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State Revolving Fund Project Plan
Rehabilitation of 7 Mile Sewer System

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Rehabilitation of the 7 Mile Sewer System

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1.0 PROJECT BACKGROUND

This document has been prepared for the SRF low interest loan program in accordance with the Clean Water State Revolving Fund (SRF) Project Plan Preparation Guidance adopted by the Michigan Department of Environment, Great Lakes, and Energy (EGLE; Revision 1/2023). It is the intent of the Great Lakes Water Authority (GLWA) to seek low interest loan assistance for quarter 2 of the 2025 fiscal year under the SRF program. The purpose of this document is to describe the GLWA project that is the basis for this request for SRF funding, including details of the project as required by the SRF Project Plan Guidance document.

The GLWA wastewater conveyance system consists of over 180 miles of large diameter collector and interceptor sewers which convey wastewater flows from member communities outside Detroit to the Water Resource Recovery Facility (WRRF) located in southwest Detroit. GLWA has identified a number of conveyance system assets to be investigated for structural and operation and maintenance (O&M) condition. The assets to be rehabilitated under GLWA Contract 2300150: Rehabilitation of the 7 Mile Sewer System include three discontinuous sewer segments identified as Segments 1, 2, and 3 of the 7 Mile Sewer; the East 7 Mile Relief Sewer; and the West 7 Mile Relief Sewer. These sewers make up the 7 Mile Sewer System. Further background details regarding these sewers are discussed in Sections 1.0.1 through 1.0.3.

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The goal of the project is to rehabilitate and repair structural defects within Segments 1, 2, and 3 of the 7 Mile Sewer, the East 7 Mile Relief Sewer, and the West 7 Mile Relief Sewer to extend the service life of these assets by another 25 to 30 years. The approximate locations of the various sewers are shown in Figures 1 through 4 on the following pages. This project plan discusses the need for the project, alternative options that have been considered, recommended alternatives, and environmental impacts of the project. This document also serves as the basis for public review and comment on the proposed work in accordance with the public participation requirements of the SRF program.

1.0.1 7 Mile Sewer Segments 1, 2, & 3

The 7 Mile Sewer portion of the 7 Mile Sewer System in this project consists of three discontinuous sewer segments, identified as Segments 1, 2, and 3. Segment 1 of the 7 Mile Sewer extends from the intersection of W. 7 Mile Road and Five Points Street at its upstream end and flows east to the intersection of W. 7 Mile Road and Shiawassee Drive at its downstream end. At the upstream end, Segment 1 receives flow from local suburban gravity mains within Redford Township as well as local flow from Detroit. At the downstream end (far east), flow from Segment 1 continues to the Shiawassee Sewer or can overflow into the Seven Mile CSO Sewer, which connects to the Seven Mile Sewer Retention Treatment Basin (RTB) Facility.

Segment 2 of the 7 Mile Sewer extends from the intersection of W. 7 Mile Road and San Juan Drive at its upstream end and flows east to the intersection of W. 7 Mile Road and Pontchartrain

Drive at its downstream end. Segment 2 is a gravity main sewer connecting to the 7 Mile Sewer (DWSD-owned) on both the west and east ends. This segment carries City of Detroit flow from west to east. All flow is carried to downstream segments of the 7 Mile Sewer with several overflow connections to the West 7 Mile Relief Sewer.

Segment 3 of the 7 Mile Sewer extends from the intersection of W. 7 Mile Road and Anglin Street at its upstream end and flows east to the intersection of W. 7 Mile Road and the Grand Trunk Railroad at its downstream end. At its upstream end, Segment 3 receives flow from the 7 Mile Sewer from the west and transmits flow to the Conner Creek Sewer at the east (downstream) end. Several local gravity mains from Detroit input into Segment 3 of the 7 Mile Sewer. There are also various overflow connections to the East 7 Mile Relief Sewer throughout the length of Segment 3.

The 7 Mile Sewer was constructed over several different construction projects. Segment 1 of the 7 Mile Sewer was constructed in one section and is the shortest of the three segments. Segment 2 was constructed in three sections. Segment 3 was constructed in four sections. All segments were constructed in the 1920s and 1930s.

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1.0.2 East 7 Mile Relief Sewer

The East 7 Mile Relief Sewer extends from the intersection of the Grand Trunk Railroad and E. 7 Mile Road at its most upstream end and flows west to the intersection of E. 7 Mile Road and Anglin St. Flows are predominantly east to west in this relief sewer; however, a small portion of the sewer flows from west to east starting near the intersection of Terrell Street and E. 7 Mile Road to the Grand Trunk Railroad. The west end of the sewer outputs into the Conant-Mt. Elliot Sewer, while the east end outputs into the Conner Creek Sewer. There are several flow inputs into the East 7 Mile Relief Sewer which include overflow connections from Segment 3 of the 7 Mile Sewer as well as local gravity mains from Detroit. Historically, the East 7 Mile Relief Sewer was constructed in two sections in the 1950s and 1960s.

1.0.3 West 7 Mile Relief Sewer

The West 7 Mile Relief Sewer extends from the intersection of W. 7 Mile Road and San Juan Street at its upstream end then flows east to W. 7 Mile Road and Pontchartrain Drive on its downstream end. The upstream end of the sewer receives flow inputs from the Evergreen-Farmington Relief Sewer, 7 Mile Relief Sewer, and the San Juan Relief Sewer. At the downstream end of the West 7 Mile Relief Sewer, flow outputs to the First-Hamilton Relief Sewer. The West 7 Mile Relief Sewer parallels Segment 2 of the 7 Mile Sewer and at several locations the two sewers connect, allowing overflow from Segment 2 into the adjacent relief sewer. Historically, the West 7 Mile Relief Sewer was constructed after Segment 2 of the 7 Mile Sewer in four sections in the 1960s.

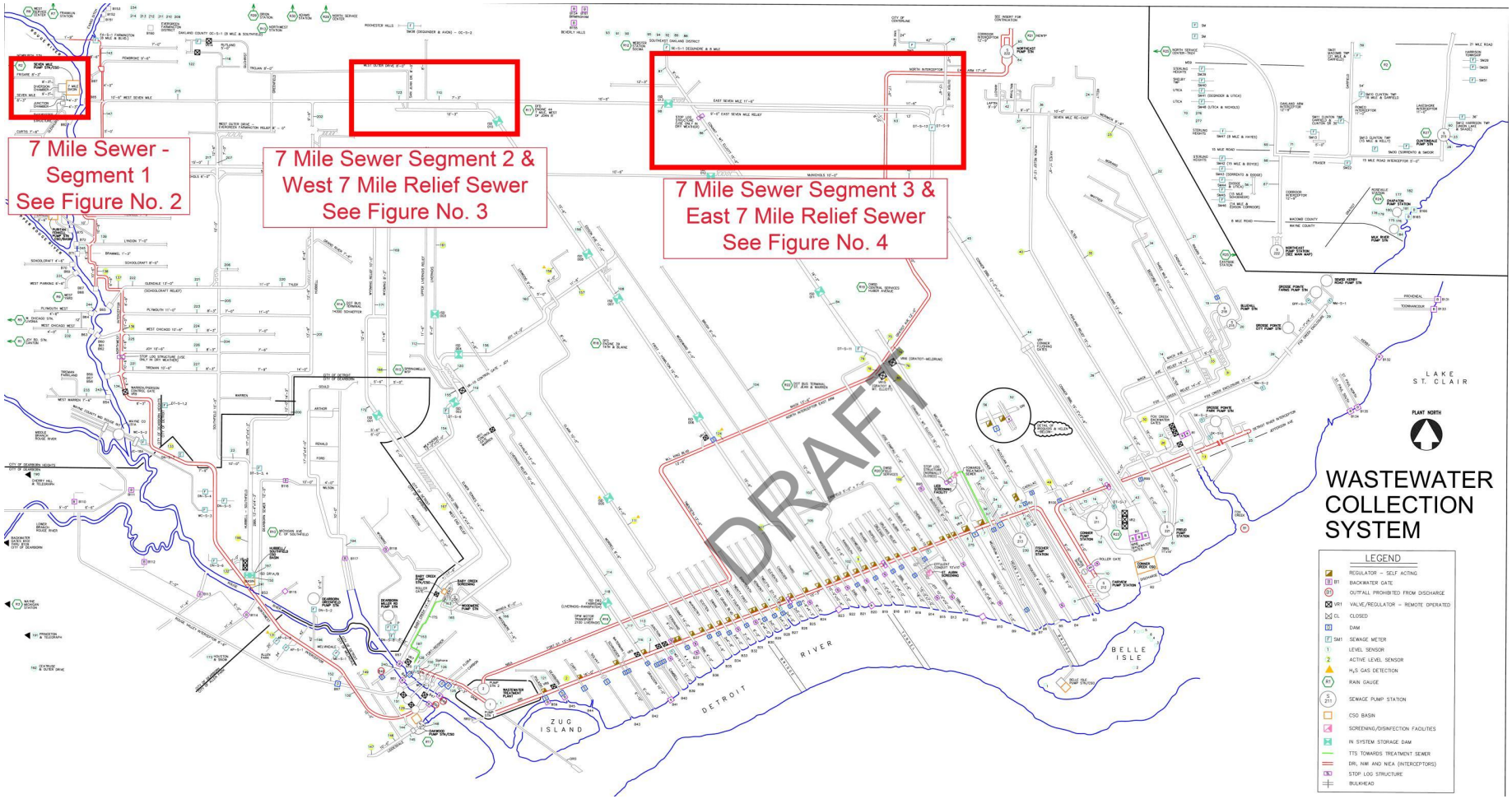

Figure 1: Overall Location Plan

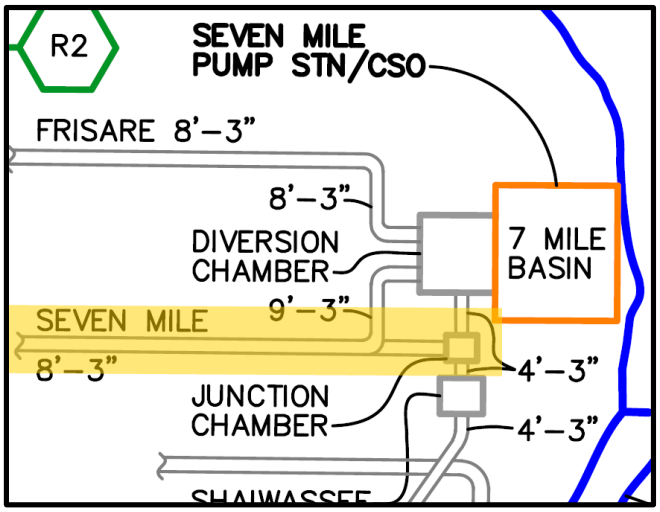

Figure 4: 7 Mile Sewer, Segment 1

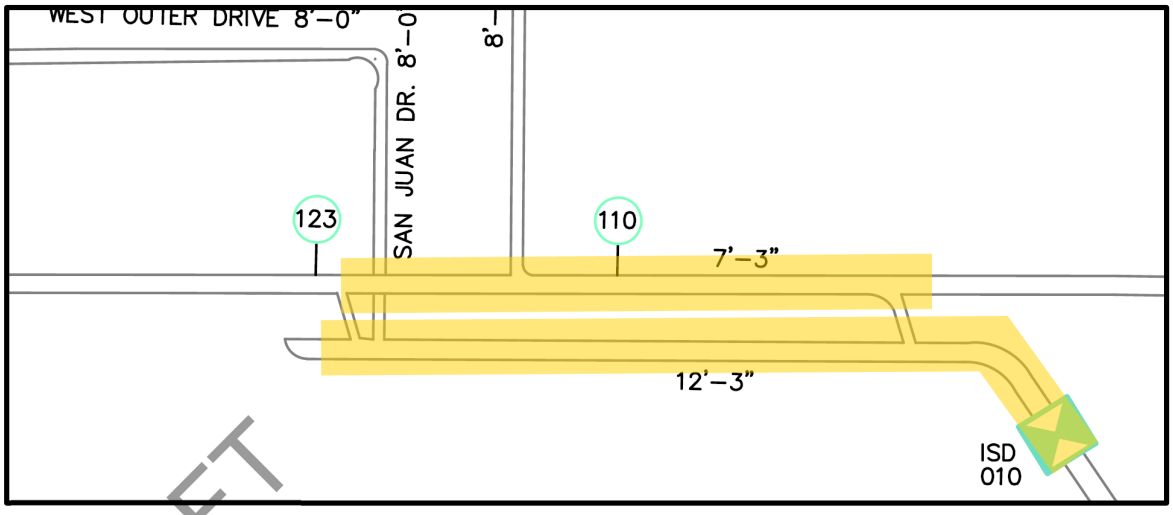

Figure 3: 7 Mile Sewer, Segment 2 (north) and West 7 Mile Relief Sewer (south).

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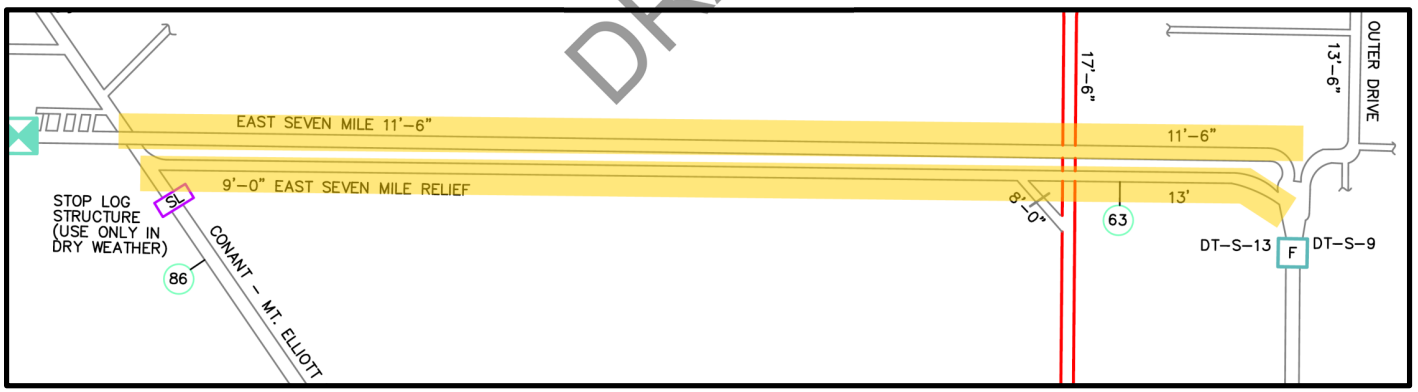

Figure 2: 7 Mile Sewer, Segment 3 (north) and East 7 Mile Relief Sewer (south).

1.1 Delineation of the Study Area

The area of study for this project runs entirely along 7 Mile Road extending from Five Points Street on the west to Outer Drive on the east. The areas directly impacted by this project are shown in Figure 5 below. These areas include part of the City of Detroit, the Evergreen-Farmington Sanitary Drain Drainage District (EFSD), and the George W. Kuhn Drainage District (GWKDD). The area indirectly impacted by this project is estimated to be the rest of the City of Detroit.

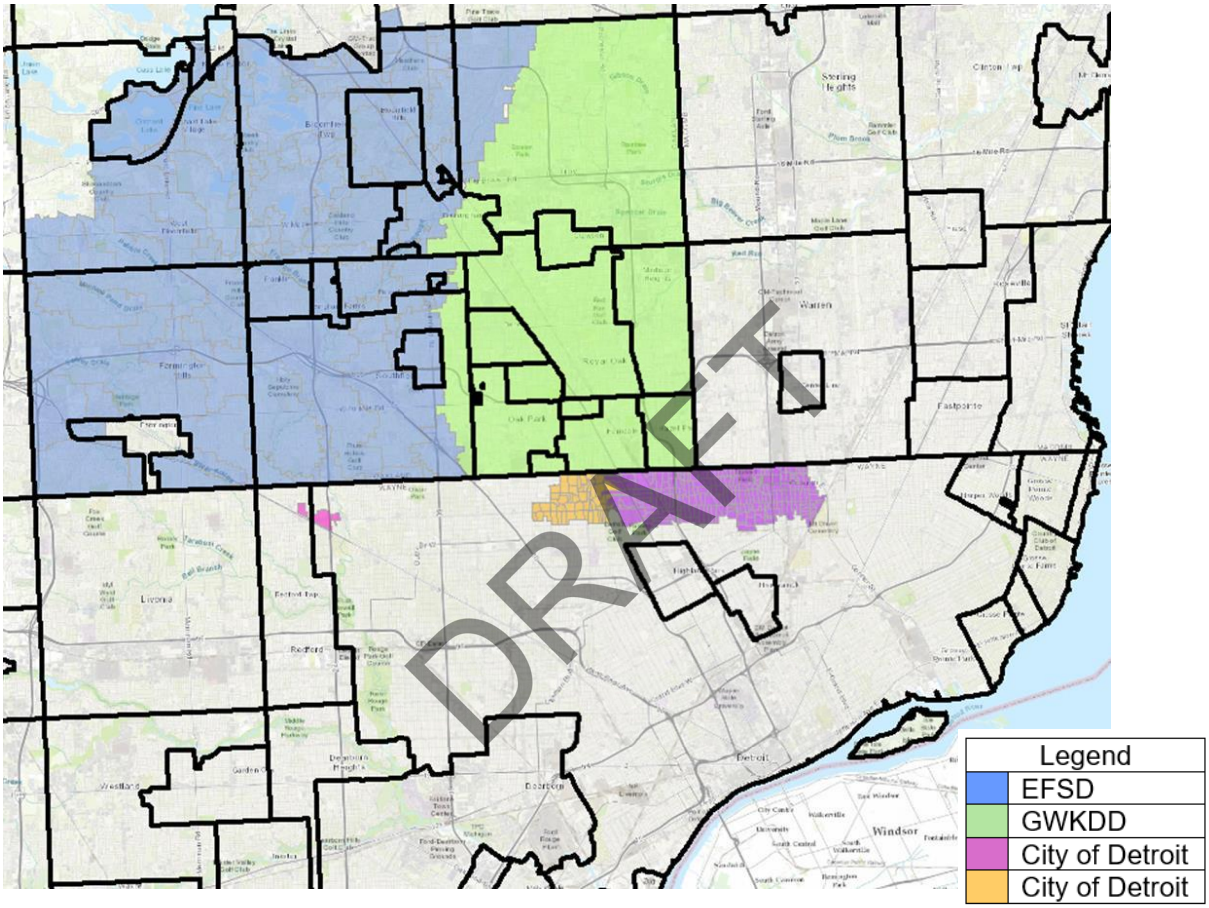

Figure 5: Service Area Directly Impacted by 7 Mile Sewer System

The specific location of the 7 Mile Sewer System in this project is shown in the 90-percent design drawings for the project attached as Appendix A. The at-grade areas affected are generally within the driving lanes along 7 Mile Road extending from Five Point Ave. to Outer Drive. Along 7 Mile Road, at-grade construction disturbance will consist of manhole frame and cover replacement which is limited to an approximately 8-foot by 8-foot area centered on each manhole structure.

1.2 Environmental Setting

The environmental setting of the study area is discussed in the following sections.

1.2.1 Cultural Resources

Kidorf Preservation Consulting and their subcontractor, Arbre Croche Cultural Resources LLC, are currently preparing a State of Michigan Section 106 application for this project to evaluate the possible impacts to scientific, prehistorical, historical, or archeological resources in the vicinity of the project. The final report from Kidorf is not complete at the time of this draft project plan report. Therefore, items required under the Section 106 review, including the final Kidorf report and required attachments will be included at the time of the final report under Appendix B.

Twelve federally recognized Indian tribes in Michigan were contacted during the development of this project plan. The Tribal Historic Preservation Officer (THPO) for each tribe was given the opportunity to comment on the project. The THPO contacts were provided with a summary of the project and a location plan of the project areas. The Notice of Opportunity to Comment Letters and responses that have been received are included in Appendix B. From the responses received so far, it does not appear that this project will have any effect on recorded resources or cultural resources.

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1.2.2 The Natural Environment

Considerations to the natural environment in the study area are discussed in the following sections.

1.2.2.1 Air Quality

Direct or indirect air pollutant emissions are not expected to result from the operation of this project. Air pollutant emissions that will result from this project are limited to the construction phase of this project. This project will not impact contract capacity for any of the upstream sewer system wholesale customers, and therefore is not expected to result in any population growth in the area that could impact long-term air quality.

As part of our efforts to analyze whether this project will impact air quality in the project area, the EGLE Air Quality Annual Report for 2022 was reviewed. The entire state of Michigan is in attainment for CO, Pb, NO_2, and particulate matter. The project area is in nonattainment for SO_2 and O_3. The levels for all criteria pollutants have continually decreased since monitoring began in the 1970s, and this project is not expected to affect the continually decreasing levels.

1.2.2.2 Wetlands

According to Michigan's wetland statute, Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, defines a wetland as "land characterized by the presence of water at a frequency and duration sufficient to support,

and that under normal circumstances does support, wetland vegetation or aquatic life, and is commonly referred to as a bog, swamp, or marsh."

To evaluate the potential effects of the project on wetlands in the area, the design team utilized the EGLE wetlands map viewer. The wetlands in the specific construction area are shown in Appendix C as Figures 1 through 3, and the wetlands in the entire project study area is shown in Figure 6 on the following page. There are no wetlands in the construction areas as identified in the Part 303 Final Wetlands Inventory and MIRIS maps or in the 2005 National Wetlands Inventory. Segment 1 of the 7 Mile Sewer is less than one mile away from a wetland area. With the proposed minimal above-ground improvements and the below-groundwork being trenchless, negative impacts to any of the wetlands identified near the project areas are not expected.

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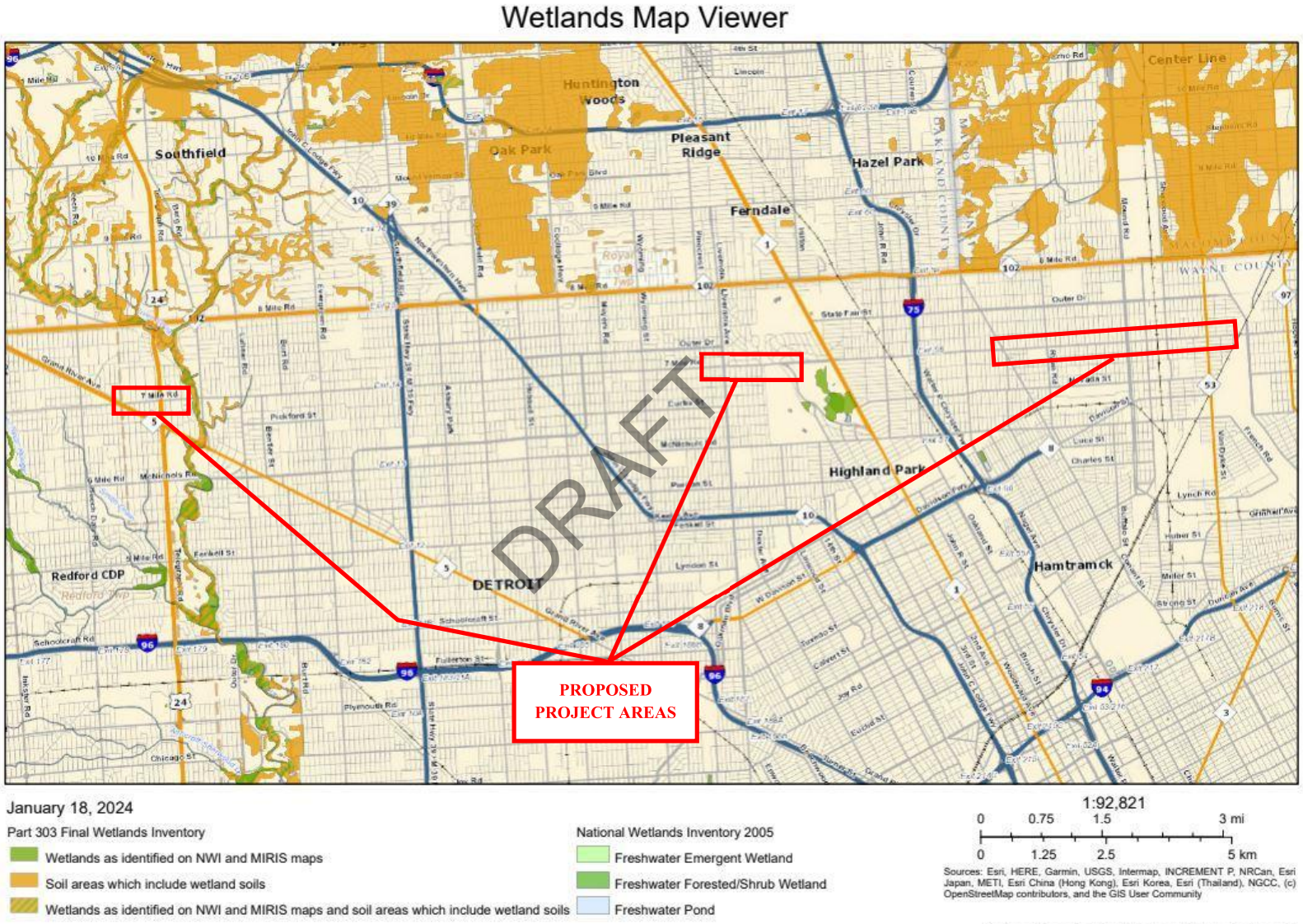

Figure 6: Wetlands map from EGLE Wetland Identification Program with respect to proposed project areas.

1.2.2.3 Coastal Zones

The Wayne County coastal map provided by EGLE (Figure 7) shows the boundaries for the Coastal Zone Management. None of the project construction areas are within the Coastal Zone Management Area where it extends inland along the Rouge River. EGLE administrates permits for activities within the coastal zone for the protection of high-risk erosion and critical dune areas. High-risk-erosion and critical dune areas are primarily located on the west shoreline of the state, in the upper peninsula, and in select areas on the shore of Lake Huron. This project is not in any high-risk-erosion or critical dune areas, and there are no coastal wetlands of concern in the project study area.

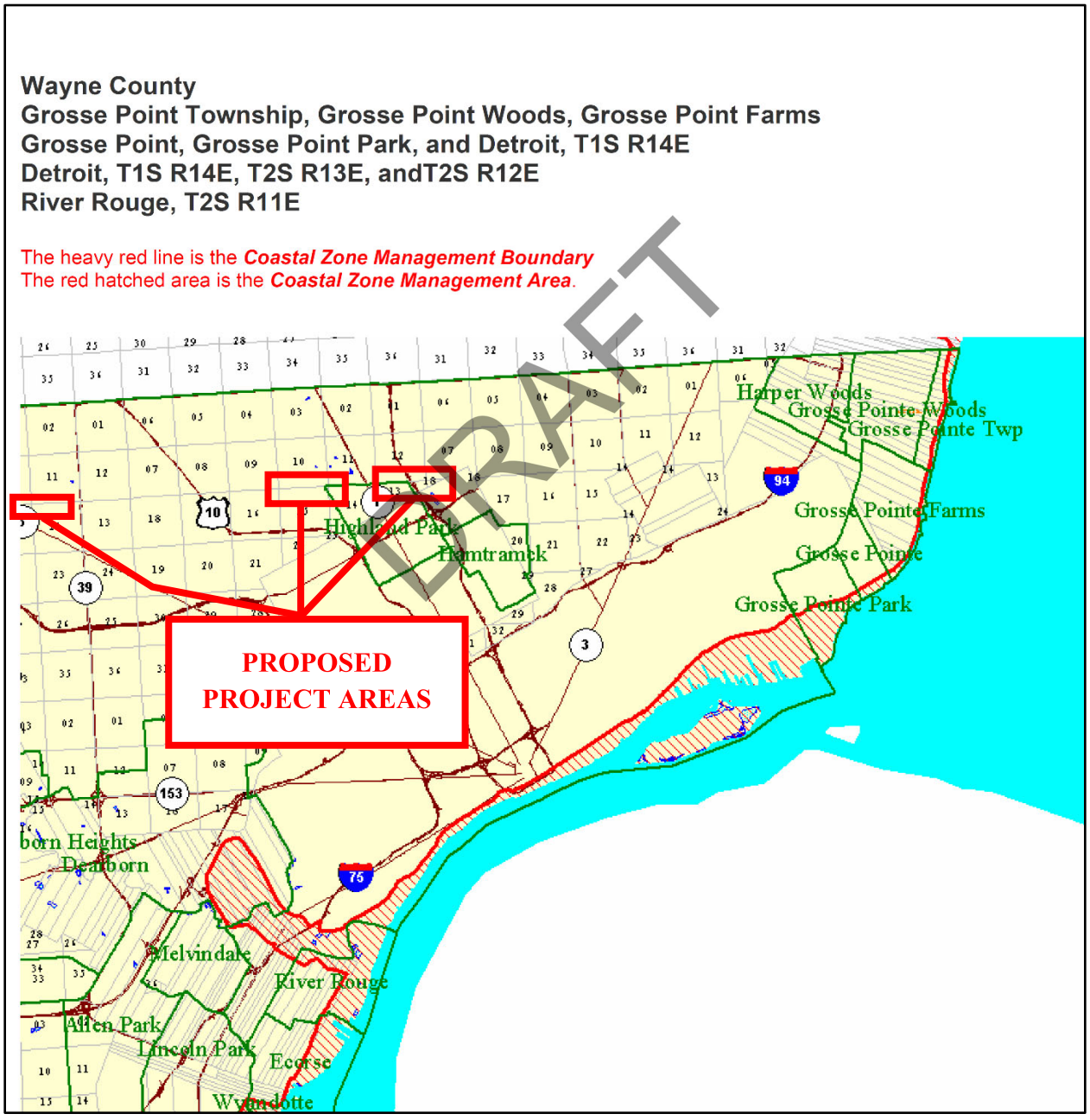

Figure 7: Wayne County Coastal Zone Boundary Map provided by EGLE with Project Areas Highlighted

1.2.2.4 Floodplains

The project areas have been evaluated for floodplain hazards using the Federal Emergency Management Agency (FEMA) Flood Map Service Center available online. Due to the large geographical size of the project, the floodplain maps with the project areas highlighted in relation to flood hazard zones have been included in Appendix C as Figures 4 through 6. After reviewing the floodplain maps, it appears that above and below ground construction is not located within the identified floodplain locations and activities are not anticipated to negatively impact any floodplains.

1.2.2.5 Natural or Wild and Scenic Rivers and Major Surface Waters

The rivers and major surface waters located near the project area are shown in Figure 8: Wayne County Watershed Map. This map indicates that the project area is in the Rouge River Watershed and the Detroit River Watershed. The Rouge River Watershed is broken down into 7 watersheds. Figure 9 shows that the 7 Mile Sewer Segment 1 is solely in the Main 3-4 Rouge River watershed. 7 Mile Sewer Segment 2, West 7 Mile Relief Sewer, 7 Mile Segment 3, and East 7 Mile Relief Sewer are solely in the Detroit Watershed. The major surface waters near the project area are the Detroit River and the Rouge River. These rivers are developed waterways with extensive urban, commercial, and industrial facilities along the shorelines, within the vicinity of the project.

The points where water is drawn for public and industrial use are shown on Figure 10: Water Intakes Map provided from the GLWA GIS system. This map shows the water intake locations on the Detroit River for Water Works Parks, Springwells, Northeast, and Southwest Water Treatment Plants, and the Ford Raw Water Intake Tunnel on the Rouge River.

The National Wild and Scenic Rivers System website indicates that sixteen different rivers in the State of Michigan have the designation of wild & scenic. These rivers are generally located in the northern portion of Michigan's Lower Peninsula and Michigan's Upper Peninsula, and it is not expected that this project will adversely impact any of the designated river segments.

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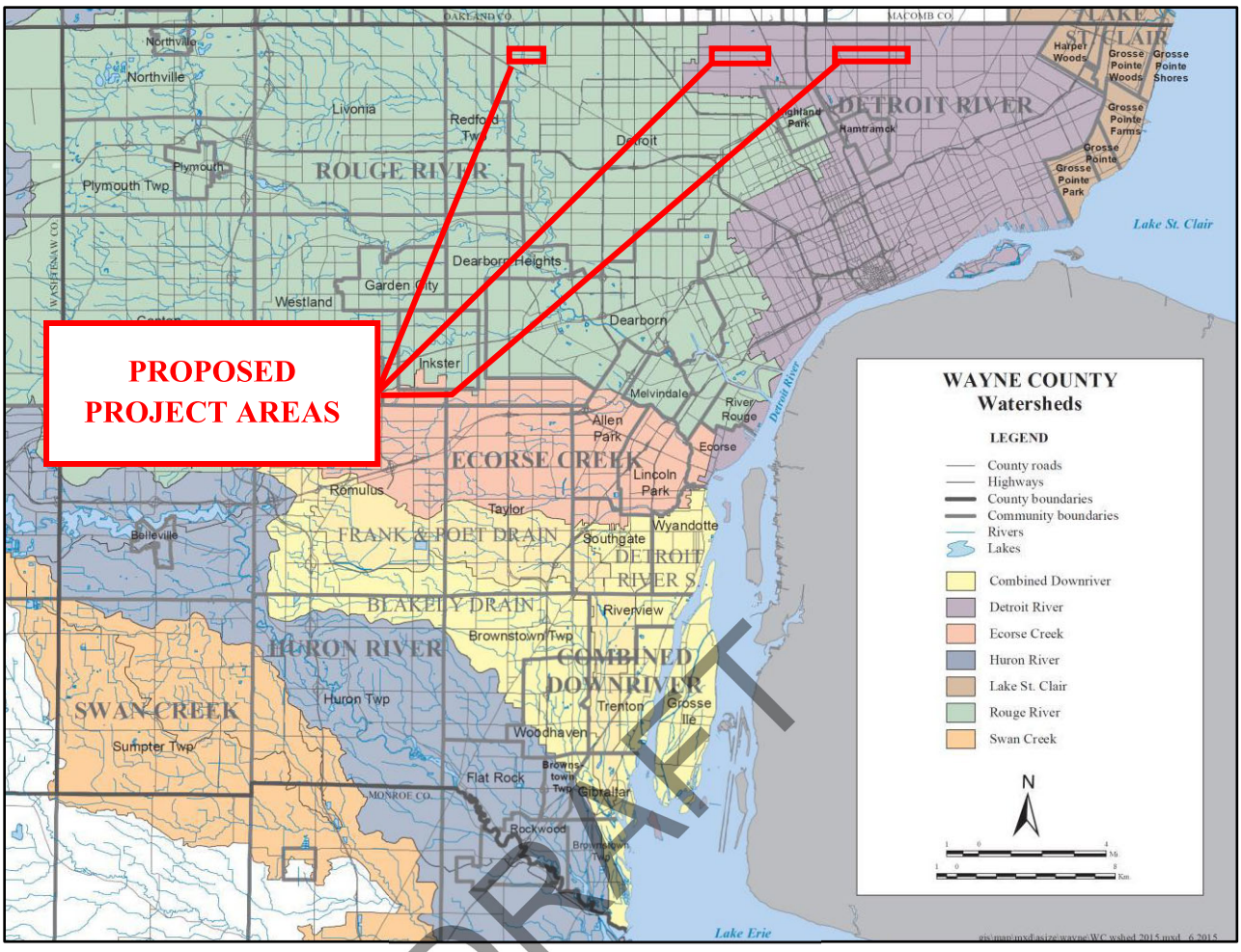

Figure 8: Wayne County Watershed Map in relation to project areas.

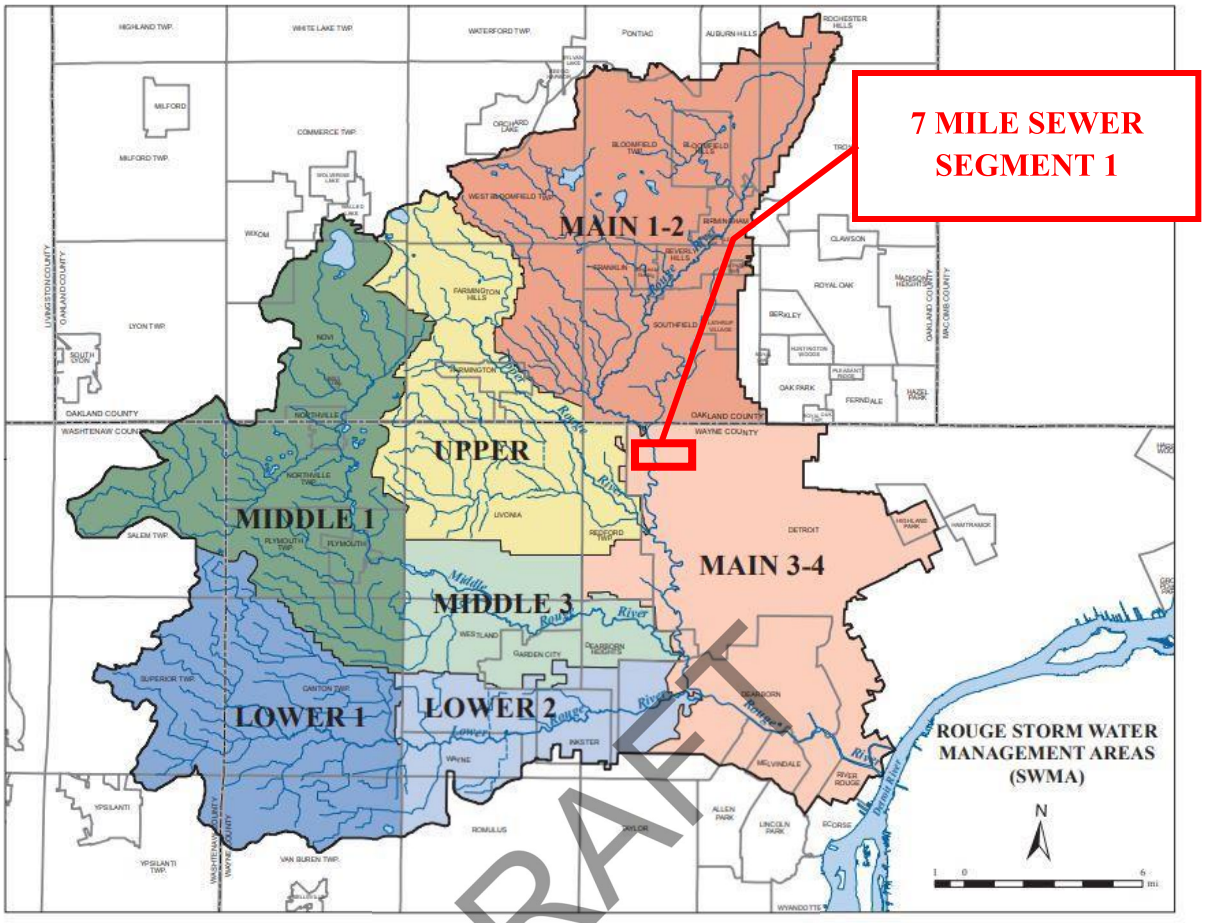

Figure 9: Rouge River Watershed Map

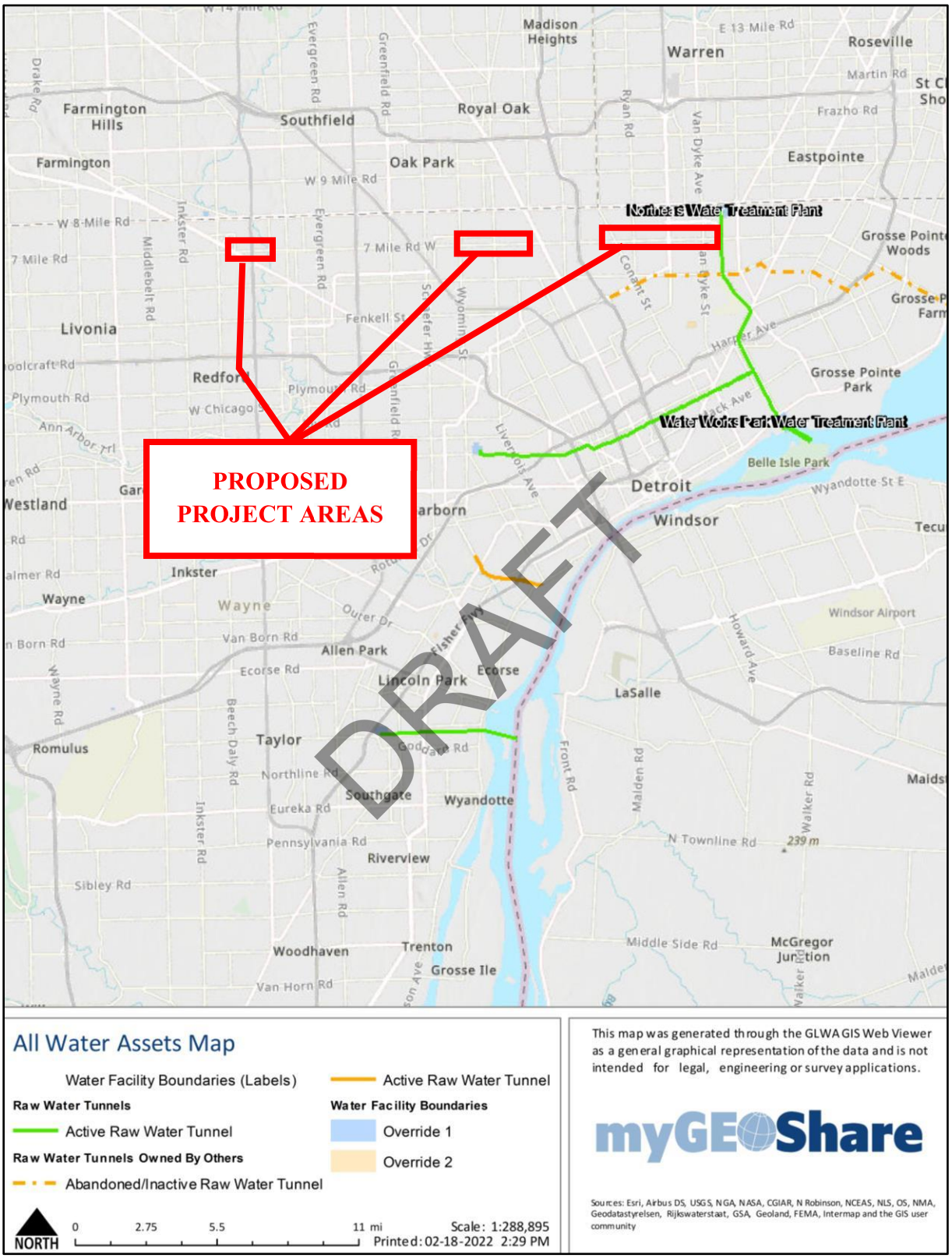

Figure 10: Detroit and Rouge River Water Intakes Locations – GLWA

1.2.2.6 Recreational Facilities

The most recent Parks and Recreation Improvement Plan document from 2017 and the City of Detroit Park Finder map were reviewed to identify any parks and outdoor recreational facilities in the project area. Based on these two resources, there are several parks and outdoor recreational facilities near the project areas. Figure 11 shows the identified City of Detroit parks in relation to the project areas from the City of Detroit Park Finder map. Table 1 summarizes the parks and outdoor recreational facilities that are closest to each of the project areas. The 2022 Parks and Recreation Improvement Plan does not indicate that Rogell, Palmer, and Kern Park will be expanded. On this basis, no impact from this project on existing parks or recreation areas are expected.

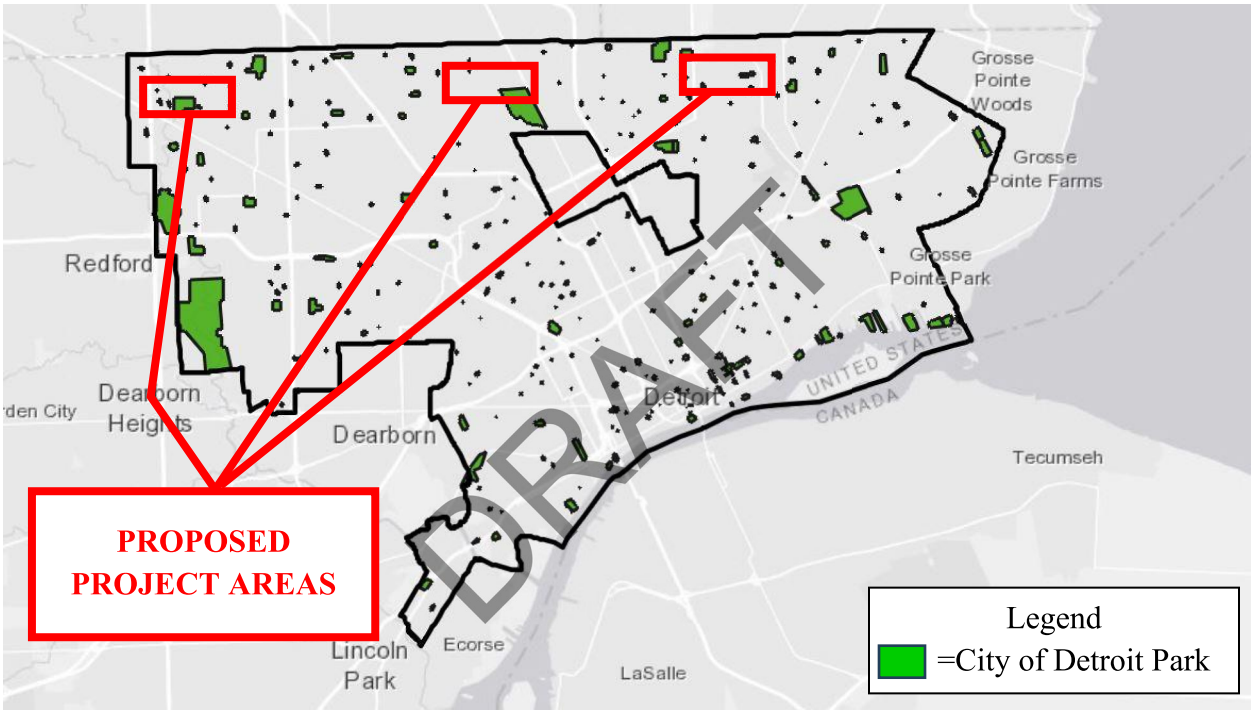

Figure 11: City of Detroit Park Finder in Relation to Project Areas

Table 1: City of Detroit Park Summary	
Sewer Segment	*Park/Outdoor Recreation Facility*
7 Mile Segment 1	Rogell Park
7 Mile Segment 2 & W. 7 Mile Relief Sewer	Palmer Park
7 Mile Segment 3 & E. 7 Mile Relief Sewer	Kern Park

1.2.2.7 Topography

Due to the large geographical size of the project locations, topographic maps were obtained from the 2019 USGS Survey and are shown in Appendix C as Figures 7 through 11. The project areas are generally located in public right-of-way (ROW) throughout residential and industrial areas. Elevations throughout the area are generally consistent and only gradual changes in elevation are present.

1.2.2.8 Regional Geology and Soils

Based on published information for the Detroit Area, the regional geology of the area consists of glacial soils underlain by bedrock. The glacial soils were deposited directly by glacial ice (till), by glacial meltwater streams (glaciofluvial), or by glacial lakes (lacustrine deposits).

Based on published information from the Michigan Geological Survey Physiographic Map, the project areas reside in the Maumee Lake Plain that has soil textures that range from sandy to clayey. There are few areas that have a loam surface texture. Hydrologically, the Maumee Lake Plain is a “broad, wet plain that has been artificially drained for agriculture”.

On the basis of published data as well as site specific data, near-surface soils generally consist of variable fill, which is underlain by native lacustrine clays that are typically very soft to medium consistency and which occasionally contain relatively thin seams and layers of granular material. These clay layers are generally considered to be slightly over consolidated and occasionally normally consolidated. The upper surface soils have been desiccated during dry and low water periods, which results in stiffer clays than the underlying lacustrine soils. The lacustrine deposits are typically underlain by a thin layer of over-consolidated glacial till that was present beneath the layers of the last ice age, consisting primarily of clay with sand, silt, and gravel. This formation is referred to locally as “hardpan” and typically overlies bedrock.

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The bedrock that underlies the overburden soil for the Detroit area consists of the Dundee Limestone Formation. This formation contains artesian groundwater within it as well as hydrogen sulfide and methane gas. This aquifer is low quality and is not used for drinking water or for any known industrial purpose.

1.2.2.9 Agricultural Resources

The project areas are primarily in public ROW, adjacent to residential and industrial properties. There are no prime or unique farmlands in the area.

1.2.2.10 Fauna and Flora

To characterize the fauna and flora in the project area and to determine if there are any environmentally sensitive habitats or any species listed as endangered, threatened, or of special concern, the design team has contacted the Michigan Natural Features Inventory (MNFI) and the U.S. Fish & Wildlife Service (USFWS).

The MNFI was contacted through the Michigan State University Extension. The MSU Extension checked the project area with a 0.5-mile buffer for rare species and unique natural features recorded in the MNFI. Several at-risk species and/or natural communities have been documented within 0.5 mile of the project location. However, it is unlikely that adverse impacts will occur from the project. The threatened or endangered species and the special concern species and natural communities that have occurred within 0.5 mile of the project site were last observed from 1867 to 1933 and have no concerns in relation to the project. This includes a total of 10 species. The full list of species identified can be found in Appendix C.

The USFWS Information for Planning and Consultation (IPaC) website was used to identify any species listed as federally endangered, threatened, proposed, and candidate species that may occur within the boundary of the project areas. Further review of the species in the project area determined that the project is not likely to adversely affect any of the species or their habitats. The species list and consistency letter provided by the USFWS IPaC system are provided in Appendix C.

By comparing the MNFI and USFWS review of species in the project area, it was determined that there is one endangered species that may fall within the project areas—the Eastern Massasauga rattlesnake. The USFWS states that to protect this species, materials used for erosion control and site restoration must be wildlife friendly and contain no plastic meshing. The service also noted that certain measures (fully described later in the report) must be taken to avoid adverse effects on the species. Due to the limited above and below ground disturbance from construction, it is not anticipated that erosion control will be required. Therefore, it is also anticipated that the Eastern Massasauga will not be negatively impacted.

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1.3 Land Use in the Study Area

The project area is mostly comprised of City of Detroit Public Right of Way, industrial properties, and residential areas. According to the City of Detroit Master Plan Future Land Use and GLWA Wastewater Master Plan 2020, the future and existing land uses in the project area are described as low density residential, medium density residential, recreational, light industrial, regional parks, and neighborhood commercial. Due to the large geographical size of the project, land use maps for the project can be found in Appendix C as Figures 12 through 16.

1.4 Population

To evaluate the current population in the project area, data available from the Southeast Michigan Council of Government (SEMCOG) 2020 Census Information was used. When applicable, the 2020 GLWA Wastewater Master Plan was used to evaluate the current population for several sewer districts. The following Tables 2 and 3 provide a summary of the GLWA service area and the direct and indirect project area populations.

Table 2 – GLWA Service Area Summary				
Type	*Service Area*	*Area (acres)*	*Population*	*Houses*
All	GLWA	658,374	2,861,873	1,155,754

Table 3 - Direct and Indirect Project Area Population Summary				
Type	*Service Area*	*Area (acres)*	*Population*	*Houses*
Directly Impact	City of Detroit (Segment 1)	208	2,427	1,178
	City of Detroit (Segment 2)	1,432	14,504	5,786
	City of Detroit (Segment 3)	5,204	33,745	12,960
	EFSD	81,425	291,090	119,357
	GWKDD	45,832	290,217	129,550
	Total	134,101	631,982	268,830
Indirectly Impact	Rest of City of Detroit	88,909	639,212	254,323

1.5 Economic Characteristics

The major employment industries in the City of Detroit are trades and transportation, education and health services, professional and business services, government, and manufacturing. The largest employers are Ford Motor Company, Stellantis, and General Motors. Other large employers include financial and health services companies. The 2022 median household income in Detroit was $37,761.

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1.6 Existing Facilities

The existing facilities/assets that this project consists of include Segments 1, 2, and 3 of the 7 Mile Sewer; the East 7 Mile Relief Sewer; and the West 7 Mile Relief Sewer. The following sections discuss additional information regarding historical information and existing conditions for each of the subject sewers.

1.6.1 7 Mile Sewer Segments 1, 2, and 3

The following subsections discuss the three discontinuous sewer segments comprising the 7 Mile Sewer for this project.

1.6.1.1 7 Mile Sewer Segment 1 Existing Conditions

Segment 1 of the 7 Mile Sewer extends from the intersection of W. 7 Mile Road and Five Points Street at its upstream end and flows east to the intersection of W. 7 Mile Road and Shiawassee Drive at its downstream end. At the upstream end, Segment 1 receives flow from local suburban gravity mains within Redford Township as well as local flow from Detroit. At the downstream end (far east), flow from Segment 1 continues to the Shiawassee Sewer or can overflow into the Seven Mile CSO Sewer, which connects to the Seven Mile Sewer Retention Treatment Basin (RTB) Facility. Segment 1 was constructed ca. 1931 and consists of a 9’-3” diameter 4-ring brick

sewer with the west end of the sewer being bulkheaded. The total distance of Segment 1 is 4,790 feet per historical drawings.

For the majority of Segment 1, conditions were observed to be in generally fair to good condition, with settled debris and infiltration being the most commonly observed defects. In addition, a number of other structural and O&M defects were observed including defective taps, defective brick and mortar sections, and areas of heavy mineral deposits.

At the most downstream end of Segment 1, a concrete diversion chamber was observed. At this point, flow either continues to the Shiawassee Sewer or can overflow into the diversion chamber leading to the Seven Mile CSO Sewer, ultimately connecting to the Seven Mile Retention Treatment Basin (RTB) Facility. Although not included in the scope, the chamber appeared to be in generally good condition, with no major defects observed.

Manholes associated with Segment 1 of the 7 Mile Sewer were generally noted to be of brick construction, and were observed to typically be in fair condition, with the exception of the chimneys directly below the manhole frames and covers. Throughout most of the manholes, brick and mortar deterioration was typically observed. Occasional infiltration and mineral deposit accumulation was also observed within the manhole chimneys. Additionally, manhole steps were observed to typically be heavily corroded, broken, or missing.

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1.6.1.2 7 Mile Sewer Segment 2 Existing Conditions

Segment 2 of the 7 Mile Sewer extends from the intersection of W. 7 Mile Road and San Juan Drive at its upstream end and flows east to the intersection of W. 7 Mile Road and Pontchartrain Drive at its downstream end. Segment 2 is a gravity main sewer connecting to the 7 Mile Sewer from both the west and east end. This segment carries flow from west to east and appears to carry entirely City of Detroit flow. All flow is carried to downstream segments of the 7 Mile Sewer with several overflow connections to the W. 7 Mile Relief Sewer. The following summarizes the sections in which Segment 2 of the 7 Mile Sewer was constructed.

7 Mile Sewer Segment 2 from San Juan Dr. to Woodward Ave.

- Section 1: San Juan Dr. to Livernois Ave.
  - 5’-6” diameter 2 ring brick sewer
  - Constructed ca. 1921 to 1922
  - Total distance of approximately 1,500 feet per historical drawings
- Section 2: Livernois Ave. to Parkside Ave.
  - 7’-3” diameter 3 ring brick sewer
  - Constructed ca. 1921
  - Total distance of 2,438 feet per historical drawings

- Section 3: Parkside St. to Woodward Ave. (Section 3 is longer than contract scope, which ends at Gloucester Dr., not Woodward Ave.)
  - 7’-6” diameter 3 ring brick sewer until Gloucester Dr.; changes to 8’-3” diameter 3 ring brick sewer (out of scope)
  - Constructed ca. 1922
  - Total distance of 2,200 feet per historical drawings (in-scope length only)

For the majority of Segment 2, conditions were observed to be in generally fair to good condition overall, with settled debris and infiltration being the most commonly observed defects. In addition, a number of other structural and O&M defects were observed including defective taps, defective brick and mortar sections, and areas of heavy mineral deposits. There were several large overflow connections within Segment 2 that were observed to connect to the parallel West 7 Mile Relief Sewer (also indicated on the historical drawings). These connections ranged in size and were generally observed to be in good condition.

Manholes associated with Segment 2 of the 7 Mile Sewer were generally noted to be of brick construction, and were observed to typically be in fair condition, with the exception of the chimneys directly below the manhole frames and covers. Throughout most of the manholes, brick and mortar deterioration was typically observed. Occasional infiltration and mineral deposit accumulation was also observed within the manhole chimneys. Additionally, manhole steps were observed to typically be heavily corroded, broken, or missing.

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1.6.1.3 7 Mile Sewer Segment 3 Existing Conditions

Segment 3 of the 7 Mile Sewer extends from the intersection of W. 7 Mile Road and Anglin Street at its upstream end and flows east to the intersection of W. 7 Mile Road and the Grand Trunk Railroad at its downstream end. At its upstream end, Segment 3 receives flow from the 7 Mile Sewer from the west and transmits flow to the Conner Creek Sewer at the east (downstream) end. Several local gravity mains from Detroit input into Segment 3 of the 7 Mile Sewer. There are also various overflow connections to the East 7 Mile Relief Sewer throughout the length of Segment 3. The following summarizes the sections in which Segment 3 of the 7 Mile Sewer was constructed.

7 Mile Sewer Segment 3 from Anglin St. to the Grand Trunk Railroad

- Section 1: Grand Trunk Railroad to Sherwood Ave.
  - 11'-6” semi-elliptical arch cast-in-place (CIP) concrete pipe with 16" thick walls; transitions to a 13’-6” diameter brick sewer that connects to a concrete junction chamber which joins Segment 3 of the 7 Mile Sewer, the East 7 Mile Relief Sewer, and the Conner Creek Sewer
  - Constructed ca. 1921 to 1922
  - Total distance of 4,865 feet per historical drawings

- Section 2: Sherwood Ave. to Keystone Ave.
  - 11’-6” semi-elliptical arch cast-in-place (CIP) concrete pipe with 16” thick walls
  - Constructed ca. 1921 to 1922
  - Total distance of 4,651 feet per historical drawings
- Section 3: Keystone Ave. to Ryan Ave.
  - 11’-6” diameter cast-in-place (CIP) concrete pipe with 16” thick walls
  - Constructed ca. 1921 to 1922
  - Total distance of 3,197 feet per historical drawings
- Section 4: Ryan Ave. to Fleming Ave.
  - 11’-6” diameter cast-in-place (CIP) concrete pipe with 16” thick walls
  - Constructed ca. 1921 to 1922
  - Total distance of 4,382 feet per historical drawings

The 11’-6” diameter CIP concrete section was observed from the east end at W. 7 Mile Road and Anglin St. to W. 7 Mile Road and Fenelon St. and was observed to be in generally poor to fair condition, with spalling, missing, and deteriorated concrete being the most commonly observed defects. Within the 11’-6” semi-elliptical arch concrete sections of Segment 3 of the 7 Mile Sewer, concrete deterioration was observed at the lower quarter points of the sewer, specifically at the 4 and 8 o’clock positions for the entire length of the arch sections. This generally corresponds to the beginning of the vertical portion of the arch shape. Deterioration at the lower quarter points included missing surface aggregate, spalling of the concrete, holes, and general deterioration and section loss of the concrete at the transition from the floor of the arch to the vertical leg.

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Additionally, at most of the joints and extending 1 to 3 feet upstream and downstream of joints, large areas of spalling and missing concrete were observed. This frequent defect was observed mostly between the 2 to 4 o’clock and 8 to 10 o’clock positions near the joints, and at times exceeded 6” of section loss. Concrete soundings both within and adjacent to the large spalls appeared to indicate that there is no large-scale deterioration of concrete strength. Other structural and operation and maintenance defects observed in Segment 3 of the 7 Mile Sewer included settled debris, infiltration, defective taps, and areas of heavy mineral deposits.

At the most downstream end of Segment 3, the sewer transitions to a 13’-6” diameter brick sewer before connecting to a concrete junction chamber. The brick portion of the sewer was found to be in good condition overall, with no signs of distress or deterioration other than settled debris. The junction chamber was observed to have flow combining from three sewers including Segment 3 of the 7 Mile Sewer (ending Segment 3), the E. 7 Mile Relief Sewer, and the Conner Creek Sewer. Although not included in the scope, the chamber appeared to be in generally good condition, with no major defects observed, except for large amounts of settled debris.

Manholes associated with Segment 3 of the 7 Mile Sewer were generally noted to be of brick construction, and were observed to typically be in fair condition, with the exception of the chimneys directly below the manhole frames and covers. Throughout most of the manholes, brick and mortar deterioration was typically observed. Occasional infiltration and mineral deposit accumulation was also observed within the manhole chimneys. Additionally, manhole steps were observed to typically be heavily corroded, broken, or missing.

1.6.2 West 7 Mile Relief Sewer Existing Conditions

The West 7 Mile Relief Sewer extends from the intersection of W. 7 Mile Road and San Juan Street at its upstream end then flows east to W. 7 Mile Road and Pontchartrain Drive on its downstream end. The upstream end of the sewer receives flow inputs from the Evergreen-Farmington Relief Sewer, 7 Mile Relief Sewer, and the San Juan Relief Sewer. At the downstream end of the West 7 Mile Relief Sewer, flow outputs to the First-Hamilton Relief Sewer. The West 7 Mile Relief Sewer parallels Segment 2 of the 7 Mile Sewer and at several locations the two sewers connect, allowing overflow from Segment 2 into the adjacent relief sewer. Historically, the West 7 Mile Relief Sewer was constructed after Segment 2 of the 7 Mile Sewer in four sections, consisting of the following components:

- Section 1: W. 7 Mile Relief Sewer from San Juan St. to Livernois Ave.
  - 10’-0” diameter cast-in-place (CIP) concrete pipe
  - Constructed ca. 1965 to 1967
  - Upstream end connects to a 6’-6” diameter cast-in-place concrete pipe (7 Mile Relief Sewer)
  - Total length of 1,564 feet per historical drawings (10’-0” dia. section only)
- Section 2: W. 7 Mile Relief Sewer from Livernois Ave. to Parkside St.
  - 10'-0" diameter cast-in-place (CIP) concrete pipe; transitions to a 12’-6” diameter cast-in-place (CIP) concrete pipe at Parkside St.
  - Constructed ca. 1965 to 1967
  - Total length of 2,335 feet per historical drawings
- Section 3: W. 7 Mile Relief Sewer from Parkside St. to Lincolnshire St.
  - 12'-6" diameter cast-in-place (CIP) concrete pipe
  - Constructed ca. 1964 to 1967
  - Total length of 1,345 feet per historical drawings
- Section 4: W. 7 Mile Relief Sewer from Lincolnshire St. to Pontchartrain St.
  - 12'-6” diameter cast-in-place (CIP) concrete pipe
  - Constructed ca. 1965 to 1967
  - Total length of 2,136 feet per historical drawings

Overall, conditions in the West 7 Mile Relief Sewer were observed to be generally good overall, with infrequent missing surface aggregate and built-up mineral deposits observed.

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At the intersection of San Juan Drive and 7 Mile Rd., two flow inputs into the West 7 Mile Relief Sewer are present—from the north on San Juan Drive is the Evergreen-Farmington Connection, while to the west is an extension of the West 7 Mile Relief Sewer. Both sewers beyond the junction are outside of the project scope. At the most downstream end of the West 7 Mile Relief Sewer, the alignment turns south onto Pontchartrain Drive and the relief sewer becomes the First-Hamilton Relief Sewer, which is also out of the project scope.

Manholes associated with the West 7 Mile Relief Sewer were generally noted to be of either concrete or brick construction, and were observed to typically be in fair condition, with the exception of the chimneys directly below the manhole frame and cover. At this location, we typically observed concrete or brick and mortar deterioration. Occasional infiltration and mineral deposit accumulation was also observed intermittently within the manhole chimneys. Additionally, manhole steps were typically observed to be heavily corroded, broken, or missing.

1.6.3 East 7 Mile Relief Sewer Existing Conditions

The East 7 Mile Relief Sewer extends from the intersection of the Grand Trunk Railroad and E. 7 Mile Road at its most upstream end and flows west to the intersection of E. 7 Mile Road and Anglin St. Flows are predominantly east to west in this relief sewer; however, a small portion of the sewer flows from west to east starting near the intersection of Terrell Street and E. 7 Mile Road to the Grand Trunk Railroad. The west end of the sewer outputs into the Conant-Mt. Elliot Sewer, while the east end outputs into the Conner Creek Sewer. There are several flow inputs into the E. 7 Mile Relief Sewer which include overflow connections from Segment 3 of the 7 Mile Sewer as well as local gravity mains from Detroit. Historically, the E. 7 Mile Relief Sewer was constructed in two sections, consisting of the following components:

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- Section 1: E. 7 Mile Relief Sewer from Conant Street to Mound Street
  - Part 1 – From Conant Street to Justine Street
    - 9’-0” diameter cast-in-place (CIP) concrete pipe with 12” thick walls
    - Constructed ca. 1959 to 1962
    - Total length of 3,983 linear feet
  - Part 2 – From Justine Street to Mound Street
    - 11’-6” diameter cast-in-place (CIP) concrete pipe with 16” thick walls
    - Constructed ca. 1959 to 1962
    - Total length of 4,029 linear feet
- Section 2: E. 7 Mile Relief Sewer from Mound Road to the Grand Trunk Railroad
  - Part 1 – From Mound Road to Rogge Street
    - 11’-6” diameter cast-in-place (CIP) concrete pipe with 16” thick walls
    - Constructed ca. 1959 to 1962
    - Total length of 3,856 linear feet
  - Part 2 – From Rogge Street to Grand Trunk Railroad

- 13’-0” diameter cast-in-place (CIP) concrete pipe with 16” thick walls
- Pipe curves and connects to a concrete junction chamber which ultimately connects to the Conner Creek Sewer
- Constructed ca. 1959 to 1962
- Total length of 3,744 linear feet

Overall, conditions in the East 7 Mile Relief Sewer were observed to be in generally good condition overall, with minimal active infiltration and occasional minor defects observed throughout. Minor defects were very infrequent, including a single defective tap, settled debris, and other observations that generally do not meet the criteria for repair. A fairly large debris shelf was observed from the junction chamber at the east end of the E. 7 Mile Relief Sewer continuing for approximately 240 feet west of the chamber. The debris shelf was observed to be approximately 3 feet wide and very compact. Other than the debris shelf, no other major structural or operation and maintenance concerns were observed.

Manholes associated with the East 7 Mile Relief Sewer were generally noted to be of both brick and precast concrete construction, and were observed to typically be in fair condition, with the exception of the brick chimney portions directly below the manhole frame and cover. It was observed that most of the manholes were constructed of precast concrete riser sections for the majority of the structure, with the top 4 to 5 feet below the ground surface being constructed of brick. Generally, the precast concrete sections were observed to be in generally good condition overall. Only minor cracking or mineral deposits were observed in these sections. We typically observed brick and mortar deterioration, occasional infiltration, and mineral deposit accumulation within the brick manhole chimneys. Additionally, manhole steps were typically observed to be heavily corroded, broken, or missing.

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1.7 Fiscal Sustainability Plan

This project is for nonpoint source work, and therefore a Fiscal Sustainability Plan (FSP) is not required.

1.8 Need for the Project

The 7 Mile Sewer System transports dry and wet weather flow to other GLWA assets including the Seven Mile Sewer Retention Treatment Basin (RTB) Facility and other large diameter sewers that transport flow to the WRRF. The East and West 7 Mile Relief Sewers allow several large collector sewers to relieve and overflow into the relief sewers preventing negative upstream hydraulic impacts such as basement flooding.

The current condition of portions of the 7 Mile Sewer System is poor, with a risk of failure. Maintaining and repairing the sewers is necessary in continuing to allow the sewers to convey flow to the GLWA WRRF and provide relief to other components of the regional conveyance

system.

The 7 Mile Sewer System is nearly 100 years old. Structural rehabilitation of the 7 Mile Sewer system is intended to extend its service life by an additional 25 to 30 years and allow the system to continue to provide positive impacts to the system.

The need for the project with respect to GLWA's compliance with the existing National Pollutant Discharge Elimination System (NPDES) permit, orders from enforcement agencies, water quality problems, future needs, and future environmental analysis are discussed in the following sections.

1.8.1 Compliance Status

GLWA is in compliance with the current NPDES permit. GLWA's NPDES Permit No. is MI0022802. A copy of the latest discharge permit has been attached in Appendix F.

1.8.2 Orders

The proposed work is not involved with any court orders, federal orders, or orders from state enforcement agencies.

1.8.3 Water Quality Problems

There are no known water quality issues related to the project. It is not anticipated that the project will negatively impact the water quality in the project area. Any discharges made throughout this project are within the limits of the current NPDES permit.

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1.8.4 Projected Needs for Next 20 Years

As discussed in Section 1.4, populations in the study area are expected to increase over the next 20 years. Consequently, it can be expected that the additional population will result in increased residential flows in the 7 Mile Sewer System which ultimately goes to the WRRF. This project will ensure that the structural aspect of the sewers is in good condition to prevent failure of the sewers and continue to provide service to the entire system.

2.0 ANALYSIS OF ALTERNATIVES

This section discusses the various options that GLWA has considered to solve the ongoing issues as they relate to the objectives of this project, as described in section 1.8. The design team has identified five alternatives that capture the widest range of potential solutions to the ongoing structural problems in the 7 Mile Sewer System.

- Alternative 1: Status Quo - No action
- Alternative 2: Targeted Spot Repairs
- Alternative 3: Full Structural Repair (Targeted)

- Alternative 4: Full Length, Full Structural Repair
- Alternative 5: Replacement (New Construction)

2.1 Alternative 1 – Status Quo (No Action)

In general, the approach to "do nothing" has not been considered an appropriate approach or in line with the scope of the project, as the age of the assets and the defect identification process typically yields a number of items requiring attention. With regard to Segments 1, 2, and 3 of the 7 Mile Sewer, it is indeed considered inappropriate to do nothing based on the conditions observed.

2.2 Alternative 2 – Targeted Spot Repairs

A spot repair approach is generally considered when overall pipe conditions are fair, and observed defects are limited in quantity. Spot repairs minimize disruptions to the surface, traffic, adjacent utilities, and general operation of the asset in question, especially in comparison to more disruptive repairs such as lining. The cost for a spot repair approach is generally lower than other structural rehabilitation approaches as well.

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The options considered for spot repair involve fixing individual defects in place, and generally consist of standard repair approaches. Such targeted spot repairs would involve such items as epoxy grouting of open cracks that may allow for loss of material; shotcrete or other applied cementitious repair of spalling joints or other deep spalls or other concrete deterioration; repairing rough break-in tap connection or trimming intruding tap connection; etc. Addressing isolated defects can help to prevent further propagation of the defect (i.e., cracking, spalling, etc.) or soil infiltration through cracks or poor tap connections. Failure to address isolated defects can lead to more widespread structural deterioration that may require more in-depth structural rehabilitation. Where spot repairs were considered feasible and not widespread, they were preferred over limited or full lining repairs.

2.3 Alternative 3 – Full Structural Repair (Targeted)

Targeted full structural repairs involve structurally repairing limited portions of a structure, but not the entirety of the structure. For example, in a pipeline in otherwise good condition, a short section with numerous defects or structural inadequacies could be lined with a structural cured-in-place pipe (CIPP) sleeve, spray lining, or other targeted structural repair, while leaving the rest of the pipeline as is. Alternatively, it could involve identifying which manholes (if any) are in poor condition and spray lining to restore structural integrity.

There are several limited pipe rehabilitation techniques that could be considered including CIPP sleeve lining, geopolymer spray lining, and various other applied linings (such as carbon fiber lining), or in-depth structural modifications. The considered approaches typically boast long service lives and corrosion resistance. CIPP sleeve lining is a proven technology, with several

installers located in the Detroit area. CIPP sleeve lining generally takes advantage of existing manholes, though it may require the construction of new manholes or modification of existing manholes if existing manholes are too far apart or otherwise inadequate for lining operations. Additionally, the maximum feasible diameter to use CIPP sleeve lining (for any significant length) is around 6', which the target sections of the 7 Mile Sewer exceed. Further, full flow bypass or diversion is typically required for CIPP lining, which can be cost-prohibitive for a targeted structural repair.

Applied lining such as carbon fiber linings can be applied in targeted areas, have a minimal cross-section reduction, and can be used for a full structural pipeline rehabilitation. However, the installation process is labor-intensive and proper surface preparation is critical; achieving the proper surface prep is expected to be problematic for this application under the field conditions expected. The surface preparation includes providing a smooth and dry surface to apply the lining; conditions which can be prohibitively difficult to achieve in longer lengths of old brick or concrete sewers with uneven surfaces and constant moisture/sewer flow.

Geopolymer spray lining is also a proven construction method and can be completed from existing manholes and for small or irregular sections. Similar to applied linings, surface preparation is important, but there are proven approaches to spray lining within active outfall segments that can be taken. Full flow bypass or diversion is also typically necessary for full-circumference spray lining repairs.

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Similar to the limited pipe rehabilitation approaches discussed above, we consider here a similar approach to manhole rehabilitation. As has become standard practice for GLWA contracts, existing manhole frames and covers are to be replaced with new, GLWA-logo, hinged frames and covers. As part of this lid replacement, we recommend that the upper 4 to 5 feet of the manhole chimney be replaced with a precast assembly. This serves the dual purpose of addressing the regularly observed brick and mortar distress as well as concrete distress under the existing lids as well as maximizing the manhole access by enlarging the upper portion of the chimney.

2.4 Alternative 4 – Full Length, Full Structural Repair

Full length, full structural repair generally involves structurally rehabilitating the asset in question by installing a new liner that does not rely on the host pipe for structural integrity. This can be done by installing a new pipe inside the host pipe (slip lining) or by lining the walls of the host pipe with a material that does not depend on the host pipe for structural stability when complete (such as full structural CIPP or applied/sprayed structural linings). In Section 4.1.4.1, we discuss the various full length, full structural repairs in general; we note, however, that this approach is ultimately not being considered for any of the 7 Mile Sewer System segments.

We considered four types of full length, full structural repair for the sewer segments; spray-applied structural liners (geopolymer or polyurea), CIPP lining, slip-lining with glass-fiber reinforced polymer mortar pipe (GFRPMP; i.e., Hobas or similar), and a two-part repair mortar and epoxy lining system (i.e., Madewell Mainstay or similar). These methods again boast long service lives and corrosion resistance, with the added benefit that these methods are proven approaches with available contractors located in the Detroit area. Though ultimately not selected for any of the 7 Mile sewers, the options considered for full length, full structural repair are described below.

GFRPMP slip lining involves the insertion of a new, structurally independent pipe within the host pipe. It requires the construction of lining shafts, which can be generally disruptive to surface activities. GFRPMP is a thin-wall pipe and is typically grouted in place once installed. A major benefit of GFRPMP is that it can be installed in sewers with active flow, provided that installation is sequenced correctly. Slip-lining will generally reduce the cross-section of the host pipe by 8 inches to more than a foot, as the slip-line pipe must be carried, pulled, jacked, or otherwise transported through the host pipe without damage. Additionally, multiple lining shafts may be required to accommodate turns or cross-section changes.

Spray-applied linings such as geopolymer or polyurea are a flexible approach to pipe rehabilitation, as they can generally conform to variations in the host pipe geometry such as cross-section changes or transitions. Spray lining can generally be installed through existing manholes, and can be completed in active sewer conditions, provided that flow can either be diverted, stored upstream in-system during the cure time, or bypassed. The best results are usually achieved when flow can be diverted upstream or bypassed and the full pipe surface perimeter prepared under generally dry conditions. As such, extensive spray lining operations will typically incorporate a bypass or other flow control measure to eliminate active flow through the work area. Surface preparation can include addressing infiltration, cleaning pipe surface, debris removal, and installing anchors to the host pipe, depending on the application. Typically, we recommend that a structural spray-applied lining must be a 360-degree repair. This is based on our experience that such linings perform significantly better in the long term if a continuous thrust-ring can be developed. In linings that have been installed over a partial cross-section (270 degrees for example), we have typically observed premature delamination and peeling at the margins, increased reflective cracking, and premature structural failure. Both geopolymers and polyurea liners typically provide excellent corrosion resistance; although, under certain extreme conditions, have been observed to perform poorly.

A very similar rehabilitation approach to single-stage spray lining, a two-part epoxy lining system can provide both structural and corrosion resistance. Products like Madewell Mainstay consist of a high-strength restoration mortar and epoxy corrosion barrier. The restoration mortar provides structural rehabilitation to deteriorated concrete and brick structures, and the epoxy

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barrier provides long-term corrosion resistance. The epoxy is applied directly to the restoration mortar, ensuring that the bond between the materials is sound throughout the full installation and preventing the epoxy lining failure often observed when epoxy is applied directly to the host pipe or structure. Similar to single-stage spray applied linings, we recommend a 360-degree liner for two-part lining systems. The major advantage of two-part epoxy lining systems is increased corrosion protection, while the major disadvantage involves increased complexity for preparation and for installing in active flow conditions.

CIPP lining generally requires less surface level disruption than slip lining with GFRPMP, as CIPP lining can often be accomplished through existing manholes or small shafts. Lining with CIPP also generally leads to less reduction in cross-section, as the CIPP liner expands against the walls of the host pipe. However, lining large diameter pipes (greater than about 6 to 7 feet) becomes increasingly impractical due to the difficulty in bypassing flow and then installing and fully curing the CIPP liner together with the associated risk held by the contractor. CIPP lining can be accomplished in non-circular pipes and can typically tolerate some level of ongoing infiltration and variations in pipe surfaces, especially if installed with a pre-liner.

2.5 Alternative 5 – Full Replacement (New Construction)

Full replacement was not considered structurally necessary in any of the three segments of the 7 Mile Sewer, the East 7 Mile Relief Sewer, or the West 7 Mile Relief Sewer.

3.0 SELECTED ALTERNATIVE

3.1 Alternative Overview

The following sections discuss the selected alternatives for the three 7 Mile Sewer segments, the East 7 Mile Relief Sewer, and the West 7 Mile Relief Sewer.

3.1.1 7 Mile Sewer Segments 1, 2, and 3

Localized repair of defects was considered as the appropriate alternative for all three segments of the 7 Mile Sewer, except in Segment 3 where there was widespread major distress that required a full structural targeted repair as discussed below. There is approximately a 9000-foot-long semi-elliptical arch portion of Segment 3 of the 7 Mile Sewer. In this segment, extensive continuous longitudinal deterioration was observed at the lower quarter points, which we consider excessive for spot repairs. However, the overall structure of the arch section appears to be intact, with little to no cracking of the pipe observed, indicating that full-length, full structural rehabilitation may be excessive for the conditions observed. It is recommended that a reinforced cast-in-place or spray-applied knee wall will restore section loss and provide structural integrity in the future.

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As noted previously, it should be recognized that because of the age of the assets in question, additional grade 3, 4, and 5 defects are expected to occur over the next 25 to 30 years, and as such, regular maintenance and repair would still be required as part of a standard O&M program.

It is recommended to replace the manholes with new manhole frames and covers to facilitate future access and repair work. 7 Mile Segment 1 has six manholes; 7 Mile Segment 2 has nine manholes; and 7 Mile Segment 3 has eighteen manholes.

3.1.2 East 7 Mile Relief Sewer

The East 7 Mile Relief Sewer was noted to be in good to very good condition from a structural perspective, with only a minimal number of Grade 3 defects observed and virtually no Grade 4 or 5 defects. The “do nothing” alternative is an appropriate option, with respect to in-pipe structural repairs for this segment.

It is recommended to replace the twenty manholes with new manhole frames and covers to facilitate future access and repair work, and we also recommend the removal of the approximately 250-foot-long debris shelf located on the far east end of the East 7 Mile Relief Sewer.

3.1.3 West 7 Mile Relief Sewer

The West 7 Mile Relief Sewer was noted to be in good to very good condition from a structural perspective, with only a minimal number of Grade 3 defects observed and virtually no Grade 4 or 5 defects. The “do nothing” alternative is an appropriate option, with respect to in-pipe structural repairs for this segment.

It is recommended to replace the 8 manholes with new manhole frames and covers to facilitate future access and repair work.

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3.2 Project Schedule

The design of this project is ongoing, and construction is anticipated to begin in April 2025. Project completion is expected in July 2027. A summary construction schedule (based on the Basis of Design Report) is shown in the following Figure 12.

Contract 2300150 CSO Rehabilitation of 7 Mile Sewer System Estimated Construction Schedule (3/6/2024)																												
Task	Duration (days)	Duration (months)	Month																									
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Mobilization	5	27																										
Flow Control	188																											
Traffic Control	110																											
Misc. Site Work	30																											
Engineer Direct Repairs	100																											
Shut Down Days	180																											
7 Mile Sewer Segment 1	141	7																										
7 Mile Sewer Segment 2	141	7																										
7 Mile Sewer Segment 3	942	24*																										
East 7 Mile Relief Sewer	25	1																										
West 7 Mile Relief Sewer	9	<1																										
Project Punch List	50	3																										

Figure 12: Construction Schedule updated 3/6/2024

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3.3 Engineer's Opinion of Project Cost

For the construction of the repairs throughout the 7 Mile Sewer System, the AACE Level 4 Opinion of Cost is $30,000,000 which includes a 20% contingency, corresponding to $5,000,000. A preliminary project cost breakdown is shown in Figure 13 on the following page. On this basis, $30M is being sought through SRF Funding.

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Bid Item No.	Bid Quantity	Bid Units	Description	Unit Price	Bid Price
A. Lump Sum and Allowance Items					
1	LS	N/A	Mobilization	N/A	$1,300,000
2	LS	N/A	Flow Control	N/A	$1,000,000
3	LS	N/A	Misc. Site Work	N/A	$250,000
4	LS	N/A	Traffic Control	N/A	$250,000
SUB-TOTAL LUMP SUM AND ALLOWANCE ITEMS (1 to 4) =					$2,800,000
B. Unit Price and Allowance Items					
5	180	Days	Shutdown Days	$3,000	$540,000
6	6000	SF	Deep Concrete Repair	$400	$2,400,000
7	29000	GAL	Seal Infiltration with Chemical Grout	$150	$4,350,000
8	61	EACH	Replace Manhole Frame and Cover	$9,800	$597,800
9	1565	TONS	Remove Debris	$1,250	$1,956,250
10	50	SF	Tuckpointing Deteriorated Mortar	$50	$2,500
11	13	SF	Deteriorated Brick Repairs	$200	$2,600
12	250	SF	Remove Mineral Deposits and Roots	$60	$15,000
13	70	EACH	Repair Rough Taps	$900	$63,000
14	100	LF	Open Joint Repair	$500	$50,000
15	300	LF	Epoxy Crack Repair	$200	$60,000
16	18914	LF	In-Depth Structural Repair	$600	$11,348,400
17	NTE	N/A	Provisional Allowance	N/A	$400,000
SUB-TOTAL UNIT PRICE AND ALLOWANCE ITEMS (5 to 17) =					$21,785,550
TOTAL BID (1 TO 17) =					$24,585,550
				20% Contingency	$4,917,110
					$29,502,660

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Figure 13: Construction Schedule updated 3/6/2024

3.4 Authority to Implement the Proposed Project

GLWA is a regional water and wastewater provider responsible for improving, enlarging, extending, financing, and operating a water supply and wastewater system and has the authority to implement this project. GLWA is legally, financially, and managerially responsible for the 7 Mile Sewer System, and will be the loan applicant for this project.

3.5 User Costs

The cost per user is determined using the following equation:

$$A = PW \times \left[\frac{i \times (1+i)^n}{(1+i)^n - 1}\right]$$

Where: A=Equivalent Annual Cost

PW=Present Worth=Project Cost = $30,000,000

i=SRF Interest Rate=2.5%

n=SRF Term Length = 20 years

The equivalent annual cost is $1,924,414. Based on SEMCOG projections, the 2020 GLWA WWMP anticipates a service area containing approximately 2.9 million residents in the next 20

years and based on the U.S. Census Bureau, the number of persons per household in Michigan from 2016 to 2020 was 2.45. Therefore, the estimated number of households that the GLWA service area contains is approximately 1.16 million.

The estimated total project cost of $30,000,000 will be incorporated into the regional system revenue requirement and allocated to all member partners through the Sewer charges methodology process. Therefore, the estimated cost per household has been determined to be less than $1.65 per year.

3.6 Useful Life

The 7 Mile Sewer System is being designed for a service life extension of 25 to 30 years.

4.0 EVALUATION OF ENVIRONMENTAL IMPACTS

The following sections evaluate the beneficial impacts and the potential direct, indirect, and total environmental impacts that this project may have on the natural environment. Generally, the project is located within public ROW, and limited impacts to the natural environment are expected. The natural setting of the environment was discussed in detail in Section 1 where it was determined that no adverse effects were likely to result from the construction of the project.

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4.1 Direct Impacts

Construction of the 7 Mile Sewer System Project is not expected to have an adverse effect on historical, archaeological, geographic, or cultural areas, as the construction activities will mostly occur underground and will require minimal disturbance of the project area soils at areas involving surface structures (i.e., manholes). The project will not affect the water quality of the area, air quality, wetlands, endangered species, wild and scenic rivers, or unique agricultural lands.

4.2 Indirect Impacts

Indirect impacts are those caused by the proposed project that will eventually be removed with time and distance. These impacts are often seen when the project increases growth of residential or commercial developments. The project is in areas that are already developed, so changes to land use and the rate, density, or type of developments in the project area are not expected. Additionally, the water quality, natural environment, and cultural environment are not expected to see any adverse impacts from this project. Most of the project will be completed below ground, and above-ground areas will be restored to their pre-construction condition.

4.3 Cumulative Impacts

Improved reliability, efficiency, and the ability to safely convey stormwater and sanitary flows to the WRRF are the primary cumulative beneficial impacts anticipated from the implementation of the 7 Mile Sewer Rehabilitation Project. If the structural defects identified in the 7 Mile Sewer

System are neglected, we expect that defects will continue to get deteriorate, which could result in loss of service, negative upstream hydraulic impacts, and increased sanitary and combined sewer overflows.

5.0 MITIGATION

This section discusses mitigation strategies that will be taken for adverse impacts that were identified in Section 4.

5.1 Mitigation of Short-Term Construction Impacts

Short term adverse impacts (i.e., nuisance) due to construction activities are expected and cannot be avoided. However, the construction contract will include methods for noise control, dust control, odor control, and soil erosion and sedimentation control. Noise disruptions can be avoided by scheduling work hours to avoid noise in the early morning and late evening. A soil erosion and sedimentation control plan will be developed and will include dust control methods. The construction contract will also include traffic control plans and a safety plan to mitigate personnel-related hazards. The contractor will be required to dispose of manhole rehabilitation spoils only at approved disposal sites. Following all construction activities, roadways, sidewalks, utilities, and greenbelt areas will be restored to their pre-construction condition.

5.2 Mitigation of Long-Term Impacts

Long term adverse impacts are not anticipated from this project. Site restoration will be completed at all locations affected by construction and permanent site modifications will be completed at all manhole locations that will be rehabilitated.

5.3 Mitigation of Indirect Impacts

This project is not anticipated to have any indirect impact on new development or population growth in the project area.

6.0 PUBLIC PARTICIPATION

The design team has reached out to any necessary stakeholders, municipalities, and authorities having jurisdiction (AHJs) that are in the direct alignment of various sewers. The design process of the project has included input and design requirement from AHJs along the sewer alignments. Additionally, GLWA will hold a public hearing prior to the submittal of the final project plan to allow the general public to comment on the project. Other public participation includes reaching out to the THPO for all 12 federally recognized Indian tribes in Michigan.

6.1 Public Hearing Advertisement

A public hearing is scheduled for April 24, 2024, and has been advertised to solicit public feedback on the draft project plan. A transcript of the public meeting will be provided in

DRAFT

Appendix E for the final project plan.

6.2 Public Hearing Transcript

The public hearing transcript will be provided in Appendix E of the final Project Plan report.

6.3 Public Hearing Contents

The PowerPoint presentation that will be shown during the public hearing (currently scheduled for April 24, 2024) will be provided in Appendix E of the final Project Plan report.

6.4 Public Hearing Comments

Reponses and questions received during/after the public hearing will be provided in Appendix E of the final Project Plan report.

6.5 Adoption of the Project Plan

The resolution from GLWA to formally adopt the project plan and implement the selected alternative will be included in Appendix E of the final Project Plan report.

DRAFT

GLWA Contract 2300150
Rehabilitation of the 7 Mile Sewer System

State Revolving Fund Project Plan
Appendix A

- **Rehabilitation of the 7 Mile Sewer System 90% Design Drawings**

GREAT LAKES WATER AUTHORITY

CONTRACT NO. 2300150

DRAWINGS
FOR

REHABILITATION OF 7 MILE SEWER SYSTEM

(7 MILE SEWER SEGMENTS 1, 2, 3, EAST 7 MILE RELIEF SEWER, & WEST 7 MILE RELIEF SEWER)

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PRIME CONSULTANT

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30425 STEPHENSON HWY.
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS

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ANDERSON, ECKSTEIN AND WESTRICK, INC.
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51301 SCHOENHERR ROAD
SHELBY TOWNSHIP, MI 48315

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Director of Systems Operations Control Center

CONTRACT DRAWINGS

BOOK 2 - PART II

NOVEMBER 2023

DRAWING NO. T-1

LOCATION PLAN

SCALE: 1" = 2,500'
GRAPHIC SCALE
0 1"
SCALE: 1" = 2,500'

LEGEND

- SEWER
- RELIEF SEWER

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
F				
E				
D				
C				
B				
A				

DESIGNED BY: KDT
DRAWN BY: DAH-J
CHECKED BY: JRM
APPROVED BY: FJK

SEAL / STAMP

FACILITY: REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE: OVERALL LOCATION MAP

PRIME CONSULTANT: FK ENGINEERING, 30425 STEPHENSON HWY, MADISON HEIGHTS, MI 48071

SUB CONSULTANTS: ANDERSON, ECKSTEIN AND WESTRICK, INC. Engineers | Surveyors | Architects; Applied Science, Inc.; Hazen

GLWA Great Lakes Water Authority

SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. -
GLWA CONTRACT No. 2300150
GLWA CIP No. -
DRAWING No. T-2

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	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
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DESIGNED BY: KDT
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APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
DRAWING INDEX

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GLWA
Great Lakes Water Authority

SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. T-3

GENERAL

1. THE WORK CONSISTS OF CLEANING, DEBRIS REMOVAL, AND SPOT REPAIRS TO THE 7 MILE SEWER SYSTEM AT VARIOUS LOCATIONS INCLUDING FLOW CONTROL AS NECESSARY TO ACCOMPLISH THE REPAIRS.
2. EXISTING CONDITIONS AND PROPOSED REPAIRS ARE PRESENTED ON SHEETS C-101 THROUGH C-512. PRIOR TO ORDERING ANY MATERIALS OR EQUIPMENT OR MOBILIZING FOR A SPECIFIC REPAIR, CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND MEASUREMENTS.
3. PROPOSED REPAIRS ARE CALLED OUT WITHIN EACH MANHOLE SEGMENT, BOTH IN THE PROFILE AND IN INDIVIDUAL REPAIR TABLES. NOT ALL DEFECTS ARE TO BE REPAIRED; BID SHALL BE BASED ON THOSE DEFECTS CALLED OUT FOR REPAIR IN THE DRAWINGS AND SPECIFICATIONS AND AS NEEDED TO COMPLY WITH MANUFACTURERS RECOMMENDATIONS FOR INSTALLED EQUIPMENT AND LININGS. OTHER DEFECTS MAY BE ADDRESSED UNDER THE BID ITEM "ENGINEER-DIRECTED REPAIRS" AT DISCRETION OF THE OWNER.
4. THE ELEVATIONS AND DIMENSIONS SHOWN ON THE CONSTRUCTION PLANS ARE BASED ON HISTORICAL DRAWINGS AND RECORDS. ACTUAL DIMENSIONS AND ELEVATIONS OF UNDERGROUND ASSETS MAY VARY AND SHOULD BE FIELD VERIFIED AS NECESSARY PRIOR TO CONSTRUCTION.

ACCESS AND FLOW CONTROL

1. THE 7 MILE SEWER SYSTEM IS LOCATED IN A PERMANENT EASEMENT, WITH PORTIONS OF THE SEWER RUNNING THROUGH PUBLIC AND PRIVATE PROPERTY. ACCESS TO THE WORK AREAS SHALL BE VIA ENGINEER-APPROVED ROUTES AND NEGOTIATED PATHS ONLY. THE CONTRACTOR SHALL PROTECT PROPERTY OUTSIDE OF WORK AREAS AT ALL TIMES. RESTRICTIONS MAY APPLY TO ACCESS IN PRIVATE OR THIRD-PARTY AREAS.
2. MAINTAIN ACCESS TO ALL PRIVATE PROPERTIES AFFECTED BY THE PERFORMANCE OF THE WORK AS DETAILED IN THE DRAWINGS.
3. CONTRACTOR SHALL COORDINATE WITH THE CITY OF DETROIT CITY ENGINEERING DEPARTMENT AND DETROIT DEPARTMENT OF TRANSPORTATION (DDOT) FOR WORK TO BE COMPLETED UNDER CITY OF DETROIT ROADWAYS AND OTHER CITY PROPERTY, INCLUDING ALL OR PORTIONS OF SEWER REPAIR. CONTACT INFORMATION IS INCLUDED BELOW:

   CITY OF DETROIT
   CITY ENGINEERING
   313-224-3935

   KATHY KELLY
   DDOT
   KELLYK@DETROITMI.GOV
   313-319-5218

4. ACCESS TO SEWER/INTERCEPTOR WILL REQUIRE CONFINED SPACE ENTRY (CSE). PROPER CSE TRAINING/PERMITS/RESCUE WILL BE RESPONSIBILITY OF CONTRACTOR. CONTRACTOR SHALL PROVIDE FULL CSE ACCESS TO THE ENGINEER AT ALL TIMES DURING THE WORK, INCLUDING PERMIT AND RESCUE.
5. OBTAIN ALL RIGHT-OF-WAY PERMITS FROM THE JURISDICTIONAL AUTHORITY PRIOR TO BEGINNING WORK WITHIN ANY RIGHT-OF-WAY. PAY ALL REQUIRED PERMIT FEES, INCLUDING CITY OF DETROIT.
6. PROVIDE WRITTEN NOTICE AND OBTAIN PERMISSION FROM EACH PROPERTY OWNER PRIOR TO ENTRY INTO THE SEWER IN ACCORDANCE WITH SPECIFICATIONS.
7. OBTAIN EQUIPMENT SHUTDOWN REQUESTS/FACILITY ACCESS REQUESTS FROM GLWA FOR ALL SEWER ENTRIES, FLOW CONTROL DEVICES, ETC; GLWA DOES NOT NORMALLY PROVIDE FLOW CONTROL ON GOVERNMENT HOLIDAYS OR WEEKENDS. CONTRACTOR SHALL PLAN WORK ACCORDINGLY. SUBMIT ALL REQUESTS AT LEAST 2 WEEKS PRIOR TO PLANNED WORK.
8. OPERATION OF GLWA FLOW CONTROLS WILL BE IN ACCORDANCE WITH GLWA-APPROVED PROCEDURES. DURATIONS FOR FLOW CONTROLS WILL BE DEPENDENT ON EXISTING SEWER FLOWS, WHICH VARY BY SEASON AND CAN QUICKLY CHANGE DURING WET WEATHER EVENTS. CONTRACTOR WILL BE RESPONSIBLE FOR MONITORING SEWER LEVELS WHILE FLOW CONTROLS ARE IN PLACE. SEE "FLOW CONTROL MANAGEMENT", THIS PAGE, FOR ADDITIONAL INFORMATION.
9. MANHOLE MODIFICATIONS MAY BE PERFORMED BY THE CONTRACTOR AT THEIR OPTION. CONDITIONS AT EACH MANHOLE VARY AND MAY INCLUDE NARROW CONES, OBSTRUCTIONS, ETC.

UTILITIES

1. CONTACT MISS DIG (811) AND OBTAIN UTILITY CLEARANCES A MINIMUM OF 3 DAYS PRIOR TO PERFORMING ANY EXCAVATIONS.
2. FIELD LOCATE ALL UTILITIES. PROTECT THE UTILITIES REGARDLESS IF THEY ARE SHOWN OR NOT SHOWN ON THE PLANS.
3. EXERCISE EXTREME CAUTION WHEN WORKING IN CLOSE PROXIMITY TO GAS MAINS, PUBLIC LIGHTING, ELECTRICAL UTILITIES, AND ANY OTHER UTILITIES LOCATED IN WORK AREAS.
4. MAINTAIN A MINIMUM CLEARANCE OF 20 FEET FROM ALL OVERHEAD POWER LINES. OVERHEAD HIGH VOLTAGE ELECTRICAL LINES CANNOT BE RELOCATED OR SHIELDED. WORK TO BE PERFORMED WITHIN EXISTING CLEARANCES.
5. REPAIR DAMAGE TO EXISTING UTILITIES OCCURRING DURING CONSTRUCTION TO THE SATISFACTION OF UTILITY OWNER, AS DIRECTED BY THE ENGINEER, AT NO ADDITIONAL COST TO THE OWNER.
6. VERIFY UTILITY CLEARANCE WITHIN WORK AREA. SUPPORT AND/OR RELOCATE UTILITIES AS REQUIRED. GAS UTILITIES TO BE RELOCATED BY UTILITY COMPANIES' REPRESENTATIVES AND PAID FOR UNDER "ENGINEER-DIRECTED REPAIRS". COORDINATE RELOCATION AT CONTRACTOR'S COST. DELAY CLAIMS FOR 3RD PARTY COORDINATION FOR UTILITY RELOCATION WILL NOT BE ACCEPTED.

INSPECTION DATA AND SEWER STATIONING

1. DEFECTS ARE AS OBSERVED IN JANUARY AND JUNE 2022. SOME FURTHER DETERIORATION SINCE THAT TIME SHOULD BE EXPECTED.
2. THE LOCATIONS OF DISTRESSED AREAS INSIDE THE SEWER WERE MAPPED USING DISTANCES AS DETERMINED DURING PERSONNEL ENTRY INSPECTIONS AND CORRELATED TO SEWER STATIONING IN POST-PROCESSING; AS SUCH, LOCATIONS SHOWN ARE APPROXIMATE. ACTUAL LOCATIONS MAY VARY AND SHOULD BE LOCATED IN THE FIELD BY THE CONTRACTOR. CONFIRM LOCATION IN WRITING TO THE ENGINEER PRIOR TO PERFORMING THE WORK ASSOCIATED WITH DISTRESSES. INSPECTION DATA/VIDEO WILL BE MADE AVAILABLE BY THE ENGINEER UPON REQUEST. CONTRACTOR SHOULD REVIEW THE VIDEO TO UNDERSTAND THE EXTENT OF DISTRESS TO THE SEWER.
3. THE ELEVATIONS AND DIMENSIONS SHOWN ON THE CONSTRUCTION PLANS ARE BASED ON A COMBINATION OF INSPECTIONS, HISTORICAL DRAWINGS, AND INSPECTION FOOTAGE AND AS SUCH ARE CONSIDERED APPROXIMATE. ACTUAL DIMENSIONS AND ELEVATIONS MAY VARY AND SHOULD BE VERIFIED AS NECESSARY PRIOR TO CONSTRUCTION.

VENTILATION

1. HYDROGEN SULFIDE, METHANE GAS, AND OTHER TOXIC CONDITIONS SHOULD BE EXPECTED TO BE PRESENT IN THE INTERCEPTORS.
2. AS A MINIMUM, PROVIDE A VENTILATION SYSTEM CAPABLE OF HANDLING AN AIR FLOW AS REQUIRED BY MIOSHA REQUIREMENTS FOR VELOCITY, MANPOWER, AND OPERATING EQUIPMENT.
3. AIRBORNE HYDROGEN SULFIDE GAS LEVELS AT ADJACENT BUSINESSES OR RESIDENCES SHALL BE MAINTAINED AT LESS THAN A ONE HOUR TIME WEIGHTED AVERAGE OF 0.2 PARTS PER MILLION. SEE "AIR MONITORING", THIS SHEET.
4. PROVIDE SOUND BAFFLES OR MUFFLERS AS REQUIRED TO MINIMIZE THE DISRUPTION TO ADJACENT PROPERTY OWNERS. FOR VENTILATION NOISE LIMITATIONS, REFER TO "NOISE" THIS SHEET.

ILLUMINATION

1. PROVIDE ILLUMINATION IN THE WORK AREAS IN ACCORDANCE WITH THE MIOSHA REQUIREMENTS FOR UNDERGROUND CONSTRUCTION.
2. MAINTAIN A MINIMUM INTENSITY OF 10-FOOT CANDLES IN WORK AREAS AND 5-FOOT CANDLES IN WALKWAYS.
3. IN ABOVE GROUND AREAS, PROVIDE A MINIMUM INTENSITY OF 5-FOOT CANDLES IN TRAVEL AREAS. PROVIDE SHIELDING AS REQUIRED TO MINIMIZE IMPACTS ON ADJACENT PROPERTIES.

FIRST AID

1. PROVIDE A MINIMUM OF TWO FIRST AID AND CPR-TRAINED INDIVIDUALS PER SHIFT WHO SHALL COMPLY WITH THE FIRST AID REQUIREMENTS OF THE MIOSHA STANDARDS. PROVIDE A SUITABLE FIRST AID WORK AREA WITH A MINIMUM LIGHT INTENSITY OF 50-FOOT CANDLES.
2. PROVIDE ON-SITE A HARD COPY OF MSDS SHEETS FOR ANY CHEMICALS USED.

AIR MONITORING

1. PROVIDE AIR MONITORING IN THE SEWER IN ACCORDANCE WITH MIOSHA REQUIREMENTS.
2. PROVIDE AND DOCUMENT AIR MONITORING AT THE PERIMETER OF THE WORK AREA(S). RECORD RESULTS AT A MINIMUM FREQUENCY OF ONCE PER HOUR. PROVIDE COPIES OF THE AIR MONITORING RESULTS TO THE ENGINEER AT LEAST EVERY OTHER DAY. IF LEVELS OF HYDROGEN SULFIDE IN EXCESS OF 5 PPM ARE ENCOUNTERED DURING THE SURFACE MONITORING, IMMEDIATELY NOTIFY THE ENGINEER.
3. MANHOLES, OPENINGS, ETC. SHALL BE COVERED AND SEALED AT THE END OF THE DAY AND WHEN NOT IN USE TO ELIMINATE ODORS FROM THE SEWER ENTERING THE ATMOSPHERE AND TO PROTECT THE PUBLIC.

FLOW CONTROL MANAGEMENT

1. PROVIDE FLOW CONTROL MANAGEMENT IN ACCORDANCE WITH THE SPECIFICATIONS AND DRAWINGS TO ALLOW FOR SAFE WORKING CONDITIONS AND EFFICIENT PROGRESS OF THE WORK.
2. OPERATION OF FLOW CONTROL DEVICES SUCH AS EXISTING GATES AND PUMPS MUST BE COORDINATED THROUGH THE APPROPRIATE AUTHORITY IN ACCORDANCE WITH THE SPECIFICATIONS.
3. OBTAIN EQUIPMENT SHUTDOWN REQUESTS/FACILITY ACCESS REQUESTS FROM GLWA FOR ALL SEWER ENTRIES, FLOW CONTROL DEVICES, ETC. GLWA DOES NOT NORMALLY PROVIDE FLOW CONTROL ON GOVERNMENT HOLIDAYS AND WEEKENDS. CONTRACTOR SHALL PLAN WORK ACCORDINGLY. SUBMIT ALL REQUESTS AT LEAST 2 WEEKS PRIOR TO PLANNED WORK.
4. WORK MAY BE INTERRUPTED OR DELAYED BY GLWA OR DWSD OPERATIONS AND/OR WET WEATHER. CONTRACTOR SHALL COORDINATE WORK AND BE RESPONSIBLE FOR WORK PRODUCTS, CURING TIME, ETC., AT NO EXPENSE TO OWNER.
5. CONTRACTOR SHALL BE PREPARED TO REMOVE ALL ISOLATION GATES/MECHANISMS TO PROVIDE FOR FULL OPERATION OF THE SEWER WITHIN 4 HOURS OF GLWA NOTICE, REGARDLESS OF TIMING OF NOTIFICATION.
6. FLOW LEVELS IN THE SEWER VARY SEASONALLY, AS WELL AS DURING AND FOLLOWING WET WEATHER EVENTS.
7. CONTRACTOR IS RESPONSIBLE FOR MONITORING SEWER LEVELS AND ISOLATION GATES/MECHANISMS DURING USE OF FLOW CONTROLS TO PREVENT SANITARY SEWER OVERFLOWS (SSO).
8. USE OF PROPOSED FLOW CONTROLS WILL REDUCE BUT NOT ELIMINATE THE LEVEL IN THE DEPRESSED SECTION. SHOULD FULL CIRCUMFERENCE REPAIRS BE REQUIRED, ADDITIONAL DEWATERING METHODS SUCH AS A LOCAL BYPASS MAY BE REQUIRED. SUCH DEWATERING METHODS ARE NOT ANTICIPATED FOR THIS CONTRACT. IF DURING THE COURSE OF REPAIRS, GLWA IDENTIFIES A NEED FOR FULL-CIRCUMFERENCE REPAIRS, ENGINEER WILL WORK WITH CONTRACTOR TO SELECT AN ACCEPTABLE BYPASS METHOD AND TO OBTAIN NECESSARY PERMIT APPROVAL.

TRAFFIC CONTROL

1. TRAFFIC CONTROL IS REQUIRED FOR ALL WORK AREAS. PROVIDE TRAFFIC CONTROL IN ACCORDANCE WITH THE LATEST MICHIGAN MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES AND MDOT AND CITY OF DETROIT REQUIREMENTS.
2. PROVIDE CONSTRUCTION TRAFFIC PLANS ACCEPTABLE TO THE AUTHORITIES HAVING JURISDICTION AND/OR PROPERTY OWNERS FOR ALL WORK AREAS.
3. OBTAIN ALL PERMITS FROM THE AUTHORITIES HAVING JURISDICTION PRIOR TO WORKING WITHIN OR ADJACENT TO THE RIGHT-OF-WAY. SUBMIT TRAFFIC CONTROL PLANS THAT HAVE BEEN APPROVED BY JURISDICTIONAL AUTHORITIES AT LEAST 7 DAYS PRIOR TO PROPOSED TRAFFIC CONTROL.

NOISE

1. COMPLY WITH LOCAL NOISE ORDINANCES. CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH VIOLATIONS OF THE NOISE ORDINANCES. PROVIDE NOISE BARRIERS TO REDUCE THE IMPACT OF OPERATIONS TO ADJACENT PROPERTY OWNERS. AT THE PROPERTY LINE, NOISE LEVELS MAY NOT EXCEED THE MORE RESTRICTIVE OF LOCAL ORDINANCES OR 45db AT NIGHT AND 70db DURING THE DAY.

SITE AND SEWER RESTORATION

1. RESTORE CONSTRUCTION AREAS TO THE ORIGINAL CONDITION OR AS DIRECTED BY THE ENGINEER.
2. RESTORE ALL SURFACES SUCH AS PAVEMENTS, CURBS, SIDEWALKS, LAWNS, LANDSCAPED AREAS, ETC., WHICH ARE NOT INDICATED TO BE REMOVED BUT ARE DISTURBED BY CONTRACTOR OPERATIONS TO THEIR ORIGINAL CONDITION OR BETTER AND IN A MANNER PRESCRIBED BY AUTHORITIES HAVING JURISDICTION. THIS INCLUDES ALL SURFACES WHICH ARE OPENED UP FOR INSTALLATION OF UNDERGROUND UTILITIES AND OTHER INDICATED WORK.
3. ALL EXCESS MATERIAL GENERATED DURING DEMOLITION, CLEANING, REPAIRS, AND RESTORATION SHALL BE REMOVED IN ITS ENTIRETY AND PROPERLY DISPOSED OF BY CONTRACTOR.

SPOT REPAIR NOTES

1. DEFECTS INTENDED FOR REPAIR ARE IDENTIFIED IN THE DRAWINGS, BUT WILL BE VERIFIED IN THE FIELD BETWEEN THE ENGINEER AND THE CONTRACTOR. NOT ALL DEFECTS IDENTIFIED IN THE DRAWINGS WILL BE REPAIRED. ENGINEER AND CONTRACTOR WILL IDENTIFY AND MARK DEFECTS TO BE REPAIRED PRIOR TO CONTRACTOR COMPLETING ANY REPAIRS. SPECIFICALLY, ALL INSTANCES OF DRIPPING INFILTRATION ARE CALLED OUT FOR REPAIR, BUT WILL ACTUALLY BE REPAIRED ON A CASE-BY-CASE BASIS.
2. APPROXIMATE LOCATIONS OF DEFECTS ARE NOTED IN THE DRAWING, BUT ACTUAL LOCATIONS MAY VARY AND WILL BE MARKED IN THE FIELD BY THE ENGINEER.
3. REPAIR LOCATIONS AND QUANTITIES ARE IDENTIFIED FOR EACH MANHOLE SEGMENT, BUT MAY BE MOVED THROUGHOUT THE ENTIRE PROJECT BY THE OWNER AT NO EXPENSE.
4. MANHOLE REPAIRS ARE INTENDED TO MAINLY CONSIST OF REPLACEMENT OF THE UPPER 4 TO 5 FT OF THE CHIMNEY WITH A PRECAST CONCRETE RISER AND A NEW, 36-INCH DIAMETER GLWA-LOGO FRAME AND COVER. ADDITIONAL MANHOLE REPAIRS MAY BE COMPLETED ON A CASE-BY-CASE BASIS.
5. REPAIR QUANTITIES AS PRESENTED ON THE BID FORM INCLUDE ALL QUANTITIES AS PRESENTED IN THE INDIVIDUAL SEGMENT SUMMARIES OF DEFECTS, AS WELL AS AN APPROPRIATE CONTINGENCY TO ACCOUNT FOR DEFECTS EXTENDING BEYOND INITIALLY IDENTIFIED QUANTITIES.

DEBRIS REMOVAL

1. DEBRIS LOCATIONS SHOWN ARE ILLUSTRATIVE OF CONCENTRATIONS OF DEBRIS, AND ARE APPROXIMATE. ACTUAL DEBRIS SHOULD BE EXPECTED TO BE SPREAD THROUGHOUT, AND SHOULD BE EXPECTED TO HAVE SHIFTED FROM THE CONCENTRATED LOCATIONS AS SHOWN.
2. DISPOSE OF ALL DEBRIS IN A TYPE II LANDFILL. ALL WASTE CHARACTERIZATION TESTS NECESSARY FOR DISPOSAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. DEBRIS IS EXPECTED TO CONSIST OF ANY AND ALL MATERIAL, INCLUDING BUT NOT LIMITED TO, CONCRETE RUBBLE, BRICKS, SAND, SLUDGE, GARBAGE, ROPE, CABLE, CEMENTED MATERIALS, AND ALL OTHER FORMS OF MATERIAL. CONTRACTOR SHALL REMOVE AND DISPOSE OF SUCH MATERIALS AS NECESSARY TO RESULT IN A CLEAN SEWER CROSS-SECTION WITH NO ACCUMULATED MATERIAL ON THE INVERT.
4. DEBRIS QUANTITIES AS PRESENTED ON THE BID FORM INCLUDE ALL QUANTITIES AS PRESENTED IN THE INDIVIDUAL SEGMENT SUMMARIES OF DEFECTS, AS WELL AS AN APPROPRIATE CONTINGENCY TO ACCOUNT FOR DEBRIS QUANTITIES EXTENDING BEYOND INITIALLY IDENTIFIED QUANTITIES AS A RESULT OF ADDITIONAL DEBRIS DEPOSITION SINCE INITIAL OBSERVATION.

REPAIR CALLOUTS

1. REPAIR CALLOUTS ARE SHOWN ON THE PLAN AND PROFILE DRAWINGS, AND CONSIST OF THE FOLLOWING SYMBOL:

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
F				
E				
D				
C				
B				
A				

DESIGNED BY: KDT
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APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
GENERAL NOTES

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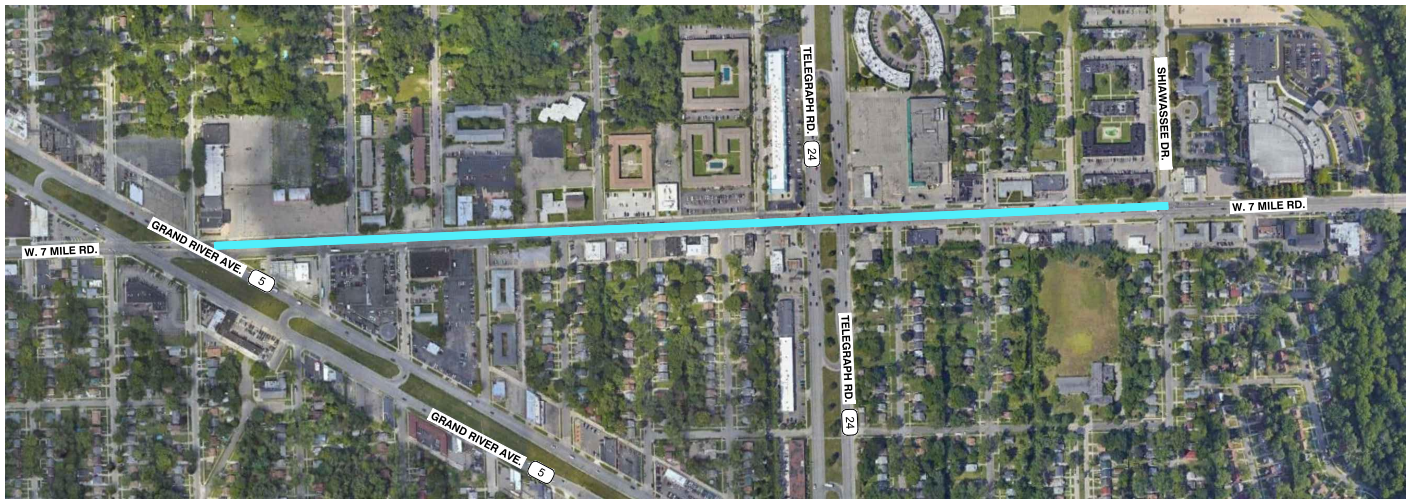
EGLE PERMIT No.
GLWA CONTRACT No. 2300150
GLWA CIP No.
DRAWING No. T-4



7 MILE SEWER SEGMENT 1
LOCATION PLAN

SCALE: 1" = 250'
GRAPHIC SCALE
0
SCALE: 1" = 250'

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
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DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
7 MILE SEWER
SEGMENT 1 LOCATION PLAN

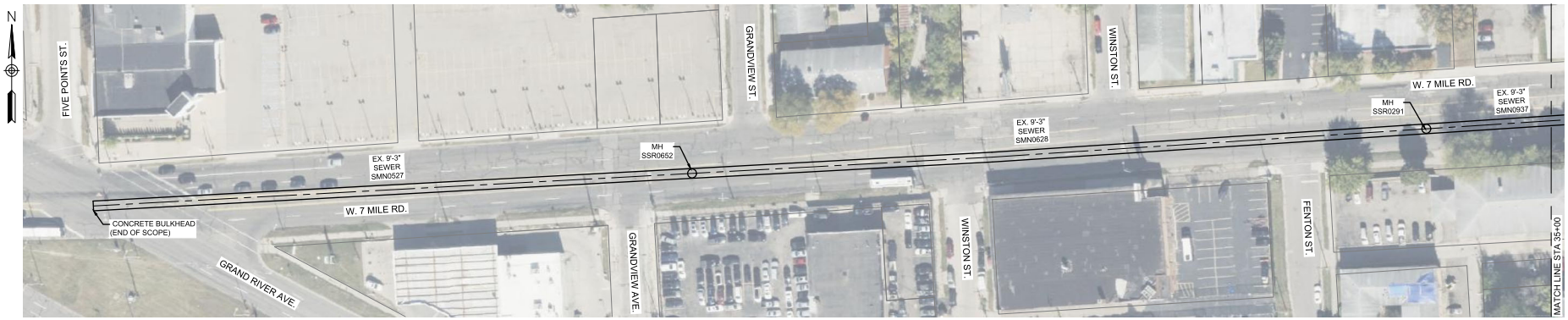
PRIME CONSULTANT
FK ENGINEERING
30425 STEPHENSON HWY.
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS
ANDERSON, ECKSTEIN AND WESTRICK, INC.
Engineers | Surveyors | Architects
Applied Science, Inc.
Hazen

GLWA
Great Lakes Water Authority

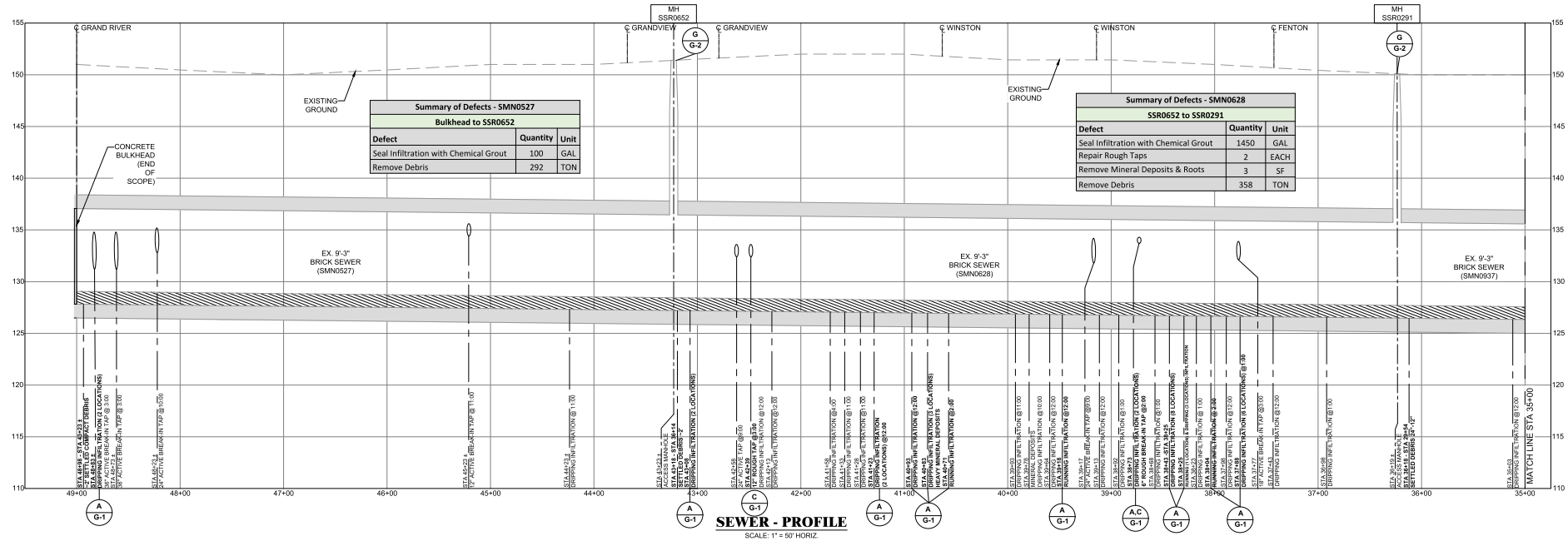
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. -
GLWA CONTRACT No. 2300150
GLWA CIP No. -
DRAWING No. C-100



SEWER - PLAN

SCALE: 1" = 50'



Summary of Defects - SMN0527

Bulkhead to SSR0652

Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	100	GAL
Remove Debris	292	TON

Summary of Defects - SMN0628

SSR0652 to SSR0291

Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	1450	GAL
Repair Rough Taps	2	EACH
Remove Mineral Deposits & Roots	3	SF
Remove Debris	358	TON

SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
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DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY

REHABILITATION OF 7 MILE SEWER SYSTEM

PROJECT TITLE

DRAWING TITLE

7 MILE SEWER SEGMENT 1
STA 49+00 TO STA 35+00
DETROIT, MICHIGAN

PRIME CONSULTANT

FK ENGINEERING
30425 STEPHENSON HWY
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS

ANDERSON, ECKSTEIN AND WESTRICK, INC.
Engineers | Surveyors | Architects

Applied Science, Inc.

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GLWA
Great Lakes Water Authority

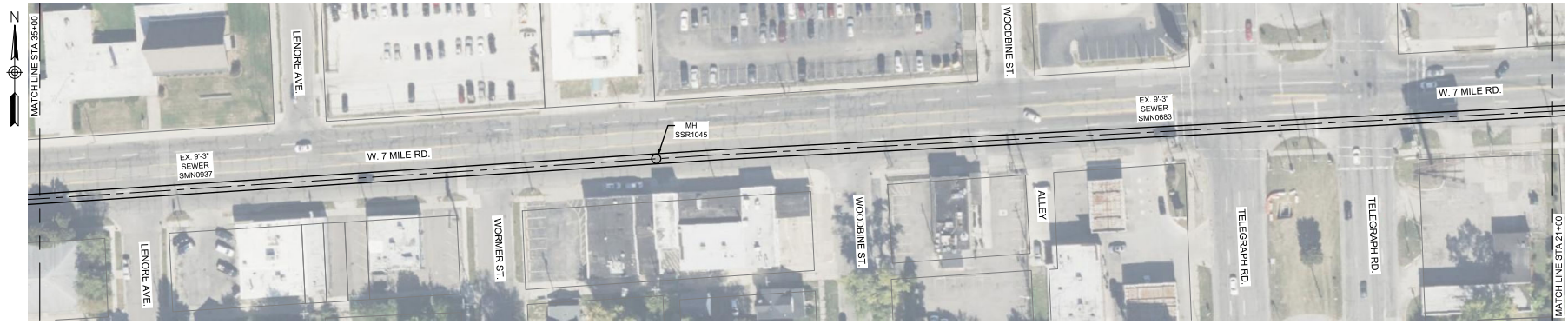
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. -

GLWA CONTRACT No. 2300150

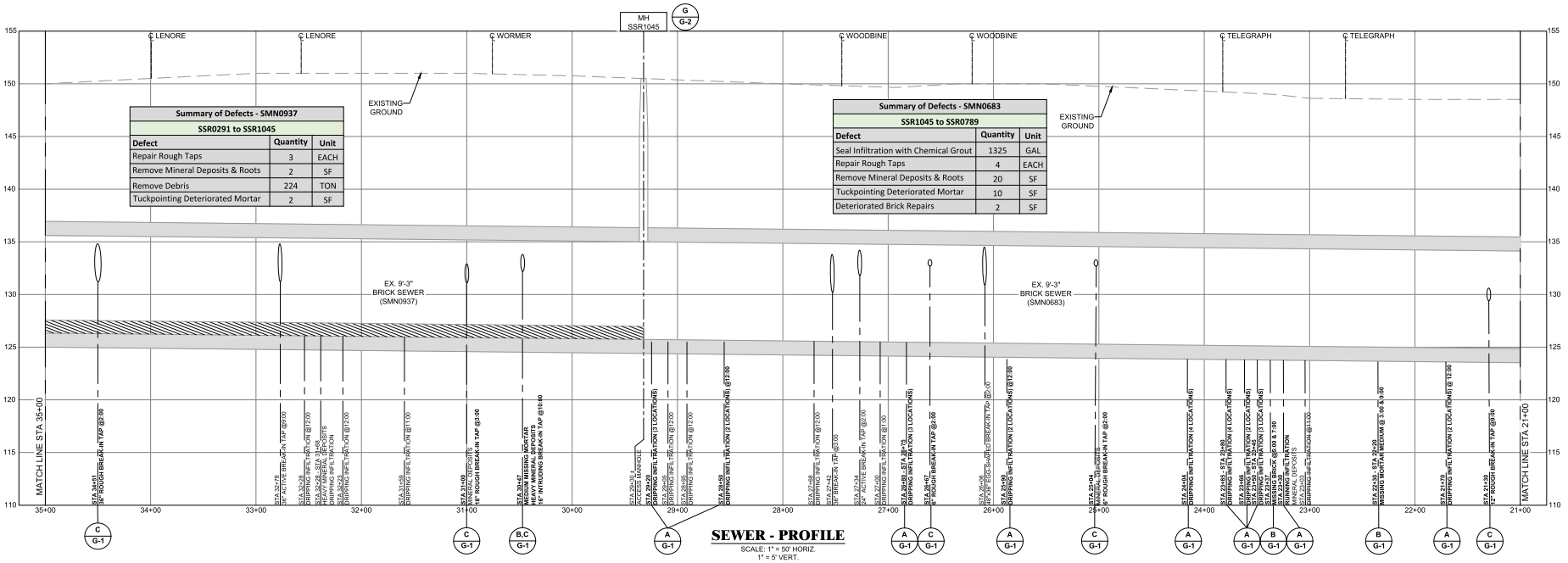
GLWA CIP No. -

DRAWING No. C-101



SEWER - PLAN

SCALE: 1" = 50'



Summary of Defects - SMN0937
SSR0291 to SSR1045

Defect	Quantity	Unit
Repair Rough Taps	3	EACH
Remove Mineral Deposits & Roots	2	SF
Remove Debris	224	TON
Tuckpointing Deteriorated Mortar	2	SF

Summary of Defects - SMN0683
SSR1045 to SSR0789

Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	1325	GAL
Repair Rough Taps	4	EACH
Remove Mineral Deposits & Roots	20	SF
Tuckpointing Deteriorated Mortar	10	SF
Deteriorated Brick Repairs	2	SF

SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
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DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
7 MILE SEWER SEGMENT 1
STA 35+00 TO STA 21+00
DETROIT, MICHIGAN

PRIME CONSULTANT
FK ENGINEERING
30425 STEPHENSON HWY
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS
ANDERSON, ECKSTEIN AND WESTRICK, INC.
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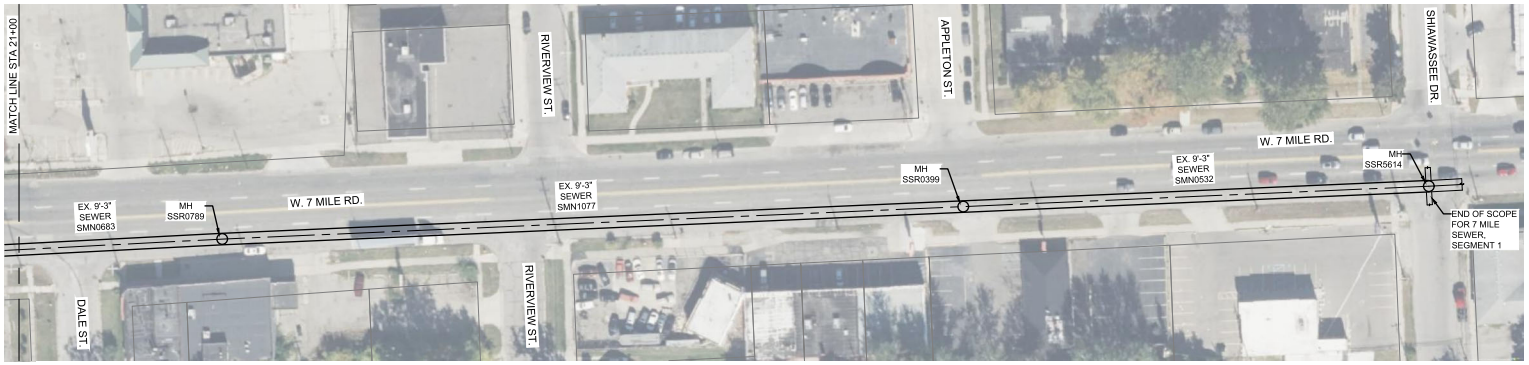
Applied Science, Inc.
Hazen

GLWA
Great Lakes Water Authority

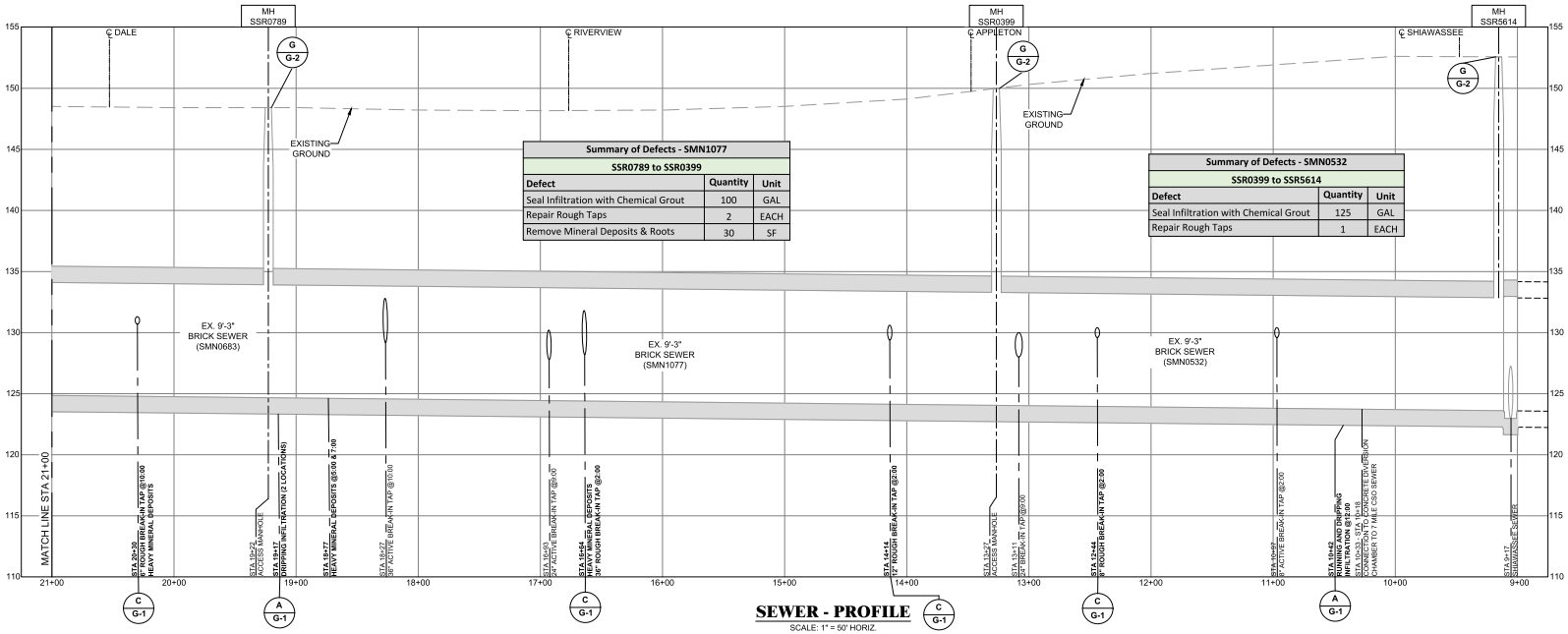
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. -
GLWA CONTRACT No. 2300150
GLWA CIP No. -
DRAWING No. C-102



SEWER - PLAN

SCALE: 1" = 50'



Summary of Defects - SMN1077

SSR0789 to SSR0399

Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	100	GAL
Repair Rough Taps	2	EACH
Remove Mineral Deposits & Roots	30	SF

Summary of Defects - SMN0532

SSR0399 to SSR5614

Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	125	GAL
Repair Rough Taps	1	EACH

SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
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DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
7 MILE SEWER SEGMENT 1
STA 21+00 TO STA 9+00
DETROIT, MICHIGAN

PRIME CONSULTANT
FK ENGINEERING
30425 STEPHENSON HWY
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS
ANDERSON, ECKSTEIN AND WESTRICK, INC.
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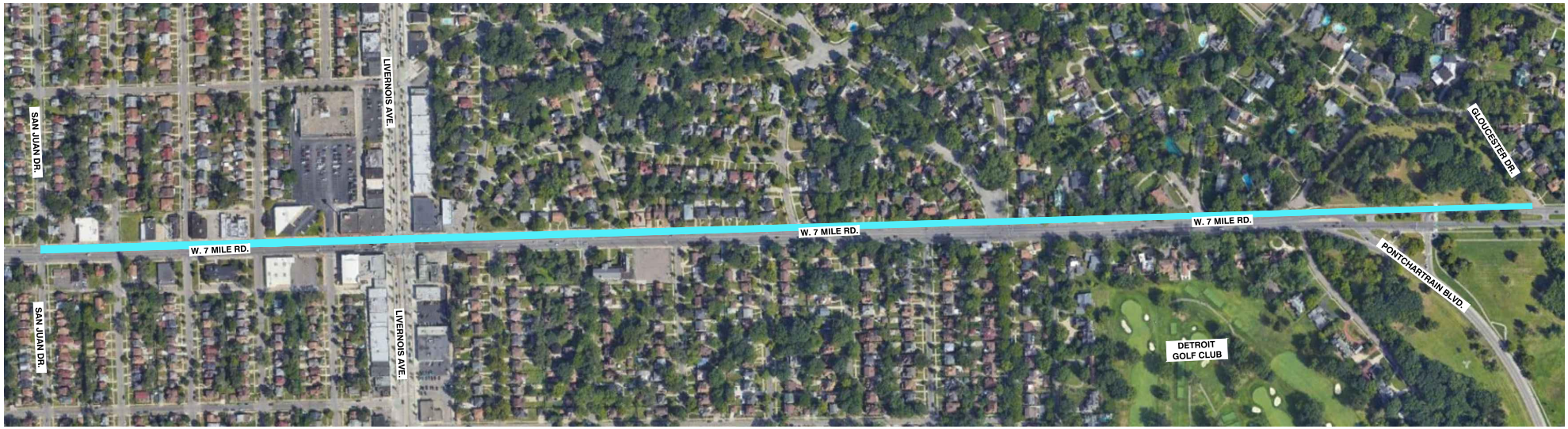
Applied Science, Inc.
Hazen

GLWA
Great Lakes Water Authority

SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. C-103



7 MILE SEWER SEGMENT 2
LOCATION PLAN

SCALE: 1" = 200'
GRAPHIC SCALE
0 1"
SCALE: 1" = 200'

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
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DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
7 MILE SEWER
SEGMENT 2 LOCATION PLAN

PRIME CONSULTANT
FK ENGINEERING
30425 STEPHENSON HWY.
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS
ANDERSON, ECKSTEIN AND WESTRICK, INC.
Engineers | Surveyors | Architects
Applied Science, Inc.
Hazen

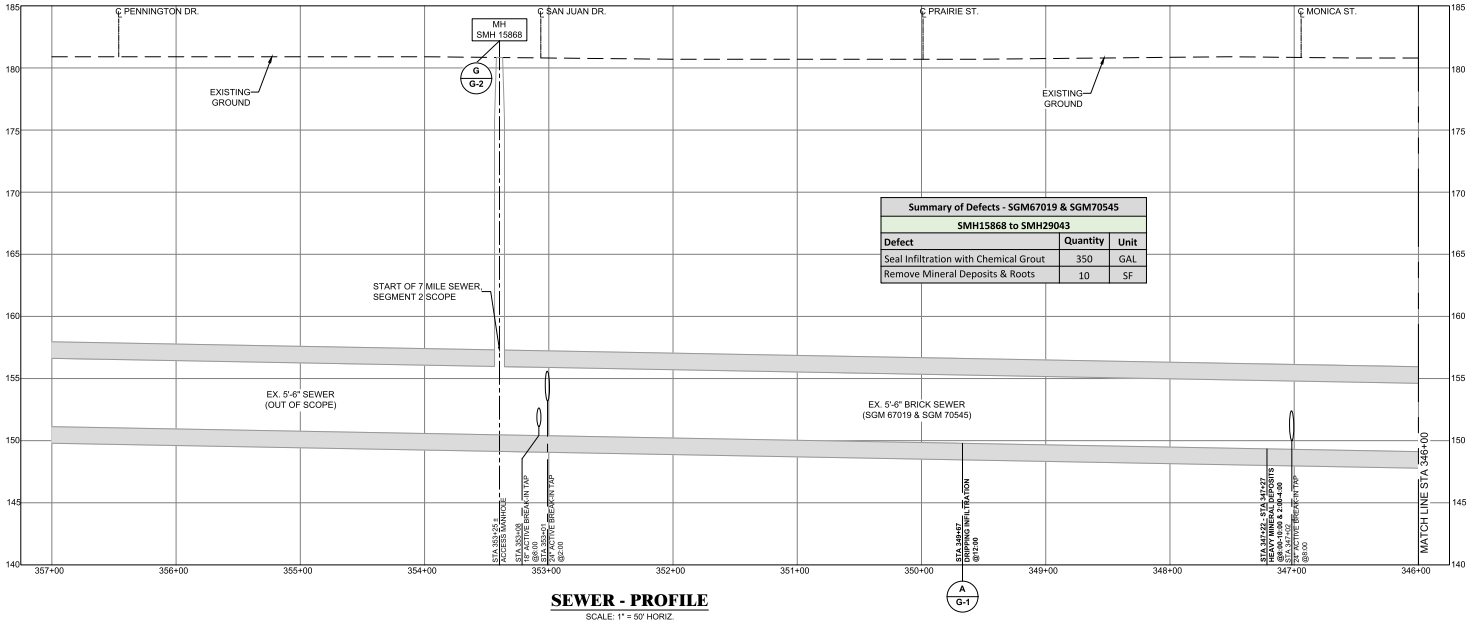
GLWA
Great Lakes Water Authority

SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. -
GLWA CONTRACT No. 2300150
GLWA CIP No. -
DRAWING No. C-200

SEWER - PLAN

SCALE: 1" = 50'



Summary of Defects - SGM67019 & SGM70545		
SMH15868 to SMH29043		
Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	350	GAL
Remove Mineral Deposits & Roots	10	SF

SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
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DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
7 MILE SEWER SEGMENT 2
STA 357+00 TO STA 346+00
DETROIT, MICHIGAN

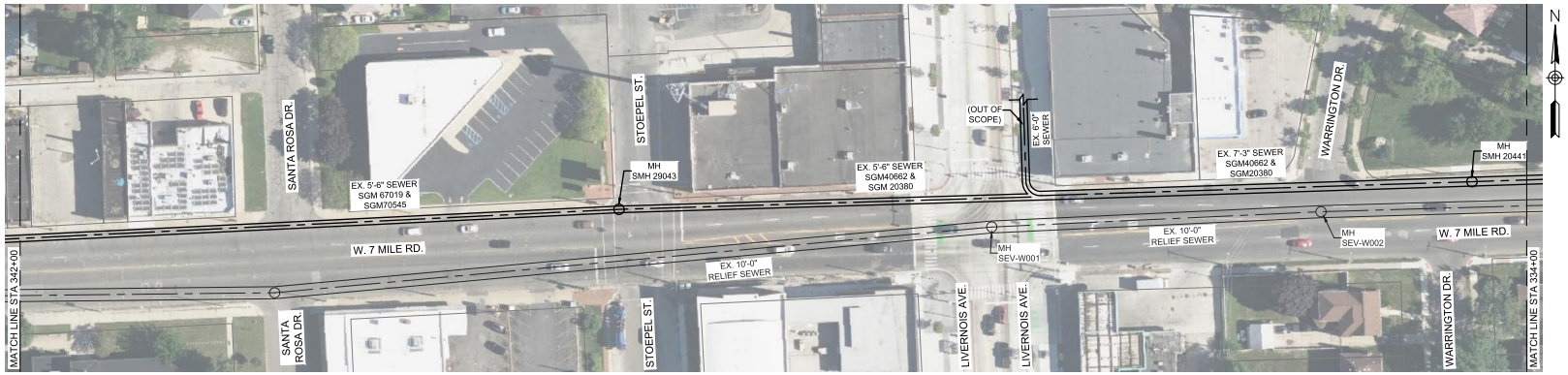
PRIME CONSULTANT
FK ENGINEERING
30425 STEPHENSON HWY
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS
ANDERSON, ECKSTEIN AND WESTRICK, INC.
Engineers | Surveyors | Architects
Applied Science, Inc.
Hazen

GLWA
Great Lakes Water Authority

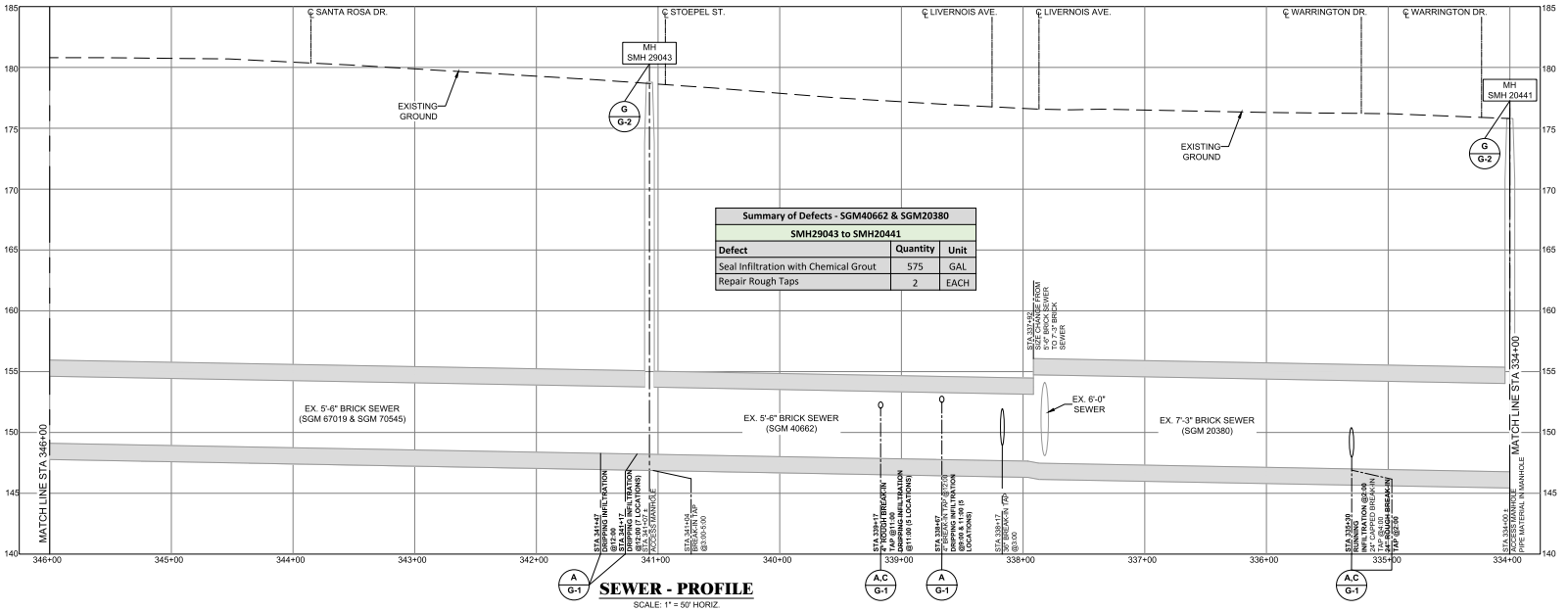
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. C-201



SEWER - PLAN

SCALE: 1" = 50'



Summary of Defects - SGM40662 & SGM20380		
SMH29043 to SMH20441		
Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	575	GAL
Repair Rough Taps	2	EACH

SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

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	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE	

DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
7 MILE SEWER SEGMENT 2
STA 346+00 TO STA 334+00
DETROIT, MICHIGAN

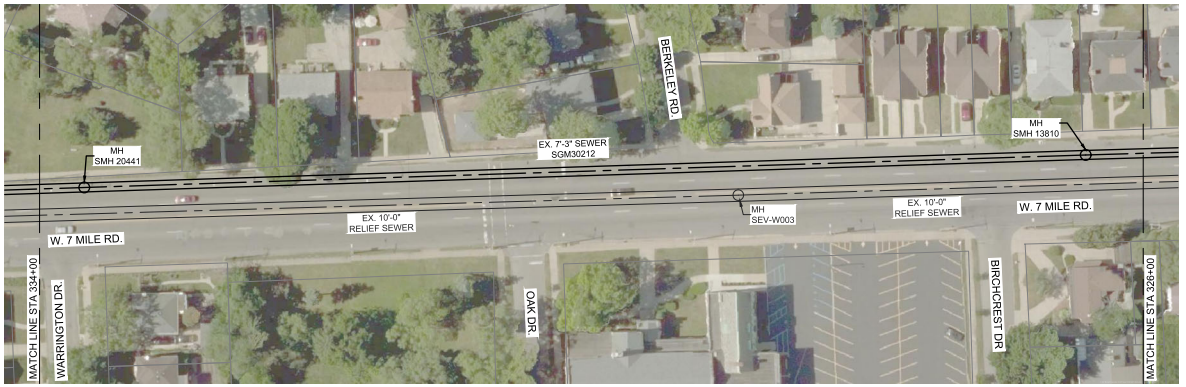
PRIME CONSULTANT
FK ENGINEERING
30425 STEPHENSON HWY
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS
ANDERSON, ECKSTEIN AND WESTRICK, INC.
Engineers | Surveyors | Architects
Applied Science, Inc.
Hazen

GLWA
Great Lakes Water Authority

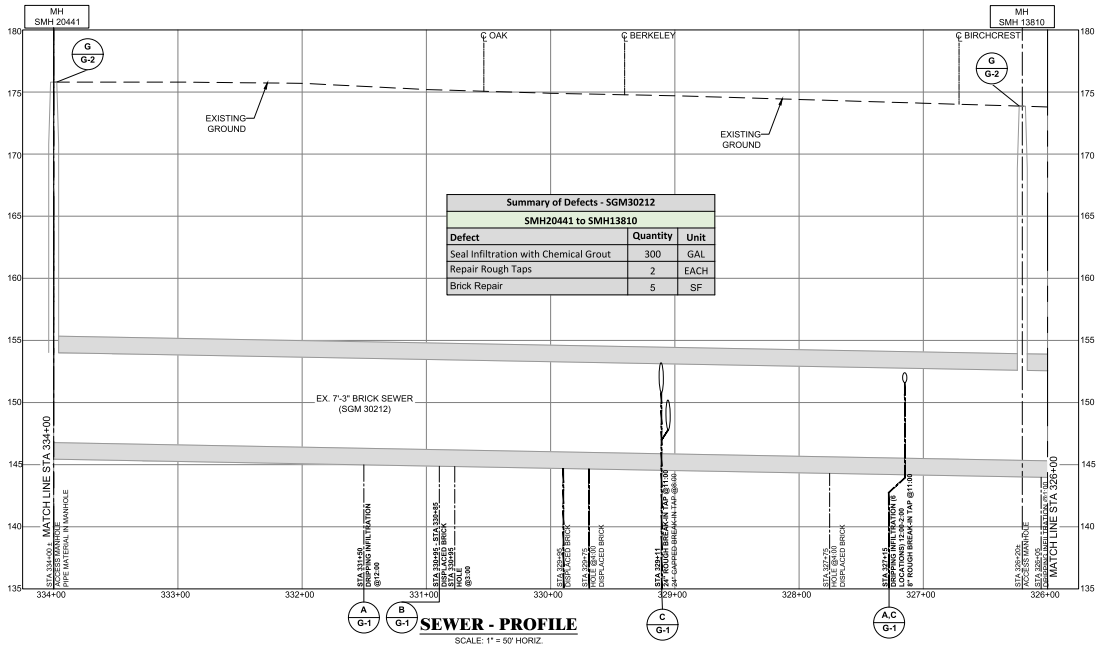
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. C-202



SEWER - PLAN

SCALE: 1" = 50'

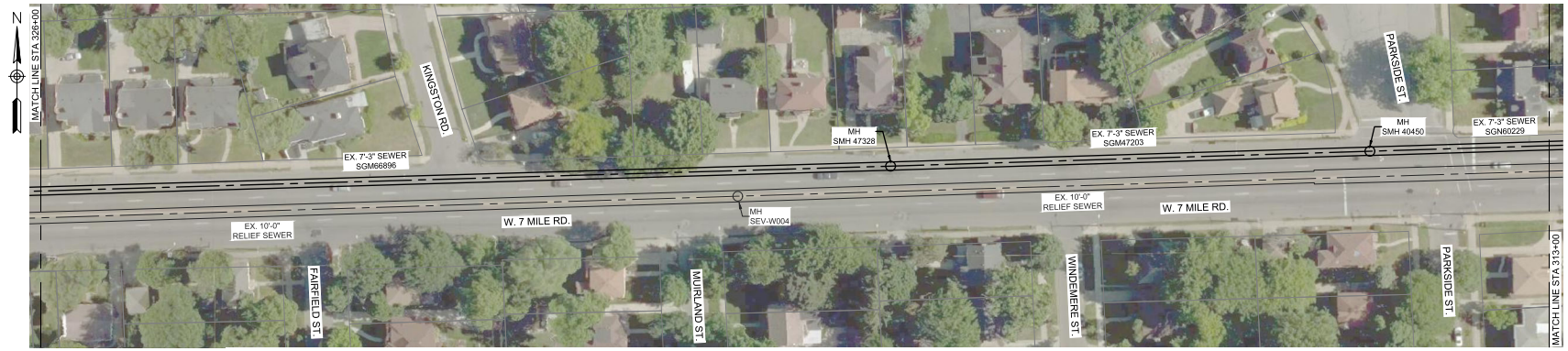


Summary of Defects - SGM30212		
SMH20441 to SMH13810		
Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	300	GAL
Repair Rough Taps	2	EACH
Brick Repair	5	SF

SEWER - PROFILE

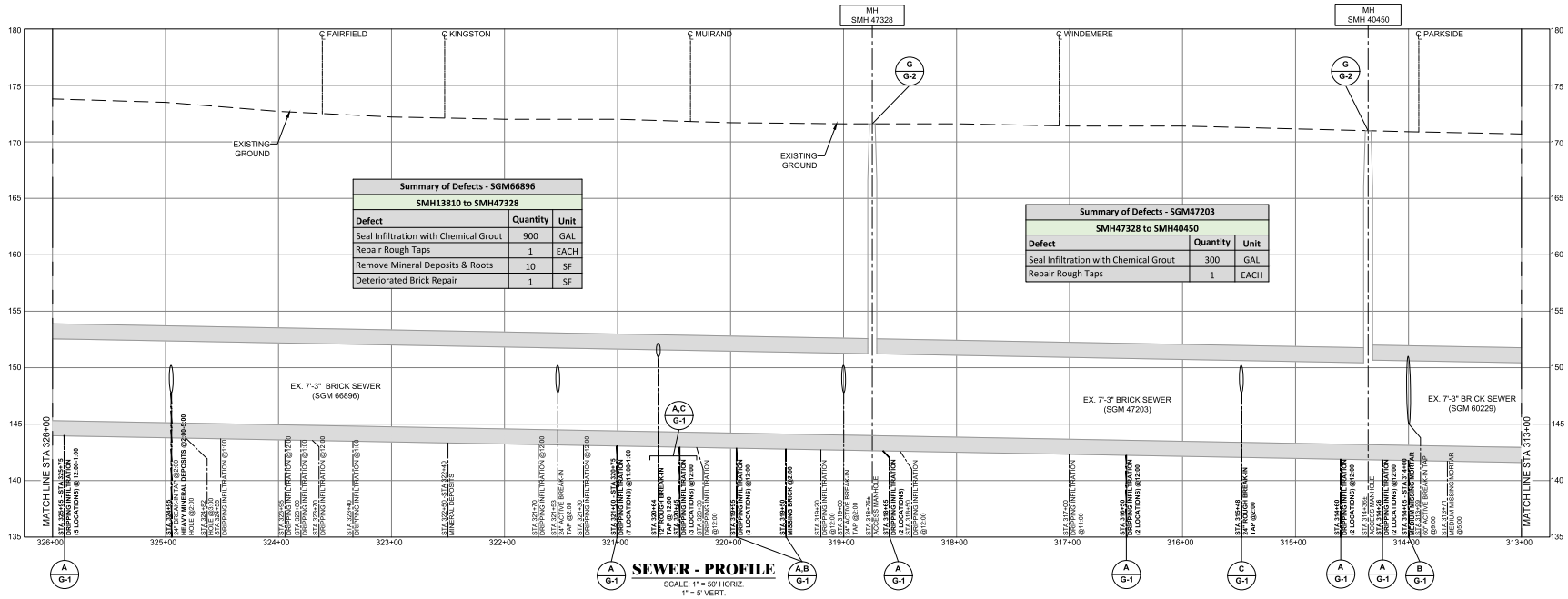
SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

| | | |



SEWER - PLAN

SCALE: 1" = 50'



Summary of Defects - SGM66896
SMH13810 to SMH47328

Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	900	GAL
Repair Rough Taps	1	EACH
Remove Mineral Deposits & Roots	10	SF
Deteriorated Brick Repair	1	SF

Summary of Defects - SGM47203
SMH47328 to SMH40450

Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	300	GAL
Repair Rough Taps	1	EACH

SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

F				DESIGNED BY: KDT	SEAL / STAMP
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D				CHECKED BY: KDT	
C				APPROVED BY: FJK	
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A					
	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE	

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
7 MILE SEWER SEGMENT 2
STA 326+00 TO STA 313+00
DETROIT, MICHIGAN

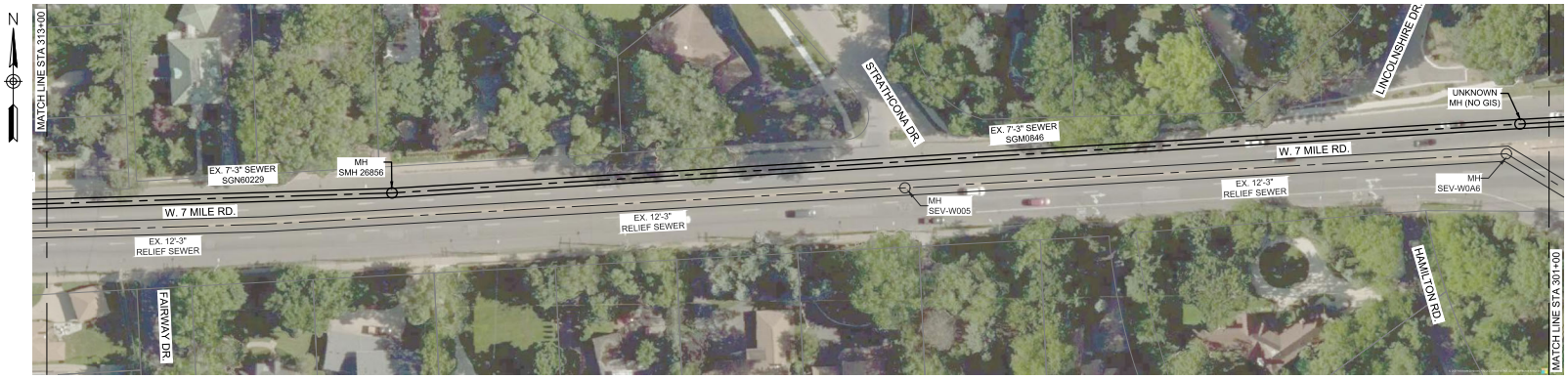
PRIME CONSULTANT
FK ENGINEERING
30425 STEPHENSON HWY
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS
ANDERSON, ECKSTEIN AND WESTRICK, INC.
Engineers | Surveyors | Architects
Applied Science, Inc.
Hazen

GLWA
Great Lakes Water Authority

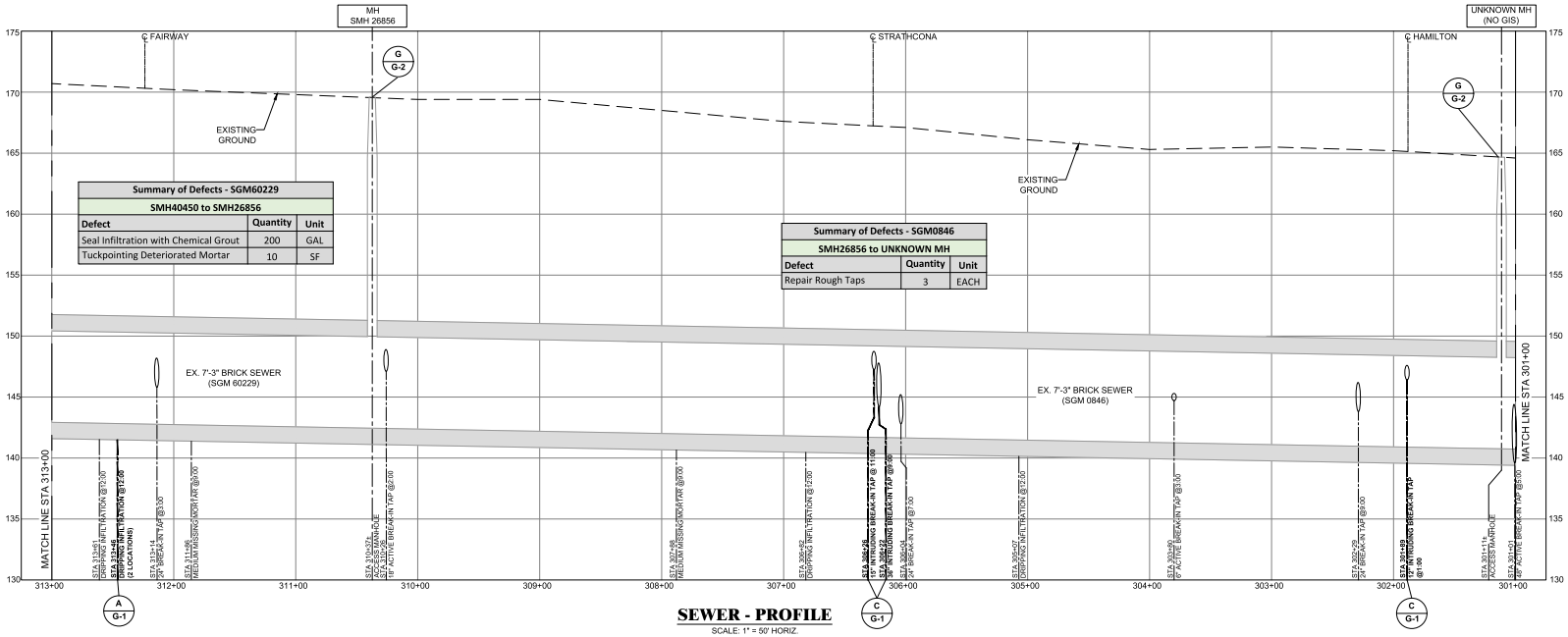
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. C-204



SEWER - PLAN

SCALE: 1" = 50'



Summary of Defects - SGM60229

SMH40450 to SMH26856		
Defect	**Quantity**	**Unit**
Seal Infiltration with Chemical Grout	200	GAL
Tuckpointing Deteriorated Mortar	10	SF

Summary of Defects - SGM0846

SMH26856 to UNKNOWN MH		
Defect	**Quantity**	**Unit**
Repair Rough Taps	3	EACH

SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
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DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
7 MILE SEWER SEGMENT 2
STA 313+00 TO STA 301+00
DETROIT, MICHIGAN

PRIME CONSULTANT
FK ENGINEERING
30425 STEPHENSON HWY.
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS
ANDERSON, ECKSTEIN AND WESTRICK, INC.
Engineers | Surveyors | Architects
Applied Science, Inc.
Hazen

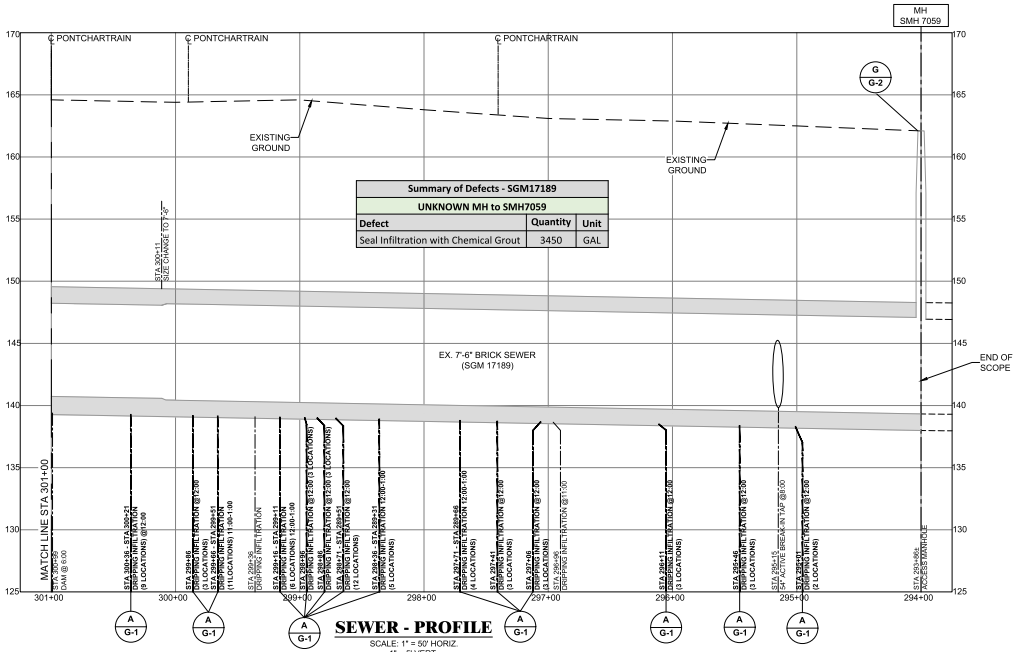
GLWA
Great Lakes Water Authority

SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. C-205

SEWER - PLAN

SCALE: 1" = 50'



SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

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	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE	

DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
7 MILE SEWER SEGMENT 2
STA 301+00 TO STA 294+00
DETROIT, MICHIGAN

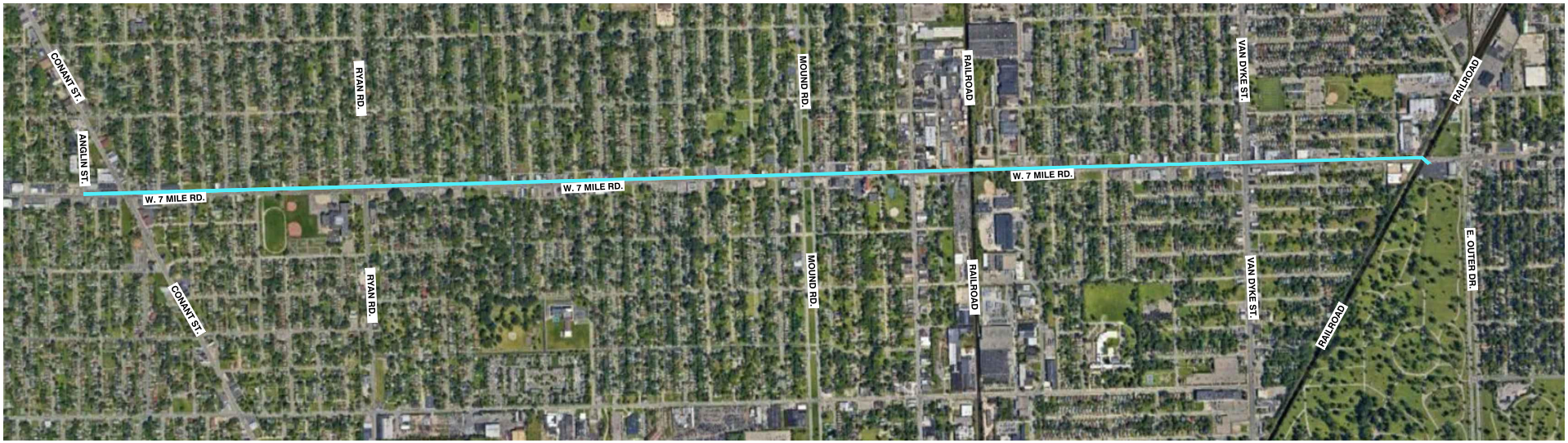
PRIME CONSULTANT
FK ENGINEERING
30425 STEPHENSON HWY
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS
ANDERSON, ECKSTEIN AND WESTRICK, INC.
Engineers | Surveyors | Architects
Applied Science, Inc.
Hazen

GLWA
Great Lakes Water Authority

SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No.
GLWA CONTRACT No. 2300150
GLWA CIP No.
DRAWING No. C-206



7 MILE SEWER SEGMENT 3
LOCATION PLAN

SCALE: 1" = 600'
GRAPHIC SCALE
0 1
SCALE: 1" = 600'

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
F				
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DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY: REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE: 7 MILE SEWER SEGMENT 3 LOCATION PLAN

PRIME CONSULTANT: FK ENGINEERING, 30425 STEPHENSON HWY, MADISON HEIGHTS, MI 48071

SUB CONSULTANTS: ANDERSON, ECKSTEIN AND WESTRICK, INC. Engineers | Surveyors | Architects; Applied Science, Inc.; Hazen

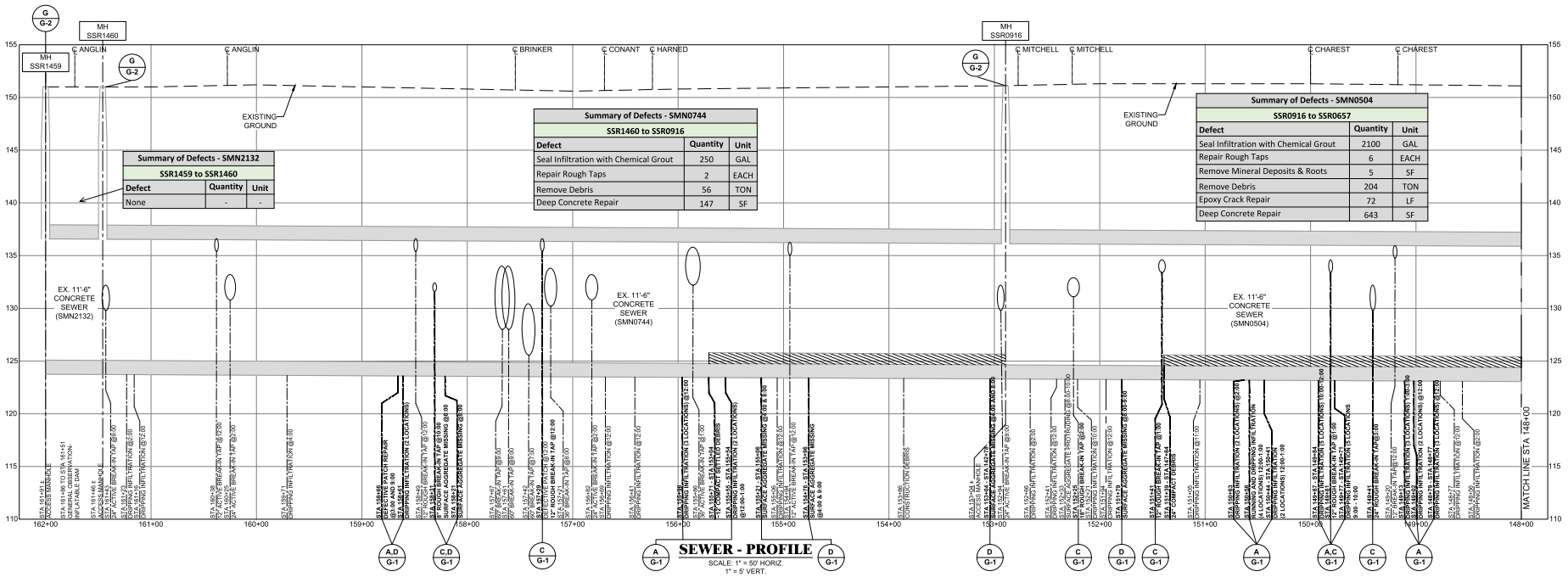
GLWA Great Lakes Water Authority

SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. -
GLWA CONTRACT No. 2300150
GLWA CIP No. -
DRAWING No. C-300

SEWER - PLAN

SCALE: 1" = 50'



Summary of Defects - SMN2132

SSR1459 to SSR1460		
Defect	Quantity	Unit
None	-	-

Summary of Defects - SMN0744

SSR1460 to SSR0916		
Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	250	GAL
Repair Rough Taps	2	EACH
Remove Debris	56	TON
Deep Concrete Repair	147	SF

Summary of Defects - SMN0504

SSR0916 to SSR0657		
Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	2100	GAL
Repair Rough Taps	6	EACH
Remove Mineral Deposits & Roots	5	SF
Remove Debris	204	TON
Epoxy Crack Repair	72	LF
Deep Concrete Repair	643	SF

SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

DESIGNED BY: KDT	SEAL / STAMP	FACILITY: REHABILITATION OF 7 MILE SEWER SYSTEM	PRIME CONSULTANT: FK ENGINEERING, 30425 STEPHENSON HWY, MADISON HEIGHTS, MI 48071	SUB CONSULTANTS: ANDERSON, ECKSTEIN AND WESTRICK, INC. Engineers | Surveyors | Architects; Applied Science, Inc.; Hazen	EGLE PERMIT No. -
DRAWN BY: CPM		PROJECT TITLE			GLWA CONTRACT No. 2300150
CHECKED BY: KDT		DRAWING TITLE: 7 MILE SEWER SEGMENT 3 STA 162+00 TO STA 148+00 DETROIT, MICHIGAN			GLWA CIP No. -
APPROVED BY: FJK					DRAWING No. C-301

GLWA Great Lakes Water Authority

SECTION MAP | TOWN | RANGE | SECTION | Q | QQ

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
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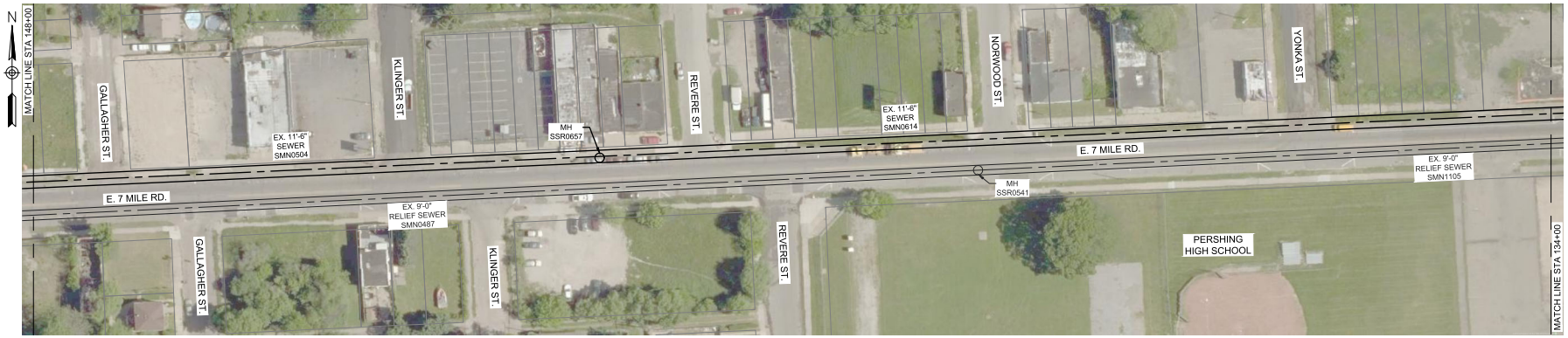
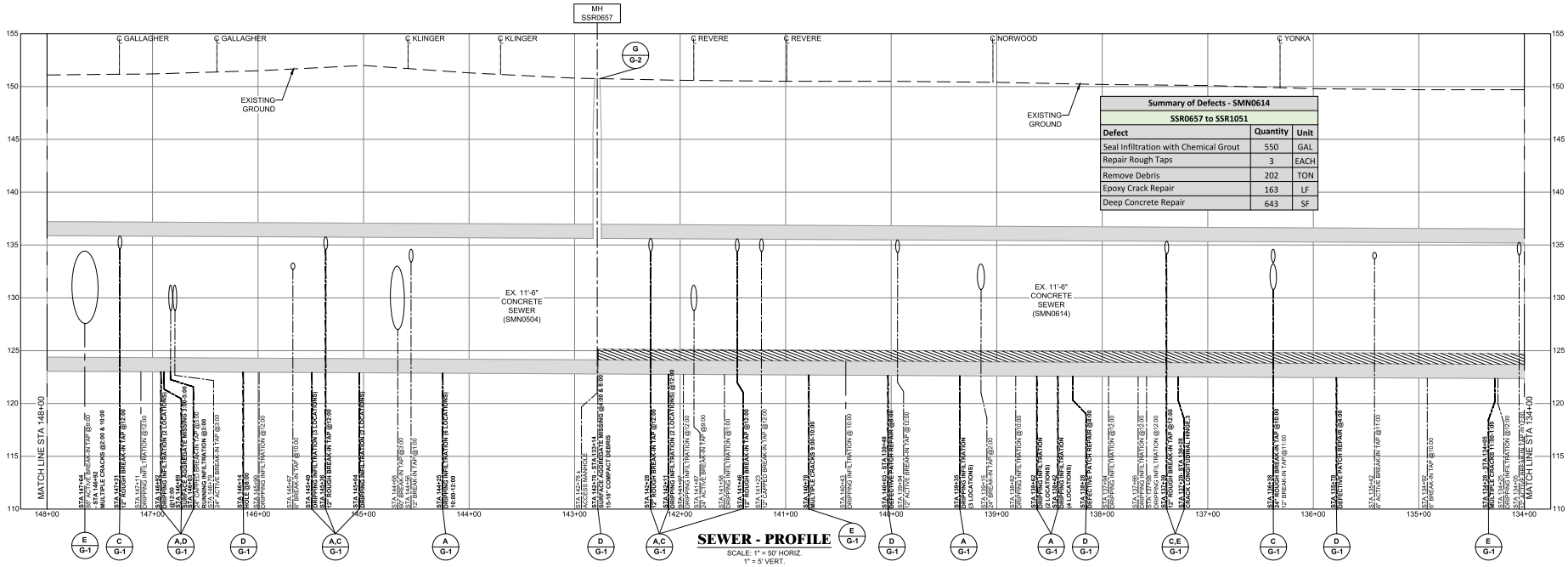


SEWER - PLAN

SCALE: 1" = 50'

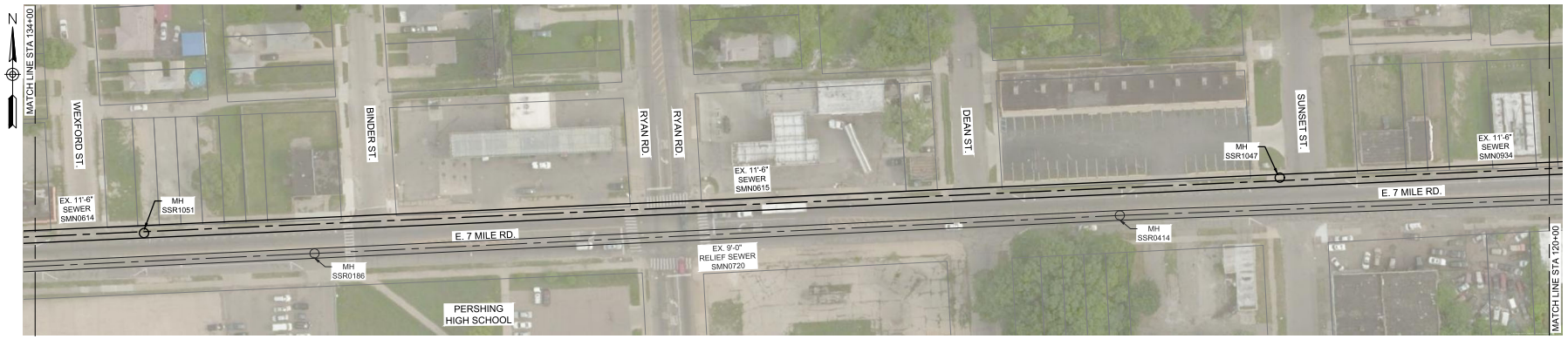


Summary of Defects - SMN0614		
SSR0657 to SSR1051		
Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	550	GAL
Repair Rough Taps	3	EACH
Remove Debris	202	TON
Epoxy Crack Repair	163	LF
Deep Concrete Repair	643	SF

SEWER - PROFILE

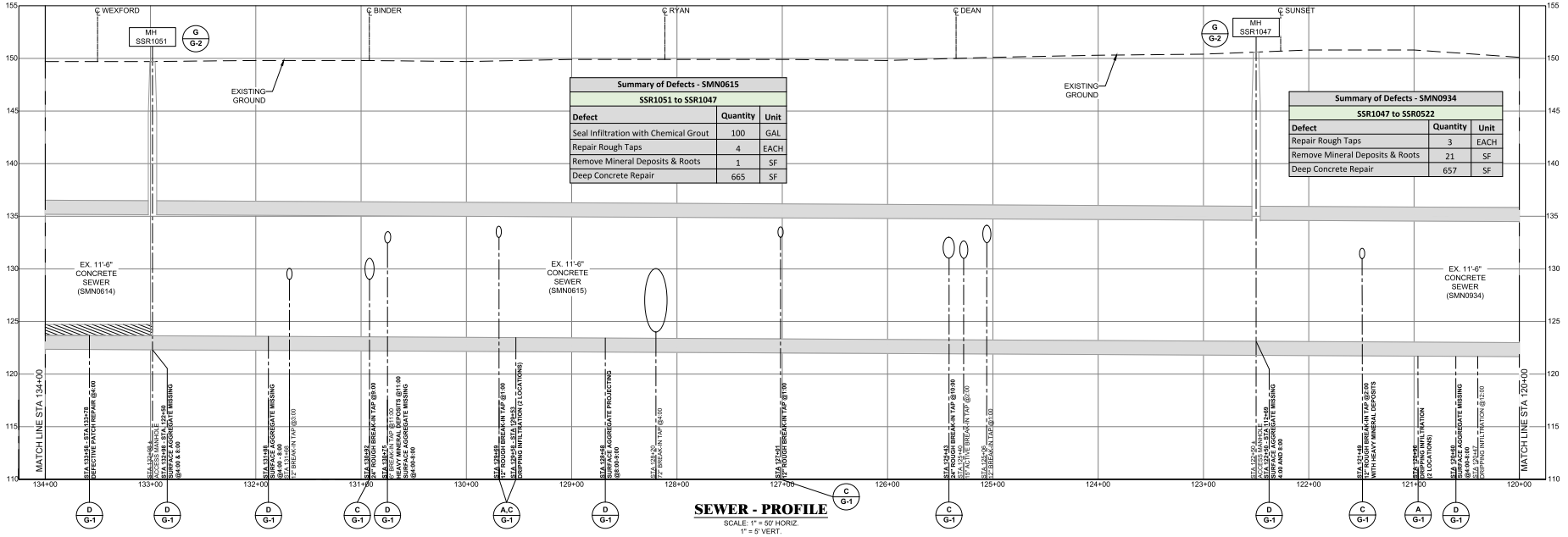
SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

| | | |



SEWER - PLAN

SCALE: 1" = 50'



Summary of Defects - SMN0615
SSR1051 to SSR1047

Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	100	GAL
Repair Rough Taps	4	EACH
Remove Mineral Deposits & Roots	1	SF
Deep Concrete Repair	665	SF

Summary of Defects - SMN0934
SSR1047 to SSR0522

Defect	Quantity	Unit
Repair Rough Taps	3	EACH
Remove Mineral Deposits & Roots	21	SF
Deep Concrete Repair	657	SF

SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

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	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE	

DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
7 MILE SEWER SEGMENT 3
STA 134+00 TO STA 120+00
DETROIT, MICHIGAN

PRIME CONSULTANT
FK ENGINEERING
30425 STEPHENSON HWY
MADISON HEIGHTS, MI 48071

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GLWA
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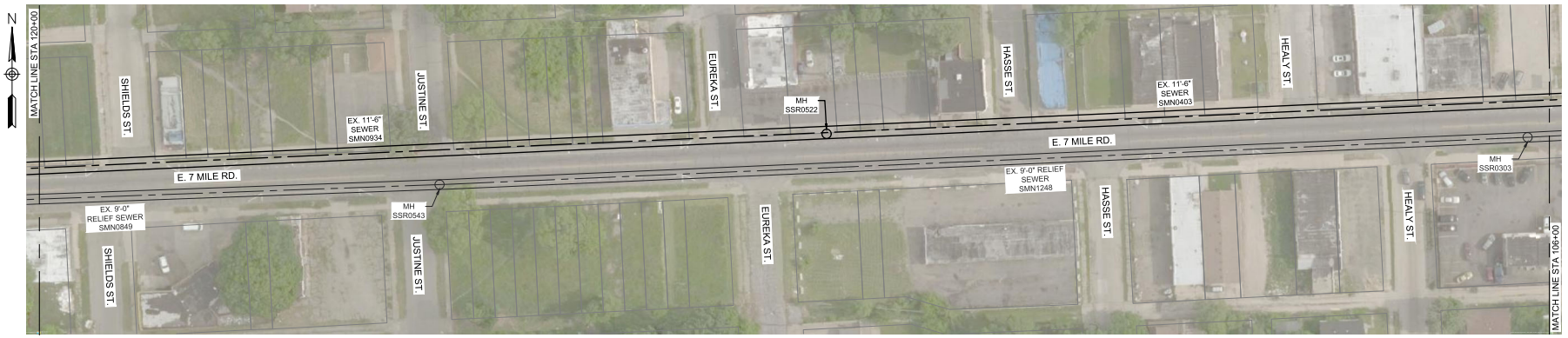
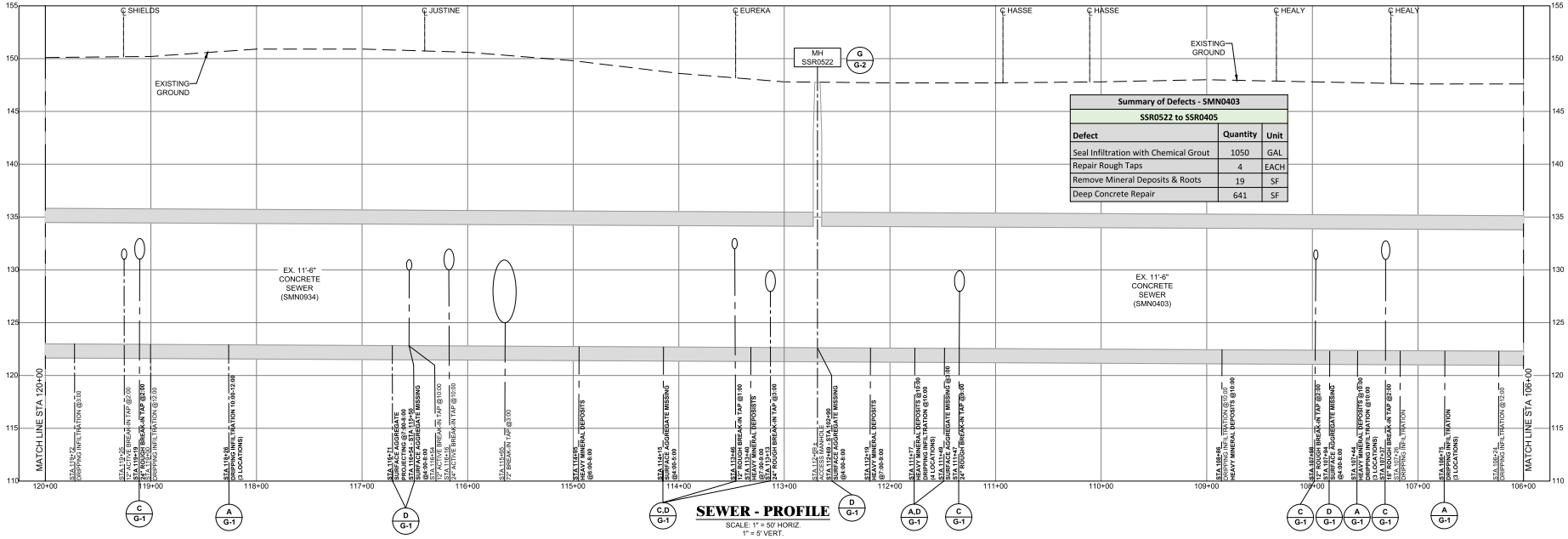
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. C-303



SEWER - PLAN

SCALE: 1" = 50'



Summary of Defects - SMN0403 SSR0522 to SSR0405		
Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	1050	GAL
Repair Rough Taps	4	EACH
Remove Mineral Deposits & Roots	19	SF
Deep Concrete Repair	641	SF

SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

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	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE	

DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
7 MILE SEWER SEGMENT 3
STA 120+00 TO STA 106+00
DETROIT, MICHIGAN

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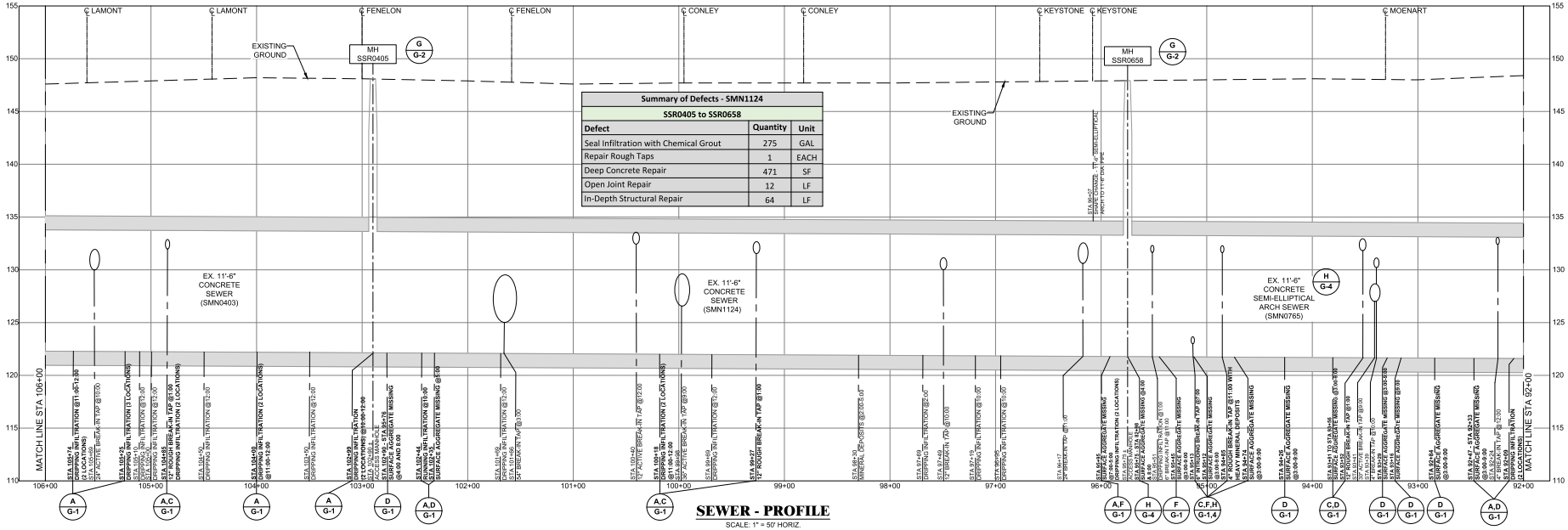
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. C-304

SEWER - PLAN

SCALE: 1" = 50'



Summary of Defects - SMN1124 SSR0405 to SSR0658		
Defect	**Quantity**	**Unit**
Seal Infiltration with Chemical Grout	275	GAL
Repair Rough Taps	1	EACH
Deep Concrete Repair	471	SF
Open Joint Repair	12	LF
In-Depth Structural Repair	64	LF

SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

F				DESIGNED BY: KDT	SEAL / STAMP
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D				CHECKED BY: KDT	
C				APPROVED BY: FJK	
B					
A					
	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE	

FACILITY

REHABILITATION OF 7 MILE SEWER SYSTEM

PROJECT TITLE

DRAWING TITLE

7 MILE SEWER SEGMENT 3
STA 106+00 TO STA 92+00
DETROIT, MICHIGAN

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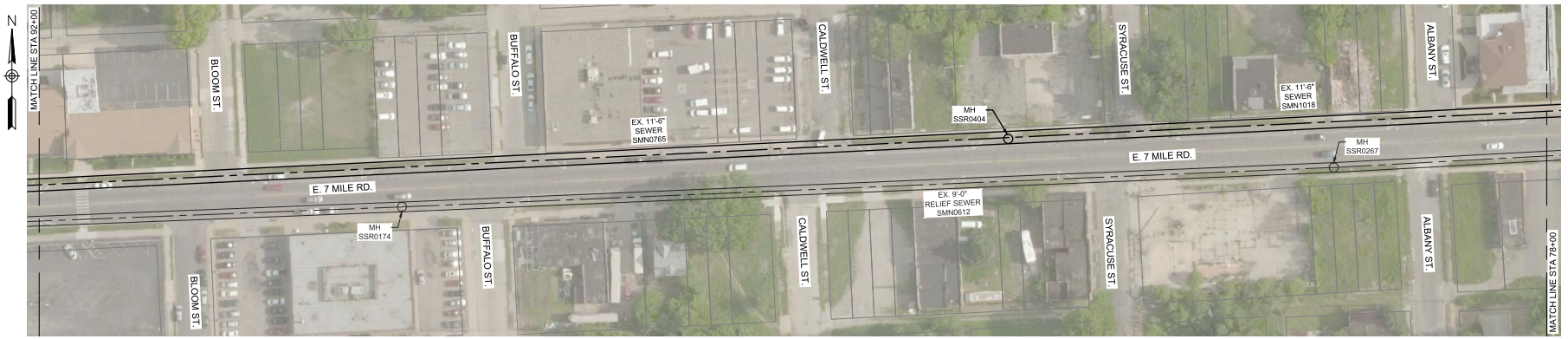
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --

GLWA CONTRACT No. 2300150

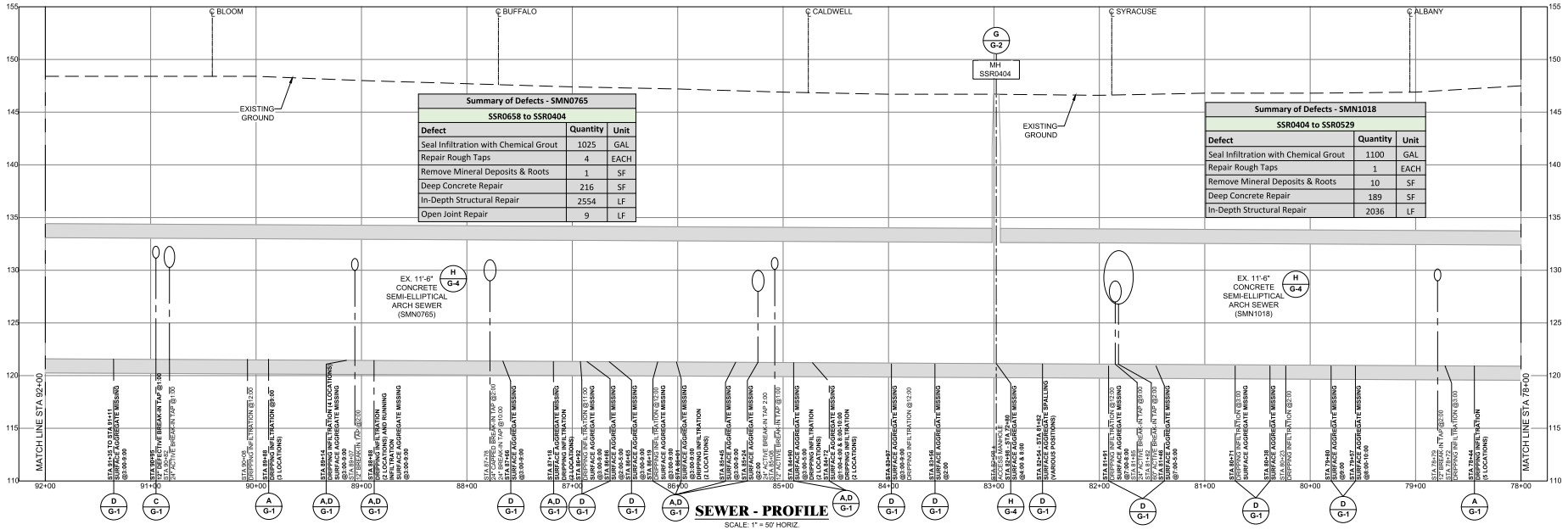
GLWA CIP No. --

DRAWING No. C-305



SEWER - PLAN

SCALE: 1" = 50'



Summary of Defects - SMN0765
SSR0658 to SSR0404

Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	1025	GAL
Repair Rough Taps	4	EACH
Remove Mineral Deposits & Roots	1	SF
Deep Concrete Repair	216	SF
In-Depth Structural Repair	2554	LF
Open Joint Repair	9	LF

Summary of Defects - SMN1018
SSR0404 to SSR0529

Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	1100	GAL
Repair Rough Taps	1	EACH
Remove Mineral Deposits & Roots	10	SF
Deep Concrete Repair	189	SF
In-Depth Structural Repair	2036	LF

SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

F				DESIGNED BY: KDT	SEAL / STAMP
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D				CHECKED BY: KDT	
C				APPROVED BY: FJK	
B					
A					
	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE	

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
7 MILE SEWER SEGMENT 3
STA 92+00 TO STA 78+00
DETROIT, MICHIGAN

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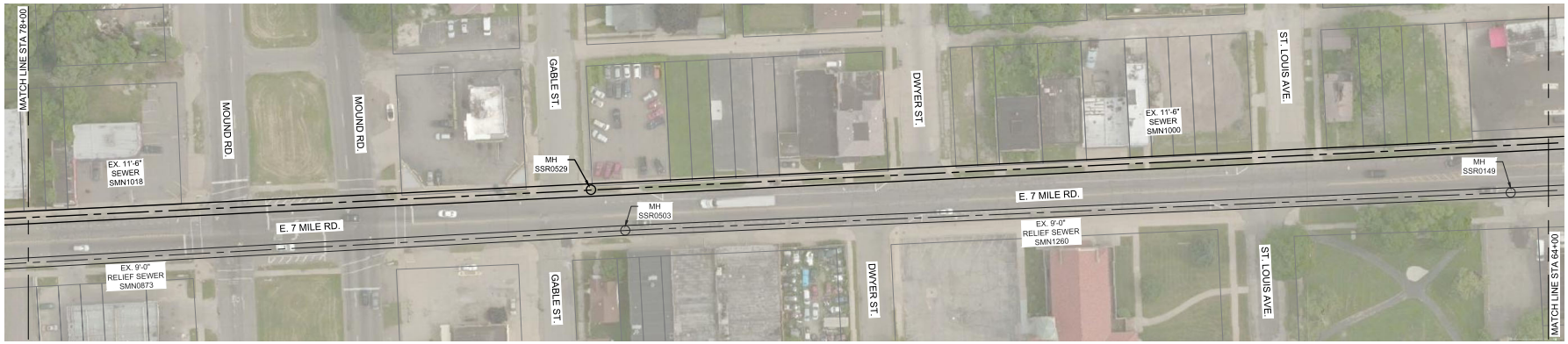
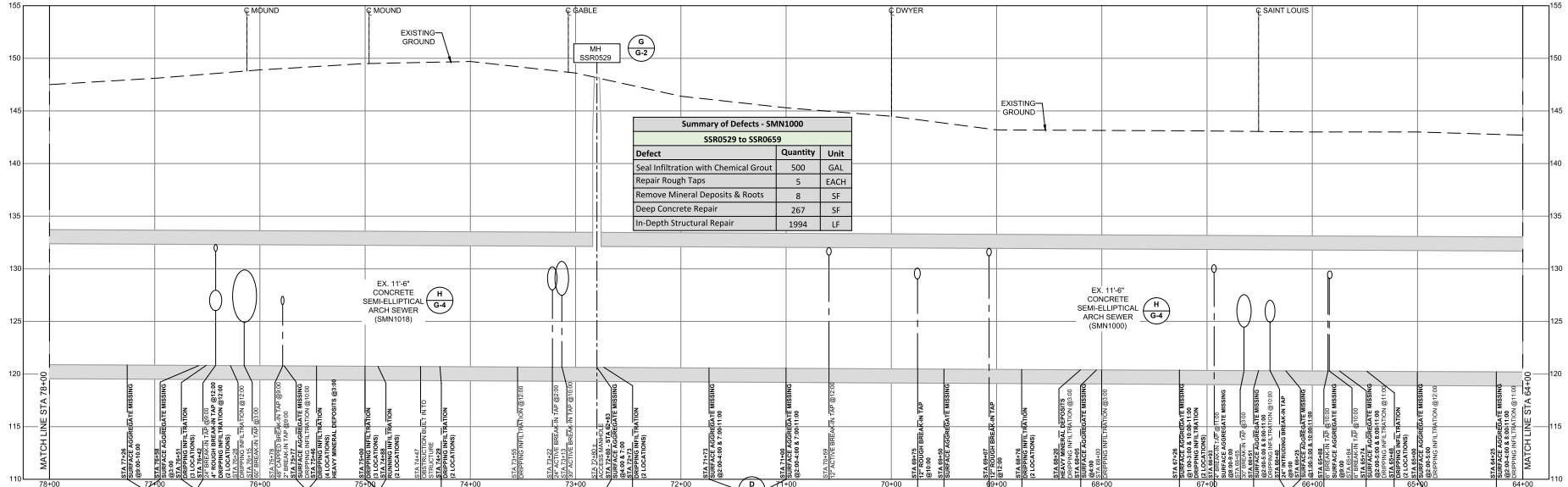
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. C-306



SEWER - PLAN

SCALE: 1" = 50'



Summary of Defects - SMN1000		
SSR0529 to SSR0659		
Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	500	GAL
Repair Rough Taps	5	EACH
Remove Mineral Deposits & Roots	8	SF
Deep Concrete Repair	267	SF
In-Depth Structural Repair	1994	LF

SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
F				
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DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
7 MILE SEWER SEGMENT 3
STA 78+00 TO STA 64+00
DETROIT, MICHIGAN

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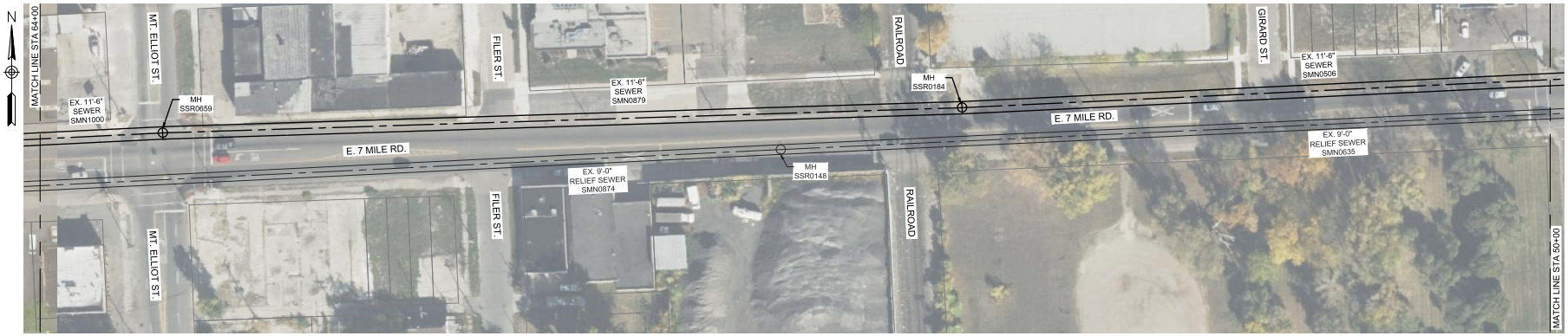
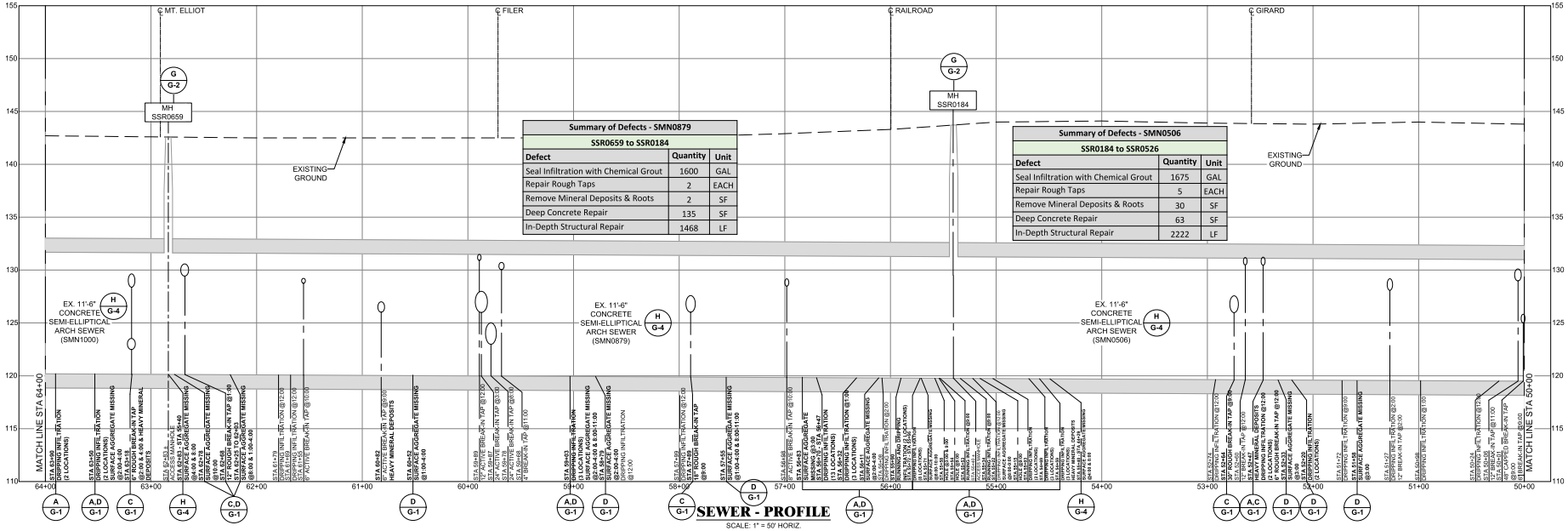
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. -
GLWA CONTRACT No. 2300150
GLWA CIP No. -
DRAWING No. C-307



SEWER - PLAN

SCALE: 1" = 50'



Summary of Defects - SMN0879		
SSR0659 to SSR0184		
Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	1600	GAL
Repair Rough Taps	2	EACH
Remove Mineral Deposits & Roots	2	SF
Deep Concrete Repair	135	SF
In-Depth Structural Repair	1468	LF

Summary of Defects - SMN0506		
SSR0184 to SSR0526		
Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	1675	GAL
Repair Rough Taps	5	EACH
Remove Mineral Deposits & Roots	30	SF
Deep Concrete Repair	63	SF
In-Depth Structural Repair	2222	LF

SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

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	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE	

DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
7 MILE SEWER SEGMENT 3
STA 64+00 TO STA 50+00
DETROIT, MICHIGAN

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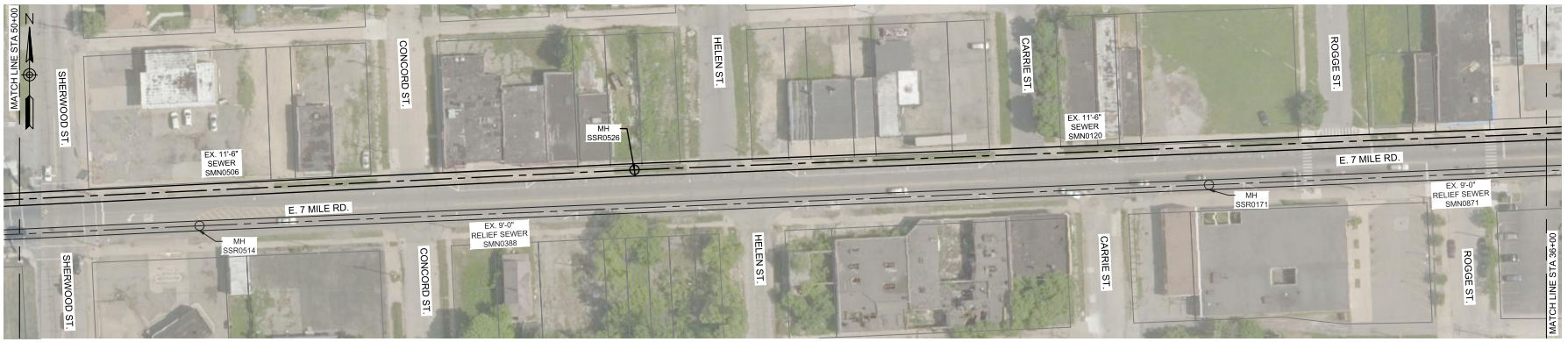
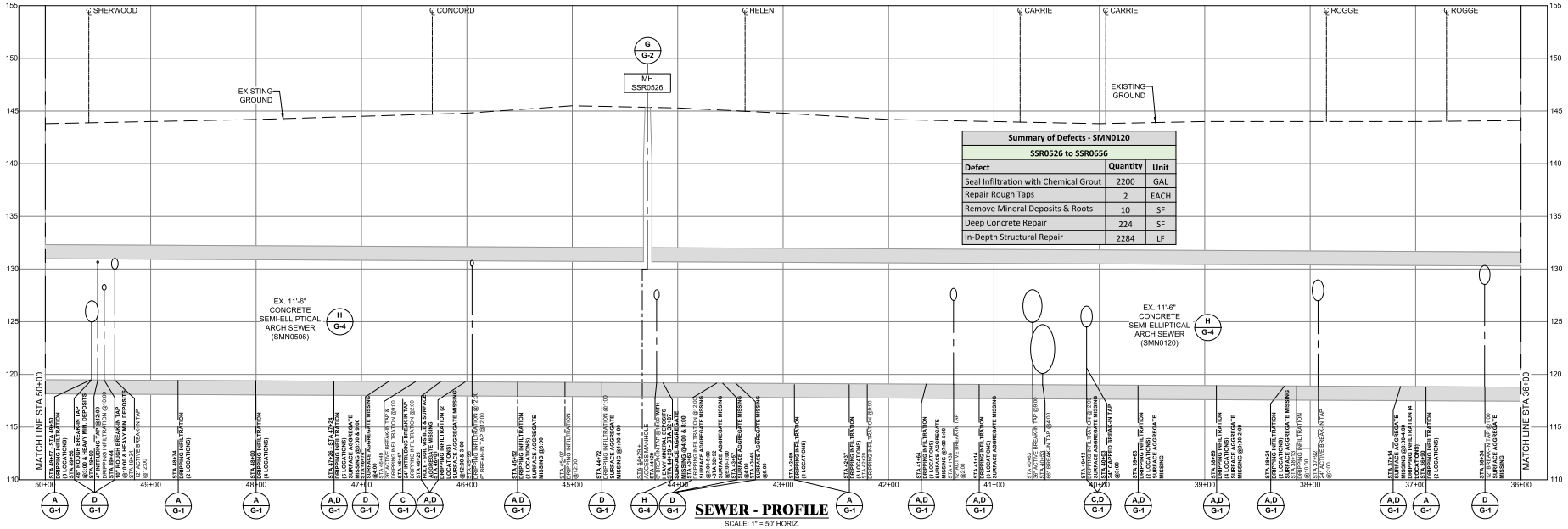
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. -
GLWA CONTRACT No. 2300150
GLWA CIP No. -
DRAWING No. C-308



SEWER - PLAN

SCALE: 1" = 50'



Summary of Defects - SMN0120		
SSR0526 to SSR0656		
Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	2200	GAL
Repair Rough Taps	2	EACH
Remove Mineral Deposits & Roots	10	SF
Deep Concrete Repair	224	SF
In-Depth Structural Repair	2284	LF

SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

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	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE	

DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY

REHABILITATION OF 7 MILE SEWER SYSTEM

PROJECT TITLE

DRAWING TITLE

7 MILE SEWER SEGMENT 3
STA 50+00 TO STA 36+00
DETROIT, MICHIGAN

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SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. -

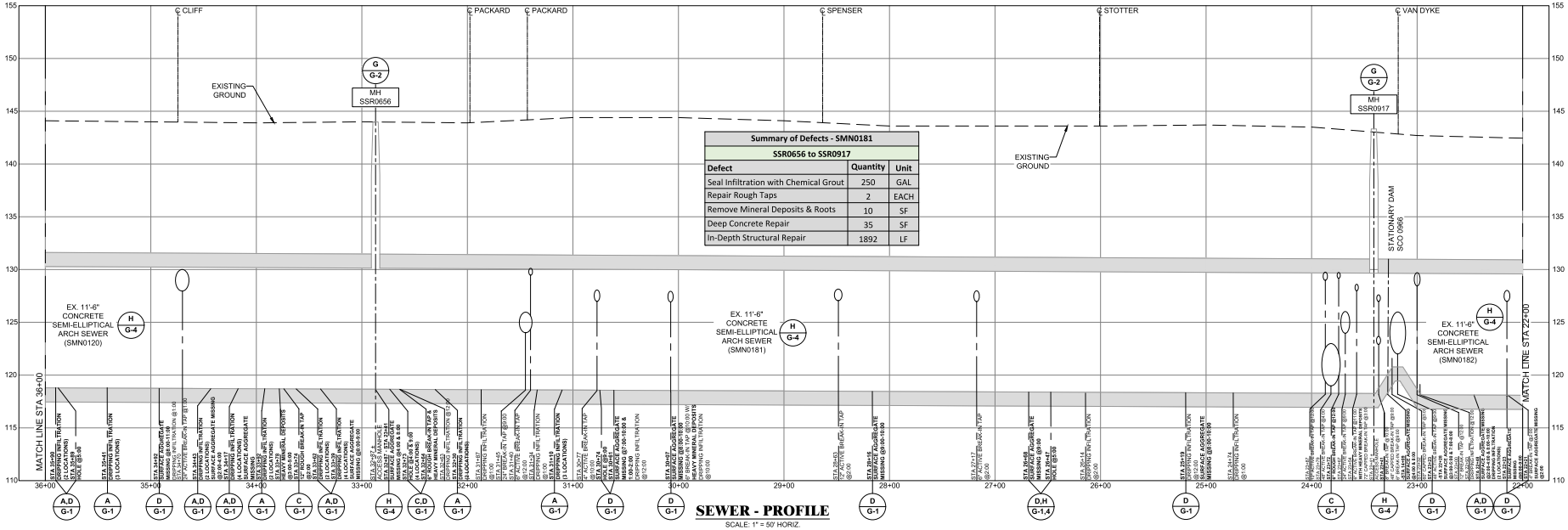
GLWA CONTRACT No. 2300150

GLWA CIP No. -

DRAWING No. C-309

SEWER - PLAN

SCALE: 1" = 50'



Summary of Defects - SMN0181		
SSR0656 to SSR0917		
Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	250	GAL
Repair Rough Taps	2	EACH
Remove Mineral Deposits & Roots	10	SF
Deep Concrete Repair	35	SF
In-Depth Structural Repair	1892	LF

SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
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SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
7 MILE SEWER SEGMENT 3
STA 36+00 TO STA 22+00
DETROIT, MICHIGAN

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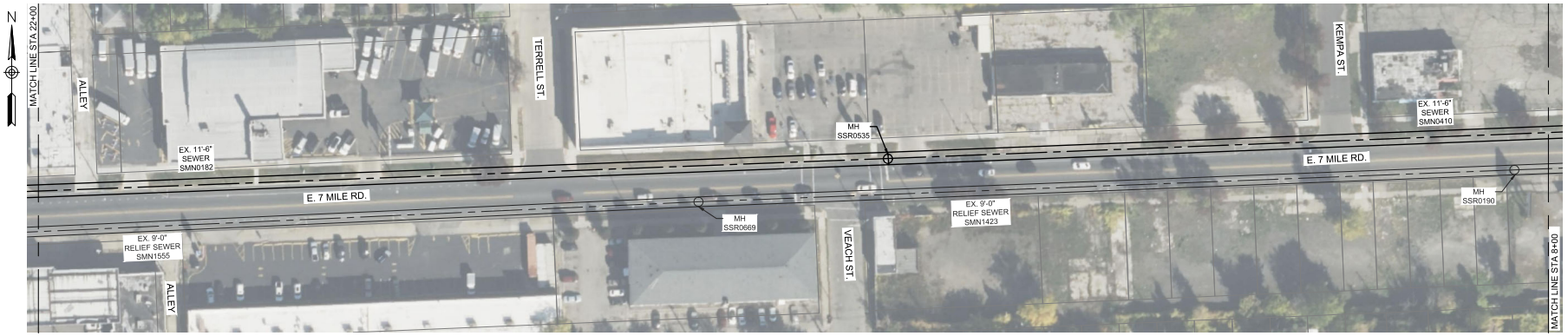
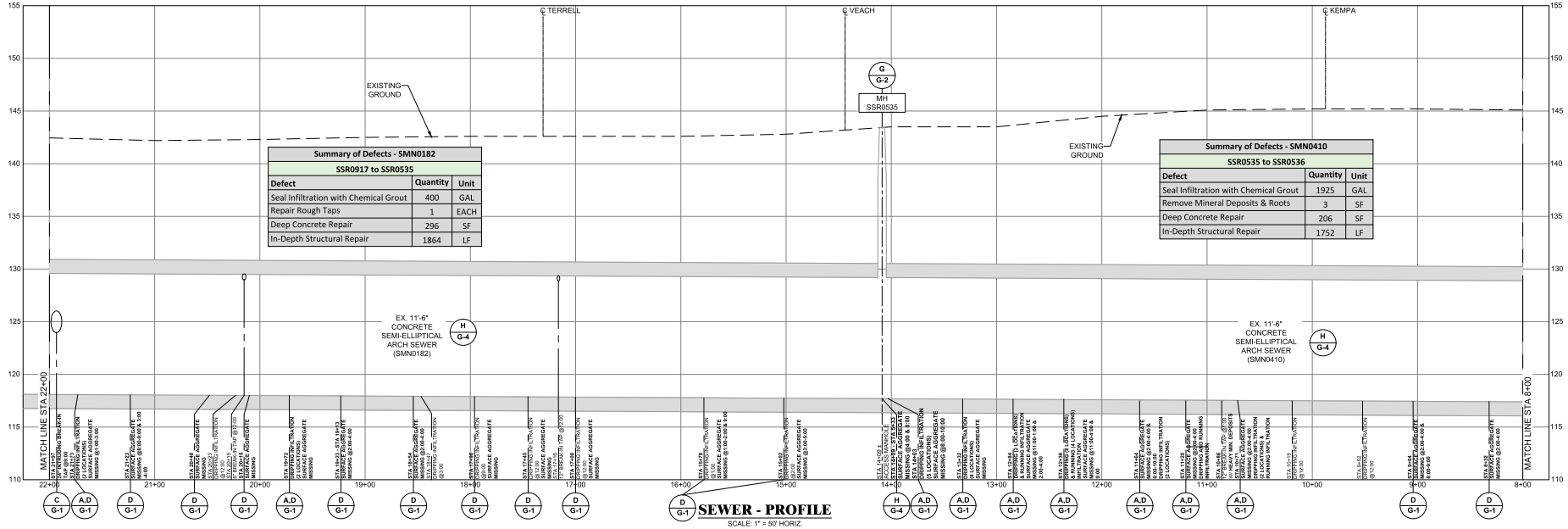
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. -
GLWA CONTRACT No. 2300150
GLWA CIP No. -
DRAWING No. C-310



SEWER - PLAN

SCALE: 1" = 50'



Summary of Defects - SMN0182
SSR0917 to SSR0535

Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	400	GAL
Repair Rough Taps	1	EACH
Deep Concrete Repair	296	SF
In-Depth Structural Repair	1864	LF

Summary of Defects - SMN0410
SSR0535 to SSR0536

Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	1925	GAL
Remove Mineral Deposits & Roots	3	SF
Deep Concrete Repair	206	SF
In-Depth Structural Repair	1752	LF

SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

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A					
	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE	

DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
7 MILE SEWER SEGMENT 3
STA 22+00 TO STA 8+00
DETROIT, MICHIGAN

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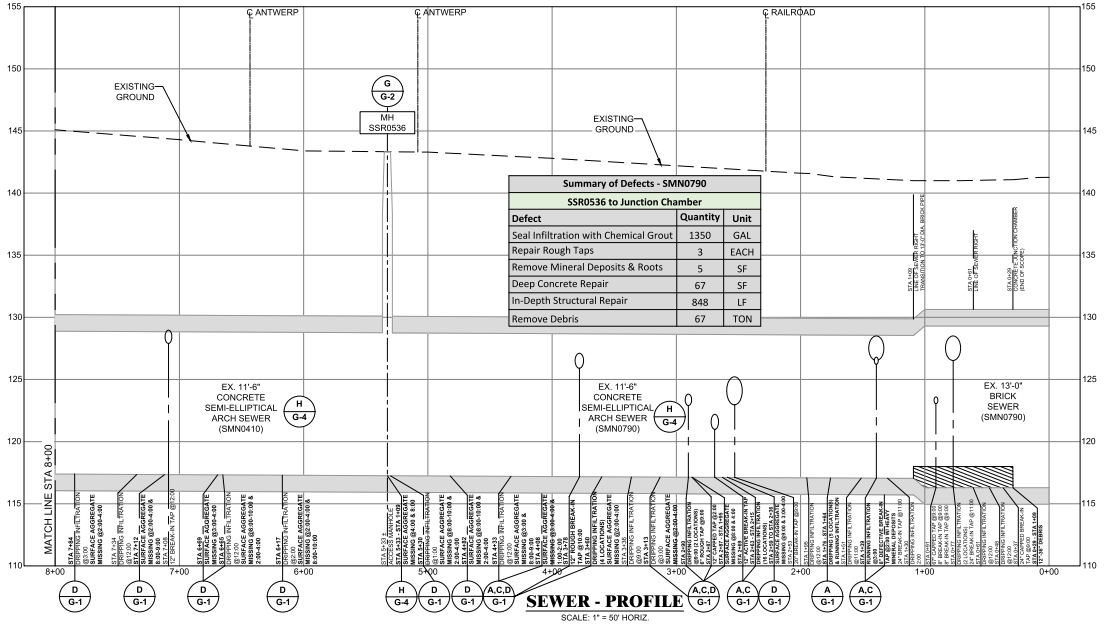
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. -
GLWA CONTRACT No. 2300150
GLWA CIP No. -
DRAWING No. C-311

SEWER - PLAN

SCALE: 1" = 50'



Summary of Defects - SMN0790		
SSR0536 to Junction Chamber		
Defect	Quantity	Unit
Seal Infiltration with Chemical Grout	1350	GAL
Repair Rough Taps	3	EACH
Remove Mineral Deposits & Roots	5	SF
Deep Concrete Repair	67	SF
In-Depth Structural Repair	848	LF
Remove Debris	67	TON

SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
F				
E				
D				
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A				

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DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
7 MILE SEWER SEGMENT 3
STA 8+00 TO STA 0+00
DETROIT, MICHIGAN

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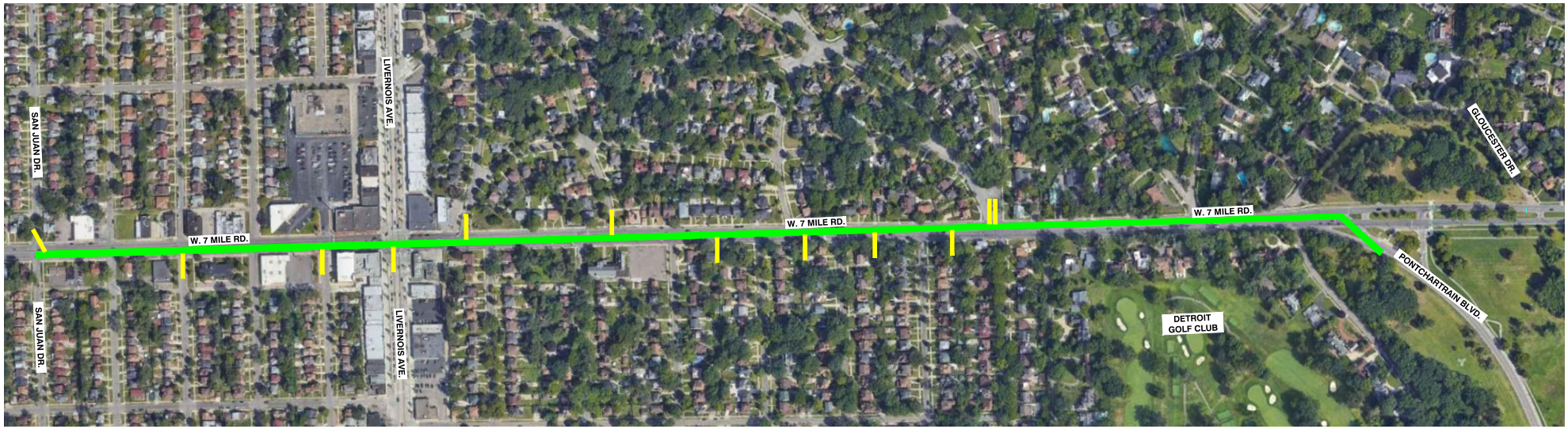
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. C-312



WEST 7 MILE RELIEF SEWER
LOCATION PLAN

SCALE: 1" = 200'
GRAPHIC SCALE
0 1"
SCALE: 1" = 200'

NOTE:
EXISTING CONDITIONS WITHIN W. 7 MILE RELIEF SEWER ARE SHOWN FOR INFORMATION ONLY ON C-401 THROUGH C-405 AS NO IN-PIPE WORK IS ANTICIPATED FOR THIS SEWER. SCOPE OF WORK FOR THIS SEGMENT DOES INCLUDES MANHOLE FRAME AND COVER REPLACEMENT.

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
F				
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DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY: REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE: WEST 7 MILE RELIEF SEWER LOCATION PLAN

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MADISON HEIGHTS, MI 48071

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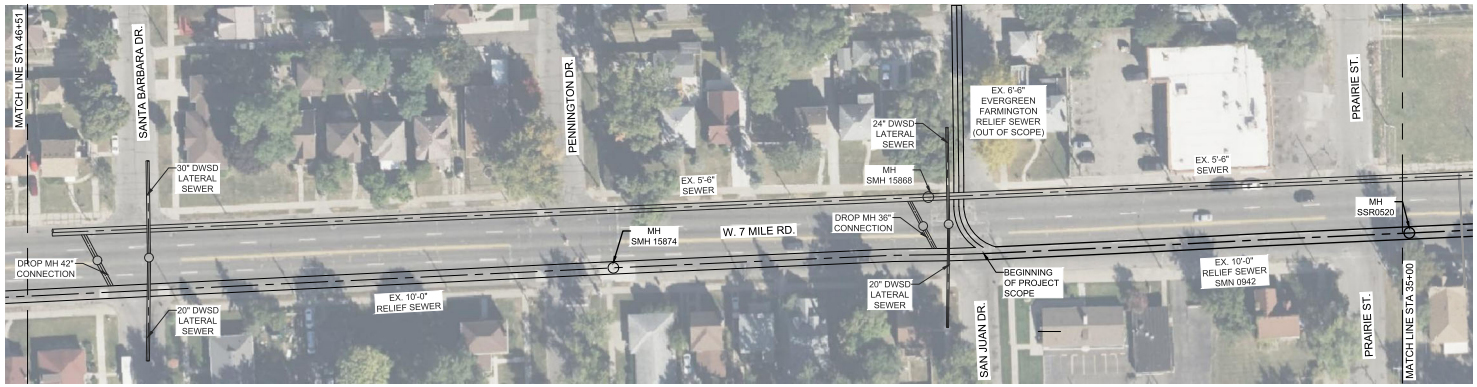
Great Lakes Water Authority

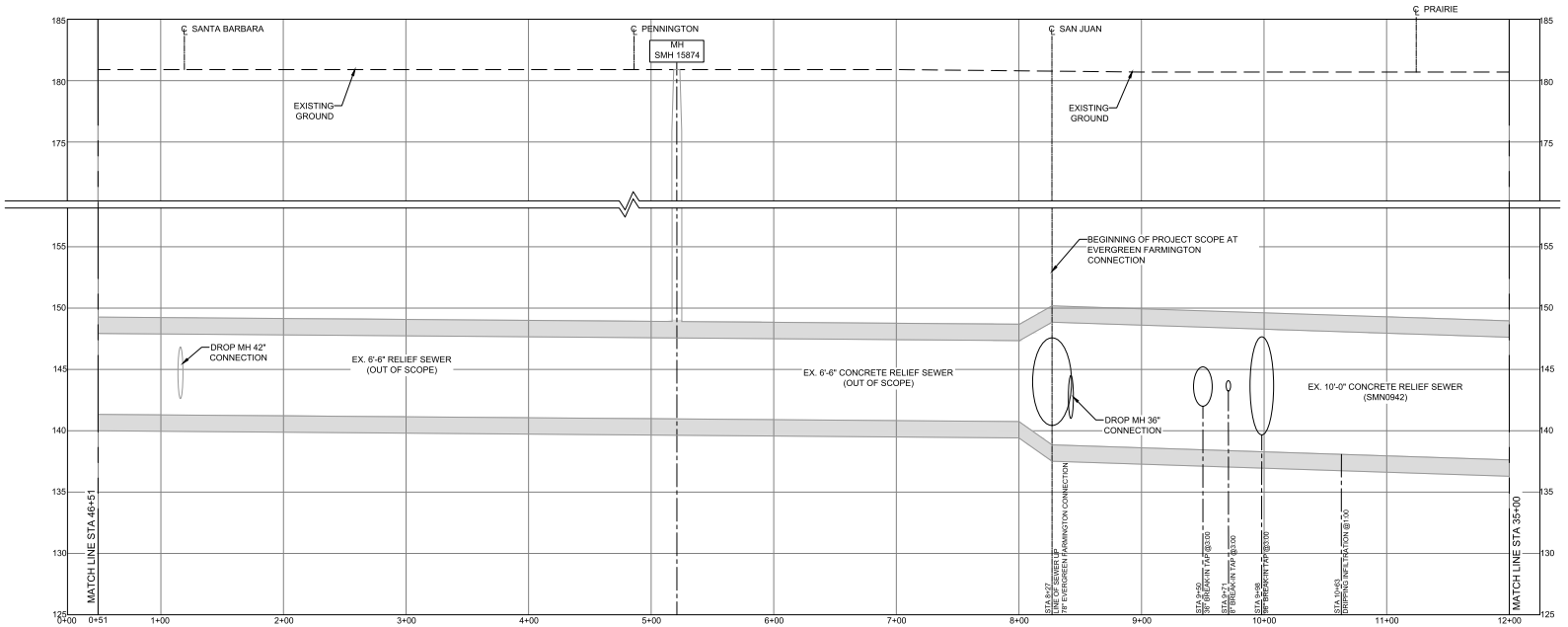
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. -
GLWA CONTRACT No. 2300150
GLWA CIP No. -
DRAWING No. C-400



RELIEF SEWER - PLAN

SCALE: 1" = 50'



RELIEF SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

F					DESIGNED BY: KDT	SEAL / STAMP	FACILITY: REHABILITATION OF 7 MILE SEWER SYSTEM
E					DRAWN BY: CPM		PROJECT TITLE
D					CHECKED BY: KDT		DRAWING TITLE: WEST 7 MILE RELIEF SEWER STA 0+51 TO STA 12+00 DETROIT, MICHIGAN
C					APPROVED BY: FJK		
B							
A							
	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE			

PRIME CONSULTANT: FK ENGINEERING, 30425 STEPHENSON HWY, MADISON HEIGHTS, MI 48071

SUB CONSULTANTS: ANDERSON, ECKSTEIN AND WESTRICK, INC. Engineers | Surveyors | Architects; Applied Science, Inc.; Hazen

GLWA Great Lakes Water Authority

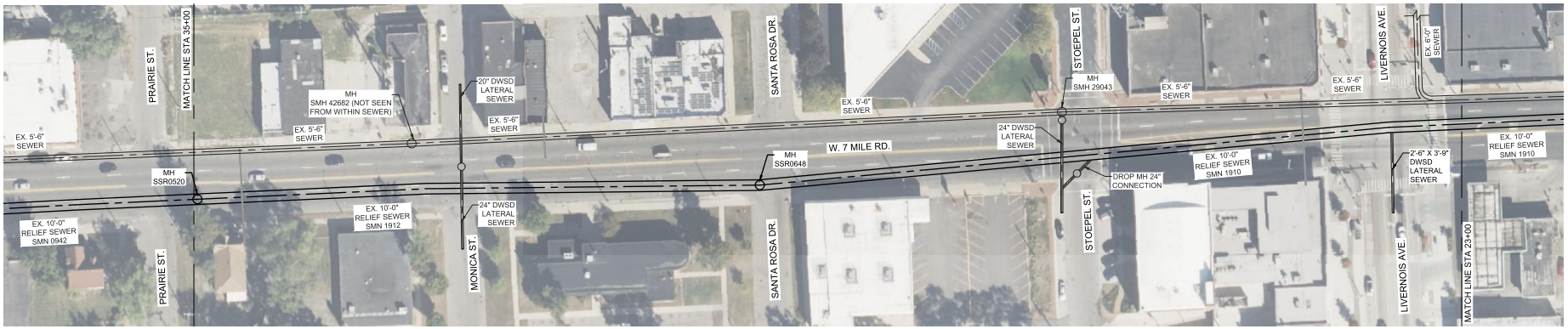
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --

GLWA CONTRACT No. 2300150

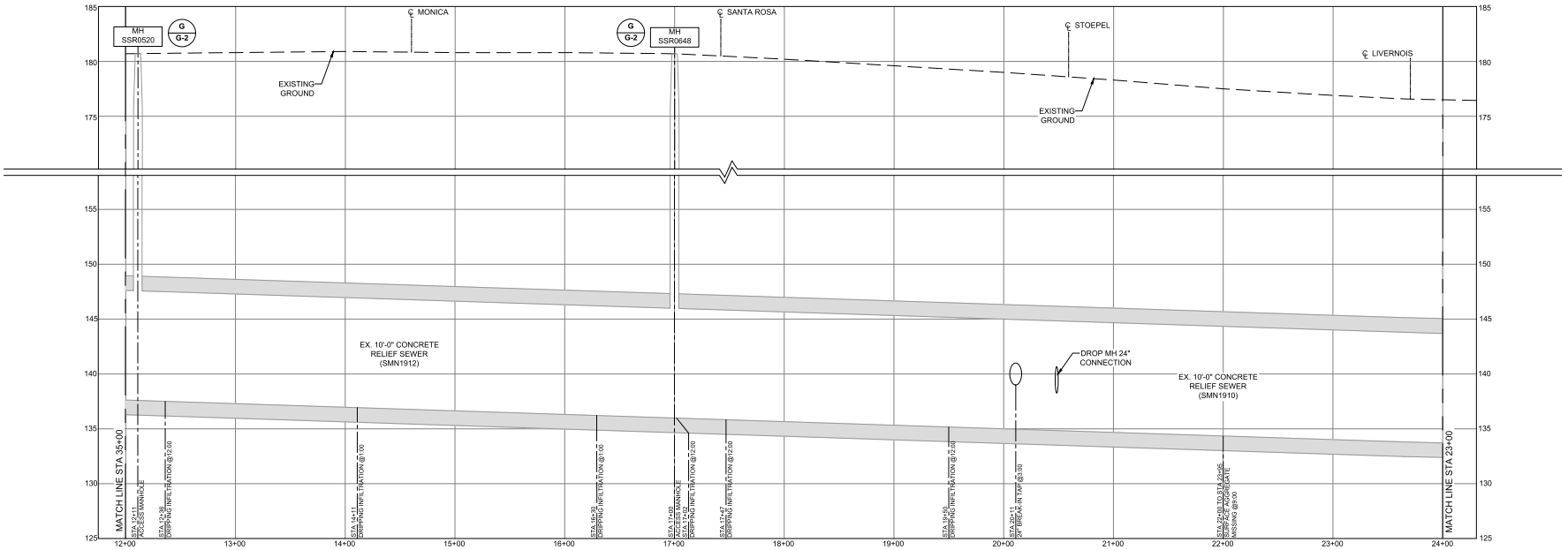
GLWA CIP No. --

DRAWING No. C-401



RELIEF SEWER - PLAN

SCALE: 1" = 50'



RELIEF SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
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A				

DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY: REHABILITATION OF 7 MILE SEWER SYSTEM

PROJECT TITLE

DRAWING TITLE: WEST 7 MILE RELIEF SEWER
STA 12+00 TO STA 24+00
DETROIT, MICHIGAN

PRIME CONSULTANT: FK ENGINEERING
30425 STEPHENSON HWY
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS: ANDERSON, ECKSTEIN AND WESTRICK, INC. Engineers | Surveyors | Architects; Applied Science, Inc.; Hazen

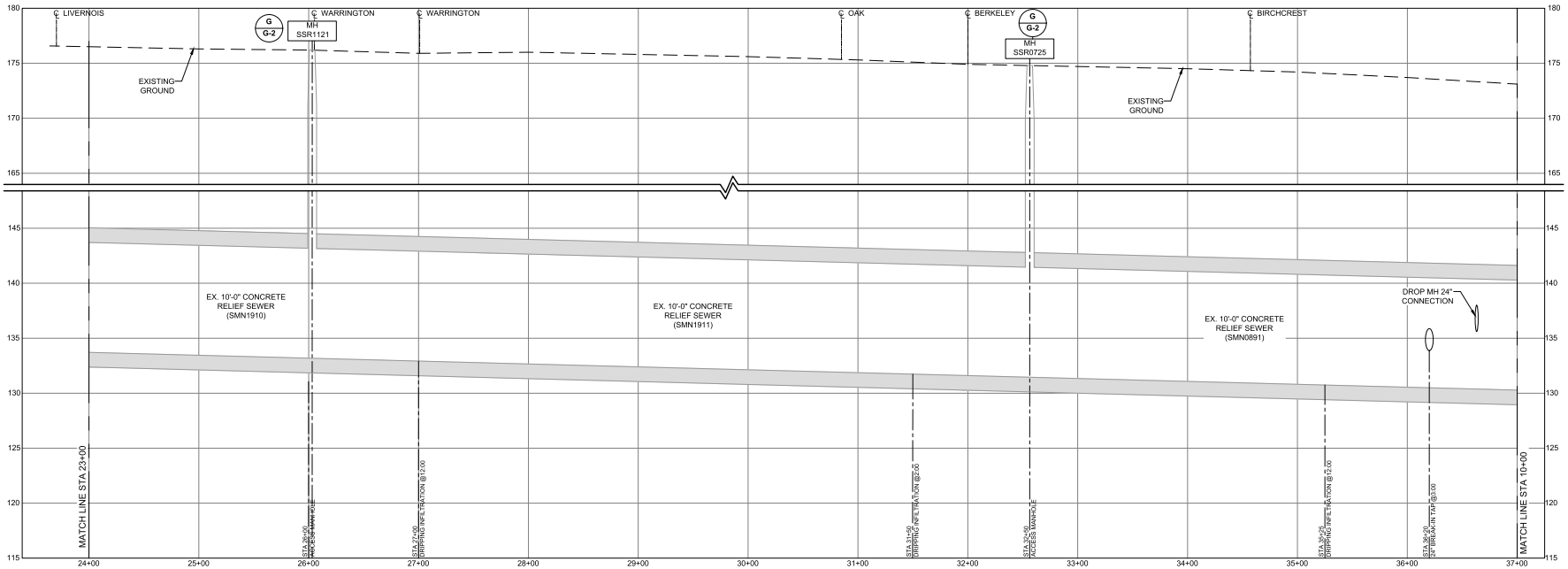
GLWA Great Lakes Water Authority

SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No.: --
GLWA CONTRACT No.: 2300150
GLWA CIP No.: --
DRAWING No.: C-402

RELIEF SEWER - PLAN

SCALE: 1" = 50'



RELIEF SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
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DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
WEST 7 MILE RELIEF SEWER
STA 24+00 TO STA 37+00
DETROIT, MICHIGAN

PRIME CONSULTANT
FK ENGINEERING
30425 STEPHENSON HWY.
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS
ANDERSON, ECKSTEIN AND WESTRICK, INC.
Engineers | Surveyors | Architects
Applied Science, Inc.
Hazen

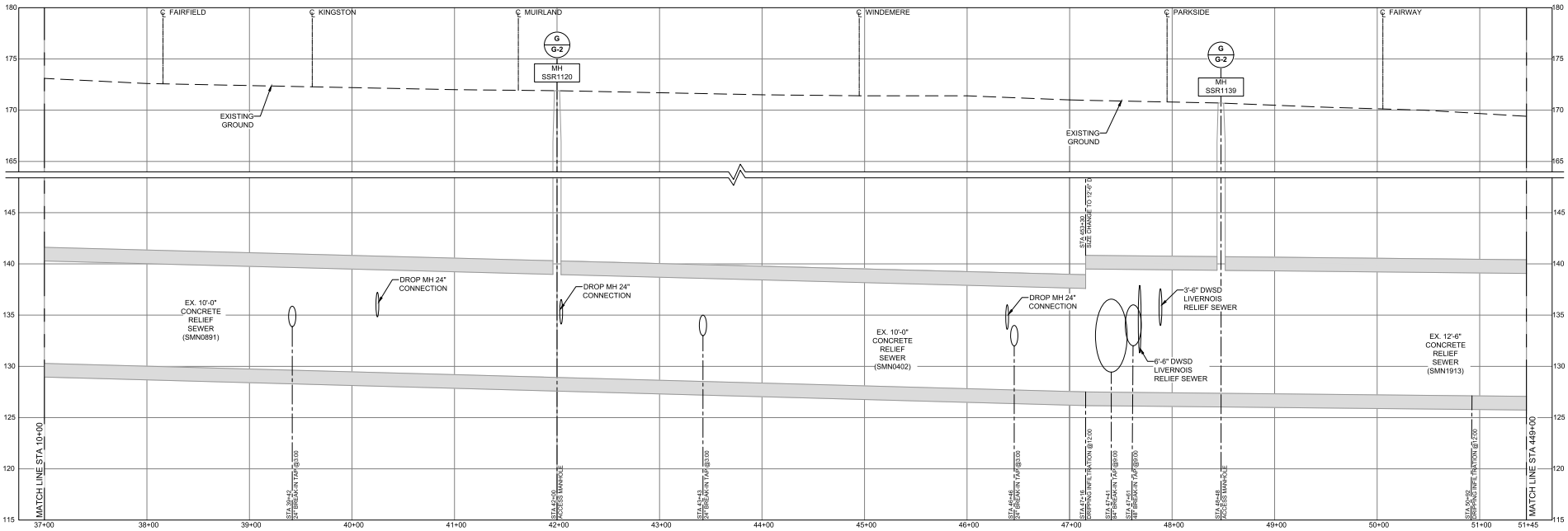
GLWA
Great Lakes Water Authority

SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. C-403

RELIEF SEWER - PLAN

SCALE: 1" = 50'



RELIEF SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
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DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY: REHABILITATION OF 7 MILE SEWER SYSTEM

PROJECT TITLE

DRAWING TITLE: WEST 7 MILE RELIEF SEWER
STA 37+00 TO STA 51+45
DETROIT, MICHIGAN

PRIME CONSULTANT: FK ENGINEERING
30425 STEPHENSON HWY.
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS
ANDERSON, ECKSTEIN AND WESTRICK, INC. Engineers | Surveyors | Architects
Applied Science, Inc.
Hazen

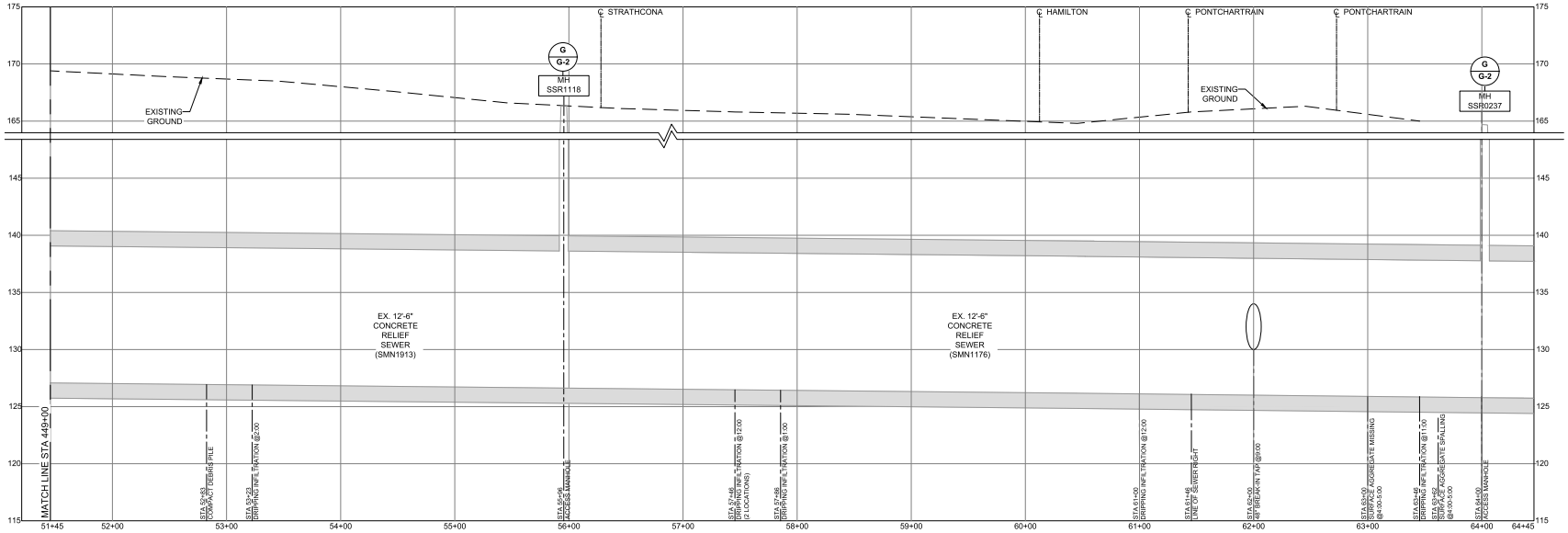
GLWA Great Lakes Water Authority

SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. C-404

RELIEF SEWER - PLAN

SCALE: 1" = 50'



RELIEF SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

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	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE	

DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
WEST 7 MILE RELIEF SEWER
STA 51+45 TO STA 64+45
DETROIT, MICHIGAN

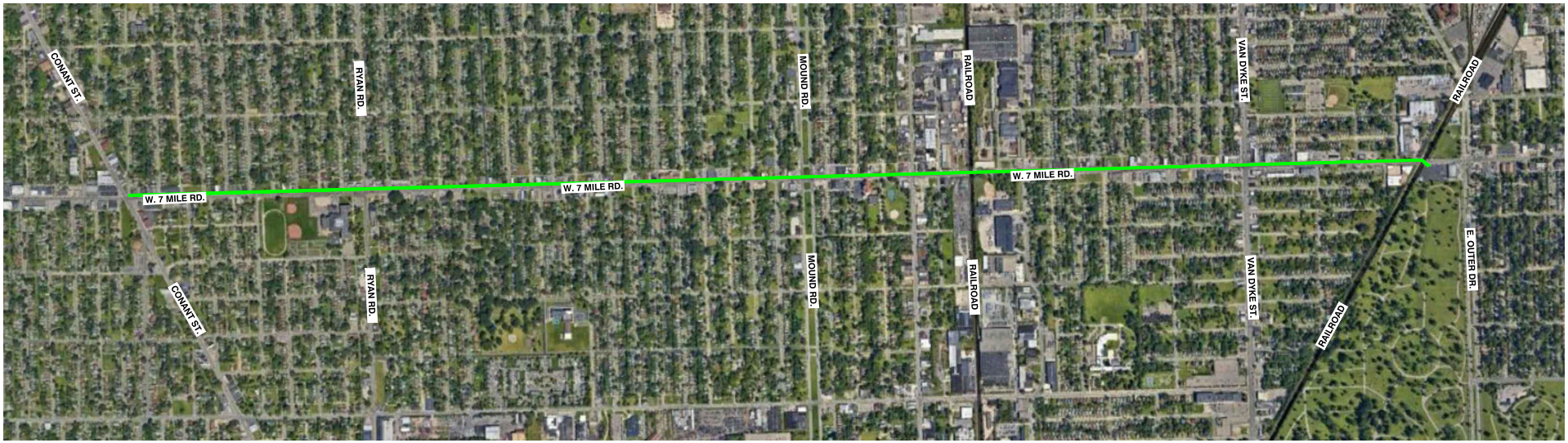
PRIME CONSULTANT
FK ENGINEERING
30425 STEPHENSON HWY.
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS
ANDERSON, ECKSTEIN AND WESTRICK, INC.
Engineers | Surveyors | Architects
Applied Science, Inc.
Hazen

GLWA
Great Lakes Water Authority

SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. C-405



EAST 7 MILE RELIEF SEWER
LOCATION PLAN

SCALE: 1" = 600'
GRAPHIC SCALE
0 1
SCALE: 1" = 600'

NOTE:
EXISTING CONDITIONS WITHIN THE E. 7 MILE RELIEF SEWER ARE SHOWN FOR INFORMATION ONLY, AS NO IN-PIPE WORK IS ANTICIPATED FOR THIS SEWER, WITH THE EXCEPTION OF DEBRIS REMOVAL AT THE EASTERN END. SCOPE OF WORK FOR THIS SEGMENT ALSO INCLUDES MANHOLE FRAME AND COVER REPLACEMENT.

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
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A				

DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
EAST 7 MILE RELIEF SEWER LOCATION PLAN

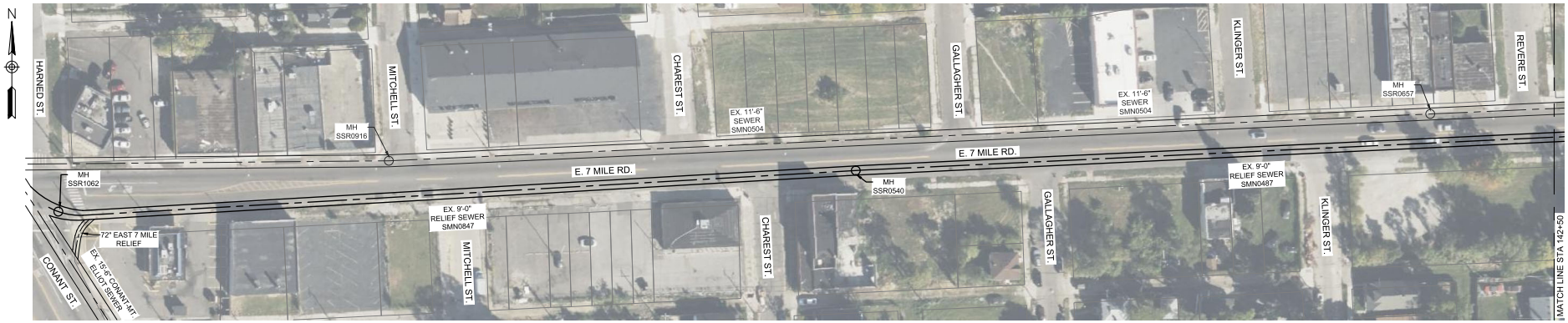
PRIME CONSULTANT
FK ENGINEERING
30425 STEPHENSON HWY.
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS
ANDERSON, ECKSTEIN AND WESTRICK, INC.
Engineers | Surveyors | Architects
Applied Science, Inc.
Hazen

GLWA
Great Lakes Water Authority

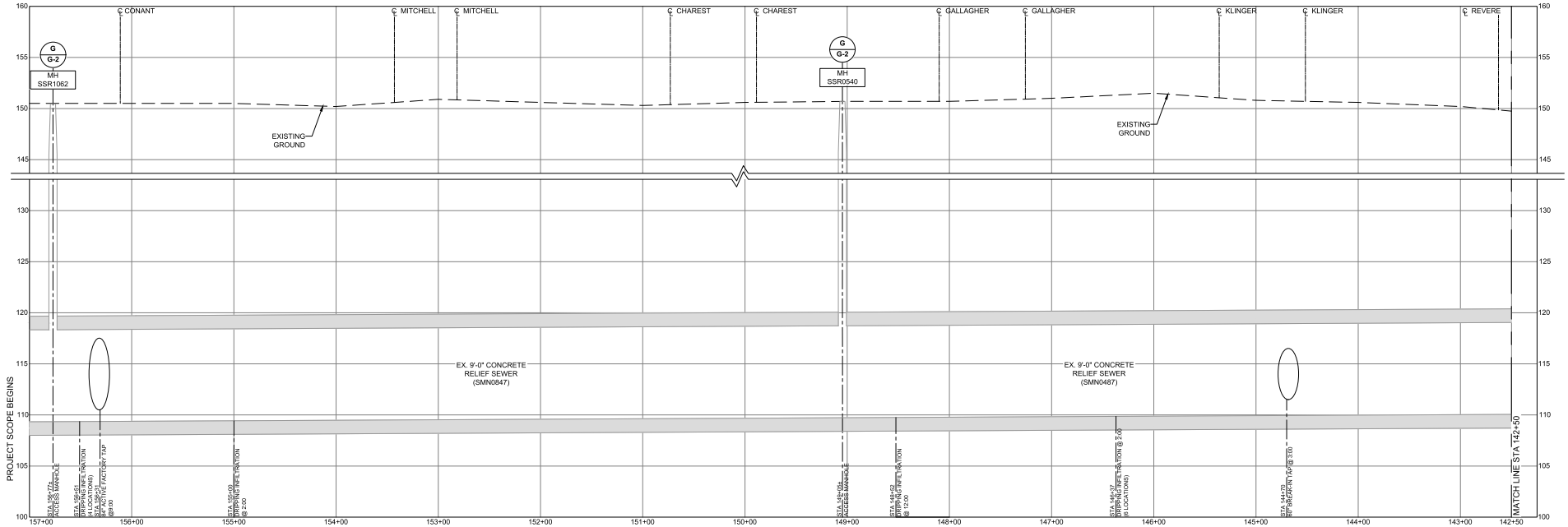
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. -
GLWA CONTRACT No. 2300150
GLWA CIP No. -
DRAWING No. C-500



RELIEF SEWER - PLAN

SCALE: 1" = 50'



RELIEF SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
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DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY: REHABILITATION OF 7 MILE SEWER SYSTEM

PROJECT TITLE

DRAWING TITLE: EAST 7 MILE RELIEF SEWER
STA 157+00 TO STA 142+50
DETROIT, MICHIGAN

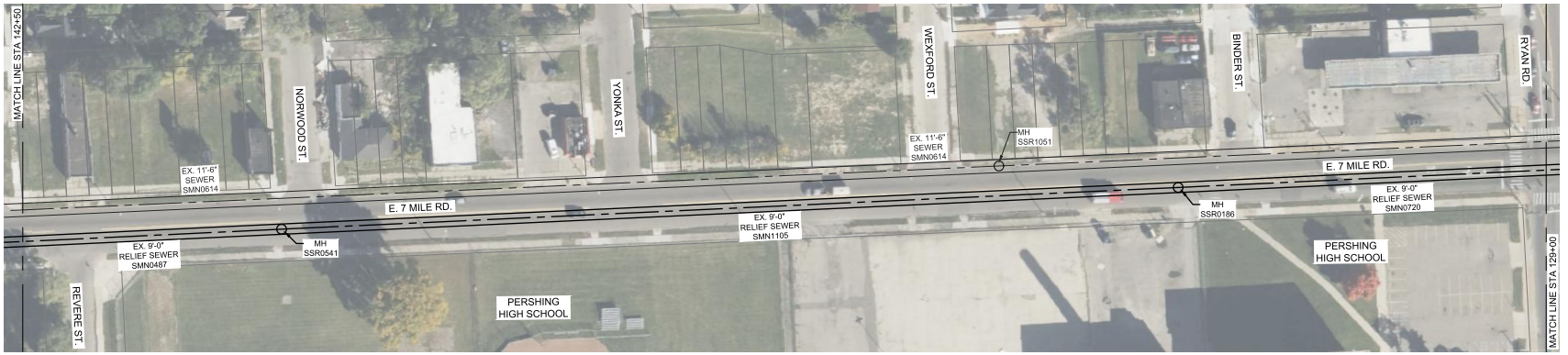
PRIME CONSULTANT: FK ENGINEERING
30425 STEPHENSON HWY
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS: ANDERSON, ECKSTEIN AND WESTRICK, INC. Engineers | Surveyors | Architects; Applied Science, Inc.; Hazen

GLWA Great Lakes Water Authority

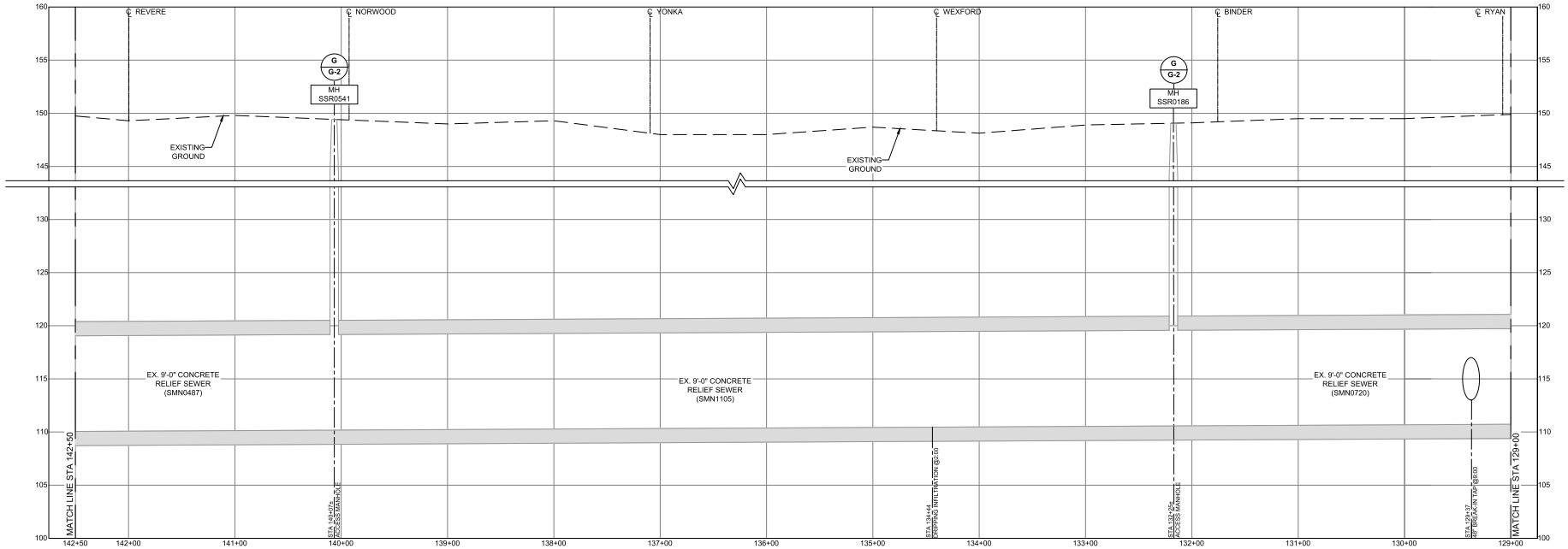
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. C-501



RELIEF SEWER - PLAN

SCALE: 1" = 50'



RELIEF SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

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	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE	

DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE

DRAWING TITLE
EAST 7 MILE RELIEF SEWER
STA 142+50 TO STA 129+00
DETROIT, MICHIGAN

PRIME CONSULTANT
FK ENGINEERING
30425 STEPHENSON HWY
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS
ANDERSON, ECKSTEIN AND WESTRICK, INC.
Engineers | Surveyors | Architects
Applied Science, Inc.
Hazen

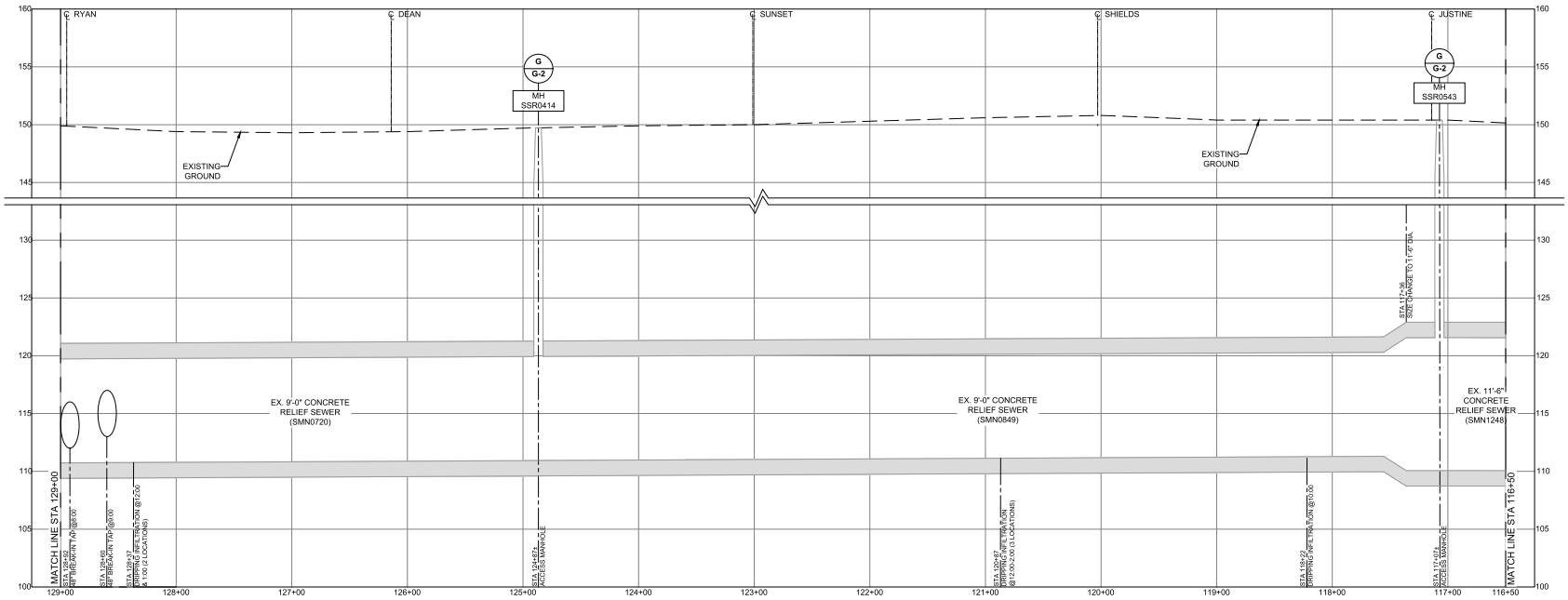
GLWA
Great Lakes Water Authority

SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. C-502

RELIEF SEWER - PLAN

SCALE: 1" = 50'



RELIEF SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
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DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY: REHABILITATION OF 7 MILE SEWER SYSTEM

PROJECT TITLE

DRAWING TITLE: EAST 7 MILE RELIEF SEWER
STA 129+00 TO STA 116+50
DETROIT, MICHIGAN

PRIME CONSULTANT
FK ENGINEERING
30425 STEPHENSON HWY.
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS
ANDERSON, ECKSTEIN AND WESTRICK, INC.
Engineers | Surveyors | Architects
Applied Science, Inc.
Hazen

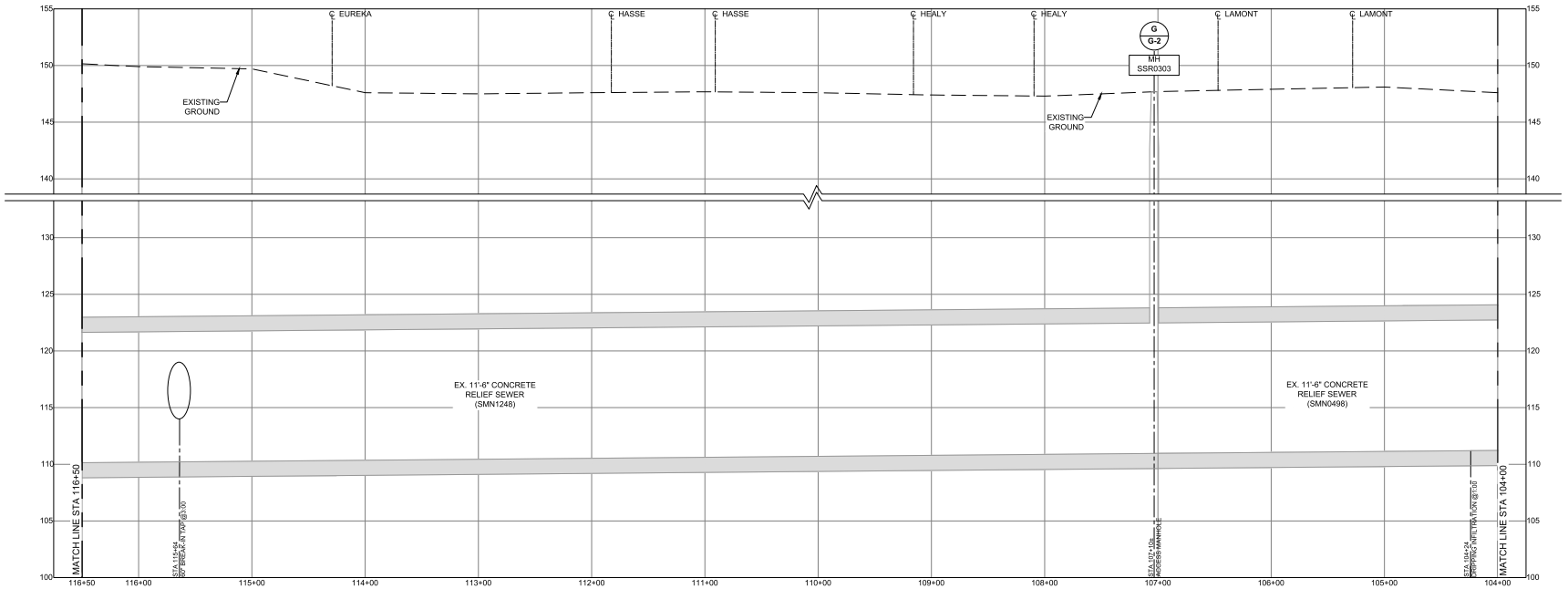
GLWA
Great Lakes Water Authority

SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. C-503

RELIEF SEWER - PLAN

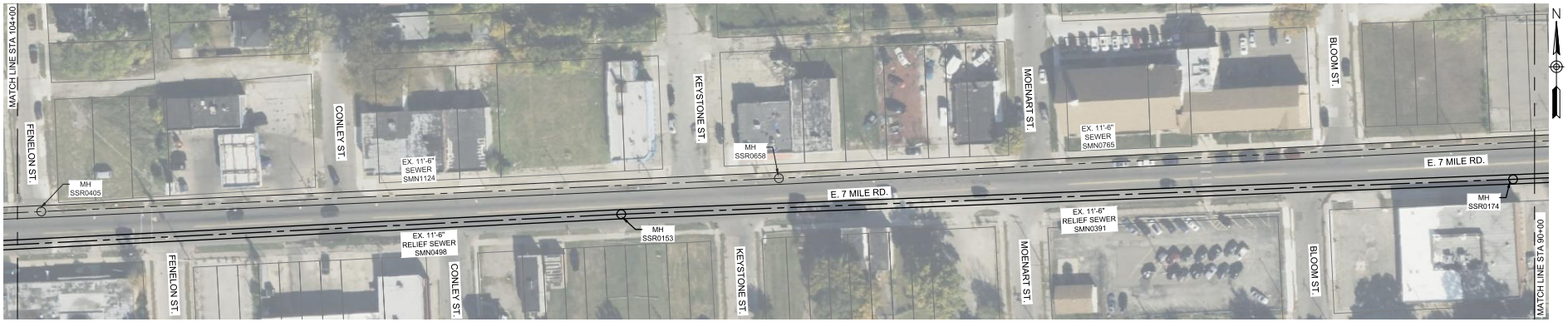
SCALE: 1" = 50'



RELIEF SEWER - PROFILE

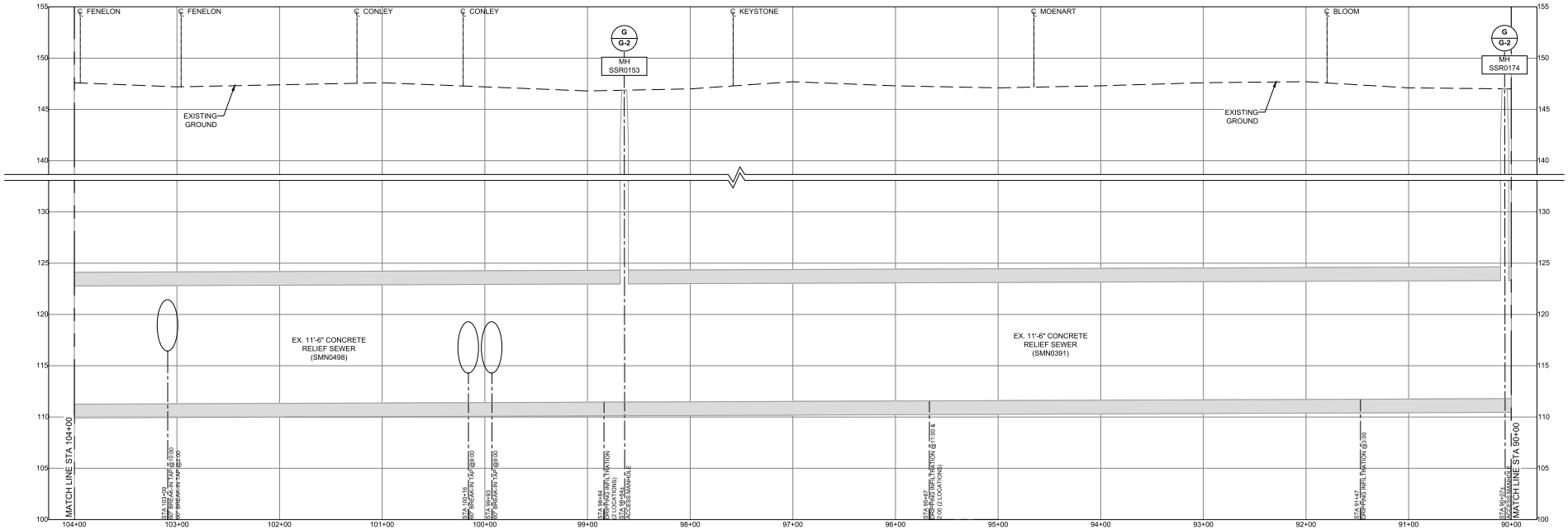
SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

F					DESIGNED BY: KDT	SEAL / STAMP	FACILITY: REHABILITATION OF 7 MILE SEWER SYSTEM	PRIME CONSULTANT: FK ENGINEERING, 30425 STEPHENSON HWY, MADISON HEIGHTS, MI 48071
E					DRAWN BY: CPM		PROJECT TITLE	SUB CONSULTANTS: ANDERSON, ECKSTEIN AND WESTRICK, INC. Engineers | Surveyors | Architects; Applied Science, Inc.; Hazen
D					CHECKED BY: KDT		DRAWING TITLE: EAST 7 MILE RELIEF SEWER STA 116+50 TO STA 104+00 DETROIT, MICHIGAN	GLWA Great Lakes Water Authority
C					APPROVED BY: FJK			SECTION MAP | TOWN | RANGE | SECTION | Q | QQ
B								EGLE PERMIT No. --
A								GLWA CONTRACT No. 2300150
	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE				GLWA CIP No. --
								DRAWING No. C-504



RELIEF SEWER - PLAN

SCALE: 1" = 50'



RELIEF SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
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DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY: REHABILITATION OF 7 MILE SEWER SYSTEM

PROJECT TITLE

DRAWING TITLE: EAST 7 MILE RELIEF SEWER
STA 104+00 TO STA 90+00
DETROIT, MICHIGAN

PRIME CONSULTANT: FK ENGINEERING
30425 STEPHENSON HWY
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS: ANDERSON, ECKSTEIN AND WESTRICK, INC. Engineers | Surveyors | Architects; Applied Science, Inc.; Hazen

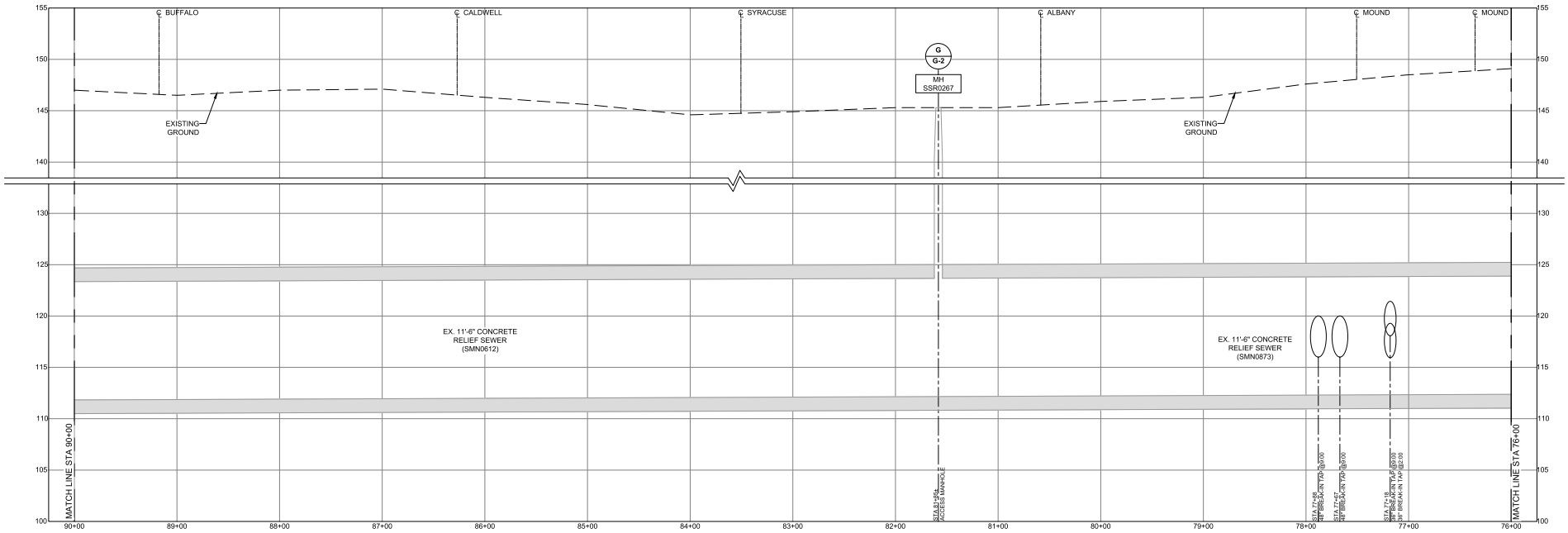
GLWA Great Lakes Water Authority

SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No.: --
GLWA CONTRACT No.: 2300150
GLWA CIP No.: --
DRAWING No.: C-505

RELIEF SEWER - PLAN

SCALE: 1" = 50'



RELIEF SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
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DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY: REHABILITATION OF 7 MILE SEWER SYSTEM

PROJECT TITLE

DRAWING TITLE: EAST 7 MILE RELIEF SEWER
STA 90+00 TO STA 76+00
DETROIT, MICHIGAN

PRIME CONSULTANT: FK ENGINEERING
30425 STEPHENSON HWY
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS: ANDERSON, ECKSTEIN AND WESTRICK, INC. Engineers | Surveyors | Architects; Applied Science, Inc.; Hazen

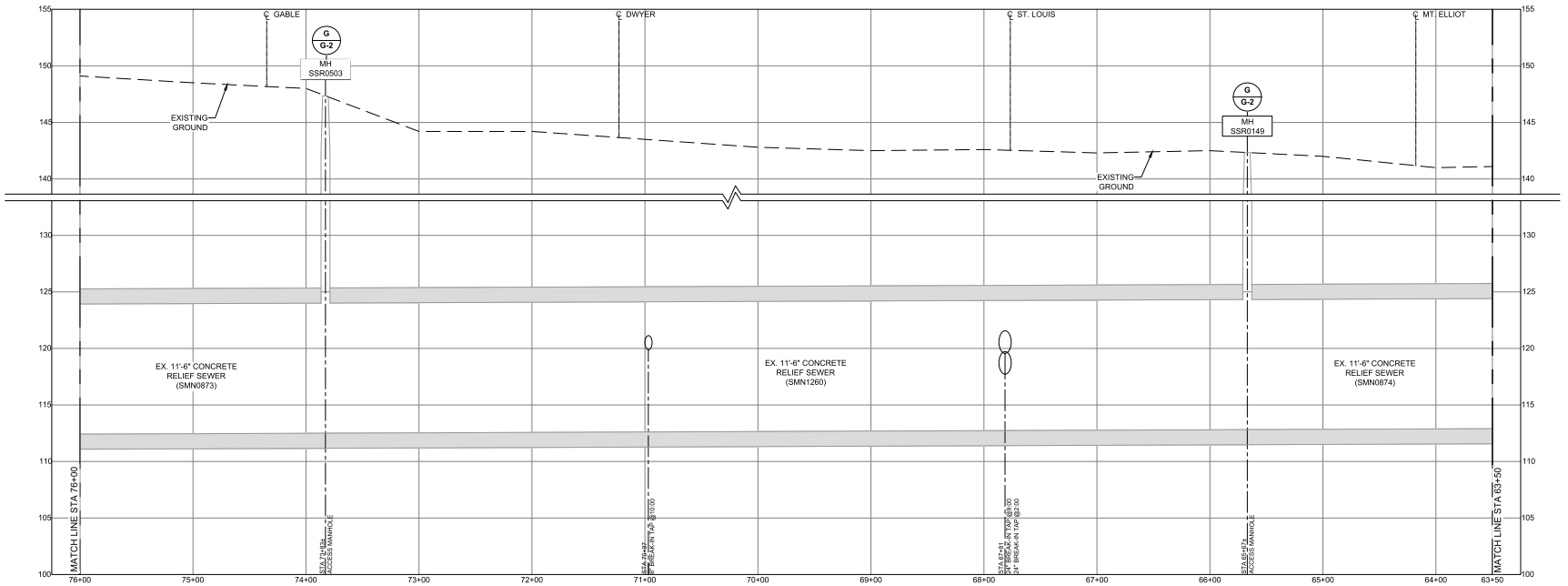
GLWA Great Lakes Water Authority

SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No.: --
GLWA CONTRACT No.: 2300150
GLWA CIP No.: --
DRAWING No.: C-506

RELIEF SEWER - PLAN

SCALE: 1" = 50'



RELIEF SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

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	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE	

DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE

DRAWING TITLE
EAST 7 MILE RELIEF SEWER
STA 76+00 TO STA 63+50
DETROIT, MICHIGAN

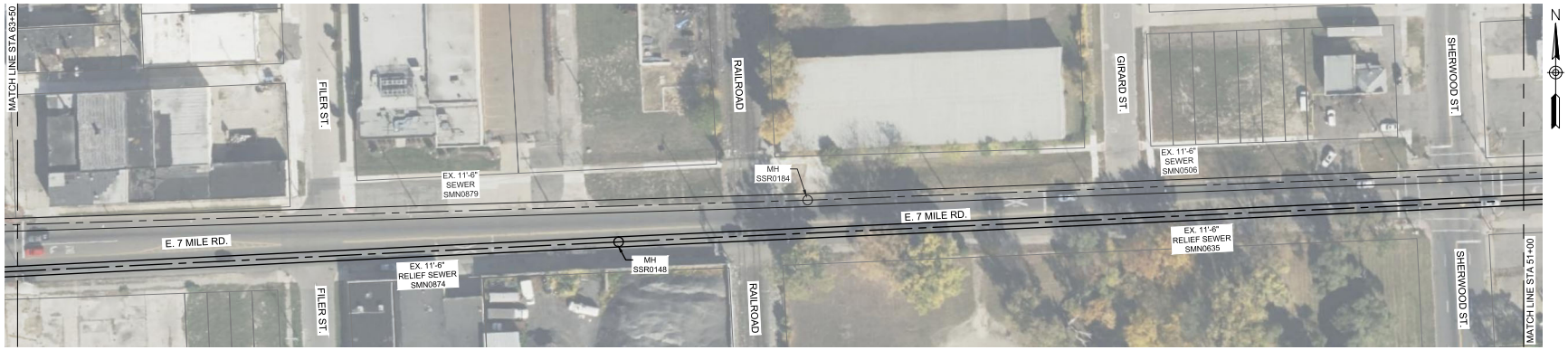
PRIME CONSULTANT
FK ENGINEERING
30425 STEPHENSON HWY.
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS
ANDERSON, ECKSTEIN AND WESTRICK, INC.
Engineers | Surveyors | Architects
Applied Science, Inc.
Hazen

GLWA
Great Lakes Water Authority

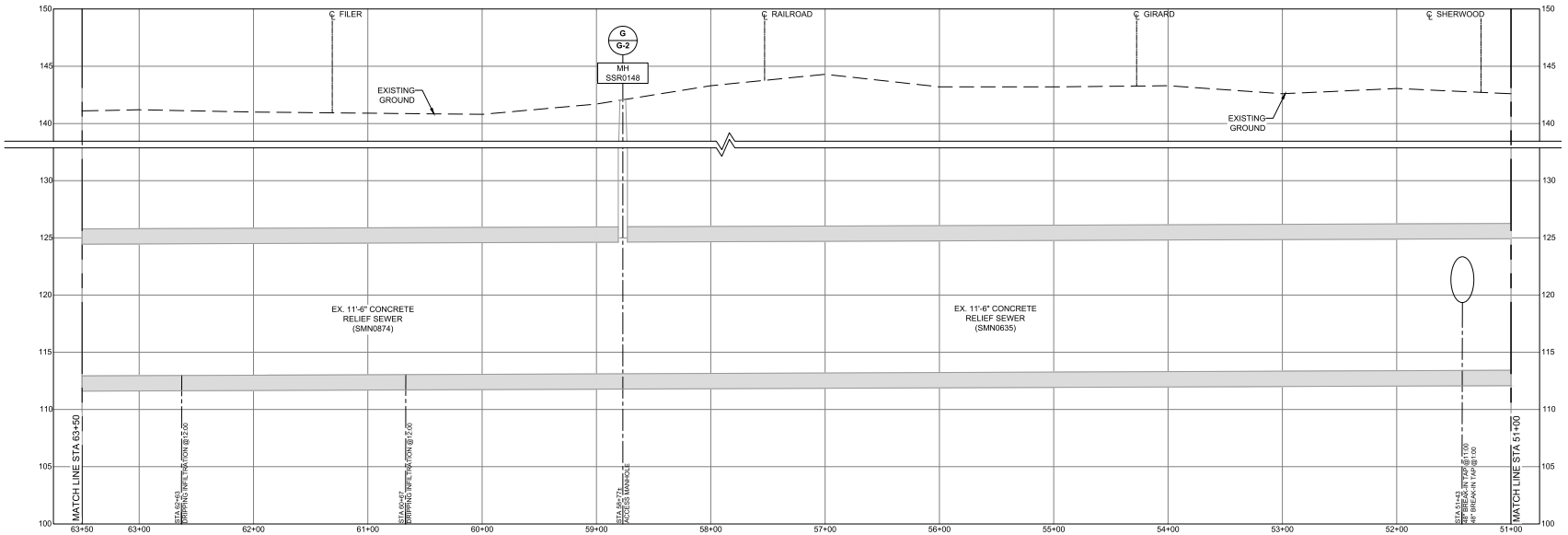
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No.
GLWA CONTRACT No. 2300150
GLWA CIP No.
DRAWING No. C-507



RELIEF SEWER - PLAN

SCALE: 1" = 50'



RELIEF SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
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DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM

PROJECT TITLE

DRAWING TITLE
EAST 7 MILE RELIEF SEWER
STA 63+50 TO STA 51+00
DETROIT, MICHIGAN

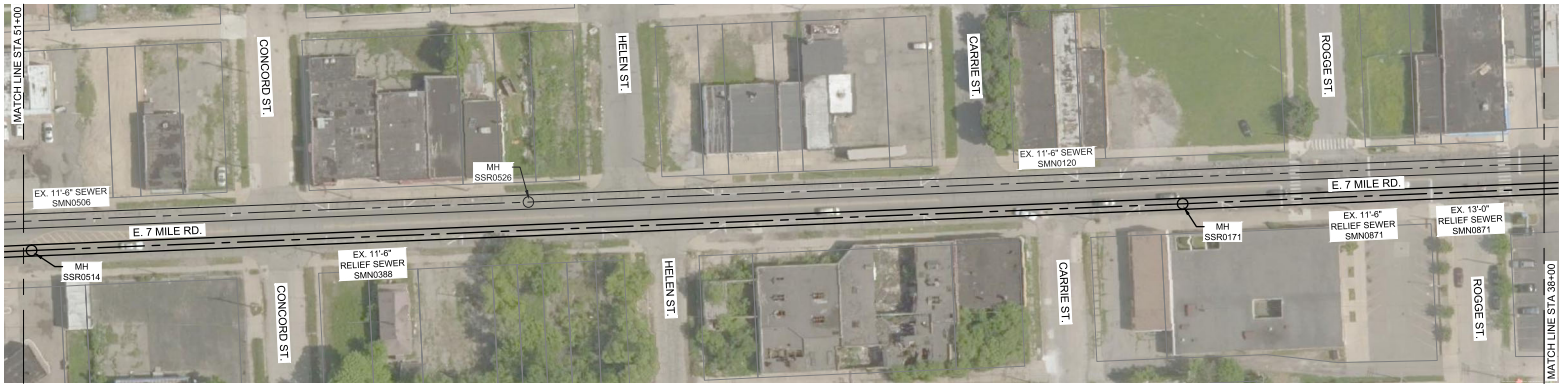
PRIME CONSULTANT
FK ENGINEERING
30425 STEPHENSON HWY
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS
ANDERSON, ECKSTEIN AND WESTRICK, INC.
Engineers | Surveyors | Architects
Applied Science, Inc.
Hazen

GLWA
Great Lakes Water Authority

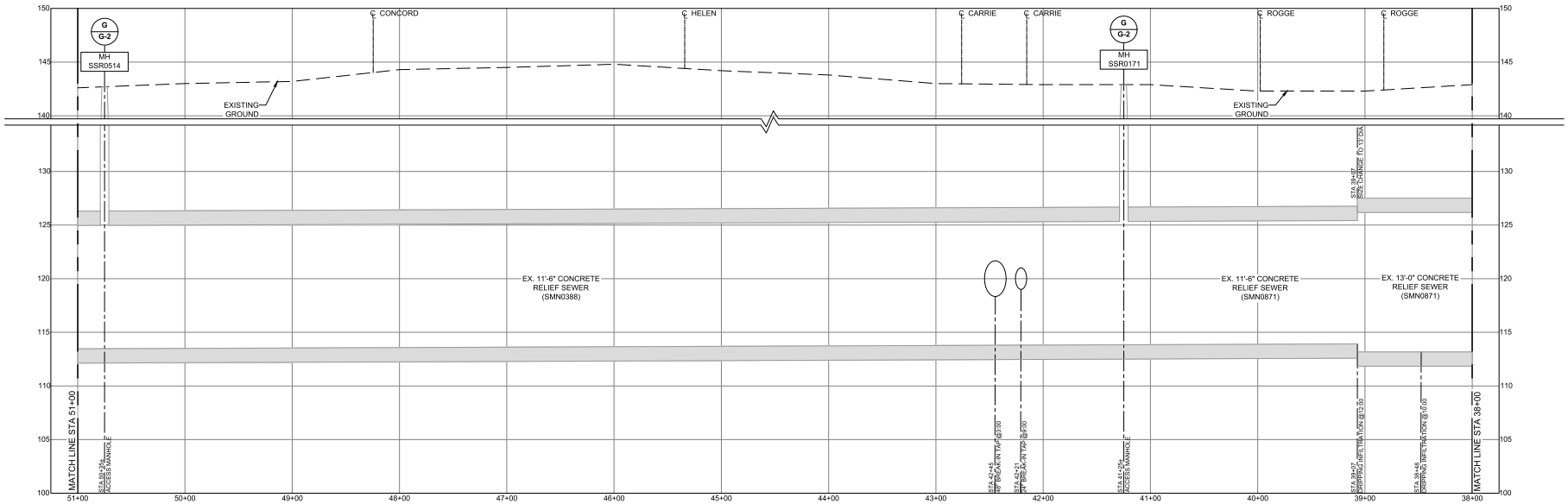
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. C-508



RELIEF SEWER - PLAN

SCALE: 1" = 50'



RELIEF SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
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DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
EAST 7 MILE RELIEF SEWER
STA 51+00 TO STA 38+00
DETROIT, MICHIGAN

PRIME CONSULTANT
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MADISON HEIGHTS, MI 48071

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ANDERSON, ECKSTEIN AND WESTRICK, INC.
Engineers | Surveyors | Architects
Applied Science, Inc.
Hazen

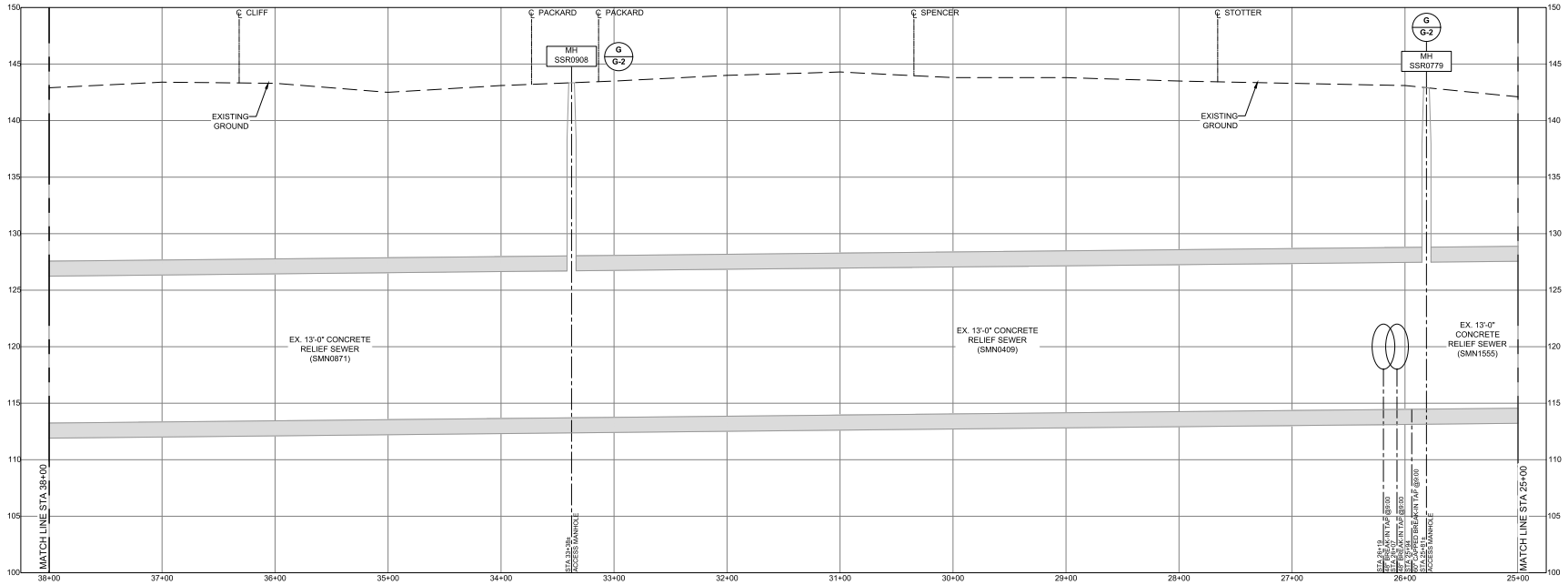
GLWA
Great Lakes Water Authority

SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. C-509

RELIEF SEWER - PLAN

SCALE: 1" = 50'



RELIEF SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

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	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE

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DRAWN BY: CPM
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APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
EAST 7 MILE RELIEF SEWER
STA 38+00 TO STA 25+00
DETROIT, MICHIGAN

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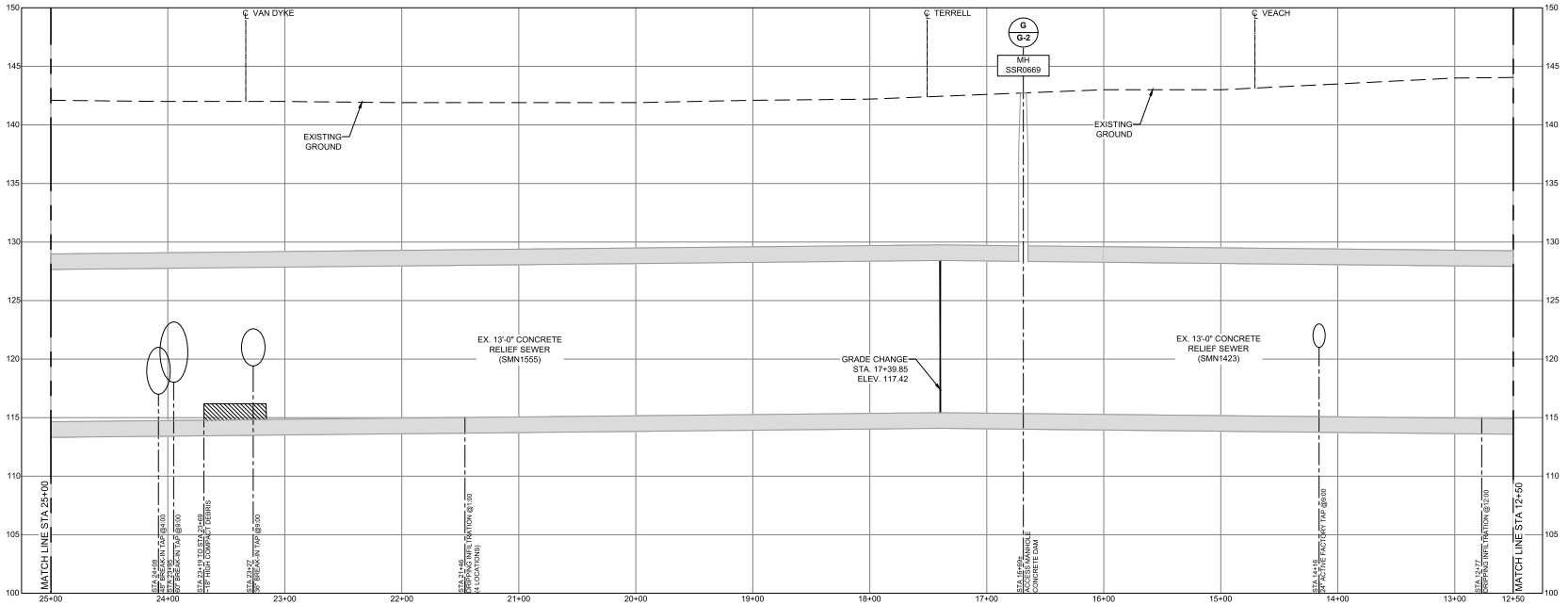
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. C-510

RELIEF SEWER - PLAN

SCALE: 1" = 50'



RELIEF SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

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SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
EAST 7 MILE RELIEF SEWER
STA 25+00 TO STA 12+50
DETROIT, MICHIGAN

PRIME CONSULTANT
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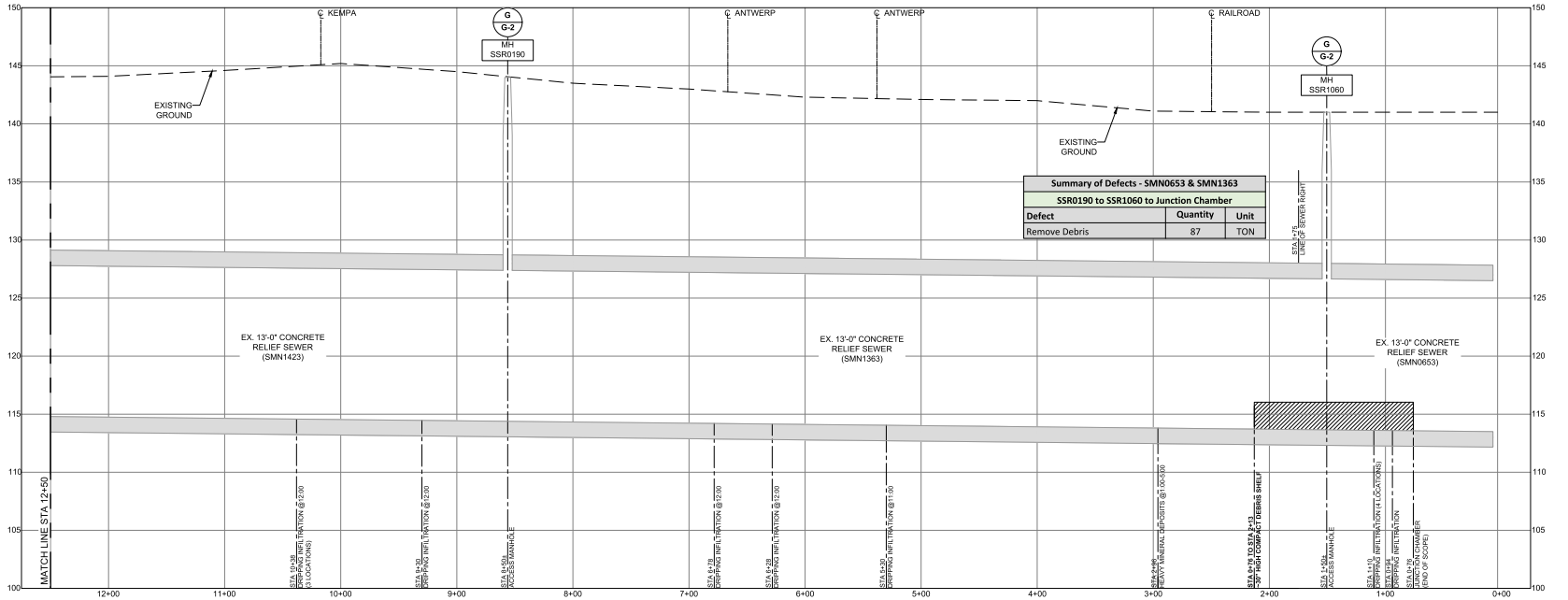
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No.
GLWA CONTRACT No. 2300150
GLWA CIP No.
DRAWING No. C-511

RELIEF SEWER - PLAN

SCALE: 1" = 50'



Summary of Defects - SMN0653 & SMN1363		
SSR0190 to SSR1060 to Junction Chamber		
Defect	Quantity	Unit
Remove Debris	87	TON

RELIEF SEWER - PROFILE

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

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E					
D					
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A					
	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE	

DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY: REHABILITATION OF 7 MILE SEWER SYSTEM

PROJECT TITLE

DRAWING TITLE: EAST 7 MILE RELIEF SEWER
STA 12+50 TO STA 0+00
DETROIT, MICHIGAN

PRIME CONSULTANT: FK ENGINEERING
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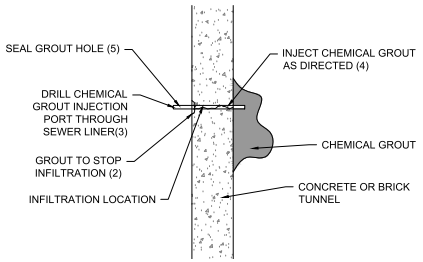
SUB CONSULTANTS: ANDERSON, ECKSTEIN AND WESTRICK, INC. Engineers | Surveyors | Architects; Applied Science, Inc.; Hazen

GLWA Great Lakes Water Authority

SECTION MAP | TOWN | RANGE | SECTION | Q | QQ

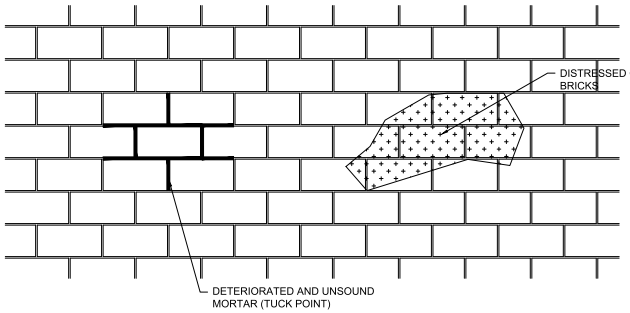
EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. C-512



LEAK REPAIR NOTES:

1. REMOVE ALL DETERIORATED AND UNSOUND BRICK/CONCRETE AS DIRECTED BY THE ENGINEER.
2. PATCH LOCATION TO STOP INFILTRATION, IF POSSIBLE.
3. DRILL CHEMICAL GROUT INJECTION PORT TO INTERSECT INFILTRATION LOCATION.
4. INJECT CHEMICAL (ACRYLIMYDE) GROUT AS DIRECTED BY THE ENGINEER. VARY SET TIME AS REQUIRED.
5. SEAL GROUT PORT AND CUT FLUSH WITH INTERCEPTOR FACE.

A **LEAK REPAIR / SEAL INFILTRATION**
NOT TO SCALE



TUCK POINT NOTES:

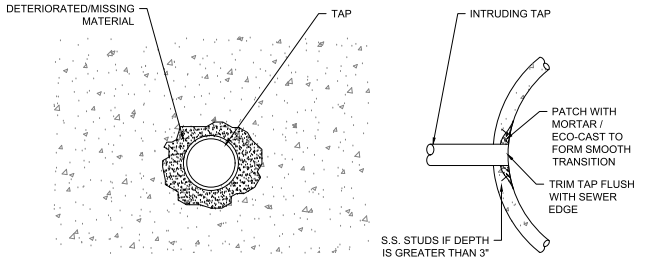
1. REMOVE ALL DETERIORATED AND UNSOUND MORTAR BETWEEN BRICKS.
2. CLEAN OUT LOOSE MATERIAL BETWEEN BRICKS.
3. FILL JOINTS BETWEEN BRICKS WITH NEW MORTAR AND FINISH.

BRICK REPAIR NOTES:

1. REMOVE SIGNIFICANTLY DAMAGED/DETERIORATED BRICKS.
2. CLEAN THE SURFACE UNDER REMOVED BRICKS (NEXT COURSE).
3. REPLACE BRICKS AND MORTAR IN-PLACE WITH SEWERCRETE CALCIUM ALUMINATE MORTAR OR ENGINEER-APPROVED EQUIVALENT.

B **BRICK MORTAR REPAIR**
NOT TO SCALE

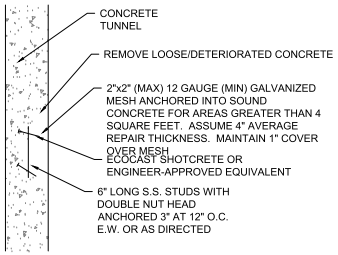
NOTE: BRICK REPAIR SPECIFIED BY THIS DETAIL MAY INCLUDE EITHER OR BOTH VARIATIONS OF REPAIR AS SHOWN ABOVE.



ROUGH TAP REPAIR NOTES:

1. REMOVE ALL DETERIORATED AND UNSOUND MATERIAL AROUND TAP.
2. WHERE EXISTING STEEL IS EXPOSED, SANDBLAST TO BARE WHITE METAL AND APPLY EPOXY COATING.
3. PATCH WITH SEWERCRETE CALCIUM ALUMINATE MORTAR OR ENGINEER-APPROVED EQUIVALENT AS DIRECTED BY ENGINEER. STAINLESS STEEL STUDS TO BE USED IF DEPTH OF REPAIR IS GREATER THAN 3 INCHES.

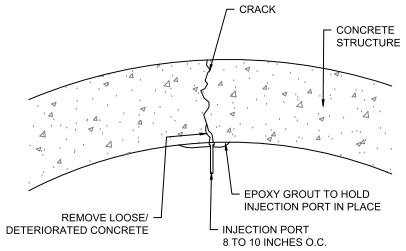
C **ROUGH TAP REPAIR**
NOT TO SCALE



DEEP CONCRETE REPAIR NOTES:

1. REMOVE ALL DETERIORATED AND UNSOUND CONCRETE AS DIRECTED BY THE ENGINEER. ASSUME 2" OF EXISTING DETERIORATED MATERIAL WILL BE REMOVED DURING PREPARATION, RESULTING IN TOTAL DEPTH OF REPAIR OF UP TO 6 INCHES (AVERAGE 4 INCHES).
2. PREPARE DEEP CONCRETE REPAIR AREA WITH MIN 5,000 PSI WATER BLASTING OR ENGINEER APPROVED EQUIVALENT.
3. WHERE EXISTING STEEL IS EXPOSED, SAND BLAST TO BARE WHITE METAL AND APPLY EPOXY COATING.
4. PATCH MATERIAL AS SPECIFIED IN CONCRETE RESTORATION SPECIFICATION OR ENGINEER APPROVED EQUIVALENT.
5. IF EXISTING STEEL IS CORRODED MORE THAN 1/8" FROM ORIGINAL DIAMETER OR CROSS-SECTIONAL DIMENSION, CHIP BACK TO EXPOSE 12" OF INTACT, NON-CORRODED STEEL AND INSTALL MESH AS SHOWN ABOVE.

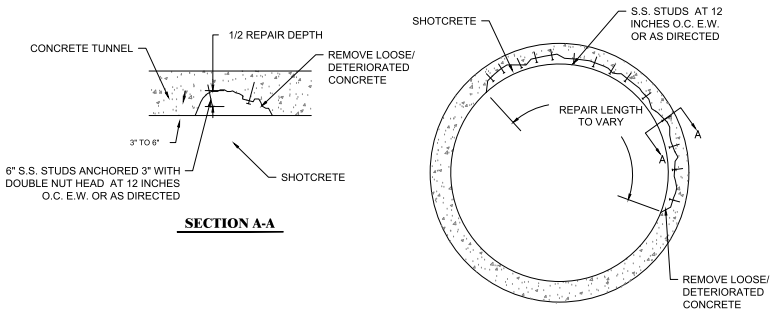
D **DEEP CONCRETE REPAIR**
NOT TO SCALE



CRACK REPAIR WITH EPOXY NOTES:

1. REMOVE ALL DETERIORATED AND UNSOUND CONCRETE AS DIRECTED BY THE ENGINEER.
2. PREPARE REPAIR AREA WITH MIN 5,000 PSI WATER BLASTING OR ENGINEER-APPROVED EQUIVALENT.
3. PERFORM LEAK REPAIR IF NECESSARY.
4. WHERE EXISTING STEEL IS EXPOSED, SAND-BLAST TO BARE WHITE METAL AND APPLY EPOXY COATING.
5. SET PORTING DEVICES OVER CRACKS AT 8 TO 10 INCHES O.C .
6. PLACE MIXED SIKADUR INJECTION GEL EPOXY RESIN ADHESIVE OVER CRACKS AND AROUND EACH INJECTION PORT A MINIMUM OF 1" WIDE BY A 1/4" THICK.
7. ALLOW SUFFICIENT TIME FOR EPOXY RESIN ADHESIVE CAP SEAL TO SET BEFORE INJECTING.
8. WHEN THE CAP SEAL HAS CURED, INJECT SIKADUR INJECTION GEL WITH STEADY PRESSURE.
9. USE AUTOMATED INJECTION EQUIPMENT OR MANUAL METHOD.
10. ALLOW EPOXY RESIN TO SET FOR APPROXIMATELY 24 HOURS.
11. SEAL INJECTION PORT IF NECESSARY AND CUT FLUSH WITH INTERCEPTOR FACE.
12. APPLY REPAIR PER DETAIL F IF NECESSARY OVER/ALONG REPAIRED CRACK. ASSUME 5% OF LENGTH OF EPOXY REPAIRS WILL REQUIRE DETAIL F-TYPE REPAIR.

E **CRACK REPAIR WITH EPOXY**
NOT TO SCALE



JOINT REPAIR NOTES:

1. REMOVE ALL DETERIORATED AND UNSOUND CONCRETE. ASSUME DEPTH OF REPAIR WILL BE 5" AVERAGE, BUT MAY EXTEND THROUGH ENTIRE THICKNESS OF LINER. ASSUME WIDTH WILL BE 12" AVERAGE, BUT MAY RANGE FROM 6" TO 18" WIDE.
2. PREPARE DEEP CONCRETE REPAIR AREA WITH MIN 5,000 PSI WATER BLASTING OR ENGINEERED EQUIVALENT.
3. PERFORM LEAK REPAIR PRIOR TO PATCHING.
4. WHERE EXISTING STEEL IS EXPOSED, SAND-BLAST TO BARE WHITE METAL AND APPLY EPOXY COATING.
5. INSTALL STAINLESS STEEL STUDS AT 12" O.C. E.W. OR AS DIRECTED.
6. PATCH WITH PERMAFORM/ECO-CAST MORTAR OR ENGINEER APPROVED EQUIVALENT.

F **JOINT REPAIR**
NOT TO SCALE

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	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
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DESIGNED BY: KDT
DRAWN BY: CPM
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APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
TYPICAL REPAIR DETAILS

PRIME CONSULTANT
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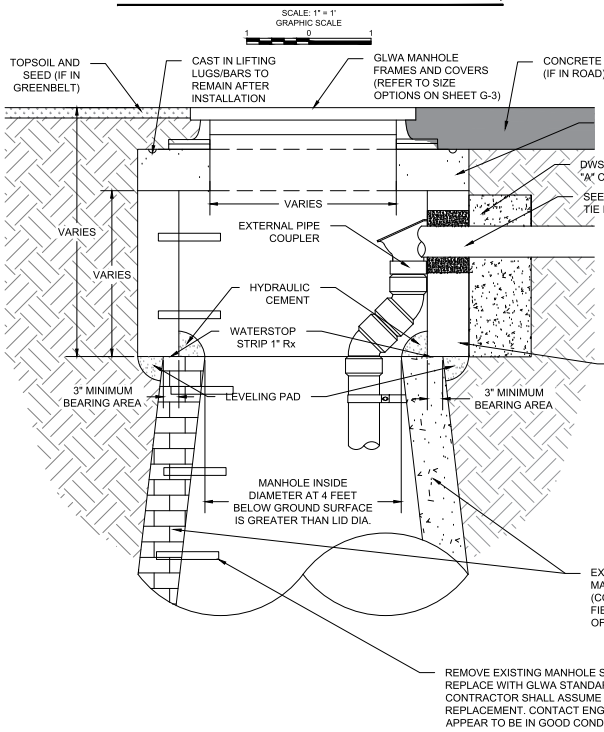
Engineers | Surveyors | Architects
Applied Science, Inc.
Hazen

GLWA
Great Lakes Water Authority

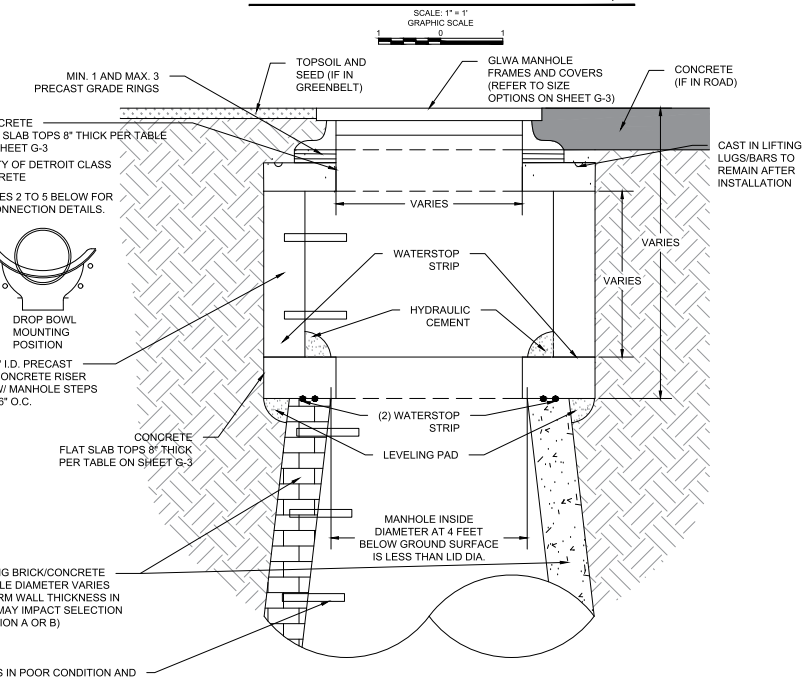
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. G-1

G.1 MANHOLE REHABILITATION (OPTION A - MANHOLE I.D. AT 4' BELOW GROUND SURFACE IS GREATER THAN LID DIAMETER)



G.2 MANHOLE REHABILITATION (OPTION B - MANHOLE I.D. AT 4' BELOW GROUND SURFACE IS LESS THAN LID DIAMETER)



GENERALIZED CONSTRUCTION SEQUENCE:

1. PRIOR TO CONSTRUCTION, CONTRACTOR IS TO OBTAIN CITY OF DETROIT TRAFFIC PERMITS AND WAYNE COUNTY SOIL EROSION AND SEDIMENTATION PERMITS. TRAFFIC CONTROL PLANS ARE TO BE SUBMITTED TO ENGINEER AND IN ACCORDANCE WITH MOST RECENT MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
2. PRIOR TO EXCAVATION, CONTRACTOR TO CONTACT MISS DIG. IF ANY POTENTIAL UTILITY CONFLICTS ARE NOTED, CONTRACTOR TO CONTACT ENGINEER IMMEDIATELY. CONTRACTOR SHALL ALSO IDENTIFY IF ANY INSTRUMENTATION IS PRESENT WITHIN MANHOLES. PRIOR TO PERFORMING ANY WORK OR ACCESSING SEWER THROUGH MANHOLES WITH INSTRUMENTATION, CONTRACTOR SHALL COORDINATE WITH GLWA TO REMOVE/PROTECT INSTRUMENTATION AS NEEDED.
3. SAW CUT TO AT LEAST 1.5 FEET RADIUS OUTSIDE OF LID IF IN ROAD AND REMOVE PAVEMENT AND UNDERLYING PAVEMENT MATERIALS.
4. EXCAVATE APPROXIMATELY 4 FT BELOW THE GROUND SURFACE TO EXPOSE MANHOLE CHIMNEY. IF MANHOLE CHIMNEY IS LESS THAN 4 FT TALL OR MANHOLE IS LOCATED IN ROOF OF SUBSURFACE CHAMBER, LIMIT EXCAVATION TO TOP OF SEWER OR TOP OF CHAMBER.
5. REMOVE EXISTING FRAME AND COVER AND BRICK MANHOLE CHIMNEY TO APPROXIMATELY 4 FT BELOW THE GROUND SURFACE. IF CONCRETE MANHOLE CHIMNEY PRESENT, CONSULT WITH ENGINEER TO DETERMINE IF CHIMNEY REMOVAL IS REQUIRED. CONTRACTOR SHALL LIMIT MATERIAL FALLING INTO SEWER DURING DEMOLITION. ANY MATERIAL THAT DOES FALL IN SHALL BE PROMPTLY REMOVED.
6. PLACE APPROXIMATELY 2 TO 3 INCH CONCRETE LEVELING PAD ON EXPOSED MANHOLE CHIMNEY.
7. ONCE LEVELING PAD HAS SUFFICIENTLY CURED, PLACE (2) WATERSTOP STRIPS (I.E. BUTYL STRIP) ON LEVELING PAD.
8. PLACE HS-20 RATED PRECAST CONCRETE FLAT SLAB TOPS AND RISERS AS NECESSARY TO BRING NEAR GRADE. FLAT SLAB TOPS AND RISERS TO HAVE DIMENSION AS SHOWN IN THE TABLE ON SHEET G-3. FINAL ADJUSTMENTS SHALL BE WITH PRECAST GRADE RINGS, NOT BRICK.
9. PLACE GLWA FRAME AND COVER ON TOP PRECAST CONCRETE COOKIE AND GRADE RINGS. PROVIDE VENTING OF EACH MANHOLE LID CONSISTENT WITH CURRENT IN-PLACE COVER. TOP PRECAST COOKIE TO HAVE EMBEDDED RECESSED LIFTING DEUCES (LUGS, BARS, ETC.) THAT ARE TO REMAIN TO ALLOW FOR FUTURE LIFTING.
10. BACKFILL EXCAVATION TO BOTTOM OF PAVEMENT WITH 150 PSI (MAX.) FLOWABLE FILL OR MDOT 21A AGGREGATE COMPACTED TO 95% OF MAXIMUM DRY DENSITY AS DEFINED BY ASTM D1557 IN LIFTS NOT EXCEEDING 9 INCHES.
11. IN GREENBELT, RESTORE TO PRE-CONSTRUCTION CONDITIONS. MANHOLES IN ROADWAY TO HAVE CONCRETE COLLAR. DOWEL CONCRETE COLLAR TO EXISTING CONCRETE PAVEMENT (IF PRESENT) IN CONFORMANCE WITH MDOT STANDARD DETAIL R-44-F.

NOTES:

1. PROVIDE VENTING OF EACH MANHOLE COVER CONSISTENT WITH CURRENT IN-PLACE COVER.
2. SEWER CONNECTIONS TO NEW MANHOLE RISERS SHALL BE CORED THROUGH THE RISER SUFFICIENTLY LARGE ENOUGH TO PERMIT 3 INCHES OF NON-SHRINK MORTAR BE PLACED AROUND THE ENTERING PIPE. MORTAR FINISH TO BE SMOOTH AND FLUSH WITH THE INNER WALL OF THE RISER.
3. CONNECTING PIPE SHALL BE ENCASED IN 6 INCHES OF DWSD/CITY OF DETROIT CLASS "A" CONCRETE FOR A MINIMUM OF 12 INCHES. DWSD/CITY OF DETROIT CLASS "A" CONCRETE SHALL BE PLACED AS BEDDING TO UNDISTURBED EARTH WITHIN EXCAVATION.
4. INSTALL RELINER INSIDE DROP BOWL OR ENGINEER APPROVED EQUIVALENT SECURED WITH STAINLESS STEEL FASTENERS. PVC DROP PIPE ANCHORED TO MANHOLE WITH STAINLESS STEEL STRAPS AT 4' INTERVALS (MIN. OF 2). PVC INTERNAL DROP NOT TO EXTEND BELOW CROWN OF SEWER/OUTFALL.
5. DROP PIPE AND BOWL TO BE SIZED PER MANUFACTURER'S RECOMMENDATIONS.

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DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
MANHOLE FRAME AND COVER REPLACEMENT DETAILS

PRIME CONSULTANT
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MADISON HEIGHTS, MI 48071

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Engineers | Surveyors | Architects
Applied Science, Inc.
Hazen

GLWA
Great Lakes Water Authority

SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No.
GLWA CONTRACT No. 2300150
GLWA CIP No.
DRAWING No. G-2

7 MILE SEWER SEGMENT 1

MANHOLE ID	CHIMNEY CONSTRUCTION	IN ROADWAY?	APPROXIMATE LOCATION	MH SIZE (IN.)	NOTES
SSR0652	BRICK	YES	IN MIDDLE OF ROAD AT 7 MILE RD. AND GRANDVIEW ST.	48	-
SSR0291	CONCRETE	YES	IN MIDDLE OF ROAD NEAR INTERSECTION OF 7 MILE RD. AND FENTON ST.	48	-
SSR1045	CONCRETE	YES	IN MIDDLE OF ROAD NEAR INTERSECTION OF 7 MILE RD. AND WORMER ST.	48	-
SSR0789	BRICK	YES	IN MIDDLE OF ROAD NEAR INTERSECTION OF 7 MILE RD. AND DALE ST.	48	-
SSR0399	BRICK	YES	IN MIDDLE OF ROAD AT SOUTH SIDE OF INTERSECTION AT 7 MILE RD. AND APPLETON ST.	48	-
SSR5614	BRICK	YES	IN MIDDLE OF ROAD AT 7 MILE RD. AND SHIAWASSEE DR.	36	-

7 MILE SEWER SEGMENT 2

MANHOLE ID	CHIMNEY CONSTRUCTION	IN ROADWAY?	APPROXIMATE LOCATION	MH SIZE (IN.)	NOTES
SMH15868	UNKNOWN	YES	7 MILE RD. & SAN JUAN DR.	?	
SMH29043	UNKNOWN	YES	7 MILE RD. & STOEPEL ST.	?	
SMH20441	UNKNOWN	YES	7 MILE RD. & WARRINGTON DR.	?	METAL PIPE WEDGED IN MH; ONE LATERAL CONNECTION
SMH13810	UNKNOWN	YES	7 MILE RD. & BIRCHCREST DR.	?	ONE LATERAL CONNECTION
SMH47328	UNKNOWN	YES	7 MILE RD. BETWEEN MUIRLAND ST. & WINDEMERE ST.	?	TWO LATERAL CONNECTIONS
SMH40450	BRICK	YES	7 MILE RD. & PARKSIDE ST.	?	ONE LATERAL CONNECTION
SMH26856	UNKNOWN	YES	JUST EAST OF 7 MILE RD. & FAIRWAY DR.	?	INSTRUMENTATION IN MH; ONE LATERAL CONNECTION
SEV013	BRICK	YES	7 MILE RD. & LINCOLNSHIRE	?	TWO LATERAL CONNECTIONS
SMH7059	UNKNOWN	YES	7 MILE RD. & GLOUCESTER DR.	?	

7 MILE SEWER SEGMENT 3

MANHOLE ID	CHIMNEY CONSTRUCTION	IN ROADWAY?	APPROXIMATE LOCATION	MH SIZE (IN.)	NOTES
SSR1459	UNKNOWN	NO	IN SIDEWALK AT INTERSECTION OF 7 MILE RD. AND ANGLIN ST.	-	ONE LATERAL CONNECTION
SSR1460	UNKNOWN	NO	IN SIDEWALK AT INTERSECTION OF 7 MILE RD. AND ANGLIN ST.	-	INSTRUMENTATION IN MH
SSR0916	UNKNOWN	YES	INTERSECTION OF 7 MILE RD. AND MITCHELL ST.	-	TWO LATERAL CONNECTIONS
SSR0657	BRICK	NO	IN SIDEWALK OFF 7 MILE RD. BETWEEN KLINGER ST. & REVERE ST.	-	LOCATED IN FRONT OF FAT MARK'S BARBER SHOP; ONE LATERAL CONNECTION
SSR1051	UNKNOWN	NO	IN GRASS NEAR SIDEWALK OFF 7 MILE RD. AND WEXFORD ST.	-	ONE LATERAL CONNECTIONS
SSR1047	BRICK	NO	IN GRASS NEAR SIDEWALK OFF 7 MILE RD. & SUNSET ST.	-	-
SSR0522	CONCRETE	YES	INTERSECTION OF 7 MILE RD. & EUREKA ST.	-	IN FRONT OF DRIVEWAY TO LIQUOR STORE; THREE LATERAL CONNECTIONS
SSR0405	CONCRETE	YES	INTERSECTION OF 7 MILE RD. & FENELON ST.	-	ONE LATERAL CONNECTION
SSR0658	BRICK	NO	IN GRASS NEAR SIDEWALK OFF 7 MILE RD. & KEYSTONE ST.	-	IN FRONT OF 4GUYS FISH & CHICKEN
SSR0404	BRICK	NO	IN CONCRETE DRIVEWAY OFF 7 MILE RD. BETWEEN CALDWELL ST. & SYRACUSE ST.	-	-
SSR0529	UNKNOWN	NO	CORNER OF 7 MILE RD. & GABLE ST.	-	LOCATED HALF IN SIDEWALK/HALF IN GRASS
SSR0659	UNKNOWN	YES	INTERSECTION OF 7 MILE RD. AND MT. ELLIOT ST.	-	TWO LATERAL CONNECTIONS; ONE BULKHEADED CONNECTION
SSR0184	BRICK	NO	IN CONCRETE DRIVEWAY NEXT TO RAILROAD TRACKS AND 7 MILE RD.	-	ONE LATERAL CONNECTION
SSR0526	BRICK	NO	IN GRASS NEAR SIDEWALK OFF 7 MILE RD. & HELEN ST.	-	ONE INTRUDING LATERAL CONNECTION
SSR0656	BRICK	YES	IN SHOULDER OF 7 MILE RD. BETWEEN PACKARD ST. AND CLIFF ST.	-	LOCATED IN FRONT OF COLD TECH APPLIANCE STORE
SSR0917	BRICK	YES	NORTHWEST CORNER OF INTERSECTION NEAR CROSSWALK AT 7 MILE RD. & VAN DYKE AVE.	-	THREE LATERAL CONNECTIONS
SSR0535	BRICK	YES	7 MILE RD. & VEACH ST.	-	ONE LATERAL CONNECTION
SSR0536	BRICK	YES	IN ROAD AT 7 MILE RD. & ANTWERP ST.	-	4 LATERAL CONNECTIONS

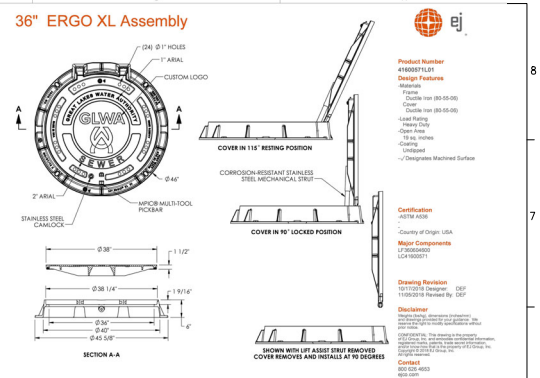
7 MILE SEWER SYSTEM MANHOLE REHABILITATION SUMMARY TABLE

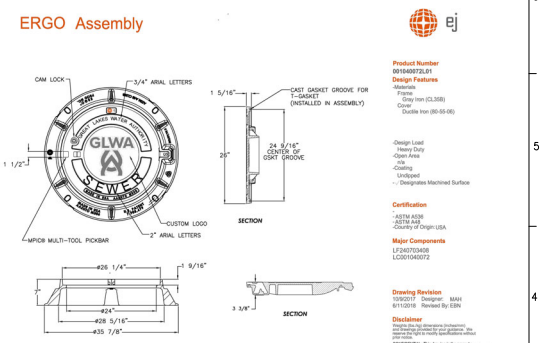
EAST 7 MILE RELIEF SEWER

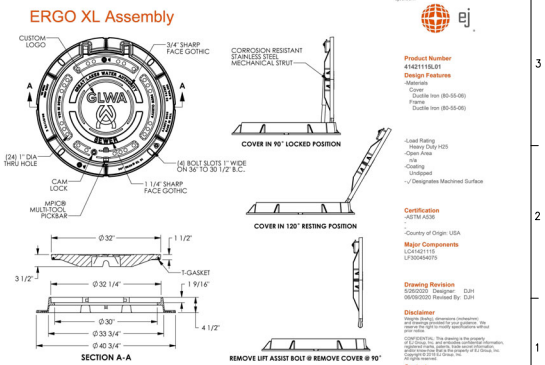
MANHOLE ID	CHIMNEY CONSTRUCTION	IN ROADWAY?	APPROXIMATE LOCATION	MH SIZE (IN.)	NOTES
SSR1062	CONCRETE	NO	IN SIDEWALK AT INTERSECTION OF 7 MILE RD. AND CONANT ST.	UNKNOWN	-
SSR0540	CONCRETE	YES	NEAR INTERSECTION OF 7 MILE RD. AND CHAREST ST.	48	-
SSR0541	CONCRETE	YES	NEAR INTERSECTION OF 7 MILE RD. AND NORWOOD ST.	48	-
SSR0186	CONCRETE	YES	NEAR INTERSECTION OF 7 MILE RD. AND BINDER ST.	48	-
SSR0414	CONCRETE	YES	ON 7 MILE RD. BETWEEN DEAN ST. & SUNSET ST.	48	-
SSR0543	CONCRETE	YES	INTERSECTION OF 7 MILE RD. & JUSTINE ST.	48	-
SSR0303	CONCRETE	YES	ON 7 MILE RD. BETWEEN HEALY ST. & LAMONT ST.	48	-
SSR0153	BRICK	YES	ON 7 MILE RD. BETWEEN CONLEY ST. & KEYSTONE ST.	48	-
SSR0174	CONCRETE	YES	7 MILE RD. BETWEEN BLOOM ST. & BUFFALO ST.	48	-
SSR0267	CONCRETE	YES	7 MILE RD. BETWEEN SYRACUSE ST. & ALBANY ST.	48	-
SSR0503	CONCRETE	YES	7 MILE RD. & GABLE ST.	48	-
SSR0149	BRICK	YES	7 MILE RD. BETWEEN ST. LOUIS AVE. & MT. ELLIOT ST.	48	-
SSR0148	UNKNOWN	YES	7 MILE RD. BETWEEN RILER ST. & RAILROAD TRACKS	48	-
SSR0514	CONCRETE	YES	7 MILE RD. BETWEEN CONCORD ST. & SHERWOOD ST.	48	-
SSR0171	CONCRETE	YES	7 MILE RD. BETWEEN CARRIE ST. & ROGGE ST.	48	-
SSR0908	BRICK	YES	7 MILE RD. & PACKARD ST.	48	3 LATERALS IN MANHOLE
SSR0779	BRICK	YES	7 MILE RD. AND VAN DYKE ST.	48	INSTRUMENTATION IN MANHOLE
SSR0669	CONCRETE	YES	7 MILE RD. BETWEEN VEACH ST. & TERRELL ST.	48	-
SSR0190	BRICK	YES	7 MILE RD. BETWEEN KEMPA ST. & ANTWERP ST.	48	-
SSR1060	CONCRETE	YES	7 MILE RD. & GRAND TRUNK RAILROAD	48	-

WEST 7 MILE RELIEF SEWER

MANHOLE ID	CHIMNEY CONSTRUCTION	IN ROADWAY?	APPROXIMATE LOCATION	MH SIZE (IN.)	NOTES
SSR0520	BRICK	YES	INTERSECTION OF 7 MILE RD. AND PRAIRIE ST IN MIDDLE OF RD.	UNKNOWN	INSTRUMENTATION IN MH
SSR0648	CONCRETE	YES	INTERSECTION OF 7 MILE RD. AND SANTA ROSA DR. ON S. SIDE OF 7 MILE	UNKNOWN	-
SSR1121	BRICK	YES	INTERSECTION OF 7 MILE RD. AND WARRINGTON DR. IN MIDDLE OF RD.	48	-
SSR0725	CONCRETE	YES	NEAR INTERSECTION OF 7 MILE RD. AND BERKELEY RD. ON S. SIDE OF 7 MILE	48	-
SSR1120	CONCRETE	YES	INTERSECTION OF 7 MILE RD. AND MUIRLAND ST. IN MIDDLE OF RD.	48	-
SSR1139	BRICK	YES	INTERSECTION OF 7 MILE RD. AND PARKSIDE ST. IN MIDDLE OF RD.	48	-
SSR1118	BRICK	YES	INTERSECTION OF 7 MILE RD AND STRATHCONA DR. IN MIDDLE OF RD.	48	-
SSR0237	BRICK	NO	IN GRASS OFF PONTCHARTRAIN DR. ON S. SIDE OF STREET	48	-







F					
E					
D					
C					
B					
A					
	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE	

DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY

REHABILITATION OF 7 MILE SEWER SYSTEM

PROJECT TITLE

DRAWING TITLE

MANHOLE FRAME AND COVER REPLACEMENT SCHEDULE

PRIME CONSULTANT

FK ENGINEERING
30425 STEPHENSON HWY
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS

ANDERSON, ECKSTEIN AND WESTRICK, INC.
Engineers | Surveyors | Architects

Applied Science, Inc.

Hazen

GLWA
Great Lakes Water Authority

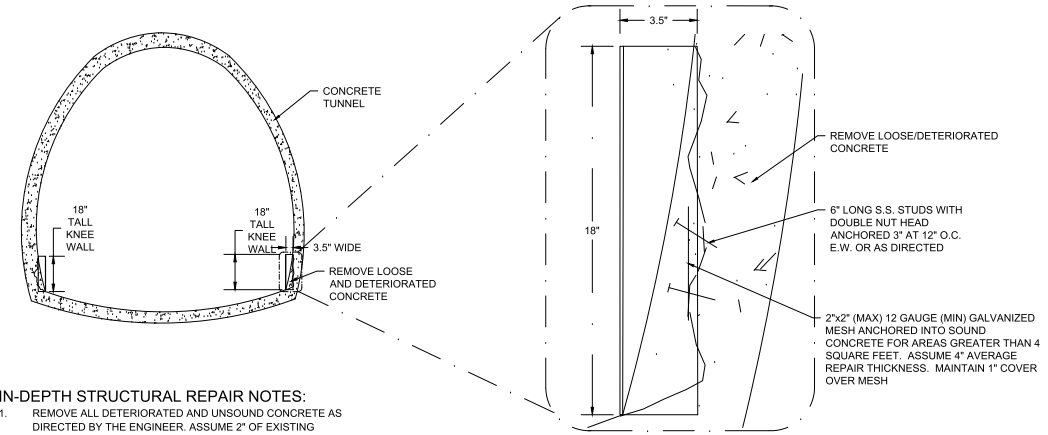
SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. -

GLWA CONTRACT No. 2300150

GLWA CIP No. -

DRAWING No. G-3



DETAIL
NOT TO SCALE

IN-DEPTH STRUCTURAL REPAIR NOTES:

1. REMOVE ALL DETERIORATED AND UNSOUND CONCRETE AS DIRECTED BY THE ENGINEER. ASSUME 2" OF EXISTING DETERIORATED MATERIAL WILL BE REMOVED DURING PREPARATION, RESULTING IN TOTAL DEPTH OF REPAIR OF UP TO 6 INCHES (AVERAGE 4 INCHES).
2. PREPARE IN-DEPTH STRUCTURAL REPAIR AREA WITH MIN. 5,000 PSI WATER BLASTING OR ENGINEER APPROVED EQUIVALENT.
3. INSTALL REINFORCING STEEL AS SHOWN ABOVE.
4. INSTALL FORM TO CREATE 18" HIGH BY 3.5" WIDE KNEE WALL (BOTH SIDES).
5. PLACE OR SPRAY CONCRETE PATCH MATERIAL BEHIND FORM TO FILL IN SPACE BETWEEN FORM WALL AND PIPE. CONCRETE TO HAVE MIN. 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI. CONCRETE TO HAVE CORROSION RESISTANCE ADDITIVES.

H **IN-DEPTH DEEP CONCRETE REPAIR**
NOT TO SCALE

	DESCRIPTIONS / REVISIONS	CHK'D	APPR	DATE
F				
E				
D				
C				
B				
A				

DESIGNED BY: KDT
DRAWN BY: CPM
CHECKED BY: KDT
APPROVED BY: FJK

SEAL / STAMP

FACILITY
REHABILITATION OF 7 MILE SEWER SYSTEM
PROJECT TITLE
DRAWING TITLE
IN-DEPTH REPAIR DETAIL

PRIME CONSULTANT
FK ENGINEERING
30425 STEPHENSON HWY
MADISON HEIGHTS, MI 48071

SUB CONSULTANTS
ANDERSON, ECKSTEIN AND WESTRICK, INC.
Engineers | Surveyors | Architects
Applied Science, Inc.
Hazen

GLWA
Great Lakes Water Authority

SECTION MAP	TOWN	RANGE	SECTION	Q	QQ

EGLE PERMIT No. --
GLWA CONTRACT No. 2300150
GLWA CIP No. --
DRAWING No. G-4

GLWA Contract 2300150
Rehabilitation of the 7 Mile Sewer System

State Revolving Fund Project Plan
Appendix B

- **Archaeological Records Review and Effect Letter (will be provided in the final Project Plan submittal)**
- **Historic Properties Review and Effect Letter (will be provided in the final Project Plan submittal)**
- **THPO Contact List**
- **Sample THPO Notice of Opportunity to Comment Letter**
- **Nottawaseppi Huron Band of the Potawatomi Response Letter**
- **Pokagon Band of Potawatomi Indians Response Letter**
- **Hannahville Indian Community Response Letter**
- **Gun Lake Tribe Match-E-Be-Nash-She-Wish Band of Pottawatomi Indians Response Letter**

EQUIVALENCY PROJECTS TRIBAL CONTACT LIST

[NOTE: Mailing Addresses For Tribes Can Be Found Through Internet Searches Using Email Addresses.]

The following Tribal email addresses should be included in the CE/FNSI Notice of Public Comment Period transmittal email when a project will take place in the following counties in the state of Michigan: Genesee, Lapeer, Lenawee, Livingston, Macomb, Monroe, Oakland, Shiawassee, St. Clair, Washtenaw, and Wayne counties. Please include the following Tribal email addresses:

Paula Carrick paulacarrick@baymills.org	J.M. Parks jmparks@baymills.org	Carolan Sonderegger Carolan.sonderegger@gtb-nsn.gov
Courtney Hessell Courtney.Hessell@gtb-nsn.gov	Sammie Dyal Sammie.dyal@gtb-nsn.gov	Molly Meshigaud Molly.Meshigaud@hannahville.org
Cory Sagataw csagataw@hicservices.org	Michael Schuster mschuster@hicservices.org	Alden Connor aconnor@kbic-nsn.gov
Dione Price dprice@kbic-nsn.gov	Alina Shively alina.shively@lvd-nsn.gov	Beth Schrader beth.schrader@lvd-nsn.gov
Jay Sam jonniesam@lrboi-nsn.gov	Frank Beaver williambeaver@lrboi-nsn.gov	Melissa Wiatrolik mwiatrolik@ltbbodawa-nsn.gov
Caroline Moellering cmoellering@ltbbodawa-nsn.gov	Lakota Hobia Lakota.Hobia@glt-nsn.gov	Kalia Akina Kaila.Akina@glt-nsn.gov
Shawn Mckenney Shawn.mckenney@glt-nsn.gov	Douglas Taylor Douglas.Taylor@nhbp-nsn.gov	Nottawaseppi Environmental environmental@nhbp-nsn.gov
Matthew Bussler Matthew.Bussler@pokagonband-nsn.gov	Jennifer Kanine Jennifer.Kanine@pokagonband-nsn.gov	Marcella Hadden mlhadden@sagchip.org
William Johnson wjohnson@sagchip.org	Sally Kniffen skniffen@sagchip.org	Marie Richards mrichards@saulttribe.net
Eric Clark eclark@saulttribe.net		

The following Tribal email addresses should be included in the CE/FNSI Notice of Public Comment Period transmittal email when a project will take place in the following counties in the state of Michigan: Allegan, Barry, Berrien, Branch, Calhoun, Cass, Hillsdale, Ionia, Jackson, Kalamazoo, Kent, Ottawa, St. Joseph, and Van Buren counties. Please include the following Tribal email addresses:

Molly Meshigaud Molly.Meshigaud@hannahville.org	Cory Sagataw csagataw@hicservices.org	Michael Schuster mschuster@hicservices.org
Jay Sam jonniesam@lrboi-nsn.gov	Frank Beaver williambeaver@lrboi-nsn.gov	Lakota Hobia Lakota.Hobia@glt-nsn.gov
Kaila Akina Kaila.Akina@glt-nsn.gov	Shawn Mckenney Shawn.mckenney@glt-nsn.gov	Douglas Taylor Douglas.Taylor@nhbp-nsn.gov
Nottawaseppi Environmental environmental@nhbp-nsn.gov	Matthew Bussler Matthew.Bussler@pokagonband-nsn.gov	Jennifer Kanine Jennifer.Kanine@pokagonband-nsn.gov

The following Tribal email addresses should be included in the CE/FNSI Notice of Public Comment Period transmittal email when a project will take place in the following counties in the state of Michigan: Alpena, Antrim, Benzie, Charlevoix, Cheboygan, Crawford, Emmet, Grand Traverse, Kalkaska, Lake, Leelanau, Manistee, Mason, Mecosta, Missaukee, Montcalm, Montmorency, Muskegon, Newaygo, Oceana, Osceola, Otsego, Presque Isle, Roscommon, and Wexford counties. Please include the following Tribal email addresses:

Carolan Sonderegger Carolan.sonderegger@gtb-nsn.gov	Courtney Hessell Courtney.Hessell@gtb-nsn.gov	Sammie Dyal Sammie.dyal@gtb-nsn.gov
Jay Sam jonniesam@lrboi-nsn.gov	Frank Beaver williambeaver@lrboi-nsn.gov	Melissa Wiatrolik mwiatrolik@ltbbodawa-nsn.gov
Caroline Moellering cmoellering@ltbbodawa-nsn.gov		

The following Tribal email addresses should be included in the CE/FNSI Notice of Public Comment Period transmittal email when a project will take place in the following counties in the state of Michigan: Alcona, Arenac, Bay, Clare, Clinton, Eaton, Gladwin, Gratiot, Huron, Ingham, Iosco, Isabella, Midland, Ogemaw, Oscoda, Saginaw, Sanilac, and Tuscola counties. Please include the following Tribal email addresses:

Douglas Taylor Douglas.Taylor@nhbp-nsn.gov	Nottawaseppi Environmental environmental@nhbp-nsn.gov	Marcella Hadden mlhadden@sagchip.org
Sally Kniffen skniffen@sagchip.org	William Johnson wjohnson@sagchip.org	

The following Tribal email addresses should be included in the CE/FNSI Notice of Public Comment Period transmittal email when a project will take place in the following counties in the state of Michigan: Alger, Chippewa, Delta, Luce, Mackinaw, and Schoolcraft counties. Please include the following Tribal email addresses:

Paula Carrick paulacarrick@baymills.org	Jennifer Parks jmparks@baymills.org	Molly Meshigaud Molly.Meshigaud@hannahville.org
Cory Sagataw csagataw@hicservices.org	Michael Schuster mschuster@hicservices.org	Melissa Wiatrolik mwiatrolik@ltbbodawa-nsn.gov
Caroline Moellering cmoellering@ltbbodawa-nsn.gov	Marie Richards mrichards@saulttribe.net	Eric Clark eclark@saulttribe.net
Alina Shively alina.shively@lvd-nsn.gov	Beth Schrader beth.schrader@lvd-nsn.gov	

The following Tribal email addresses should be included in the CE/FNSI Notice of Public Comment Period transmittal email when a project will take place in the following counties in the state of Michigan: Baraga, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Marquette, Menominee, and Ontonagon counties. Please include the following Tribal email addresses:

Molly Meshigaud Molly.Meshigaud@hannahville.org	Cory Sagataw csagataw@hicservices.org	Michael Schuster mschuster@hicservices.org
Alden Connor aconnor@kbic-nsn.gov	Dione Price dprice@kbic-nsn.gov	Alina Shively alina.shively@lvd-nsn.gov
Beth Schrader beth.schrader@lvd-nsn.gov	Marie Richards mrichards@saulttribe.net	Eric Clark eclark@saulttribe.net

For Western UP Projects:

GREAT LAKES INDIAN FISH & WILDLIFE COMMISSION JOHN COLEMAN, ENVIRONMENTAL SECTION LEADER jcoleman@glifwc.org

Sample Tribal Crosscutter Letter

Tribal Contact - example

Email address here:

SUBJECT: **Notice and Opportunity to Comment**
Project Name/Project NumberMunicipality

The_____(engineering firm), working on behalf of _____ *(municipality),* is preparing an application to fund improvements to_____. This work is proposed for funding through the Michigan Department of Environment, Great Lakes, and Energy, Clean Water State Revolving Fund/Drinking Water State Revolving Fund, starting in fiscal year_____.

The proposed work consists of _____

_____
(general description)

The project will be located in_____County, town_____range_____ section_____(s).

Please refer to actual work areas/locations in actual map(s).

This notice and opportunity to comment is being sent to you to fulfill Section 106 of the National Historic Preservation Act review process, which requires a federal agency or applicant to consult with THPOs and federally recognized Indian tribes. The purpose of this notice is to give you an opportunity to have your interests and concerns considered. Should you have any comments on potential impacts to known religious and/or culturally significant properties in the area of the proposed project, please provide them to us within 30 days of this notice.

Sincerely,

Name
Engineering Firm
Phone Number

To: Bay Mills Indian Community
Paula Carrick, THPO
12140 W. Lakeshore Drive
Brimley, MI 49715

January 12, 2024

Re: Notice and Opportunity to Comment
Contract 2300150 Rehabilitation of the 7 Mile Sewer System
Great Lakes Water Authority

Dear Ms. Carrick:

The Great Lakes Water Authority (GLWA) will be submitting a Project Plan to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) for acceptance into the Clean Water State Revolving Fund (CWSRF) financing program. The project discussed herein targets financing in fiscal year 2025. The Project Plan requires fulfillment of a review process through Section 106 of the National Historic Preservation Act. During this process a federal agency or applicant is required to consult with Tribal Historic Preservation Officers (THPO) and federally recognized Native American Tribes to determine the potential impacts on any historic properties with religious and/or cultural significance in the vicinity of the project.

On behalf of the GLWA, we are requesting information regarding the impact of the above-referenced proposed project upon any historic properties with religious and/or cultural significance in the vicinity of the project. The project consists of the rehabilitation of several large diameter combined sewers including Segments 1, 2, and 3 of the 7 Mile Sewer, the East 7 Mile Relief Sewer, and the West 7 Mile Relief Sewer. These 5 sewers comprise the 7 Mile Sewer System and are located along 7 Mile Road extending from Five Points Street to the west and the Grand Trunk Railroad to the east throughout the City of Detroit. The 7 Mile Sewer System transports dry and wet weather flow to other GLWA assets including the Seven Mile Sewer Retention Treatment Basin (RTB) Facility and other large diameter sewers that transport flow to the Water Resource Recovery Facility (WRRF). The East and West 7 Mile Relief Sewers allow several large diameter collector sewers to relieve and overflow into the relief sewers preventing negative upstream hydraulic impacts such as basement flooding. Sewer repairs are proposed to consist of, but are not limited to, various types of spot repairs; in-depth structural repairs within Segment 3 of the 7 Mile Sewer; debris/sludge removal; manhole frame and cover replacements; and more.

The project area is located in Wayne County in the City of Detroit. The table on the following page provides the township, range, and section for each sewer per the State of Michigan Public Land Survey Quarter-Quarter Sections map available online. The areas that will be affected by this project are shown in the location plans attached (overall location plan and individual site

location plans are included) and construction efforts will generally take place in public ROW.

Rehabilitation of the 7 Mile Sewer Summary					
No.	Sewer	Streets	Township	Range	Section
1	7 Mile Sewer Segment 1	7 Mile and Five Points St. to 7 Mile and Shiawassee Drive	01S	10E	4, 5, 8, 9
2	7 Mile Sewer Segment 2 and West 7 Mile Relief Sewer	7 Mie and San Juan Dr. to 7 Mile and Pontchartrain St.	01S	11E	3, 4, 9, 10
3	7 Mile Sewer Segment 3 and East 7 Mile Relief Sewer	7 Mile and Anglin St. to 7 Mile and Grand Trunk Railroad	01S	12E	7, 8, 9, 10

On behalf of the GLWA, we are pleased to provide you with the opportunity to comment on the above referenced project to assure that it will not cause an impact to any historical properties with religious and/or cultural significance of which you may be aware. We are thankful for your review and would be grateful for your response by March 1, 2024, in order to meet our project deadlines.

Thank you for your time. Should you have any questions or if you would like more information regarding the above project, please contact the undersigned.

Respectfully submitted,

Sara A. Lucchese, E.I.T
Assistant Project Engineer

Kyle D. Thompson, P.E.
Senior Project Engineer

Attachments

FKE

Sara Lucchese <slucchese@fkengineering.com>

Nottawaseppi Huron Band of the Potawatomi THPO Project Reviews

Douglas Taylor <Douglas.Taylor@nhbp-nsn.gov> Fri, Jan 12, 2024 at 2:53 PM
To: Sara Lucchese <slucchese@fkengineering.com>

Greetings,

Ref: Nottawaseppi Huron Band of the Potawatomi THPO Project Reviews

Thank you for including the Nottawaseppi Huron Band of the Potawatomi (NHBP) in your consultation process. From the description of your proposed project, it does not appear as if any cultural or religious concerns of the Tribe's will be affected. We therefore have no objection to the project. Of course, if the project scope is significantly changed or inadvertent findings are discovered during the course of the project, please contact us for further consultation.

Respectfully

Douglas R. Taylor

Douglas R. Taylor | THPO & NAGPRA - Advisory Professional

Pine Creek Indian Reservation

1301 T Drive S, Fulton, MI 49052

o: 269-704-8347 | c: 269-419-9434 | f: 269-729-5920

Douglas.Taylor@nhbp-nsn.gov | www.nhbp-nsn.gov

NOTTAWASEPPI HURON BAND OF THE POTAWATOMI

A FEDERALLY RECOGNIZED TRIBAL GOVERNMENT

Please consider the environment before printing this email. This message has been prepared on resources owned by the Nottawaseppi Huron Band of the Potawatomi located in the State of Michigan. It is subject to the Electronic Communications Policy of Nottawaseppi Huron Band of the Potawatomi. This communication may contain confidential (including "protected health information" as defined by HIPAA) or legally privileged information intended for the sole use of the designated recipient(s). If you are not the intended recipient, please notify the sender immediately by reply e-mail and delete all copies of this communication and attachments without reading or saving them. If you are not the named addressee you are notified that disclosing, disseminating, copying, distributing or taking any action in reliance on the contents of this information is strictly prohibited

From: Sara Lucchese <slucchese@fkengineering.com>
Sent: Friday, January 12, 2024 9:51 AM
To: Douglas Taylor <Douglas.Taylor@nhbp-nsn.gov>; Environment <Environmental@nhbp-nsn.gov>
Cc: Kyle Thompson <kthompson@fkengineering.com>
Subject: Nottawaseppi Huron Band of the Potawatomi THPO Project Reviews

***** EXTERNAL EMAIL WARNING - USE CAUTION *****

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Pokégnek Bodéwadmik
POKAGON BAND OF POTAWATOMI
HISTORY & CULTURE CENTER

02/12/2024

Consultant Name: Sara Lucchese
Street Address: 30425 Stephenson Highway
City: Madison Heights
State: MICHIGAN
Zip Code: 48071
Phone: 586-242-7201
Email: slucchese@fkengineering.com

GLWA Contract 2300150 – 7 Mile Sewer Rehabilitation Project

Dear Responsible Party:

Migwėtth for contacting me regarding this project. As THPO, I am responsible for handling Section 106 Consultations on behalf of the tribe. I am writing to inform you that I have reviewed the details for the project referenced above. The proposed work is occurring within a mile of known archaeological sites, historic sites or features that are considered sensitive or recorded in the Pokagon Band Historic Inventory Database. I have made the determination that the project will have **No Adverse Effect** on any historic, religious, or culturally significant resources to the Pokagon Band of Potawatomi Indians.

If any cultural or archaeological resources are uncovered during construction, please stop work, and contact me immediately. Should you have any other questions, please don't hesitate to contact me at your earliest convenience.

Sincerely,

Matthew Bussler

Matthew J.N. Bussler
Tribal Historic Preservation Officer
Pokagon Band of Potawatomi Indians
Office: (269) 462-4316
Cell: (269) 519-0838
Matthew.Bussler@Pokagonband-nsn.gov

FKE

Sara Lucchese <slucchese@fkengineering.com>

Hannahville Indian Community THPO Project Reviews

Mike Schuster <mschuster@hicservices.org> Fri, Feb 2, 2024 at 9:07 AM
To: Sara Lucchese <slucchese@fkengineering.com>

You have the correct contacts for Hannahville on your list, typically if you don't hear any comments within 30 days that means no comment.

Thanks

Mike Schuster
Environmental Coordinator
Hannahville Indian Community
N 14911 Hannahville B-1 Road
Wilson, MI 49896
(906)723-2296

From: Sara Lucchese <slucchese@fkengineering.com>
Sent: Friday, February 2, 2024 8:45 AM
To: Molly Meshigaud <Molly.Meshigaud@hannahville.org>; csagataw@hicservices.org <csagataw@hicservices.org>; Mike Schuster <mschuster@hicservices.org>
Cc: Kyle Thompson <kthompson@fkengineering.com>
Subject: Re: Hannahville Indian Community THPO Project Reviews

[Quoted text hidden]

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2872 Mission Drive, Shelbyville, MI 49344 | {p} 269.397.1780 | gunlaketribe-nsn.gov

March 15, 2024

Sara A. Luchese, E.I.T.
Assistant Project Engineer and
Kyle D. Thompson, P.E.
Senior Project Engineer
FK Engineering Associates
30425 Stephenson Highway
Madison Heights, MI 48071
admin@kengineering.com

Re: **Contract 2300149** CSO Outfall Rehabilitation Phase VI Project, Great Lakes Water Authority (GLWA) and **Contract 2300150** Rehabilitation of the 7 Mile Sewer System, GLWA

Dear Ms. Luchese and Mr. Thompson,

The Match-E-Be-Nash-She-Wish Band of Pottawatomi Indians' Tribal Historic Preservation Office has received the Section 106 consultation request for comments regarding a proposed federal undertaking to rehabilitate nineteen GLWA outfall sewers in the city of Detroit, Wayne County, Michigan. At present, we are not providing any further comments. While we have identified the presence of Cultural Resources within the undertaking's Area of Potential Effects (APE), we have not identified any direct, indirect, and cumulative effects to the identified Cultural Resources.

This office will be available to assist you in the future or during the course of this project if there is an unanticipated encounter with human remains, funerary objects, and artifacts. The subsequent identification of additional historic properties affected by the undertaking will require reinitiating Section 106 consultation related to all ongoing and proposed project work and the handling of "discoveries" per the National Historic Preservation Act (NHPA) implementing regulations, 36 CFR Part 800, and, as applicable, the Native American Graves and Repatriation Act (NAGPRA) and its implementing regulations, 43 CFR Part 10. In the event of an encounter with unanticipated human remains, funerary objects, and artifacts we request to be notified within 72 hours. At that time, the Tribe will determine if further consultation is necessary.

Please contact our office with any further questions or requests at 269-397-1780 or Section106@glt-nsn.gov. Also, keep in mind that there may be other Tribal Nations that may have an interest or knowledge of cultural resources within the APE that we may not know about. We thank you for including the Match-E-Be-Nash-She-Wish Band of Pottawatomi Indians in your consultation efforts and planning processes.

Sincerely,

Lakota Hobia

Lakota Hobia

Tribal Historic Preservation Officer
Lakota.Hobia@glt-nsn.gov
Section106@glt-nsn.gov

GLWA Contract 2300150
Rehabilitation of the 7 Mile Sewer System

State Revolving Fund Project Plan
Appendix C

- **MNFI Rare Species Review Letter**
- **MNFI Rare Species Review – USFWS Endangered Species List**
- **US Fish and Wildlife Service Consistency Letter for Specified Threatened and Endangered Species**
- **US Fish and Wildlife Service List of Threatened and Endangered Species**
- **Wetland Figures**
- **Floodplain Figures**
- **Topography Figures**
- **Land Use Figures**

MICHIGAN STATE UNIVERSITY | Extension

Sara Lucchese
FK Engineering Associates
30425 Stephenson Hwy
Madison Heights, MI 48071

February 8, 2024

Re: Rare Species Review #4854 – Rehabilitation of the 7 Mile Sewer System, Wayne County

Hello:

The location for the proposed project was checked against known localities for rare species and unique natural features, which are recorded in the Michigan Natural Features Inventory (MNFI) natural heritage database. This continuously updated database is a comprehensive source of existing data on Michigan's endangered, threatened, or otherwise significant plant and animal species, natural plant communities, and other natural features. Records in the database indicate that a qualified observer has documented the presence of special natural features. The absence of records in the database for a particular site may mean that the site has not been surveyed. The only way to obtain a definitive statement on the status of natural features is to have a competent biologist perform a complete field survey.

Under Act 451 of 1994, the Natural Resources and Environmental Protection Act, Part 365, Endangered Species Protection, "a person shall not take, possess, transport, …fish, plants, and wildlife indigenous to the state and determined to be endangered or threatened," unless first receiving an Endangered Species Permit from the Michigan Department of Natural Resources (MDNR), Wildlife Division. Responsibility to protect endangered and threatened species is not limited to the lists below. Other species may be present that have not been recorded in the database.

Although several at-risk species and/or natural communities have been documented within 0.5 miles of the project location it is unlikely that adverse impacts will occur. This response reflects a desktop review of the database and MNFI cannot fully evaluate this project without visiting the area. MNFI offers several levels of Rare Species Reviews, including field surveys which I would be happy to discuss with you.

Sincerely,

Michael Sanders

Michael Sanders
Environmental Review Specialist/Zoologist
Michigan Natural Features Inventory

MSU EXTENSION

Michigan Natural Features Inventory

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MSU is an affirmative-action, equal-opportunity employer.

Comments for Rare Species Review #4854

It is important to note that it is the applicant's responsibility to comply with both state and federal threatened and endangered species legislation. Therefore, if a state listed species occurs at a project site, and you think you need an endangered species permit please contact: Amy Bleisch, DNR-Wildlife Division, DNR-StateTEPermit@michigan.gov. If a federally listed species is involved and, you think a permit is needed, please contact Jessica Pruden, U.S. Fish and Wildlife Service, East Lansing office, 517-351-8316, or Jessica_Pruden@fws.gov.

NOTE: Special concern species and natural communities are not protected under endangered species legislation, but efforts should be taken to minimize any or all impacts. Please consult MNFI's Rare Species Explorer for additional information on Michigan's rare plants and animals.

Table 1: Occurrences of Threatened & Endangered Species within 0.5 miles of Project Site

Element Category	Scientific Name	Common Name	Federal Status	State Status	G Rank	S Rank	EO Rank	First Observed Date	Last Observed Date
Plant	*Adlumia fungosa*	Climbing fumitory		T	G4	S3	H	1929	1929-07-09
Plant	*Cerastium velutinum*	Field Chickweed		X	G5T4?	SX	H	1867-05	1867-05
Plant	*Galearis spectabilis*	Showy orchis		T	G5	S2	H	1916	1916-05-26
Plant	*Galearis spectabilis*	Showy orchis		T	G5	S2	H	1902	1902-05-18
Plant	*Liatris squarrosa*	Plains blazing star		X	G5	SX	X	1904	1904-08-24
Plant	*Penstemon pallidus*	Pale beard tongue		X	G5	SX	H	1916	1920-08-21

Comments for Table 1

No concerns – occurrences are Historic and/or far removed from project.

Table 2: Occurrences of Special Concern Species and Natural Communities within 0.5 miles of Project Site

Element Category	Scientific Name	Common Name	Federal Status	State Status	G Rank	S Rank	EO Rank	First Observed Date	Last Observed Date
Animal	*Paroxya hoosieri*	Hoosier locust		SC	G5	S1S3	H	1913-09-01	1913-09-01
Plant	*Jeffersonia diphylla*	Twinleaf		SC	G5	S3	H	1880 ?	1933-SP
Plant	*Nelumbo lutea*	American lotus		SC	G4	S2	H	1897	1897-07-09
Plant	*Trillium recurvatum*	Prairie trillium		SC	G5	S2S3	H	1891?	1905

Comments for Table 2

No concerns – occurrences are Historic and/or far removed from project.

Codes to accompany tables

State Protection Status Code Definitions
E = Endangered
T = Threatened
SC = Special concern

Federal Protection Status Code Definitions
LE = listed endangered
LT = listed threatened
LELT = partly listed endangered and partly listed threatened
PDL = proposed delist
E(S/A) = endangered based on similarities/appearance
PS = partial status (federally listed in only part of its range)
C = species being considered for federal status

Global Heritage Status Rank Definitions (G RANK)
The priority assigned by NatureServe's national office for data collection and protection based upon the element's status throughout its entire world-wide range. Criteria not based only on number of occurrences; other critical factors also apply. Note that ranks are frequently combined.
G1 = critically imperiled globally because of extreme rarity (5 or fewer occurrences range-wide or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.
G2 = imperiled globally because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extinction throughout its range.
G3 = Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g. a single western state, a physiographic region in the East) or because of other factor(s) making it vulnerable to extinction throughout its range; in terms of occurrences, in the range of 21 to 100.
G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.
G5 = Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.
Q = Taxonomy uncertain

State Heritage Status Rank Definitions (S RANK)
The priority assigned by the Michigan Natural Features Inventory for data collection and protection based upon the element's status within the state. Criteria not based only on number of occurrences; other critical factors also apply. Note that ranks are frequently combined.
S1 = Critically imperiled in the state because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extirpation in the state.
S2 = Imperiled in state because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extirpation from the state.
S3 = Rare or uncommon in state (on the order of 21 to 100 occurrences). S4 = apparently secure in state, with many occurrences.
S5 = demonstrably secure in state and essentially ineradicable under present conditions.
SX = apparently extirpated from state.

EO Rank Codes

Element Occurrence (EO) ranks refer to the viability or ecological integrity of the occurrence; they provide an assessment of the likelihood that if current conditions prevail the EO will persist for a defined period of time, typically 20-100 years.

A - Excellent estimated viability/ecological integrity
A? - Possibly excellent estimated viability/ecological integrity
AB - Excellent or good estimated viability/ecological integrity
AC - Excellent, good, or fair estimated viability/ecological integrity
B - Good estimated viability/ecological integrity
B? - Possibly good estimated viability/ecological integrity
BC - Good or fair estimated viability/ecological integrity
BD - Good, fair, or poor estimated viability/ecological integrity
C - Fair estimated viability/ecological integrity
C? - Possibly fair estimated viability/ecological integrity
CD - Fair or poor estimated viability/ecological integrity
D - Poor estimated viability/ecological integrity
D? - Possibly poor estimated viability/ecological integrity
E - Verified extant (viability/ecological integrity not assessed)
F - Failed to find
F? - Possibly failed to find
H - Historical
H? - Possibly historical
X - Extirpated
X? - Possibly extirpated
U - Unrankable
NR - Not ranked

Section 7 Comments for Rare Species Review #4854
Rehabilitation of the 7 Mile Sewer System, Wayne County

Sara Lucchese
FK Engineering Associates
30425 Stephenson Hwy
Madison Heights, MI 48071

February 8, 2024

For projects involving Federal funding or a federal agency authorization

The following information is provided to assist you with Section 7 compliance of the Federal Endangered Species Act (ESA). The ESA directs all Federal agencies "to work to conserve endangered and threatened species. Section 7 of the ESA, called "Interagency Cooperation," is the means by which Federal agencies ensure their actions, including those they authorize or fund, do not jeopardize the existence of any listed species."

The project falls within the range of the following federally listed/proposed/candidate species which have been identified by the U.S. Fish and Wildlife Service (USFWS) to occur in Wayne County, Michigan:

NOTE: New guidelines for federally listed bat species were published April 2023.

BACKGROUND INFORMATION ON NEW BAT GUIDELINES

This guidance document is intended to assist both Federal and non-Federal projects with conservation planning for federally listed bats in Michigan. These guidelines complement online conservation planning tools available to Federal and non-Federal project proponents in Michigan, including the All Species Michigan Determination Key available through the U.S. Fish and Wildlife Service (Service) Information for Planning and Consultation (IPaC) web site (see Online Planning Tools below). We strongly encourage project managers, including Federal agencies and their designated representatives as well as proponents of non-Federal projects, to use our online planning tools Information for Planning and Consultation (IPaC) to evaluate potential effects of proposed activities on listed bats and other species in Michigan.

Projects that complete consultation or coordination through IPaC automatically adhere to the recommendations provided in this document and are not required to implement any additional conservation measures for listed bats. Although these guidelines include specific recommendations for wind energy developments, we strongly recommend that wind developers additionally follow the Service's Land-Based Wind Energy Guidelines (WEG) and coordinate with our office and the Michigan Department of Natural Resources early in project development. Agencies or individuals that have received incidental take authorization for listed bats through an incidental take permit or certificate of inclusion or through formal section 7 consultation are advised to follow the specific conditions in their permit or consultation rather than these general recommendations.

Federally Endangered

Indiana bat – there does not appear to be suitable habitat within 0.5 miles of the project. Indiana bats (*Myotis sodalis*) are found only in the eastern United States and are typically confined to the southern three tiers of counties in Michigan. Indiana bats that summer in Michigan winter in caves in Indiana and Kentucky. This species forms colonies and forages in riparian and mature floodplain habitats. Nursery roost sites are usually located under loose bark or in hollows of trees near riparian habitat. Indiana bats typically avoid houses or other artificial structures and typically roost underneath loose bark of dead elm, maple and ash trees. Other dead trees used include oak, hickory and cottonwood. Foraging typically occurs over slow-moving, wooded streams and rivers as well as in the canopy of mature trees. Movements may also extend into the outer edge of the floodplain and to nearby solitary trees. A summer colony's

foraging area usually encompasses a stretch of stream over a half-mile in length. Upland areas isolated from floodplains and non-wooded streams are generally avoided.

Management and Conservation: see new Federal guidelines above.

Mitchell's satyr butterfly - there does not appear to be suitable habitat within 0.5 miles of the project. The federally and state endangered Mitchell's satyr butterfly *(Neonympha mitchellii mitchellii)* is restricted to calcareous wetlands known as prairie fens. In Michigan, this habitat is characterized by scattered tamaracks, poison sumac, and dogwood with a ground cover of sedges, shrubby cinquefoil, and a variety of herbaceous species with prairie affinities. Adult Mitchell's satyr butterflies are active two to three weeks each summer, with males emerging before females. Adult flight dates are from mid-June to mid-July. Larvae hibernate near the bottom of a sedge. The larval food plant is thought to be several species of sedge. The caterpillar is green with white stripes.

Management and Conservation: the primary threat to the continued survival of this species is habitat loss and modification. Many of the wetland complexes occupied currently have been altered or drained for agriculture or development. Wetland alteration is responsible for extirpating the single known satyr population in Ohio. Wetland alteration also can lead to invasion by exotic plant species such as glossy buckthorn (*Rhamnus frangula*), purple loosestrife (*Lythrum salicaria*), common buckthorn (*Rhamnus cathartica*), and the common reed (*Phragmites australis*). In addition, landscape-scale processes that may be important for maintaining suitable satyr habitat and/or creating new habitat, such as wildfires, fluctuations in hydrologic regimes, and flooding from beaver (*Castor canadensis*) activity, have been virtually eliminated or altered throughout the species' range

Piping plover - there does not appear to be suitable habitat within 0.5 miles of the project. In the Great Lakes region, the federally and state endangered piping plover *(Charadrius melodus)* prefers to nest and forage on sparse or non-vegetated sand-pebble beaches with less than 5% vegetative cover. Nests are simple depressions in the sand are generally placed in level areas between the water's edge and the first dune. Associated bodies of water and interdunal wetlands enhance these areas by increasing food availability. Optimal foraging areas are especially crucial along Lake Superior, where shoreline and benthic invertebrate communities are known to be naturally sparse. While feeding, open shoreline is preferred to vegetated beach areas. Piping plovers begin arriving in mid- to late-April. The nesting season is under way by mid-May and lasts until mid-August.

Management and Conservation - this species is declining throughout the Midwest due to habitat destruction and disturbance. The nests are simple depressions in the sand and are difficult to see. People walking on the beach may inadvertently destroy nests. Dogs on the beach can be especially dangerous for chicks and adults. Piping plovers are protected under the Federal Endangered Species Act and are very sensitive to human disturbance. Please avoid activity along the shoreline in this compartment between May and September.

Snuffbox – there does not appear to be suitable habitat within 0.5 miles of the project. The federally and state endangered snuffbox mussel (*Epioblasma triquetra)* inhabits rivers and streams with cobble, gravel, or sand bottoms in swift currents and usually is deeply buried in the substrate. Freshwater mussels require a fish host to complete their life cycle. Eggs are fertilized and develop into larvae within the gills of the female mussel. These larvae, called glochidia, are released into the water and must attach to a suitable fish host to survive and transform into the adult mussel. In Michigan, the only host fish known for snuffbox is the log perch (*Percina caprodes*). In other parts of their range the banded sculpin (*Cottus carolinae*) is also a known host. After completing the parasitic stage and reaching adulthood, this mussel remains relatively sessile on the river bottom, living between 8-10 years. The best time to survey for snuffbox is April through September.

Management and Conservation: this mussel is sensitive to river impoundment, siltation and disturbance, due to its requirement for clean, swift current and relative immobility as an adult. To maintain the current populations in Michigan, rivers need to be protected to reduce silt loading and run-off. Maintaining or establishing vegetated riparian buffers can aid in controlling many of the threats to mussels. Control of zebra mussels is critical to preserving native mussels. And as with all mussels, protection of their hosts habitat is also crucial. Because the life cycle of the snuffbox is

inherently linked with that of the logperch in Michigan, conservation and management of this fish species is needed to ensure that of the snuffbox.

Northern riffleshell – there does not appear to be suitable habitat within 0.5 miles of the project. The federal and state endangered northern riffleshell *(Epioblasma torulosa rangiana)* mussel inhabits medium to large rivers in gravel riffles, where the water is highly oxygenated. This species was formerly widespread in the Midwest, but it has declined in range by more than 95% and now exists in only eight to ten isolated populations, most of which are small and peripheral.

Conservation and Management: members of the genus *Epioblasma* seem to be particularly sensitive to impacts from impoundment, which include population fragmentation and streamflow alteration. Other threats include habitat destruction (e.g. channelization, dredging, bulkheading), exotic species introductions, siltation, pollution, and modified streamflows due to wetland loss, dam operation, and intensive landscape modification. The other two subspecies of *E. torulosa*, *E. torulosa torulosa* and *E. torulosa gubernaculum*, appear to have already gone extinct due to modification and degradation of river systems.

Rayed bean mussel – there does not appear to be suitable habitat within 0.5 miles of the project. The federally and state endangered rayed bean mussel *(Villosa fabalis)* occurs in fine mud substrates and riffles among roots of aquatic vegetation. Limits of the breeding season are not known but gravid specimens have been found in May.

Management and Conservation: like other mussels, threats to the rayed bean include: natural flow alterations, siltation, channel disturbance, point and non-point source pollution, and exotic species. Maintenance or establishment of vegetated riparian buffers can help protect mussel habitats from many of their threats. Control of zebra mussels is critical to preserving native mussels. And as with all mussels, protection of their hosts' habitat is also crucial.

Karner blue butterfly - there does not appear to be suitable habitat within 0.5 miles of the project area. The federally endangered and state threatened Karner blue butterfly *(Lycaeides melissa samuelis)* was historically found in open-canopied barrens communities, including oak and oak-pine savanna or barrens found prior to European settlement. Since their historical habitat suffers from fire suppression efforts, the butterfly often occurs in openings, old fields, and rights-of-way. Karner blue larvae feed exclusively on wild lupine (*Lupinus perennis*), an early successional species that can become abundant after appropriate disturbances. Adults visit a wide variety of flowering plants for nectar.

The Karner blue has two generations per year, with the later, or summer, generation typically having three to four times the number of adults as the earlier, or spring, brood. Adults are active most of the day, decreasing activity during midday and during cool, rainy weather. Females can live up to two weeks in the field, but typically live an average of five days. Peak flight dates are mid-May through early June and mid-July through early August, with stragglers found between.

Management and Conservation: recommendations for management of Karner blue butterfly habitat will be pertinent only if the host plant, wild lupine (*Lupinus perennis*) is present. If lupine is present the following guidelines should be followed: (1) mower blades should be set no lower than 6 inches; (2) mowing should not occur before August 15th (i.e. no spring mowing at all!); (3) no burning of habitat where lupine exists, and (4) contact us if planting or logging will occur in lupine areas.

Northern long-eared bat - Northern long-eared bat (*M. septentrionalis*) numbers in the northeast US have declined up to 99 percent. Loss or degradation of summer habitat, wind turbines, disturbance to hibernacula, predation, and pesticides have contributed to declines in Northern long-eared bat populations. However, no other threat has been as severe to the decline as White-nose Syndrome (WNS). WNS is a fungus that thrives in the cold, damp conditions in caves and mines where bats hibernate. The disease is believed to disrupt the hibernation cycle by causing bats to repeatedly awake thereby depleting vital energy reserves. This species was federally listed in May 2015 primarily due to the threat from WNS.

There does not appear to be suitable habitat within 0.5 miles of the project.

Also called northern bat or northern myotis, this bat is distinguished from other *Myotis* species by its long ears. In Michigan, northern long-eared bats hibernate in abandoned mines and caves in the Upper Peninsula; they also commonly hibernate in the Tippy Dam spillway in Manistee County. This species is a regional migrant with migratory distance largely determined by locations of suitable hibernacula sites.

Northern long-eared bats typically roost and forage in forested areas. During the summer, these bats roost singly or in colonies underneath bark, in cavities or in crevices of both living and dead trees. Roost trees are selected based on the suitability to retain bark or provide cavities or crevices. Common roost trees in southern Lower Michigan include species of ash, elm and maple. Foraging occurs primarily in areas along woodland edges, woodland clearings and over small woodland ponds. Moths, beetles, and small flies are common food items. Like all temperate bats this species typically produces only 1-2 young per year.

Management and Conservation: see new Federal guidelines above.

Federally Threatened

Rufa red knot – there does not appear to be suitable habitat within 0.5 miles of the project. The federally threatened rufa red knot (*Calidris canutus rufa*) is one of the longest-distance migrants in the animal kingdom, flying some 18,000 miles annually between its breeding grounds in the Canadian Arctic to the wintering grounds at the southern-most tip of South America. Primarily occurring along the Atlantic and Gulf coasts, small groups of this shorebird regularly use the interior of the United States such as the Great Lakes during the annual migration. The Great Lakes shorelines provide vital stopover habitat for resting and refueling during their long annual journey.

The largest concentration of rufa red knots is found in May in Delaware Bay, where the birds stop to gorge on the eggs of spawning horseshoe crabs; a spectacle attracting thousands of birdwatchers to the area. In just a few days, the birds nearly double their weight to prepare for the final leg of their long journey to the Arctic. This species may be especially vulnerable to climate change which affects coastal habitats due to rising sea levels.

Management and Conservation: applies to actions that occur along coastal areas during the Red Knot migratory window of MAY 1 - SEPTEMBER 30.

Eastern massasauga rattlesnake (EMR) –This **activity falls outside of Tier 1/Tier 2 EMR habitat as** designated by the US Fish & Wildlife Service. The federally threatened and state special concern eastern massasauga rattlesnake *(Sistrurus catenatus)* is Michigan's only venomous snake and is found in a variety of wetland habitats including bogs, fens, shrub swamps, wet meadows, marshes, moist grasslands, wet prairies, and floodplain forests. Eastern massasaugas occur throughout the Lower Peninsula but are not found in the Upper Peninsula. Populations in southern Michigan are typically associated with open wetlands, particularly prairie fens, while those in northern Michigan are better known from lowland coniferous forests, such as cedar swamps. These snakes normally overwinter in crayfish or small mammal burrows often close to the groundwater level and emerge in spring as water levels rise. During late spring, these snakes move into adjacent uplands they spend the warmer months foraging in shrubby fields and grasslands in search of mice and voles, their favorite food.

Often described as "shy and sluggish", these snakes avoid human confrontation and are not prone to strike, preferring to leave the area when they are threatened. However, like any wild animal, they will protect themselves from anything they see as a potential predator. Their short fangs can easily puncture skin and they do possess potent venom. Like many snakes, the first human reaction may be to kill the snake, but it is important to remember that all snakes play vital roles in the ecosystem. Some may eat harmful insects. Others like the massasauga consider rodents a delicacy and help control their population. Snakes are also a part of a larger food web and can provide food to eagles, herons, and several mammals.

Management and Conservation: any sightings of these snakes should be reported to the Michigan Department of Natural Resources, Wildlife Division. If possible, a photo of the live snake is also recommended.

Round Hickorynut - there does not appear to be suitable habitat within 0.5 miles of the project. The round hickorynut is typically found in medium to large rivers and along the shores of Lake Erie and Lake St. Clair, near river mouths. The round hickorynut generally is found in sand and gravel substrates in areas with moderate flow.

Management and Conservation: Like other mussels, threats to the round hickorynut include: natural flow alterations, siltation, channel disturbance, point and non-point source pollution, and exotic species. Maintenance or establishment of vegetated riparian buffers can help protect mussel habitats from many of their threats. Control of zebra mussels is critical to preserving native mussels. And as with all mussels, protection of their hosts habitat is also crucial.

USFWS Section 7 Consultation Technical Assistance can be found at:

https://www.fws.gov/service/esa-section-7-consultation

The website offers step-by-step instructions to guide you through the Section 7 consultation process with prepared templates for documenting “no effect.” as well as requesting concurrence on "may affect, but not likely to adversely affect" determinations.

Please let us know if you have questions.

Michael Sanders
Environmental Review Specialist/Zoologist
Michigan Natural Features Inventory

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Michigan Ecological Services Field Office
2651 Coolidge Road Suite 101
East Lansing, MI 48823-6360
Phone: (517) 351-2555 Fax: (517) 351-1443

In Reply Refer To: January 11, 2024
Project code: 2024-0035350
Project Name: 2300150 Rehabilitation of the 7 Mile Sewer System Project

Subject: Consistency letter for '2300150 Rehabilitation of the 7 Mile Sewer System Project' for specified threatened and endangered species that may occur in your proposed project location consistent with the Michigan Endangered Species Determination Key (Michigan DKey)

Dear Sara Lucchese:

The U.S. Fish and Wildlife Service (Service) received on **January 11, 2024** your effect determination(s) for the '2300150 Rehabilitation of the 7 Mile Sewer System Project' (the Action) using the Michigan DKey within the Information for Planning and Consultation (IPaC) system. The Service developed this system in accordance with the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based on your answers and the assistance of the Service's Michigan DKey, you made the following effect determination(s) for the proposed Action:

Species	**Listing Status**	**Determination**
Eastern Massasauga (=rattlesnake) (*Sistrurus catenatus*)	Threatened	NLAA
Eastern Prairie Fringed Orchid (*Platanthera leucophaea*)	Threatened	No effect
Indiana Bat (*Myotis sodalis*)	Endangered	No effect
Monarch Butterfly (*Danaus plexippus*)	Candidate	No effect
Northern Long-eared Bat (*Myotis septentrionalis*)	Endangered	No effect
Northern Riffleshell (*Epioblasma rangiana*)	Endangered	No effect
Rufa Red Knot (*Calidris canutus rufa*)	Threatened	No effect
Tricolored Bat (*Perimyotis subflavus*)	Proposed Endangered	No effect

Coordination with the Michigan Ecological Services Office is complete. Thank you for considering federally listed species during your project planning.

Please provide sufficient project details on your project homepage in IPaC (Define Project, Project Description) to support your conclusions. Failure to disclose important aspects of your project that would influence the outcome of your effects determinations may negate your determinations and invalidate this letter. If you have site-specific information that leads you to believe a different determination is more appropriate for your project than what the Dkey concludes, you can and should proceed based on the best available information.

The Service recommends that you contact the Service or re-evaluate the project in IPaC if: 1) the scope or location of the proposed Action is changed; 2) new information reveals that the action may affect listed species or designated critical habitat in a manner or to an extent not previously considered; 3) the Action is modified in a manner that causes effects to listed species or designated critical habitat; or 4) a new species is listed or critical habitat designated. If any of the above conditions occurs, additional consultation with the Service should take place before project changes are final or resources committedThe

Freshwater Mussels:
Based on your answers to the Michigan DKey, the Action will have ”No Effect” on Federally listed mussels. **However, state-listed mussels may occur in your Action area. Contact the Michigan Department of Natural Resources to determine effects to state-listed mussels.**

Freshwater mussels are one of the most critically imperiled groups of organisms in the world. In North America, 65% of the remaining 300 species are vulnerable to extinction (Haag and Williams 2014). Implementing measures to conserve and restore freshwater mussel populations directly improves water quality in lakes, rivers, and streams throughout Michigan. An adult freshwater mussel filters anywhere from 1 to 38 gallons of water per day (Baker and Levinton 2003, Barnhart pers. comm. 2019). A 2015 survey found that in some areas mussels can reduce the bacterial populations by more than 85% (Othman et al. 2015 in Vaughn 2017). Mussels are also considered to be ecosystem engineers, stabilizing substrate and providing habitat for other aquatic organisms (Vaughn 2017). In addition to ecosystem services, mussels play an important role in the food web, contributing critical nutrients to both terrestrial and aquatic habitats, including those that support sport fish (Vaughn 2017). Taking proactive measures to conserve and restore freshwater mussels will improve water quality, which has the potential to positively impact human health and recreation in the State of Michigan.

Bald and Golden Eagles:
Bald eagles, golden eagles, and their nests are protected under the Bald and Golden Eagle Protection Act (54 Stat. 250, as amended, 16 U.S.C. 668a-d) (Eagle Act). The Eagle Act prohibits, except when authorized by an Eagle Act permit, the “taking” of bald and golden eagles and defines “take” as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.” The Eagle Act’s implementing regulations define disturb as “…to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.”

If the Action may impact bald or golden eagles, additional coordination with the Service under the Eagle Act may be required. For more information on eagles and conducting activities in the

vicinity of an eagle nest, please visit https://www.fws.gov/library/collections/all-about-eagles. In addition, the Service developed the National Bald Eagle Management Guidelines (May 2007) in order to assist landowners in avoiding the disturbance of bald eagles. The full Guidelines are available at https://www.fws.gov/media/national-bald-eagle-management-guidelines-0.

If you have further questions regarding potential impacts to eagles, please contact Chris Mensing, Chris_Mensing@fws.gov or 517-351-2555.

Monarch butterfly and other pollinators
In December 2020, after an extensive status assessment of the monarch butterfly, we determined that listing the monarch under the Endangered Species Act is warranted but precluded by higher priority actions to amend the Lists of Endangered and Threatened Wildlife and Plants. Therefore, the Service added the monarch butterfly to the candidate list. The Service will review its status each year until we are able to begin developing a proposal to list the monarch.

The Endangered Species Act does not establish protections or consultation requirements for candidate species. Some Federal and State agencies may have policy requirements to consider candidate species in planning. We encourage implementing measures that will remove or reduce threats to these species and possibly make listing unnecessary.

For all projects, we recommend the following best management practices (BMPs) to benefit monarch and other pollinators.

Monarch and Pollinator BMP Recommendations

Consider monarch and other pollinators in your project planning when possible. Many pollinators are declining, including species that pollinate key agricultural crops and help maintain natural plant communities. Planting a diverse group of native plant species will help support the nutritional needs of Michigan’s pollinators. We recommend a mix of flowering trees, shrubs, and herbaceous plants so that something is always blooming and pollen is available during the active periods of the pollinators, roughly early spring through fall (mid-March to mid-October). To benefit a wide variety of pollinators, choose a wide range of flowers with diverse colors, heights, structure, and flower shape. It is important to provide host plants for any known butterfly species at your site, including native milkweed for Monarch butterfly. Incorporating a water source (e.g., ephemeral pool or low area) and basking areas (rocks or bare ground) will provide additional resources for pollinators.

Many pollinators need a safe place to build their nests and overwinter. During spring and summer, leave some areas unmowed or minimize the impacts from mowing (e.g., decrease frequency, increase vegetation height). In fall, leave areas unraked and leave plant stems standing. Leave patches of bare soil for ground nesting pollinators.

Avoid or limit pesticide use. Pesticides can kill more than the target pest. Some pesticide residues can kill pollinators for several days after the pesticide is applied. Pesticides can also kill natural predators, which can lead to even worse pest problems.

Planting native wildflowers can also reduce the need to mow and water, improve bank stabilization by reducing erosion, and improve groundwater recharge and water quality.

Resources:

https://www.fws.gov/initiative/monarchs
https://www.fws.gov/library/collections/pollinators

Wetland impacts:
Section 404 of the Clean Water Act of 1977 (CWA) regulates the discharge of dredged or fill material into waters (including wetlands) of the United States. Regulations require that activities permitted under the CWA (including wetland permits issued by the Michigan Department of Environment, Great Lakes, and Energy (EGLE)) not jeopardize the continued existence of species listed as endangered or threatened. Permits issued by the U.S. Army Corps of Engineers must also consider effects to listed species pursuant to section 7 of the Endangered Species Act. The Service provides comments to the agencies that may include permit conditions to help avoid or minimize impacts to wildlife resources including listed species. For this project, we consider the conservation measures you agreed to in the determination key and/or as part of your proposed action to be non-discretionary. If you apply for a wetland permit, these conservation measures should be explicitly incorporated as permit conditions. Include a copy of this letter in your wetland permit application to streamline the threatened and endangered species review process.

Mussel References
Baker, S.M. and J. Levinton. 2003. Selective feeding by three native North American freshwater mussels implies food competition with zebra mussels. Hydrobiologia 505(1):97-105.
Haag, W. R. and J.D. Williams, 2014. Biodiversity on the brink: an assessment of conservation strategies for North American freshwater mussels. Hydrobiologia 735:45-60.
Morowski, D., L. James and D. Hunter. 2009. Freshwater mussels in the Clinton River, southeastern Michigan: an assessment of community status. Michigan Academician XXXIX: 131-148.
Othman, F., M.S. Islam, E.N. Sharifah, F. Shahrom-Harrison and A. Hassan. 2015. Biological control of streptococcal infection in Nile tilapia Oreochromis niloticus (Linnaeus, 1758) using filter-feeding bivalve mussel Pilsbryoconcha exilis (Lea, 1838). Journal of Applied Ichthyology 31: 724-728.
Vaughn, C.C. 2017. Ecosystem services provided by freshwater mussels. Hydrobiologia DOI: 10.1007/s10750-017-3139-x.

1.The Group 3 is a specific list of stream segments within known counties that contain habitat likely to be occupied by listed mussels (see Michigan Freshwater Mussel Survey Protocol and Relocation Procedures for additional information).

Summary of conservation measures for your project You agreed to the following conservation measures to avoid adverse effects to listed species and our concurrence is only valid if the measures are fully implemented. These must be included as permit conditions if a permit is required and/or included in any contract language.

Eastern massasauga
Materials used for erosion control and site restoration must be wildlife-friendly. Do not use erosion control products containing plastic mesh netting or other similar material that could entangle eastern massasauga rattlesnake (EMR). Several products for soil erosion and control exist that do not contain plastic netting including net-less erosion control blankets (for example, made of excelsior), loose mulch, hydraulic mulch, soil binders, unreinforced silt fences, and straw bales. Others are made from natural fibers (such as jute) and loosely woven together in a manner that allows wildlife to wiggle free.

To increase human safety and awareness of EMR, those implementing the project must first review the EMR factsheet (available at https://www.fws.gov/media/eastern-massasauga-rattlesnake-fact-sheet), and watch MDNR's "60-Second Snakes: The Eastern Massasauga Rattlesnake" video (available at https://youtu.be/~PFnXe_e02w).

During project implementation, report sightings of any federally listed species, including EMR, to the Service within 24 hours.

The project will not result in permanent loss of more than one acre of wetland or conversion of more than 10 acres of EMR upland habitat (uplands associated with high quality wetland habitat) to other land uses.

The project will occur entirely within the EMR inactive season (in the southern Lower Peninsula: October 16 through April 14; in the northern Lower Peninsula, October 2 through April 30).

The action will not include temporary or permanent lighting of roadway(s), facility(ies), and/or parking lot(s).

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

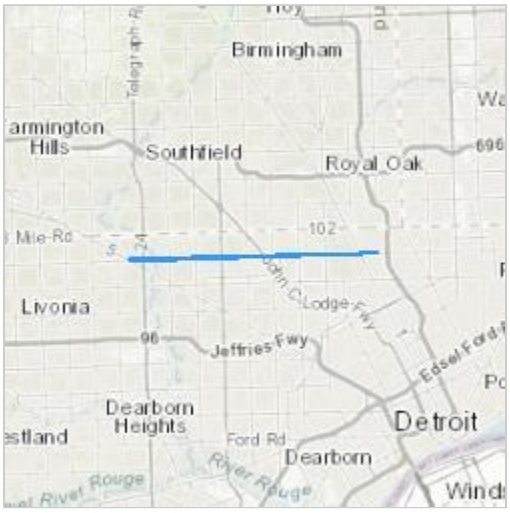
2300150 Rehabilitation of the 7 Mile Sewer System Project

2. Description

The following description was provided for the project '2300150 Rehabilitation of the 7 Mile Sewer System Project':

> The above-mentioned project consists of the rehabilitation of several large diameter combined sewers including Segments 1, 2, and 3 of the 7 Mile Sewer, the East 7 Mile Relief Sewer, and the West 7 Mile Relief Sewer. These 5 sewers comprise the 7 Mile Sewer System and are located along 7 Mile Road extending from Five Points Street to the west and the Grand Trunk Railroad to the east throughout the City of Detroit. The 7 Mile Sewer System transports dry and wet weather flow to other GLWA assets including the Seven Mile Sewer Retention Treatment Basin (RTB) Facility and other large diameter sewers that transport flow to the Water Resource Recovery Facility (WRRF). The East and West 7 Mile Relief Sewers allow several large diameter collector sewers to relieve and overflow into the relief sewers preventing negative upstream hydraulic impacts such as basement flooding. Sewer repairs are proposed to consist of, but are not limited to, various types of spot repairs; in-depth structural repairs within Segment 3 of the 7 Mile Sewer; debris/sludge removal; manhole frame and cover replacements; and more.
>
> The project area is located in Wayne County throughout the City of Detroit all along 7 Mile. Construction efforts will generally take place in public right-of-way areas. Anticipated construction for this project is currently May 2025.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.43049575,-83.19113729051205,14z



QUALIFICATION INTERVIEW

1. Are there any possible effects to any listed species or to designated critical habitat from your project or effects from any other actions or projects subsequently made possible by your project?

   Select "Yes" even if the expected effects to the species or critical habitat are expected to be 1) extremely unlikely (discountable), 2) can't meaningfully be measured, detected, or evaluated (insignificant), or 3) wholly beneficial.

   Select "No" to confirm that the project details and supporting information allow you to conclude that listed species and their habitats will not be exposed to any effects (including discountable, insignificant, or beneficial effects) and therefore, you have made a "no effect" determination for all species. If you are unsure, select YES to answer additional questions about your project.

   Yes

2. This determination key is intended to assist the user in the evaluating the effects of their actions on Federally listed species in Michigan. It does not cover other prohibited activities under the Endangered Species Act (e.g., for wildlife: import/export, Interstate or foreign commerce, possession of illegally taken wildlife, purposeful take for scientific purposes or to enhance the survival of a species, etc.; for plants: import/export, reduce to possession, malicious destruction on Federal lands, commercial sale, etc.) or other statutes. Click yes to acknowledge that you must consider other prohibitions of the ESA or other statutes outside of this determination key.

   Yes

3. Is the action the approval of a long-term (i.e., in effect greater than 10 years) permit, plan, or other action? (e.g., a new or re-issued hydropower license, a land management plan, or other kinds of documents that provide direction for projects or actions that may be conducted over a long term (>10 years) without the need for additional section 7 consultation).

   No

4. Is the action being funded, authorized, or carried out by a Federal agency?

   No

5. Does the action involve the installation or operation of wind turbines?

   No

6. Are there at least 30 days prior to your action occurring? Endangered species consultation must be completed before taking any action that may have effects to listed species. The Service also needs 30 days to review projects before we can verify conclusions in some dkey output letters. For example, if you have already started some components of the project on the ground (e.g., removed vegetation) before completing this key, answer “no” to this question. The only exception is if you have a Michigan Field Office pre-approved emergence survey (i.e., if you have conducted pre-approved emergence surveys for listed bats before tree removal, you can still answer yes to this question).

   Yes

7. Does the action involve constructing a new communication tower or modifying an existing communications tower?

   No

8. Does the activity involve aerial or other large-scale application of any chemical (including insecticide, herbicide, etc.)?

   No

9. Does your project include water withdrawal (ground or surface water) greater than 10,000 gallons/day?

   No

10. Will your action permanently affect hydrology?

    No

11. Will your action temporarily affect hydrology?

    No

12. Will your project have any direct impacts to a stream or river (e.g., Horizontal Directional Drilling (HDD), hydrostatic testing, stream/road crossings, new storm-water outfall discharge, dams, other in-stream work, etc.)?

    No

13. Does your project have the potential to indirectly impact the stream/river or the riparian zone (e.g., cut and fill, horizontal directional drilling, hydrostatic testing, construction, vegetation removal, discharge, etc.)?

    Yes

14. Are you applying for one of the following Michigan EGLE/Army Corps of Engineers joint permit application Minor Permit (MP) Categories:
MP 3 - Boat Hoist; MP 5 - Boal Wells; MP 7 - Completed Enforcement Actions; MP 12 - Dock;
MP 21 - Fish and Wildlife Habitat Structures;
MP 22 - Ford Stream Crossings for Commercial Forestry Operations;
MP 28 - Maintenance and Repair of Serviceable Structures;
MP 45 - Temporary Recreational Structures;
MP 48 - Wetland Habitat Restoration and Enhancement?

    Verify the MP category number and associated description matches your project/ application (https://www.michigan.gov/documents/egle/WRD-Minor-Project-Categories_733320_7.pdf). If you don't know what category applies for your project, answer no to this question.

    No

15. Are you applying for one of the following Michigan EGLE/Army Corps of Engineers joint permit application General Permit (GP) Categories:
GP A - Aids to Navigation;
GP C - Clear Span Bridge;
GP E - Culverts - Small;
GP J - Dry Fire Hydrant;
GP O - Minor Permit Revisions and Transfers;
GP Q - Mooring Buoy;
GP W - Scientific Measuring Devices;
GP X - Snow Road Stream Crossings for Forestry Operations;
GP Z - Spring Piles and Piling Clusters;
GP DD - Wetland Habitat Restoration and Enhancement?

    Verify the GP category number and associated description matches your project/ application (https://www.michigan.gov/documents/deq/wrd-general-permit-categories_555828_7.pdf). If you don't know what category applies for your project, answer no to this question.

    No

16. Will your action disturb the ground or existing vegetation? This includes any off road vehicle access, soil compaction, digging, seismic survey, directional drilling, heavy equipment, grading, trenching, placement of fill, pesticide application, vegetation management (including removal or maintenance using equipment or chemicals), cultivation, development, etc.

    Yes

17. Is the action a utility-scale solar development project?

    No

18. [Hidden semantic] Does the action intersect the MOBU AOI?

    Automatically answered
    Yes

19. Under the ESA, monarchs remain warranted but precluded by listing actions of higher priority. The monarch is a candidate for listing at this time. The Endangered Species Act does not establish protections or consultation requirements for candidate species. Some Federal and State agencies may have policy requirements to consider candidate species in planning. We encourage implementing measures that will remove or reduce threats to these species and possibly make listing unnecessary. If your project will have no effect on monarch butterflies (for example, if your project won't affect their habitat or individuals), then you can make a "no effect" determination for this project. Are you making a "no effect" determination for monarch?

    Yes

20. [Hidden Semantic] Does the action intersect the Eastern massasauga rattlesnake area of influence?

    Automatically answered
    Yes

21. Does your action involve prescribed fire?

    No

22. Will this action occur entirely in the Eastern massasauga rattlesnake inactive season (October 16 through April 14)?

    Yes

23. Will the action result in permanent loss of more than one acre of wetland or conversion of more than 10 acres of uplands of potential Eastern massasauga rattlesnake habitat (uplands associated with high quality wetland habitat) to other land uses?

    No

24. Will you use wildlife safe materials for erosion control and site restoration and eliminate the use of erosion control products containing plastic mesh netting or other similar material that could ensnare Eastern massasauga rattlesnake?

    Yes

25. Will you watch MDNR's "60-Second Snakes: The Eastern Massasauga Rattlesnake (EMR)" video, review the EMR factsheet or call 517-351-2555 to increase human safety and awareness of EMR?

    Yes

26. Will all action personnel report any Eastern massasauga rattlesnake observations, or observation of any other listed threatened or endangered species, during action implementation to the Service within 24 hours?

    Yes

27. [Semantic] Does the action area intersect the northern riffelshell area of influence?

    Automatically answered
    Yes

28. [Hidden Semantic] Does the action area intersect the rufa red knot area of influence?

    Automatically answered
    Yes

29. [Hidden Semantic] Does the action area intersect the area of influence for Eastern prairie fringed orchid?

    Automatically answered
    Yes

30. The project has the potential to affect federally listed bats. Does the action area contain any known or potential bat hibernacula (natural caves, abandoned mines, or underground quarries)?

    No

31. Has a presence/absence bat survey or field-based habitat assessment following the Service's Range-wide Indiana Bat and Northern Long-eared Bat Summer Survey Guidelines been conducted within the action area?

    No

32. Does the action involve removal/modification of a human structure (barn, house or other building) known to contain roosting bats?

    No

33. Does the action include removal/modification of an existing bridge or culvert?

    No

34. Does the action include temporary or permanent lighting of roadway(s), facility(ies), and/or parking lot(s)?

    No

35. Does the action include one or more of the following: (1) tree cutting/trimming, (2) prescribed fire, (3) pesticide (including insecticide and/or rodenticide), and/or (4) herbicide/fungicide application?

    No

36. [Hidden Semantic] Does the action area intersect the Indiana bat AOI?

    Automatically answered
    Yes

37. [Hidden Semantic] Does this project intersect the northern long-eared bat area of influence?

    Automatically answered
    Yes

38. [Hidden semantic] Does the action intersect the Tricolored bat AOI/SLA/range?

    Automatically answered
    Yes

39. The tricolored bat was proposed for listing as endangered on September 13, 2022. In Michigan, the tricolored bat was rare pre-white nose syndrome (WNS) and is exceedingly rare post-WNS. The species has been observed in 12 Michigan counties to date, largely during the fall or winter. With very few exceptions, the species has not been observed in Michigan in the summer months, and no maternity colonies have been found. During winter, tricolored bats hibernate in caves, abandoned mines, and abandoned tunnels ranging from small to large in size. During spring, summer and fall months, they roost primarily among leaf clusters of live or recently dead deciduous/hardwood trees.

    Are you making a no effect determination on this project for the tricolored bat?

    Yes

IPAC USER CONTACT INFORMATION

Agency: Michigan Department of Environment, Great Lakes, and Energy
Name: Sara Lucchese
Address: 30425 Stephenson Hwy.
City: Madison Heights
State: MI
Zip: 48071
Email slucchese@fkengineering.com
Phone: 5862427201

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Detroit city

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Michigan Ecological Services Field Office
2651 Coolidge Road Suite 101
East Lansing, MI 48823-6360
Phone: (517) 351-2555 Fax: (517) 351-1443

In Reply Refer To: January 11, 2024
Project Code: 2024-0035350
Project Name: 2300150 Rehabilitation of the 7 Mile Sewer System Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

Official Species List
The attached species list identifies any Federally threatened, endangered, proposed and candidate species that may occur within the boundary of your proposed project or may be affected by your proposed project. The list also includes designated critical habitat if present within your proposed project area or affected by your project. This list is provided to you as the initial step of the consultation process required under section 7(c) of the Endangered Species Act, also referred to as Section 7 Consultation.

Under 50 CFR 402.12(e) (the regulations that implement section 7 of the Endangered Species Act), the accuracy of this species list should be verified after 90 days. You may verify the list by visiting the IPaC website (https://ipac.ecosphere.fws.gov/) at regular intervals during project planning and implementation. To update an Official Species List in IPaC: from the My Projects page, find the project, expand the row, and click Project Home. In the What's Next box on the Project Home page, there is a Request Updated List button to update your species list. Be sure to select an "official" species list for all projects.

Consultation requirements and next steps
Section 7 of the Endangered Species Act of 1973 requires that actions authorized, funded, or carried out by Federal agencies not jeopardize Federally threatened or endangered species or adversely modify designated critical habitat. To fulfill this mandate, Federal agencies (or their designated non-Federal representative) must consult with the Fish and Wildlife Service if they determine their project may affect listed species or critical habitat.

There are two approaches to evaluating the effects of a project on listed species.

Approach 1. Use the All-species Michigan determination key in IPaC. This tool can assist you in making determinations for listed species for some projects. In many cases, the determination key

will provide an automated concurrence that completes all or significant parts of the consultation process. Therefore, we strongly recommend screening your project with the **All-Species Michigan Determination Key (Dkey)**. For additional information on using IPaC and available Determination Keys, visit https://www.fws.gov/media/mifo-ipac-instructions (and click on the attachment). Please carefully review your Dkey output letter to determine whether additional steps are needed to complete the consultation process.

Approach 2. Evaluate the effects to listed species on your own without utilizing a determination key. Once you obtain your official species list, you are not required to continue in IPaC, although in most cases using a determination key should expedite your review. If the project is a Federal action, you should review our section 7 step-by-step instructions before making your determinations: https://www.fws.gov/office/midwest-region-headquarters/midwest-section-7-technical-assistance. If you evaluate the details of your project and conclude "no effect," document your findings, and your listed species review is complete; you do not need our concurrence on "no effect" determinations. If you cannot conclude "no effect," you should coordinate/consult with the Michigan Ecological Services Field Office. The preferred method for submitting your project description and effects determination (if concurrence is needed) is electronically to EastLansing@fws.gov. Please include a copy of this official species list with your request.

For all **wind energy projects** and **projects that include installing communications towers >450 feet that use guy wires**, please contact this field office directly for assistance, even if no Federally listed plants, animals or critical habitat are present within your proposed project area or may be affected by your proposed project.

Migratory Birds
Please see the "Migratory Birds" section below for important information regarding incorporating migratory birds into your project planning. Our Migratory Bird Program has developed recommendations, best practices, and other tools to help project proponents voluntarily reduce impacts to birds and their habitats. The Bald and Golden Eagle Protection Act prohibits the take and disturbance of eagles without a permit. If your project is near an eagle nest or winter roost area, see our Eagle Permits website at https://www.fws.gov/program/eagle-management/eagle-permits to help you avoid impacting eagles or determine if a permit may be necessary.

Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your consideration of threatened and endangered species during your project

planning. Please include a copy of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Michigan Ecological Services Field Office
2651 Coolidge Road Suite 101
East Lansing, MI 48823-6360
(517) 351-2555

PROJECT SUMMARY

Project Code: 2024-0035350

Project Name: 2300150 Rehabilitation of the 7 Mile Sewer System Project

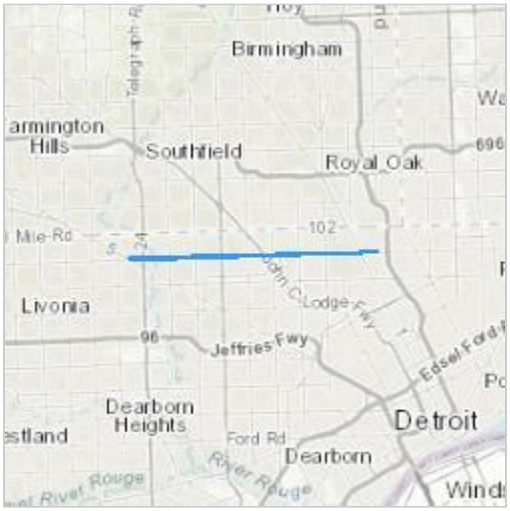
Project Type: Utility Infrastructure Maintenance

Project Description: The above-mentioned project consists of the rehabilitation of several large diameter combined sewers including Segments 1, 2, and 3 of the 7 Mile Sewer, the East 7 Mile Relief Sewer, and the West 7 Mile Relief Sewer. These 5 sewers comprise the 7 Mile Sewer System and are located along 7 Mile Road extending from Five Points Street to the west and the Grand Trunk Railroad to the east throughout the City of Detroit. The 7 Mile Sewer System transports dry and wet weather flow to other GLWA assets including the Seven Mile Sewer Retention Treatment Basin (RTB) Facility and other large diameter sewers that transport flow to the Water Resource Recovery Facility (WRRF). The East and West 7 Mile Relief Sewers allow several large diameter collector sewers to relieve and overflow into the relief sewers preventing negative upstream hydraulic impacts such as basement flooding. Sewer repairs are proposed to consist of, but are not limited to, various types of spot repairs; in-depth structural repairs within Segment 3 of the 7 Mile Sewer; debris/sludge removal; manhole frame and cover replacements; and more.

The project area is located in Wayne County throughout the City of Detroit all along 7 Mile. Construction efforts will generally take place in public right-of-way areas. Anticipated construction for this project is currently May 2025.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.43049575,-83.19113729051205,14z



Counties: Wayne County, Michigan

ENDANGERED SPECIES ACT SPECIES

There is a total of 9 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 2 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949 General project design guidelines: https://ipac.ecosphere.fws.gov/project/SO7UXFO7V5DGBH6TCXWHS2TFPU/documents/generated/6982.pdf	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

BIRDS

NAME	STATUS
Rufa Red Knot *Calidris canutus rufa* There is **proposed** critical habitat for this species. This species only needs to be considered under the following conditions: ▪ Only actions that occur along coastal areas during the Red Knot migratory window of MAY 1 - SEPTEMBER 30. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened

REPTILES

NAME	STATUS
Eastern Massasauga (=rattlesnake) *Sistrurus catenatus*	Threatened

No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:
- For all Projects: Project is within EMR Range

Species profile: https://ecos.fws.gov/ecp/species/2202
General project design guidelines:
https://ipac.ecosphere.fws.gov/project/SO7UXFO7V5DGBH6TCXWHS2TFPU/documents/generated/5280.pdf

CLAMS

NAME	STATUS
Northern Riffleshell *Epioblasma rangiana*	Endangered

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/527

Salamander Mussel *Simpsonaias ambigua*	Proposed Endangered

There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/6208

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

FLOWERING PLANTS

NAME	STATUS
Eastern Prairie Fringed Orchid *Platanthera leucophaea*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/601

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

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1. The Bald and Golden Eagle Protection Act of 1940.
2. The Migratory Birds Treaty Act of 1918.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

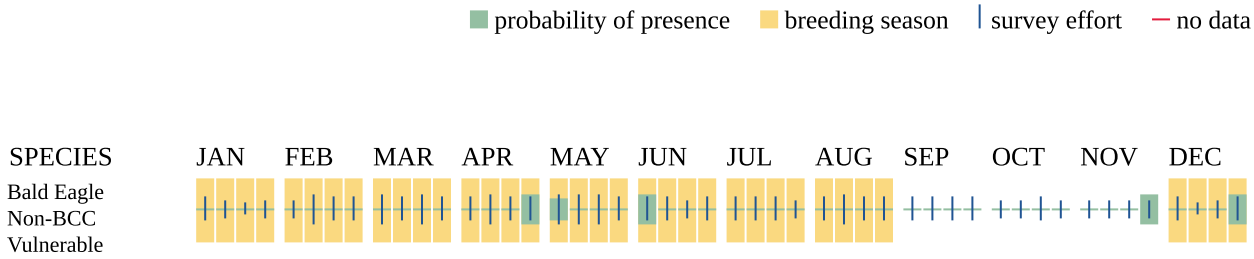
Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Black-billed Cuckoo *Coccyzus erythropthalmus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Canada Warbler *Cardellina canadensis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9643	Breeds May 20 to Aug 10
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406	Breeds Mar 15 to Aug 25
Golden-winged Warbler *Vermivora chrysoptera* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8745	Breeds May 1 to Jul 20
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Pectoral Sandpiper *Calidris melanotos* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9561	Breeds elsewhere

NAME	BREEDING SEASON
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9398	Breeds May 10 to Sep 10
Rusty Blackbird *Euphagus carolinus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9478	Breeds elsewhere
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9431	Breeds May 10 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

■ probability of presence ■ breeding season | survey effort – no data

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

RIVERINE

- R5UBFx
- R2UBH

IPAC USER CONTACT INFORMATION

Agency: Michigan Department of Environment, Great Lakes, and Energy
Name: Sara Lucchese
Address: 30425 Stephenson Hwy.
City: Madison Heights
State: MI
Zip: 48071
Email slucchese@fkengineering.com
Phone: 5862427201

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Detroit city

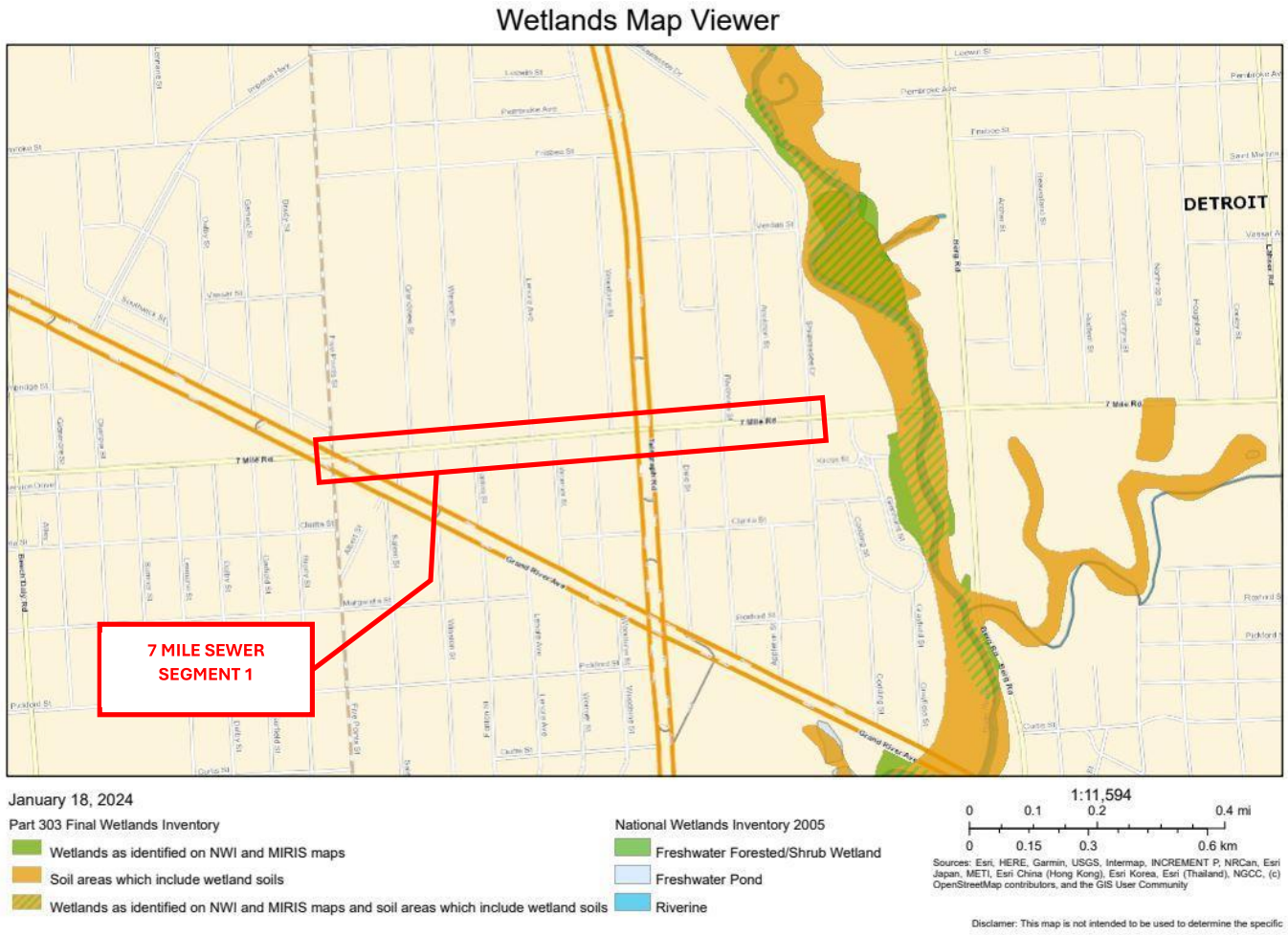


Figure 1: 7 Mile Sewer Segment 1 location relative to nearby wetlands.

Figure 2: 7 Mile Sewer Segment 2 and West 7 Mile Relief Sewer locations relative to nearby wetlands.

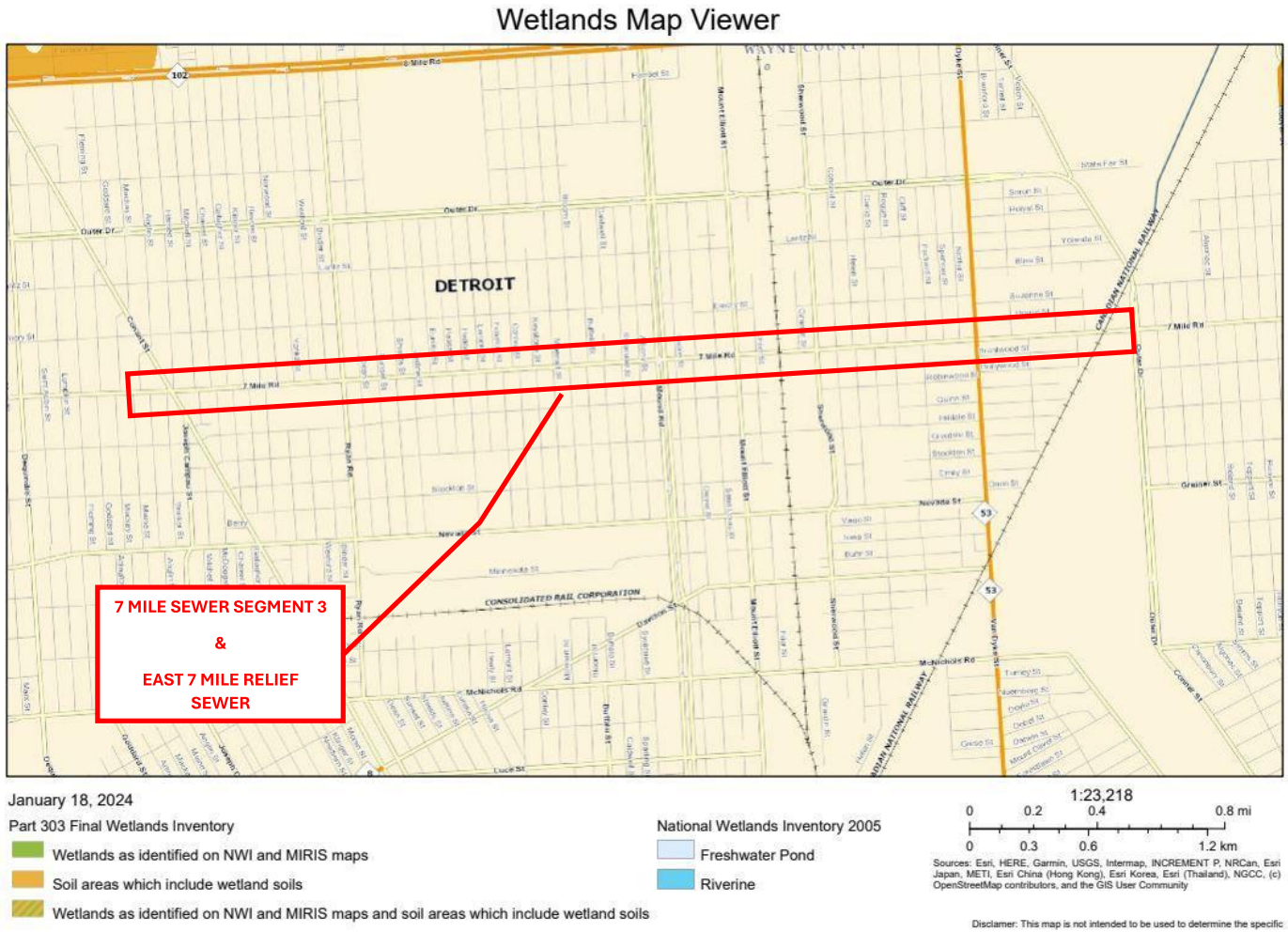


Figure 3: 7 Mile Sewer Segment 3 and East 7 Mile Relief Sewer locations relative to nearby wetlands.

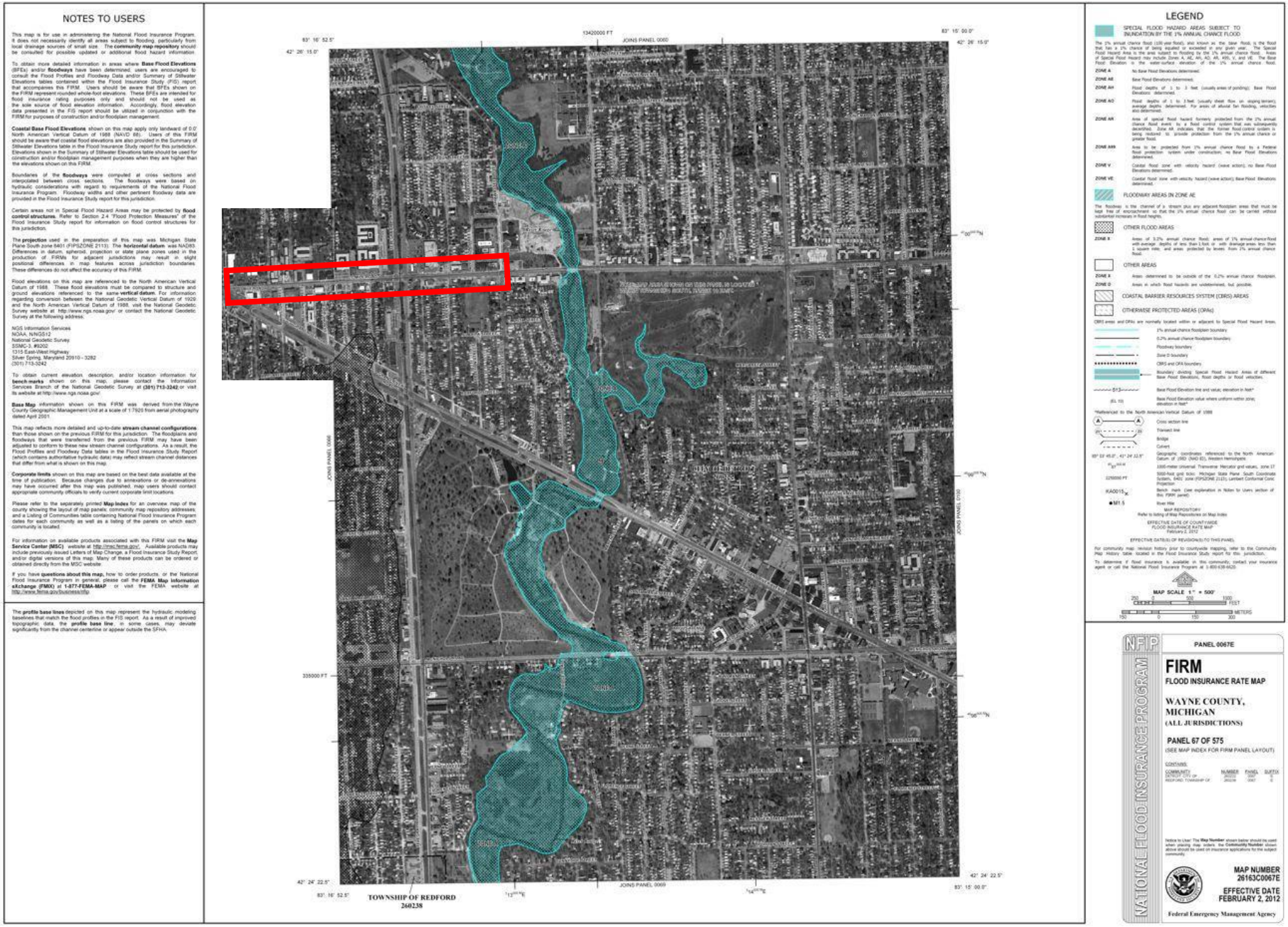


Figure 4: 7 Mile Sewer Segment 1 location relative to floodplains.

Figure 5: 7 Mile Sewer Segment 2 and West 7 Mile Relief Sewer locations relative to floodplains.

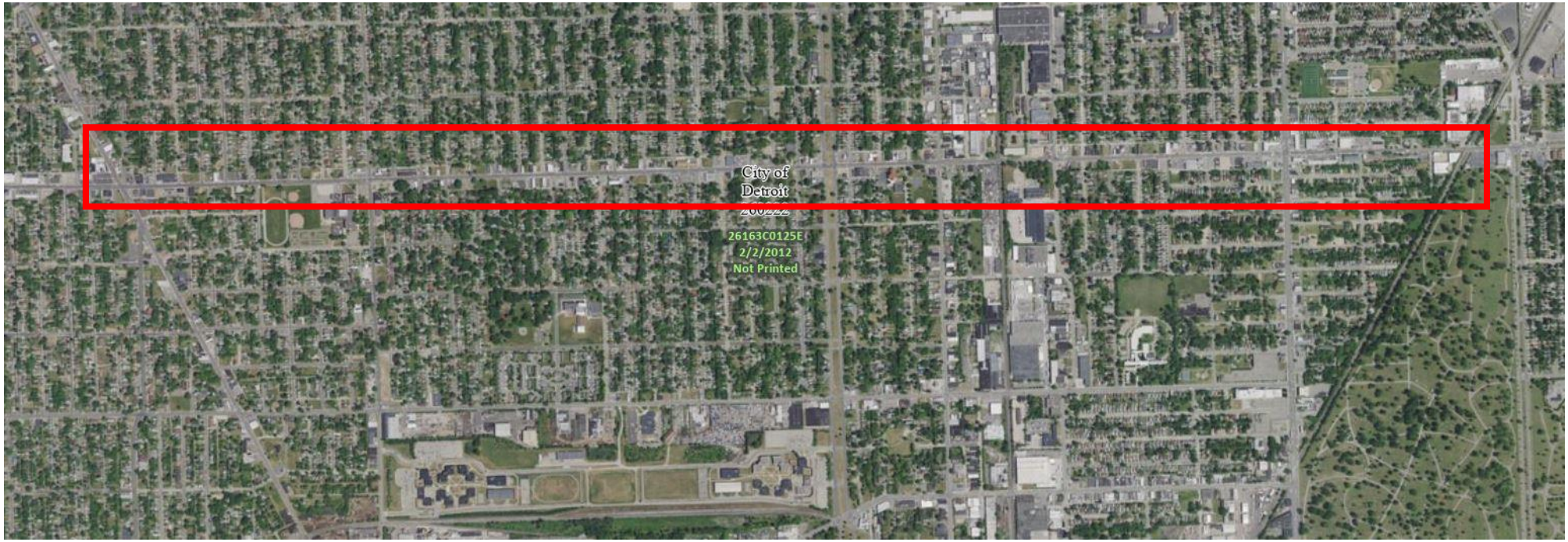


Figure 6: 7 Mile Sewer Segment 3 and East 7 Mile Relief Sewer locations relative to floodplains. FEMA map not available. Figure reference from FEMA's National Flood Hazard Map website.

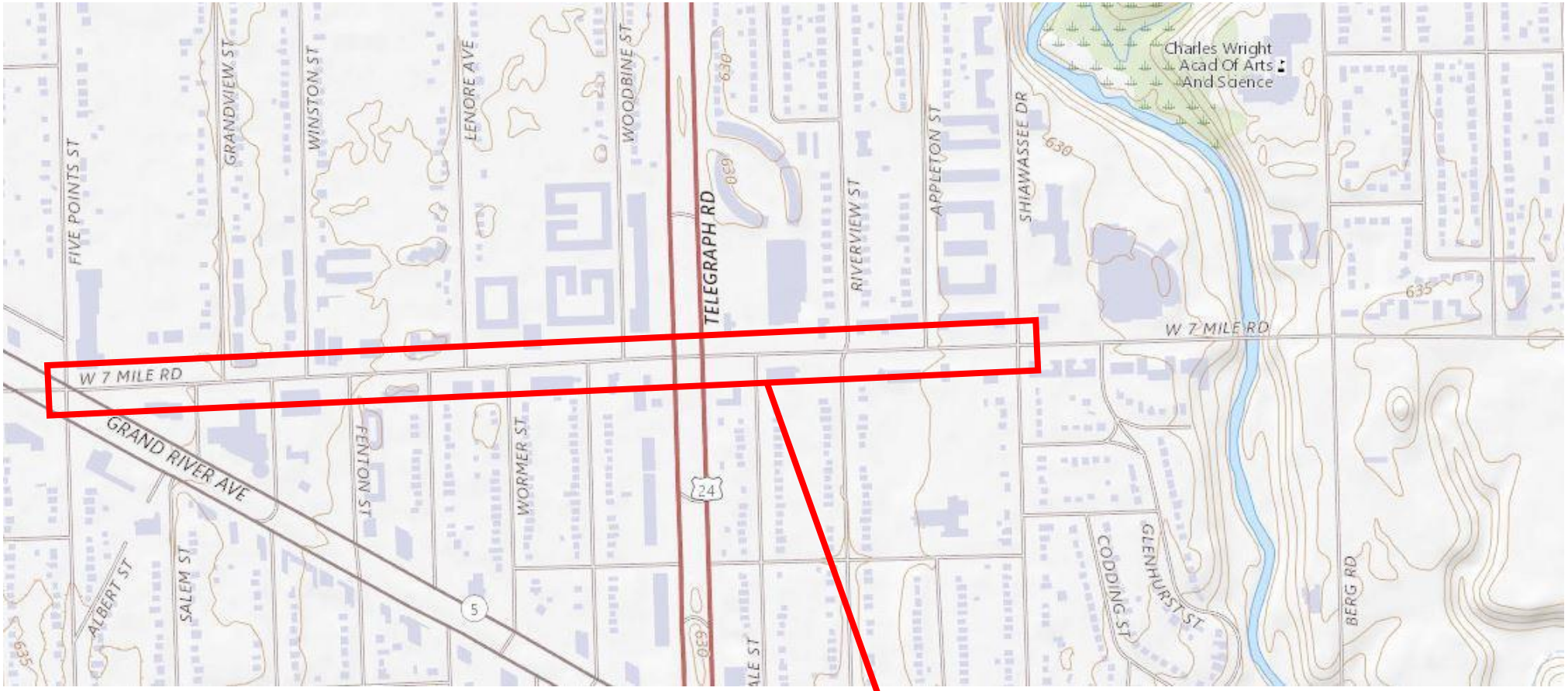


Figure 7: 7 Mile Sewer Segment 1 location with relative topography.

Figure 8: 7 Mile Sewer Segment 2 and West 7 Mile Relief Sewer locations with relative topography.

Figure 9: 7 Mile Sewer Segment 3 and East 7 Mile Relief Sewer locations with relative topography (part 1)

Figure 10: 7 Mile Sewer Segment 3 and East 7 Mile Relief Sewer locations with relative topography (part 2)

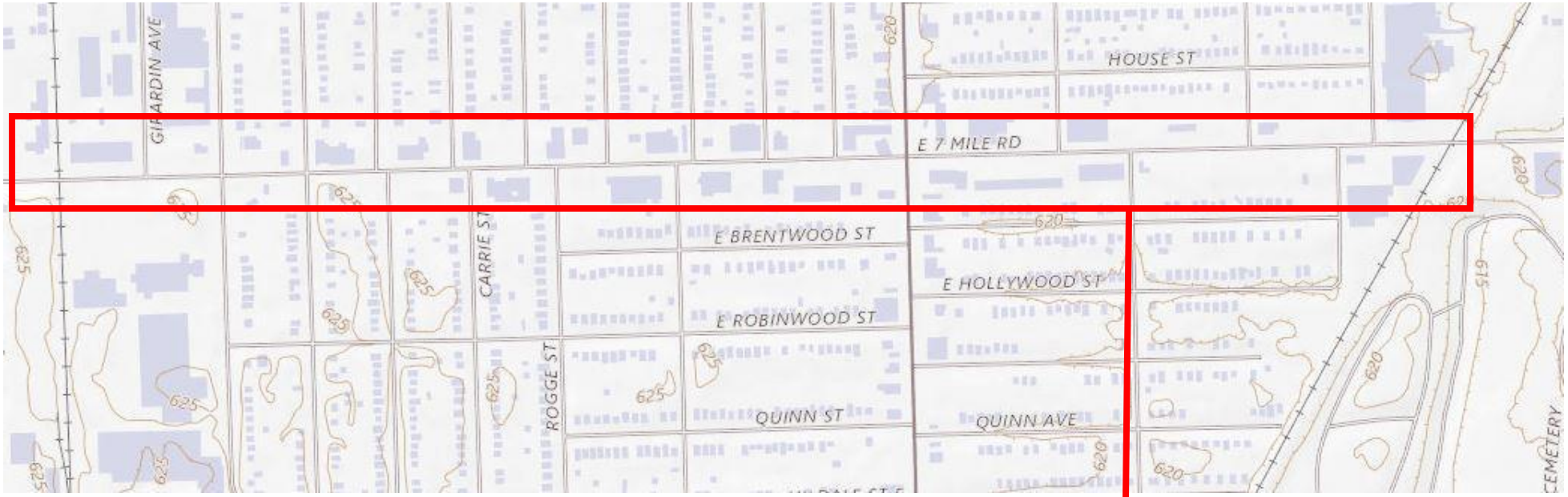


Figure 11: 7 Mile Sewer Segment 3 and East Relief Sewer locations with relative topography (part 3)

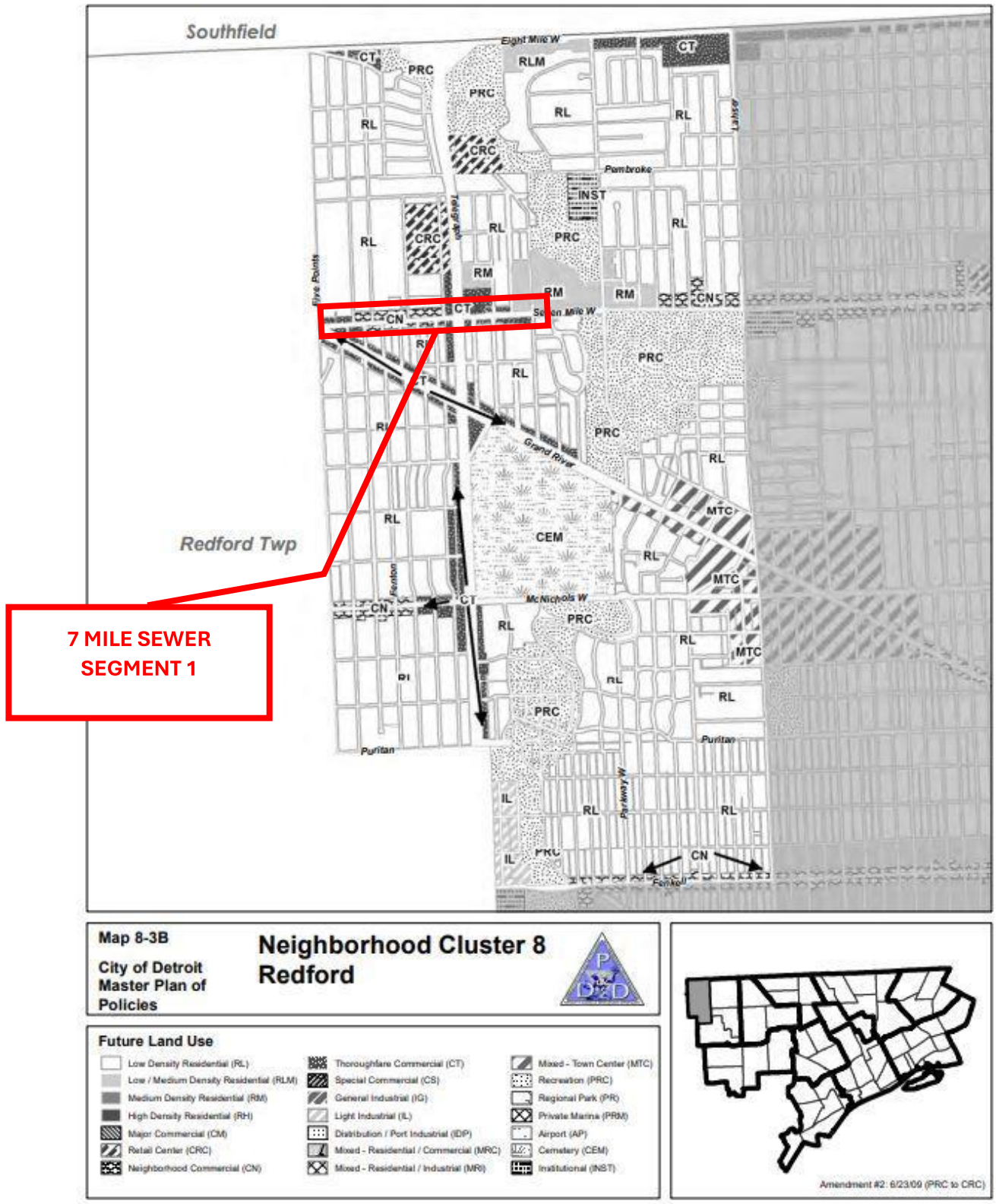


Figure 12: 7 Mile Sewer Segment 1 location with surrounding land uses.

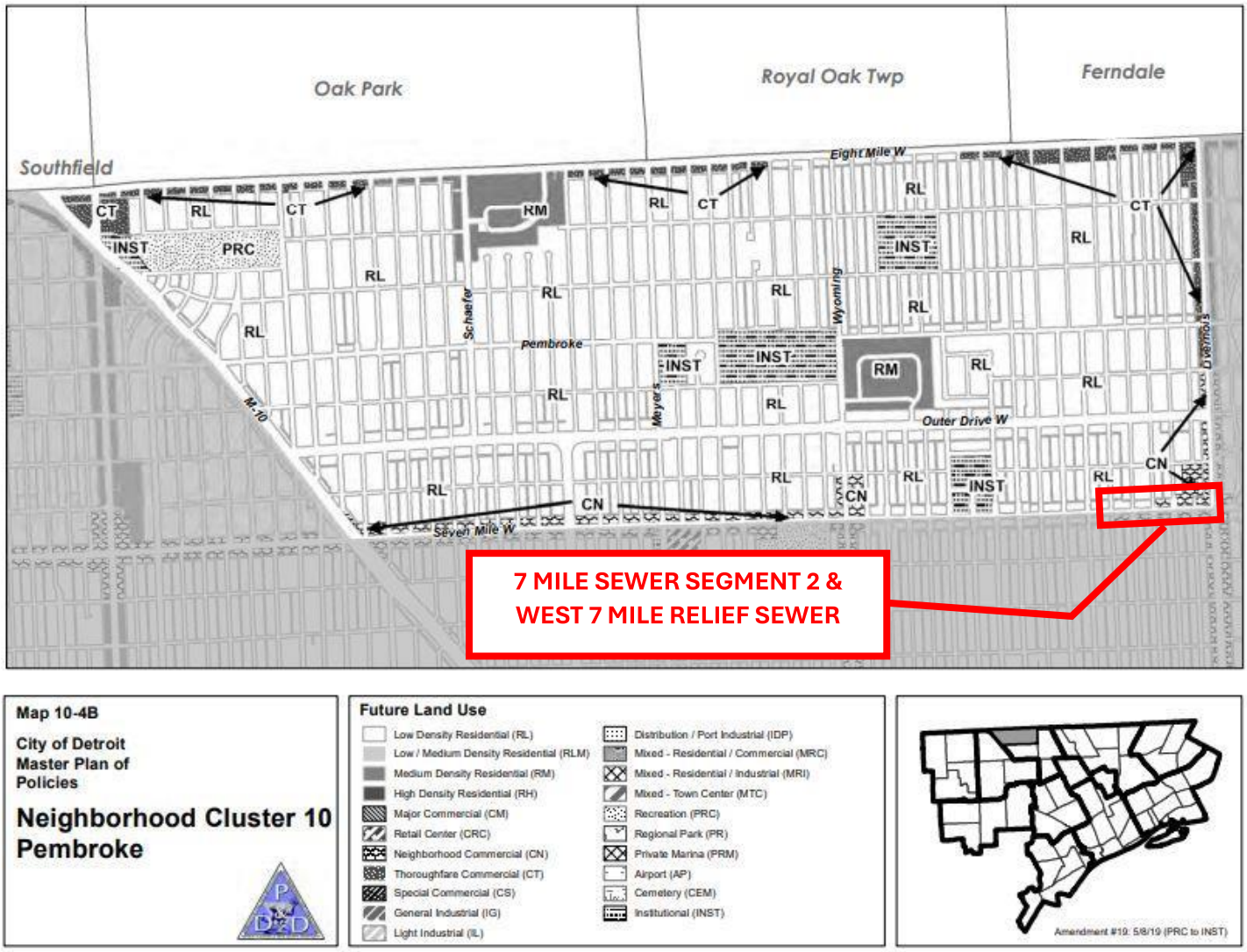


Figure 13: 7 Mile Sewer Segment 2 and West 7 Mile Relief Sewer locations with surrounding land uses (Part 1)

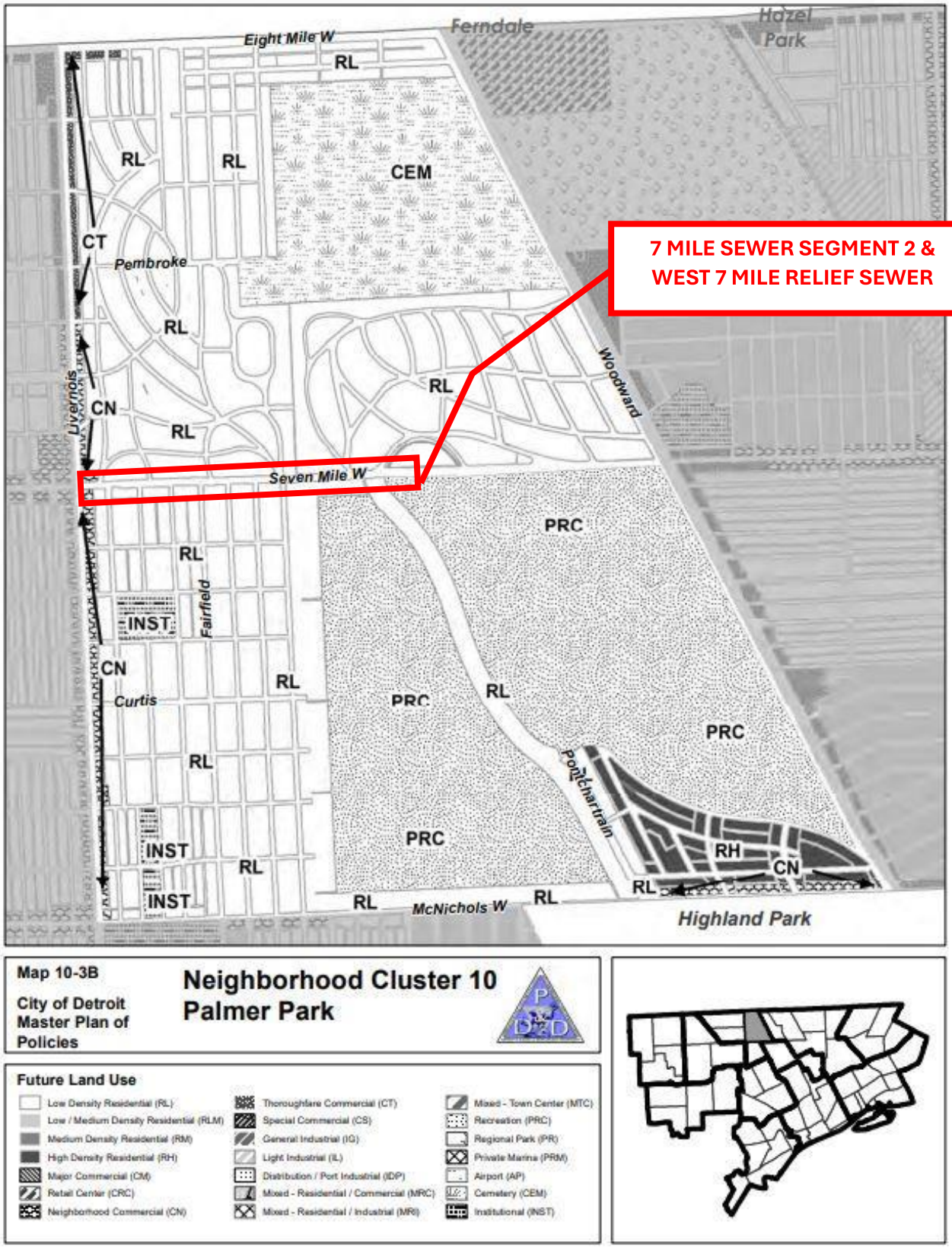


Figure 14: 7 Mile Sewer Segment 2 and West 7 Mile Relief Sewer locations with surrounding land uses (Part 2)

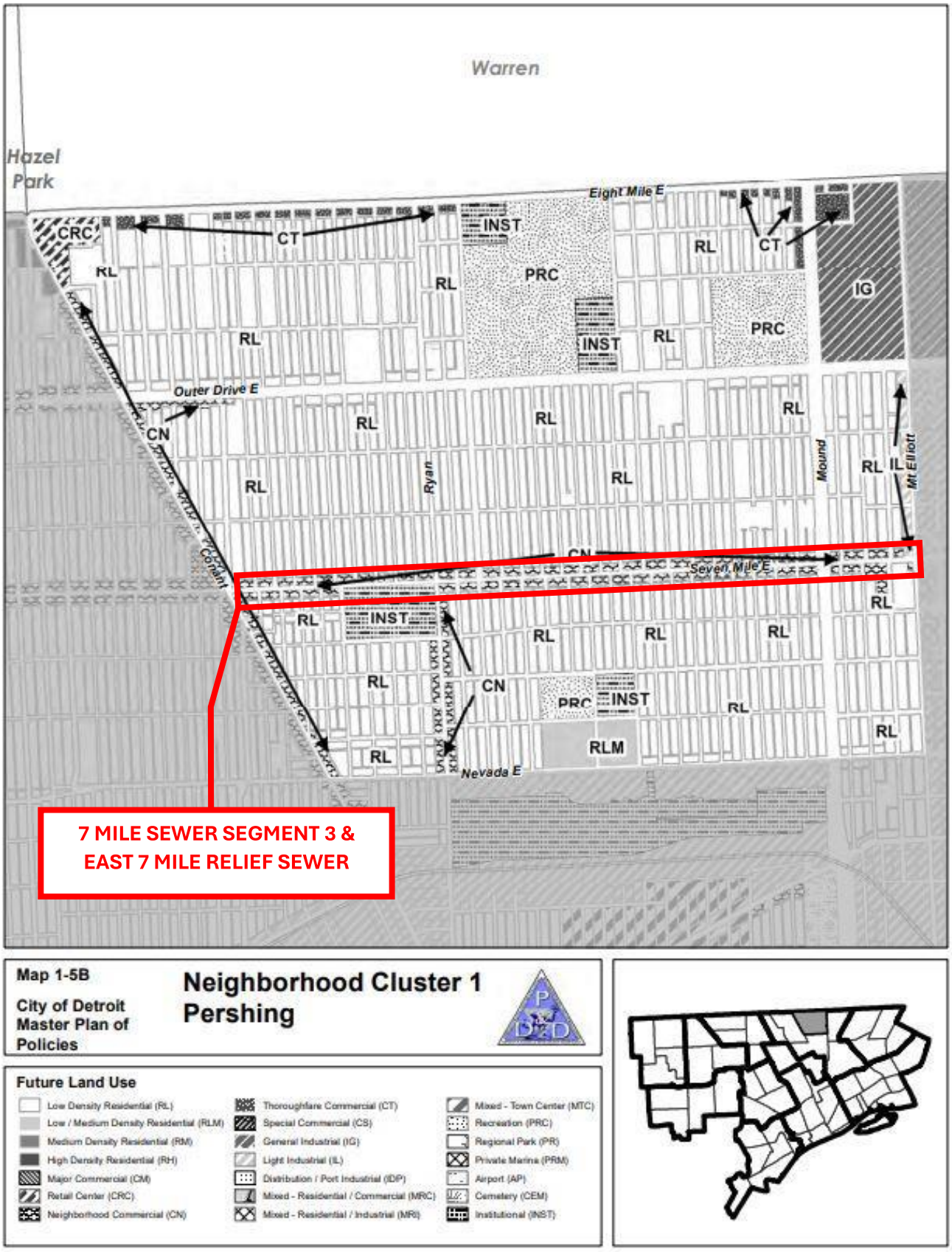


Figure 15: 7 Mile Sewer Segment 3 and East 7 Mile Relief Sewer locations with surrounding land uses (Part 1)

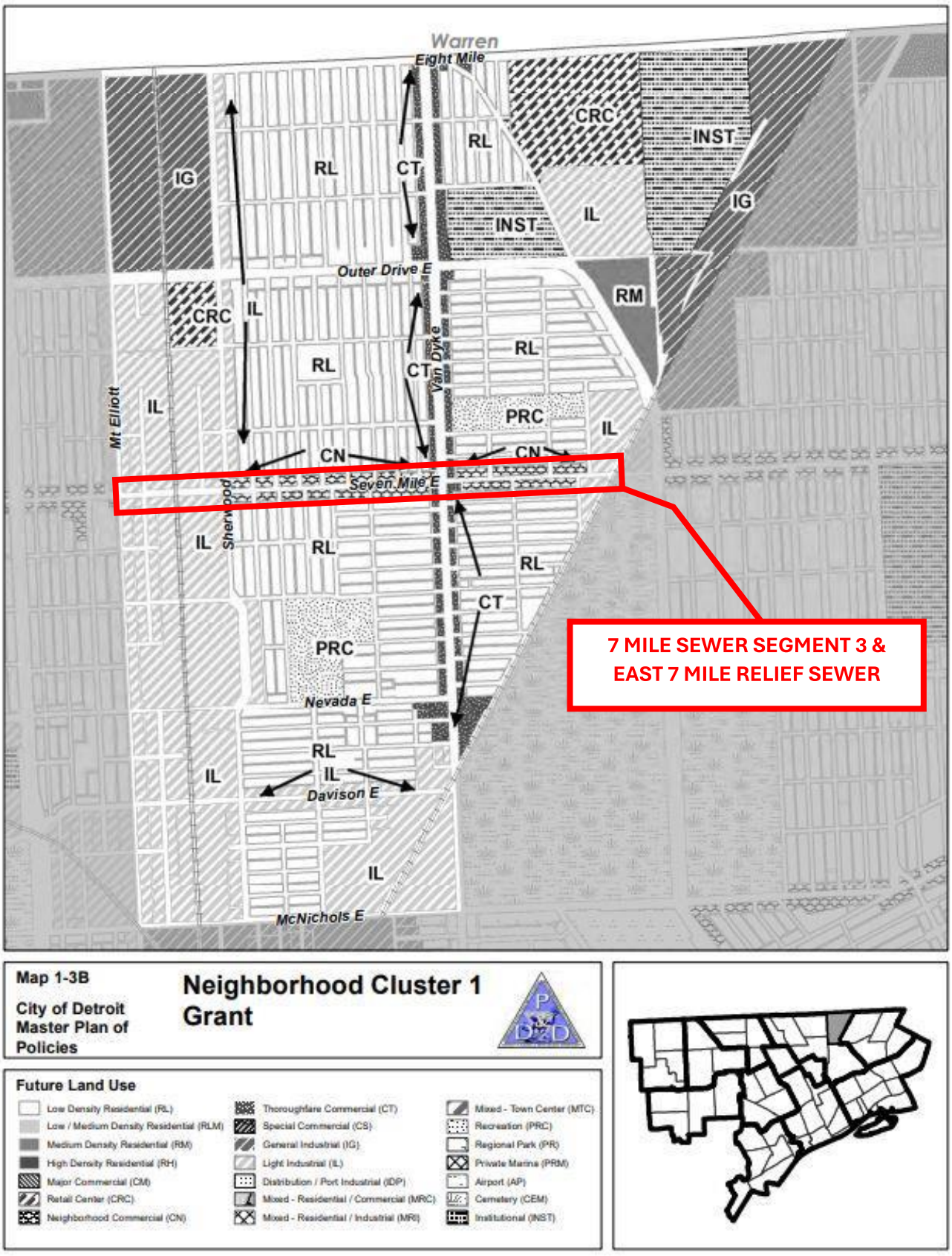


Figure 16: 7 Mile Sewer Segment 3 and East 7 Mile Relief Sewer locations with surrounding land uses (Part 2)

GLWA Contract 2300150
Rehabilitation of the 7 Mile Sewer System

State Revolving Fund Project Plan

Appendix D

(Forms to be completed prior to Final Project Plan Submittal)

- **Project Plan Submittal Form**
- **Project Useful Life and Cost Analysis Certification Form**
- **Fiscal Sustainability Plan Certification Form**
- **Project Priority List (PPL) Scoring Data Form**
- **QBS Procurement of Architectural and Engineering Services Certification Form**
- **Overburdened and Significantly Overburdened Community Status Determination Worksheet**
- **Sewer Structural Integrity Spreadsheet and Corresponding PACP Reports**
- **Resolution to Adopt the Project Plan**

Pipe Segment Reference/Manhole-Manhole ID*	Street*	Pipe Length*	NASSCO PACP Structural Quick Rating Score*	Pipe Material, if Known	Year Constructed, if Known	Consequence of Failure, per Asset Management Plan, if applicable	Probability of Failure, per Asset Management Plan, if applicable	Types of Structural Defects Found (O&M defects are not CWSRF-eligible)	Justification of Need (required for non-NASSCO structural 4 or 5 rated segments)*
7 Mile Sewer Segment 1									
SMN00000527	7 Mile & Grand River Ave. to 7 Mile & Grandview St.	~575'	0000	Brick	ca. 1931	2	4.0	None	Repairs necessary for ongoing maintenance of sewer and to prevent continued deteroration of defects that could result in failure
SMN00000628	7 Mile & Grandview St. to 7 Mile & Fenton St.	~704'	0000	Brick	ca. 1931	2	0.9	None	
SMN00000937	7 Mile & Fenton St. to 7 Mile & Wormer St.	~664'	3100	Brick	ca. 1931	2	4.0	Medium Missing Mortar	
SMN00000683	7 Mile & Wormer St. to 7 Mile & Dale St.	~978'	4321	Brick	ca. 1931	2	0.8	Small Missing Mortar, Missing Brick, Hinge Crack 2	
SMN00001077	7 Mile & Dale St. to 7 Mile & Appleton St.	~585'	2100	Brick	ca. 1931	2	0.9	Small Missing Mortar	
SMN00000532	7 Mile & Appleton St. to 7 Mile & Shiawassee Dr.	~347'	2100	Brick	ca. 1931	2	0.5	Small Missing Mortar	
7 Mile Sewer Segment 2									
SGM000000067019 & SGM000000070545	7 Mile & San Juan Dr. to 7 Mile & Stoepel St.	~1,218'	3522	Brick	ca. 1921 to 1922	3	0.6	Missing Mortar Medium & Small, Displaced Brick,	Repairs necessary for ongoing maintenance of sewer and to prevent continued deteroration of defects that could result in failure
SGM000000040662	7 Mile & Stoepel St. to 7 Mile & Livernois Ave.	~315'	2100	Brick	ca. 1921 to 1922	2	4	Missing Mortar Small	
SGM000000020380	7 Mile & Livernois Ave. to 7 Mile & Warrington Dr.	~392'	4232	Brick	ca. 1921	2	0.6	Missing Mortar Medium, Missing Brick	
SGM000000030212	7 Mile & Warrington Dr. to 7 Mile & Birchcrest Dr.	~816'	3826	Brick	ca. 1921	2	4.0	Missing Mortar Small, Displaced Bricks, Holes	
SGM000000066896	7 Mile & Birchcrest Dr. to 7 Mile & Muirland St.	~812'	4132	Brick	ca. 1921	2	0.5	Holes, Missing Brick	
SGM000000047203	7 Mile & Muirland St. to 7 Mile & Parkside St.	~425'	2117	Brick	ca. 1921	2	1.2	Surface Roughness Increased	
SGM000000060229	7 Mile & Parkside St. to 7 Mile & Fairway Dr.	~470'	3400	Brick	ca. 1922	2	1.2	Missing Mortar Medium	
SGM000000000846	7 Mile & Fairway Dr. to 7 Mile & Lincolnshire Dr.	~926'	3123	Brick	ca. 1922	2	0.9	Longitudinal Crack, Missing Mortar Small and Medium	
SGM000000017189	7 Mile & Lincolnshire Dr. to 7 Mile & Gloucester Dr.	~725'	0000	Brick	ca. 1922	2	4.0	N/A	
7 Mile Sewer Segment 3									
SMN00002132	7 Mile & Anglin St.	~45'	1100	Concrete	ca. 1921 to 1922	3	0.9	Surface Aggregate Missing, Surface Aggregate Spalling, Longitudinal cracking, Hole, Circumferential Cracking	N/A
SMN00000744	7 Mile & Anglin St. to 7 Mile & Mitchell St.	~842'	4Z2Z	Concrete	ca. 1921 to 1922	3	5.0		
SMN00000504	7 Mile & Mitchell St. to 7 Mile & Klinger St.	~967'	4Z3B	Concrete	ca. 1921 to 1922	3	5.0		
SMN00000614	7 Mile & Klinger St. to 7 Mile & Wexford St.	~964'	4Z3E	Concrete	ca. 1921 to 1922	3	5.0		
SMN00000615	7 Mile & Wexford St. to 7 Mile & Sunset St.	~1,005'	4Z31	Concrete	ca. 1921 to 1922	3	5.0		
SMN00000934	7 Mile & Sunset St. to 7 Mile & Eureka St.	~995'	4Z31	Concrete	ca. 1921 to 1922	3	5.0		
SMN00000403	7 Mile & Eureka St. to 7 Mile & Fenelon St.	~973'	4Z2Z	Concrete	ca. 1921 to 1922	3	5.0		
SMN00001124	7 Mile & Fenelon St. to 7 Mile & Keystone St.	~714'	4Z2Z	Concrete	ca. 1921 to 1922	3	5.0		
SMN00000765	7 Mile & Keystone St. to 7 Mile & Syracuse St.	~1,247'	4Z21	Concrete	ca. 1921 to 1922	3	5.0		
SMN00001018	7 Mile & Syracuse St. to 7 Mile & Gable St.	~1,012'	4Z29	Concrete	ca. 1921 to 1922	3	5.0		
SMN00001000	7 Mile & Gable St. to 7 Mile & Mt. Elliot St.	~1,000'	4Z21	Concrete	ca. 1921 to 1922	3	5.0		
SMN00000879	7 Mile & Mt. Elliot St. to 7 Mile & Penn Central Railroad	~734'	4Z2G	Concrete	ca. 1921 to 1922	3	5.0		
SMN00000506	7 Mile & Penn Central Railroad to 7 Mile & Helen St.	~1,097'	514Z	Concrete	ca. 1921 to 1922	3	0.6		
SMN00000120	7 Mile & Helen St. to 7 Mile & Packard St.	~1,137'	4Z2B	Concrete	ca. 1921 to 1922	3	5.0		
SMN00000181	7 Mile & Packard St. to 7 Mile & Van Dyke Ave.	~946'	4Z2E	Concrete	ca. 1921 to 1922	3	5.0		
SMN00000182	7 Mile & Van Dyke Ave. to 7 Mile & Veach St.	~924'	4Z3F	Concrete	ca. 1921 to 1922	3	5.0		
SMN00000410	7 Mile & Veach St. to 7 Mile & Antwerp St.	~837'	4Z23	Concrete	ca. 1921 to 1922	3	5.0		
SMN00000790	7 Mile & Antwerp St. to 7 Mile & Canadian National RR	~597'	4V24	Concrete	ca. 1921 to 1922	3	5.0		
West 7 Mile Relief Sewer									
SMN00000942	7 Mile & San Juan Dr. to 7 Mile & Prairie St.	~120'	2400	Concrete	ca. 1965 to 1967	4	0.8	Surface spalling, Surface Aggregate Missing	N/A
SMN00001912	7 Mile & Prairie St. to 7 Mile & Santa Rosa Dr.	~489'	2300	Concrete	ca. 1965 to 1967	4	0.6		
SMN00001910	7 Mile & Santa Rose Dr. to 7 Mile & Warrington Dr.	~838'	412B	Concrete	ca. 1965 to 1967	2	0.5		
SMN00001911	7 Mile & Warrington Dr. to 7 Mile & Berkeley Rd.	~650'	2300	Concrete	ca. 1965 to 1967	2	0.5		
SMN00000891	7 Mile & Berkeley Rd. to 7 Mile & Muirland St.	~830'	2400	Concrete	ca. 1965 to 1967	2	0.4		
SMN00000402	7 Mile & Muirland St. to 7 Mile & Parkside St.	~646'	2400	Concrete	ca. 1965 to 1967	2	0.4		
SMN00001913	7 Mile & Parkside St. to 7 Mile & Strathcona Dr.	~684'	0000	Concrete	ca. 1965 to 1967	3	0.5		
SMN00001176	7 Mile & Strathcona Dr. to 7 Mile & Pontchartrain Dr.	~807'	4200	Concrete	ca. 1965 to 1967	4	0.6		
East 7 Mile Relief Sewer									
SMN00000847	7 Mile & Conant St. to 7 Mile & Charest St.	~772'	2Z11	Concrete	ca. 1959 to 1962	2	0.8	Circumferential cracking, longitudinal cracking, surface spalling	N/A
SMN00000487	7 Mile & Charest St. to 7 Mile & Norwood St.	~888'	2Z11	Concrete	ca. 1959 to 1962	2	1		
SMN00001105	7 Mile & Norwood St. to 7 Mile & Binder St.	~782'	2Z12	Concrete	ca. 1959 to 1962	2	0.4		
SMN00000720	7 Mile & Binder St. to 7 Mile & Dean St.	~725'	2Z11	Concrete	ca. 1959 to 1962	2	0.5		
SMN00000849	7 Mile & Dean St. to 7 Mile & Justine St.	~743'	2Z00	Concrete	ca. 1959 to 1962	2	0.7		

Pipe Segment Reference/Manhole-Manhole ID*	Street*	Pipe Length*	NASSCO PACP Structural Quick Rating Score*	Pipe Material, if Known	Year Constructed, if Known	Consequence of Failure, per Asset Management Plan, if applicable	Probability of Failure, per Asset Management Plan, if applicable	Types of Structural Defects Found (O&M defects are not CWSRF-eligible)	Justification of Need (required for non-NASSCO structural 4 or 5 rated segments)*
SMN00001248	7 Mile & Justine St. to 7 Mile & Lamont St.	~917'	2Z00	Concrete	ca. 1959 to 1962	3	3	Circumferential cracking, longitudinal cracking, surface spalling	N/A
SMN00000498	7 Mile & Lamont St. to 7 Mile & Keystone St.	~852'	2Z00	Concrete	ca. 1959 to 1962	3	0.6		
SMN00000391	7 Mile & Keystone St. to 7 Mile & Buffalo St.	~806'	2511	Concrete	ca. 1959 to 1962	3	0.6		
SMN00000612	7 Mile & Buffalo St. to 7 Mile & Albany St.	~822'	2100	Concrete	ca. 1959 to 1962	3	3		
SMN00000873	7 Mile & Albany St. to 7 Mile & Gable St.	~687'	0000	Concrete	ca. 1959 to 1962	3	3		
SMN00001260	7 Mile & Gable St. to 7 Mile & Mt. Elliot St.	~757'	0000	Concrete	ca. 1959 to 1962	3	0.4		
SMN00000874	7 Mile & Mt.Elliot St. to 7 Mile & Penn Central Railroad	~683'	0000	Concrete	ca. 1959 to 1962	3	0.5		
SMN00000635	7 Mile & Penn Central Railroad to 7 Mile & Sherwood St.	~842'	0000	Concrete	ca. 1959 to 1962	3	1		
SMN00000388	7 Mile & Sherwood St. to 7 Mile & Carrie St.	~910'	2800	Concrete	ca. 1959 to 1962	3	1		
SMN00000871	7 Mile & Carrie St. to 7 Mile & Packard St.	~677'	2200	Concrete	ca. 1959 to 1962	4	0.5		
SMN00000409	7 Mile & Packard St. to 7 Mile & Van Dyke Ave.	~649'	0000	Concrete	ca. 1959 to 1962	4	3		
SMN00001555	7 Mile & Van Dyke Ave. to 7 Mile & Terrell St.	~777'	2U00	Concrete	ca. 1959 to 1962	4	4		
SMN00001423	7 Mile & Terrell St. to 7 Mile & Kempa St.	~732'	2Z00	Concrete	ca. 1959 to 1962	4	0.8		
SMN00001363	7 Mile & Kempa St. to 7 Mile & Canadian National RR	~677'	2100	Concrete	ca. 1959 to 1962	4	4		
SMN00000653	7 Mile & Canadian National RR to Parking Lot	~74'		Concrete	ca. 1959 to 1962	4	4		

If you need this information in an alternate format, contact 800-662-9278 or EGLE-Accessibility@Michigan.gov

EGLE does not discriminate on the basis of race, sex, religion, age, national origin, color, marital status, disability, political beliefs, height, weight, genetitc information, or sexual orientation in the adminstration of any of its programs or activities, and prohibits intimidation and retaliation, as required by applicable laws and regulations.
Questions or concerns should be directed to the Nondiscrimination Compliance Coordinator at 517-249-0906 or EGLE-NondiscriminationCC@Michigan.gov

This form and its contents are subject to the Freedom of Information Act and may be released to the public.

GLWA Contract 2300150
Rehabilitation of the 7 Mile Sewer System

7 Mile Sewer Segment 1
PACP Reports

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220314 11:50

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
U		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0527	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	111 in.		C	BR	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			575.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
Bulkhead						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0652						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	357	3V00	3.0	357	3.0	4.0	
2	0	0				0	0							
3	0	0				119	357							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				20	☐	/				
0.0 ft.		DSF	S01			20	☐	6 /		3		At least 2' of sludge
0.0 ft.		MGO					☐	/				Brick MH mostly covered with mineral deposits, heavy infiltration around perimeter
0.0 ft.		DSC				20	☐	7 /		3		Below MH
0.0 ft.		MGO					☐	/				Unable to measure distances due to level of debris. Distances will be estimates.
0.0 ft.		AMH					☐	/				SSR0652
100.0 ft.		ID					☐	11 /		3		
200.0 ft.		TBA		12.000			☐	11 /				
500.0 ft.		TBA		24.000			☐	10 /				
550.0 ft.		TBA		36.000			☐	3 /				
560.0 ft.		ID					☐	11 /		3		
560.0 ft.		ID					☐	12 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
560.0 ft.		TBA		36.000			☐	3 /				Egg shaped, 3x2
575.0 ft.		AZ					☐	/				Bulkhead
575.0 ft.		DSF	F01			20	☐	6 /		3		

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220126 16:11

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection Status:	Consequence of failure:	Pressure value:
D				

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0628	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Sewer use:	Height:	Width:	Shape:	Material:	Lining method:
	111 in.		C	BR	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year laid:	Year renewed:
			704.0 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0652						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0291						

Coordinate system:	Vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.00	0	0	738	453Z	2.76	738	2.76		
2	0	0				68	136							
3	0	0				194	582							
4	0	0				5	20							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				20	☐	/				
0.0 ft.		DSGV	S02			20	☐	5 /		3		
0.0 ft.		DSF	S01			20	☐	6 /		3		
0.0 ft.		AMH					☐	/				SSR0652
10.0 ft.		ID					☐	12 /		3		
10.0 ft.		ID					☐	1 /		3		
25.0 ft.		IW					☐	1 /	3	2		Weeping from mineral deposits
25.0 ft.		DSGV	F02			20	☐	5 /		3		
60.0 ft.		TBA		24.000			☐	9 /				Brick tap, good condition
79.0 ft.		TBD		12.000			☐	3 /		3		Rough tap repair needed, missing material around annulus
79.0 ft.		ID					☐	12 /		3		
100.0 ft.		DSZ				20	☐	7 /		3		misc. trash on sludge

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
105.0 ft.		ID					☐	12 /		3		
160.0 ft.		ID					☐	11 /		3		
160.0 ft.		DAE	S03			10	☐	10 /	1	2		
185.0 ft.		ID					☐	11 /		3		
190.0 ft.		ID					☐	11 /		3		
195.0 ft.		ID					☐	12 /		3		
195.0 ft.		ID					☐	12 /		3		
225.0 ft.		ID					☐	11 /		3		
225.0 ft.		ID					☐	12 /		3		
235.0 ft.		ID					☐	11 /		3		
235.0 ft.		ID					☐	2 /		3		
235.0 ft.		ID					☐	2 /		3		
235.0 ft.		DAE				20	☐	7 /		3		
235.0 ft.		DAE	S04			10	☐	7 /	5	2		
235.0 ft.		DAE	F03			10	☐	10 /	1	2		
247.0 ft.		IR					☐	2 /		4		
325.0 ft.		ID					☐	11 /		3		
340.0 ft.		ID					☐	10 /		3		
340.0 ft.		DAE				30	☐	9 /	10	4		Hanging mineral deposits
354.0 ft.		ID					☐	12 /		3		
360.0 ft.		DAE	F04			10	☐	7 /	5	2		
400.0 ft.		IR					☐	12 /		4		
401.0 ft.		TBA		24.000			☐	9 /				Brick sewer
405.0 ft.		ID					☐	12 /		3		
410.0 ft.		DSZ				10	☐	5 /	7	2		Debris settled on top of 2 ft of sludge

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
426.0 ft.		ID					☐	1 /		3		
445.0 ft.		TBD		6.000			☐	2 /		3		Heavy mineral deposit build up within. Rough tap repair needed
445.0 ft.		DAE				10	☐	2 /	5	2		
445.0 ft.		ID					☐	1 /		3		
445.0 ft.		ID					☐	1 /		3		
450.0 ft.		ID					☐	1 /		3		
475.0 ft.		ID					☐	1 /		3		
475.0 ft.		DAE	S05			10	☐	12 /	5	2		
476.0 ft.		ID					☐	12 /		3		
480.0 ft.		ID					☐	12 /		3		
480.0 ft.		ID					☐	12 /		3		
480.0 ft.		ID					☐	12 /		3		
480.0 ft.		ID					☐	12 /		3		
490.0 ft.		ID					☐	1 /		3		
493.0 ft.		DAE				20	☐	7 /	9	3		
493.0 ft.		IR					☐	12 /		4		
493.0 ft.		ID					☐	1 /		3		
493.0 ft.		DAE				20	☐	1 /	5	3		
493.0 ft.		ID					☐	1 /		3		
493.0 ft.		ID					☐	1 /		3		
495.0 ft.		ID					☐	1 /		3		
514.0 ft.		IR					☐	2 /		4		
520.0 ft.		ID					☐	12 /		3		
530.0 ft.		ID					☐	1 /		3		
530.0 ft.		ID					☐	1 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
530.0 ft.		ID					☐	1 /		3		
530.0 ft.		ID					☐	1 /		3		
530.0 ft.		ID					☐	1 /		3		
530.0 ft.		ID					☐	1 /		3		
541.0 ft.		TBA		18.000			☐	3 /				
575.0 ft.		ID					☐	12 /		3		
600.0 ft.		DAE	F05			10	☐	12 /	5	2		
620.0 ft.		ID					☐	1 /		3		
704.0 ft.		DSF	F01			20	☐	6 /		3		
704.0 ft.		AMH					☐	/				SSR0291

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220127 15:05

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection Status:	Consequence of failure:	Pressure value:
D				

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0937	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Sewer use:	Height:	Width:	Shape:	Material:	Lining method:
	111 in.		C	BR	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year laid:	Year renewed:
			664.0 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0291						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR1045						

Coordinate system:	Vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	3	3100	3.00	0	0	725	3Z2Y	2.53	728	2.54		
2	0	0				133	266							
3	1	3				153	459							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
0.0 ft.		MGO					☐	/				Active tap in MH, steps ok, heavy mineral deposits
0.0 ft.		DAE				10	☐	2 /	4	2		below MH
0.0 ft.		DAE	S02			10	☐	10 /	5	2		
0.0 ft.		MWL				15	☐	/				
0.0 ft.		DSF	S01			15	☐	6 /		3		
0.0 ft.		AMH					☐	/				SSR0291, infiltration and heavy mineral deposits around MH, active tap in MH
50.0 ft.		DAE	F02			10	☐	10 /	5	2		
115.0 ft.		ID					☐	12 /		3		
121.0 ft.		DSZ	S03			10	☐	6 /		2		Debris and rope on top of sludge
167.0 ft.		DAE				15	☐	4 /	5	3		Below tap
167.0 ft.		TBD		36.000			☐	2 /		3		Missing material around pipe, mineral deposits within

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
340.0 ft.		TBA		36.000			☐	9 /				Brick tap
340.0 ft.		DAE				10	☐	10 /	7	2		
390.0 ft.		ID					☐	12 /		3		
390.0 ft.		DAE	S04			15	☐	7 /	5	3		
395.0 ft.		ID					☐	12 /		3		
400.0 ft.		ID					☐	12 /		3		
450.0 ft.		DAE	F04			15	☐	7 /	5	3		
459.0 ft.		ID					☐	11 /		3		
518.0 ft.		DAE				15	☐	3 /	5	3		Below tap
518.0 ft.		TBD		18.000			☐	3 /		3		Rough tap, missing material around annulus.
571.0 ft.		TBI		16.000	24.000		☐	10 /		2		Rough around annulus. Active.
571.0 ft.		DAE				15	☐	7 /	9	3		
571.0 ft.		MMM					☐	7 /		3		
572.0 ft.		DAE	S05			10	☐	7 /	11	2		
625.0 ft.		DAE	F05			10	☐	7 /	11	2		
664.0 ft.		DSF	F01			10	☐	6 /		2		
664.0 ft.		DSZ	F03			10	☐	6 /		2		Trash and rope
664.0 ft.		AMH					☐	/				SSR1045

CUES, Inc.
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Orlando, FL 32805
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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220128 08:44

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection Status:	Consequence of failure:	Pressure value:
D				

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0683	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Sewer use:	Height:	Width:	Shape:	Material:	Lining method:
	111 in.		C	BR	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year laid:	Year renewed:
			978.0 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0291						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR1045						

Coordinate system:	Vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	14	4321	3.50	0	0	326	413F	2.26	340	2.30		
2	1	2				107	214							
3	0	0				36	108							
4	3	12				1	4							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				10	☐	/				
0.0 ft.		MGO					☐	/				MH in good condition, top steps broken off.
0.0 ft.		DSF	S01			10	☐	6 /		2		
0.0 ft.		AMH					☐	/				SSR1045, brick MH, mineral deposit buildup
10.0 ft.		ID					☐	12 /		3		
10.0 ft.		ID					☐	12 /		3		
10.0 ft.		ID					☐	12 /		3		
10.0 ft.		DAE	S02			10	☐	7 /	5	2		
25.0 ft.		ID					☐	12 /		3		
35.0 ft.		ID					☐	12 /		3		
45.0 ft.		DAE	F02			10	☐	7 /	5	2		
80.0 ft.		ID					☐	12 /		3		
80.0 ft.		ID					☐	12 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
162.0 ft.		ID					☐	12 /		3		
188.0 ft.		TB		36.000			☐	3 /				
188.0 ft.		DAE				10	☐	3 /	4	2		
196.0 ft.		TBI		24.000	6.000		☐	2 /		2		Active, good condition
196.0 ft.		DAE				10	☐	2 /	4	2		
230.0 ft.		ID					☐	1 /		3		
250.0 ft.		MMS					☐	9 /		2		
250.0 ft.		ID					☐	12 /		3		
255.0 ft.		ID					☐	1 /		3		
255.0 ft.		ID					☐	1 /		3		
263.0 ft.		DAE				10	☐	2 /	5	2		
263.0 ft.		TBD		6.000	6.000		☐	2 /		3		Active, intruding, missing material around annulus.
324.0 ft.		TBA		48.000			☐	10 /				Egg-shaped break in. 48x36
340.0 ft.		ID					☐	12 /		3		
340.0 ft.		ID					☐	12 /		3		
426.0 ft.		DAE				15	☐	2 /	5	3		
426.0 ft.		TBD		6.000			☐	2 /		3		Active, missing material around annulus.
460.0 ft.		DSF	F01			10	☐	6 /		2		Debris only 2" deep now
525.0 ft.		ID					☐	12 /		3		
525.0 ft.		ID					☐	12 /		3		
525.0 ft.		ID					☐	12 /		3		
525.0 ft.		ID					☐	12 /		3		
525.0 ft.		DAE				10	☐	7 /	1	2		
545.0 ft.		ID					☐	11 /		3		
545.0 ft.		DAE				10	☐	7 /	1	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
550.0 ft.		ID					☐	11 /		3		
550.0 ft.		ID					☐	11 /		3		
550.0 ft.		ID					☐	1 /		3		
564.0 ft.		ID					☐	11 /		3		
564.0 ft.		ID					☐	12 /		3		
564.0 ft.		DAE				10	☐	7 /	5	2		
580.0 ft.		ID					☐	12 /		3		
580.0 ft.		ID					☐	1 /		3		
580.0 ft.		DAE				10	☐	11 /	4	2		
585.0 ft.		ID					☐	12 /		3		
593.0 ft.		MB					☐	5 /	7	4		1 sf at 5 and 7, filled in with hard debris
600.0 ft.		IR					☐	10 /		4		
600.0 ft.		DAE				15	☐	7 /	10	3		
627.0 ft.		ID					☐	11 /		3		
700.0 ft.		CH2	S03				☐	3 /	9	4		
710.0 ft.		CH2	F03				☐	3 /	9	4		
760.0 ft.		ID					☐	12 /		3		
760.0 ft.		ID					☐	12 /		3		
800.0 ft.		TBA		12.000			☐	9 /				Missing material around. Rought tap.
900.0 ft.		TBD		6.000			☐	10 /		3		Heavy mineral deposit buildup. Could not determine size.
900.0 ft.		DAE				20	☐	7 /	10	3		
978.0 ft.		AMH					☐	/				SSR0789

CUES, Inc.
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Orlando, FL 32805
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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220128 10:24

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection Status:	Consequence of failure:	Pressure value:
D				

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN1077	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Sewer use:	Height:	Width:	Shape:	Material:	Lining method:
	111 in.		C	BR	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year laid:	Year renewed:
			585.0 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0789						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0399						

Coordinate system:	Vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
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Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	2	2100	2.00	0	0	258	362W	2.05	260	2.05		
2	1	2				120	240							
3	0	0				6	18							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				10	☐	/				
0.0 ft.		MGO					☐	/				Brick MH, steps missing near top, 3 taps in MH, 2 active
0.0 ft.		DAE				10	☐	2 /	5	2		
0.0 ft.		DSGV	S01			5	☐	6 /		2		
0.0 ft.		AMH					☐	/				SSR0789, 3 taps in MH (2 active), heavy mineral deposits
5.0 ft.		ID					☐	12 /		3		
5.0 ft.		ID					☐	11 /		3		
45.0 ft.		DAE				15	☐	7 /	5	3		
95.0 ft.		TBA		36.000			☐	10 /				
115.0 ft.		DSZ				5	☐	6 /		2		Brick and concrete material
150.0 ft.		MMS					☐	2 /		2		
229.0 ft.		TBA		24.000			☐	9 /				In good condition

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
258.0 ft.		DAE				20	☐	4 /	5	3		
258.0 ft.		TBD		36.000			☐	2 /		3		Active, heavy mineral deposit build up below. Rough tap, missing material
508.0 ft.		DAE				10	☐	2 /	4	2		
508.0 ft.		TBD		12.000			☐	2 /		3		Active. rough tap
585.0 ft.		DSGV	F01			5	☐	6 /		2		
585.0 ft.		AMH					☐	/				SSR0399

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Orlando, FL 32805
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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220128 13:06

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection Status:	Consequence of failure:	Pressure value:
D				

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0532	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Sewer use:	Height:	Width:	Shape:	Material:	Lining method:
	111 in.		C	BR	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year laid:	Year renewed:
			347.0 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0399						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR5614						

Coordinate system:	Vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	2	2100	2.00	0	0	97	4133	2.11	99	2.11		
2	1	2				42	84							
3	0	0				3	9							
4	0	0				1	4							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				5	☐	/				
0.0 ft.		MGO					☐	/				MH steps broken at top. Two incoming taps with active flow.
0.0 ft.		DAE				10	☐	3 /	5	2		
0.0 ft.		AMH					☐	/				SSR0399, heavy mineral deposit buildup, some steps broken, 2 incoming steps with active flow
16.0 ft.		TBD		24.000			☐	9 /		3		Active, rough around annulus.
83.0 ft.		MMS					☐	4 /	5	2		May be corrosive flow,
83.0 ft.		TBD		8.000			☐	2 /		3		Rough around circumfrence. White flow.
100.0 ft.		DAE	S01			5	☐	4 /	8	2		Grey/white mineral deposits attached. Paste-like.
125.0 ft.		DSC				10	☐	6 /		2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
230.0 ft.		TBA		8.000			☐	2 /				Pipe rusted inside. Okay condition.
285.0 ft.		DAE	F01			5	☐	4 /	8	2		
285.0 ft.		DAE				5	☐	7 /	5	2		
285.0 ft.		IR					☐	12 /		4		
285.0 ft.		ID					☐	12 /		3		
294.0 ft.		MMC					☐	/				Concrete transition chamber with another incoming sewer and AMH.
309.0 ft.		MMC					☐	/				Transitions back to original brick sewer
335.0 ft.		DAE	S02			5	☐	7 /	5	2		
347.0 ft.		DAE	F02			5	☐	7 /	5	2		
347.0 ft.		AMH					☐	/				SSR5614
347.0 ft.		MGO					☐	/				Transition chamber to perpendicular sewer, shelf with debris, bulkheaded.

GLWA Contract 2300150
Rehabilitation of the 7 Mile Sewer System

7 Mile Sewer Segment 2
PACP Reports

PACP Header Report

FK Engineering

Project Number:	**21-072**	**Project Name:**	**GLWA 2003443**	**Date:**	**16-Mar-22**

Surveyor's Name:	Kyle Thompson	Certificate Number:	N/A	System Owner:	GLWA
Reviewer's Name:	Sara Kuchark	Certificate Number:	U-1018-0703003298		
Client:	GLWA	Location:	Detroit, MI	Drainage Area:	N/A
Street name/number:	7 Mile Sewer Segment 2	Pipeline reference:	N/A	Details:	N/A

Upstream Manhole:	SMH15868	Rim to Invert:	N/A	Grade to Invert:	N/A	Rim to Grade:	N/A
Downstream Manhole:	SMH29043	Rim to Invert:	N/A	Grade to Invert:	N/A	Rim to Grade:	N/A

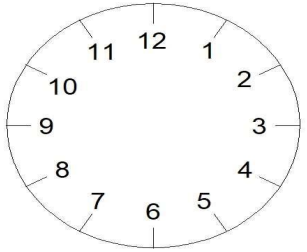
Use of Sewer:	(CB) Combined Sewer	Direction of Survey:	(U) Upstream	Flow Control:	(N) Not controlled	Shape:	(C) Circular
Height (Diameter):	67 inch	Width:	N/A	Material	(BR) Brick	Year Installed:	Unknown
Lining Method:	0	Year Renewed:	N/A	Pipe joint length:	N/A	Total reach length:	0

Length of Survey:	0	Tape/Disc Number:	N/A	Purpose of Study:	(F) Routine Assessment	Sewer Category:	N/A
Pre-cleaning:	(N) No Pre-cleaning	Date Cleaned:	N/A	Weather conditions:	(1) Dry	Location Code:	(C) Light Highway

Additional Information:	N/A

CCTV Inspection Report

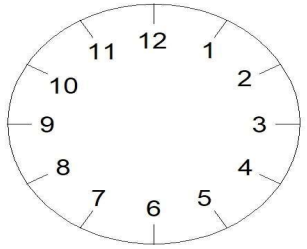
Project No.	21-072	Date	16-Mar-22
Project Name	GLWA 2003443	Sheet	2 of 3
Inspected By	Kyle Thompson	PACP Cert. No	N/A
Reviewed By	Sara Kuchark	PACP Cert. No	U-1018-0703003298
Insp. Segment	SMH29043 To SMH15868	Disc Number	N/A



Distance (Feet)	Video time	Defect/Feature Coding	Continuous Defect	Value				Joint	Circumferential Location		O&M Grade	Structural Grade	Remarks
				S/M/L	Inches 1st	Inches 2nd	%		At/ From	To			
0		AMH											Access manhole
0		MWL											Water Level
0		DAE	S01				15		7	5	3		Deposits attached - encrustation
10		ID							12		3		Dripping infiltration
10		ID							12		3		Dripping infiltration
10		ID							12		3		Dripping infiltration
10		ID							12		3		Dripping infiltration
10		ID							12		3		Dripping infiltration
10		ID							12		3		Dripping infiltration
10		ID							12		3		Dripping infiltration
20		DAE	F01				15		7	5	3		Deposits attached - encrustation
20		DAE	S02				5		7	5	2		Deposits attached - encrustation
40		ID							12		3		Dripping infiltration
~100		MMS							9			2	Missing Mortar Small
160		MMM							3			3	Missing Mortar Medium
200		MGO			66								General observation
240		MMS							9			2	Missing Mortar Small
300		DAE	F02				5		7	5	2		Deposits attached - encrustation
355		DB							8			3	Displaced Brick
400		DAE	S03				5		7	5	2		Deposits attached - encrustation
450		DAE	F03				5		7	5	2		Deposits attached - encrustation
450		MMM							3			3	Missing Mortar Medium
595		TBA			24				8	9			Break-in tap - active
615		DAE	S04				25		8	10	4		Deposits attached - encrustation
615		DAE	S05				25		2	4	4		Deposits attached - encrustation
620		DAE	F04				25		8	10	4		Deposits attached - encrustation
620		DAE	F05				25		2	4	4		Deposits attached - encrustation
750		DAE	S06				5		7	5	2		Deposits attached - encrustation
840		DAR					5		1		2		Deposits attached - ragging
860		ID							12		3		Dripping infiltration
950		DAE	F06				5		7	5	2		Deposits attached - encrustation
1020		DAE	S07				5		7	5	2		Deposits attached - encrustation
1030		DAE	F07				5		7	5	2		Deposits attached - encrustation
1050		DAE	S08				10		7	5	2		Deposits attached - encrustation
1075		DAE	F08				10		7	5	2		Deposits attached - encrustation
1075		MMM							5			3	Missing Mortar Medium
1075		MMM							8			3	Missing Mortar Medium
1194		TBA			24				2	3			Break-in tap - active
1201		TBA			18				8	9			Break-in tap - active
1218		AMH											Access manhole

CCTV Inspection Report

Project No.	21-072	Date	16-Mar-22
Project Name	GLWA 2003443	Sheet	3 of 3
Inspected By	Kyle Thompson	PACP Cert. No	0
Reviewed By	Sara Kucharek	PACP Cert. No	U-1018-0703003298
Insp. Segment	SMH29043 To SMH15868	Disc Number	N/A



Distance (Feet)	Station	Defect/Feature Coding	Continuous Defect	Value S/M/L	Value Inches 1st	Value Inches 2nd	Value %	Joint	Circumferential Location At/From	Circumferential Location To	Grade		Remarks
Structural													
Defect Grade	**Isolated Occuring**	**Isolated Grade**	**Continuous Grade**	**Continuous Length**			**Continuous Occuring**		**Continuous Grade**		**Total Grade**		
1	0	0	1		0		0		0		0		
2	2	4	2		0		0		0		4		
3	5	15	3		0		0		0		15		
4	0	0	4		0		0		0		0		
5	0	0	5		0		0		0		0		
									Structural Rating =		**2.7**		
O&M													
Defect Grade	**Isolated Occuring**	**Isolated Grade**	**Continuous Grade**	**Continuous Length**			**Continuous Occuring**		**Continuous Grade**		**Total Grade**		
1	0	0	1		0		0		0		0		
2	1	2	2		565		113		0		2		
3	8	24	3		20		4		12		36		
4	0	0	4		10		2		8		8		
5	0	0	5		0		0		0		0		
									O&M Rating =		**0.4**		
									Pipe Rating Index =		**0.5**		
									PACP Quick Rating =		**423B**		

PACP Header Report

FK Engineering

Project Number:	**21-072**	**Project Name:**	**GLWA 2003443**	**Date:**	**16-Mar-22**

Surveyor's Name:	Kyle Thompson	Certificate Number:	N/A	System Owner:	GLWA
Reviewer's Name:	Sara Kuchark	Certificate Number:	U-1018-0703003298		
Client:	GLWA	Location:	Detroit, MI	Drainage Area:	N/A
Street name/number:	7 Mile Sewer Segment 2	Pipeline reference:	N/A	Details:	N/A

Upstream Manhole:	SMH29043	Rim to Invert:	N/A	Grade to Invert:	N/A	Rim to Grade:	N/A
Downstream Manhole:	No Manhole; Livernois interse	Rim to Invert:	N/A	Grade to Invert:	N/A	Rim to Grade:	N/A

Use of Sewer:	(CB) Combined Sewer	Direction of Survey:	(D) Downstream	Flow Control:	(N) Not controlled	Shape:	(C) Circular
Height (Diameter):	67 inch	Width:	N/A	Material	(BR) Brick	Year Installed:	Unknown
Lining Method:	0	Year Renewed:	N/A	Pipe joint length:	N/A	Total reach length:	315

Length of Survey:	315	Tape/Disc Number:	N/A	Purpose of Study:	(F) Routine Assessment	Sewer Category:	N/A
Pre-cleaning:	(N) No Pre-cleaning	Date Cleaned:	N/A	Weather conditions:	(1) Dry	Location Code:	(C) Light Highway

Additional Information:	N/A

CCTV Inspection Report

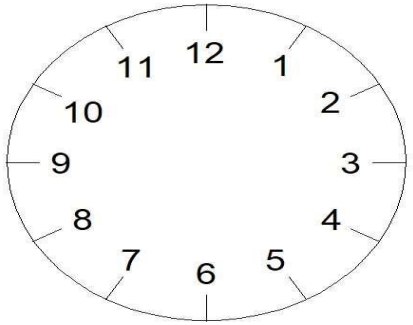
Project No. 21-072 Date 16-Mar-22

Project Name GLWA 2003443 Sheet 2 of 3

Inspected By Kyle Thompson PACP Cert. Nc N/A

Reviewed By Sara Kuchark PACP Cert. Nc U-1018-0703003298

Insp. Segment SMH29043 To 315' Downstream Disc Number N/A



Distance (Feet)	Video time	Defect/Feature Coding	Continuous Defect	Value				Joint	Circumferential Location		O&M Grade	Structural Grade	Remarks
				S/M/L	Inches 1st	Inches 2nd	%		At/ From	To			
0		AMH											Access manhole
0		DAE	S01				10		7	5	2		Deposits attached - encrustation
0		MWL			5								Water Level
3		TB							3	5			Break-In Tap
50		DAE	F01				10		7	5	2		Deposits attached - encrustation
50		DAE	S02				5		7	5	2		Deposits attached - encrustation
55		MMS							7			2	Missing Mortar Small
190		TB			4	6			11				Break-In Tap
190		ID							11		3		Dripping infiltration
190		ID							11		3		Dripping infiltration
190		ID							11		3		Dripping infiltration
190		ID							11		3		Dripping infiltration
190		ID							11		3		Dripping infiltration
190		DAE	S03				15		7	5	3		Deposits attached - encrustation
195		DAE	F03				15		7	5	3		Deposits attached - encrustation
240		TB			2	4			12				Break-In Tap
240		ID							11		3		Dripping infiltration
240		ID							11		3		Dripping infiltration
240		ID							9		3		Dripping infiltration
240		ID							9		3		Dripping infiltration
240		ID							9		3		Dripping infiltration
290		TBA			36				3	4			Break-in tap - active
315		DAE	F02				5		7	5	2		Deposits attached - encrustation
315		MSA											Survey abandoned

CCTV Inspection Report

FKE

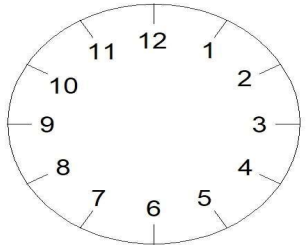
Project No. 21-072 Date 16-Mar-22

Project Name GLWA 2003443 Sheet 3 of 3

Inspected By Kyle Thompson PACP Cert. No 0

Reviewed By Sara Kucharek PACP Cert. No U-1018-0703003298

Insp. Segment SMH29043 To 315' Downstream Disc Number N/A



Distance (Feet)	Station	Defect/Feature Coding	Continuous Defect	Value S/M/L	Inches 1st	Inches 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Grade		Remarks
Structural													
Defect Grade	**Isolated Occuring**	**Isolated Grade**	**Continuous Grade**	**Continuous Length**			**Continuous Occuring**		**Continuous Grade**		**Total Grade**		
1	0	0	1	0			0		0		0		
2	1	2	2	0			0		0		2		
3	0	0	3	0			0		0		0		
4	0	0	4	0			0		0		0		
5	0	0	5	0			0		0		0		
										Structural Rating =	**2.0**		
O&M													
Defect Grade	**Isolated Occuring**	**Isolated Grade**	**Continuous Grade**	**Continuous Length**			**Continuous Occuring**		**Continuous Grade**		**Total Grade**		
1	0	0	1	0			0		0		0		
2	0	0	2	315			63		0		0		
3	10	30	3	5			1		3		33		
4	0	0	4	0			0		0		0		
5	0	0	5	0			0		0		0		
										O&M Rating =	**0.4**		
										Pipe Rating Index =	**0.5**		
										PACP Quick Rating =	**3A2K**		

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220128 15:39

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection Status:	Consequence of failure:	Pressure value:
U				

Location:

Drainage area:	Pipe segment ref.:	Street:
	388' US of SMH20441	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Sewer use:	Height:	Width:	Shape:	Material:	Lining method:
	64 in.		C	BR	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year laid:	Year renewed:
			500.0 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SMH20441						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SMH20441						

Coordinate system:	Vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	14	4232	3.50	0	0	52	322C	2.08	66	2.28		
2	0	0				23	46							
3	2	6				2	6							
4	2	8				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				5	☐	/				
0.0 ft.		MB					☐	8	9	4		
0.0 ft.		MMM					☐	8	9	3		
0.0 ft.		MB					☐	6	/	4		
0.0 ft.		MMM					☐	6	/	3		
0.0 ft.		AOC					☐	/				Starting at junction chamber
400.0 ft.		DAE	S01			5	☐	7	5	2		
420.0 ft.		TBA		48.000			☐	9	/			
475.0 ft.		ID					☐	1	/	3		
475.0 ft.		ID					☐	1	/	3		
475.0 ft.		DAR				10	☐	12	2	2		
475.0 ft.		TB		3.000			☐	12	/			
475.0 ft.		DSGV				10	☐	6	6	2		
480.0 ft.		IW					☐	9	10	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
500.0 ft.		DAE	F01			5	☐	7	5	2		
500.0 ft.		AOC					☐					Ending inspection 500' past SMH20441

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220128 13:40

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection Status:	Consequence of failure:	Pressure value:
U				

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMH20441 to North Barrel	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Sewer use:	Height:	Width:	Shape:	Material:	Lining method:
	88 in.		C	BR	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year laid:	Year renewed:
			500.0 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
North Barrel						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SMH20441						

Coordinate system:	Vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	1	1	13	4132	2.60	0	0	249	4131	2.02	262	2.05		
2	1	2				121	242							
3	2	6				1	3							
4	1	4				1	4							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				10	☐	/				
0.0 ft.		OBM				10	☐	2 /		2		Pipe intruding into sewer from MH
0.0 ft.		MGO					☐	/				Poor video quality may affect grading
0.0 ft.		AMH					☐	/				SMH20441, metal pipe wedged in MH
25.0 ft.		DAE				10	☐	7 / 5		2		
25.0 ft.		DSGV	S01			5	☐	6 /		2		
75.0 ft.		DAR	S02			10	☐	6 /		2		
100.0 ft.		DAR	F02			10	☐	6 /		2		
130.0 ft.		IR					☐	2 /		4		Below tap, due to offset tap
130.0 ft.		TBC		24.000			☐	4 /		2		
130.0 ft.		TBD		24.000			☐	2 /		3		Connection, 2-3" space around annulus

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
130.0 ft.		H					☐	2 /		3		Space around annulus of pipe
150.0 ft.		IW					☐	2 /		2		
225.0 ft.		MMS					☐	4 /		2		
225.0 ft.		DAE	S03			10	☐	8 /	4	2		
375.0 ft.		IW					☐	9 /		2		
388.0 ft.		MSC		10.000			☐	/				Brick junction chamber with two parallel barrels
399.0 ft.		MSC		72.000			☐	/				Entering north 6' brick sewer
399.0 ft.		DSGV	F01			5	☐	6 /		2		
399.0 ft.		DAE	F03			10	☐	8 /	4	2		
400.0 ft.		SRI					☐	6 /		1		
400.0 ft.		LR				15	☐	/		2		
405.0 ft.		MB					☐	12 /		4		LR
465.0 ft.		MMM					☐	4 /	8	3		
500.0 ft.		AOC					☐	/				500' past SMH20441, North Barrel

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220128 15:53

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection Status:	Consequence of failure:	Pressure value:
D				

Location:

Drainage area:	Pipe segment ref.:	Street:
	SGM30212	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Sewer use:	Height:	Width:	Shape:	Material:	Lining method:
	87 in.		C	BR	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year laid:	Year renewed:
			816.0 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SMH20441						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SMH13810						

Coordinate system:	Vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	36	3826	2.57	0	0	244	3A2T	2.09	280	2.14		
2	6	12				107	214							
3	8	24				10	30							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				5	☐	/				
0.0 ft.		OBM				20	☐	2 / 8		3		3" metal pipe from MH into sewer
0.0 ft.		MGO					☐	/				MH steps in poor condition
0.0 ft.		AMH					☐	/				SMH20441, 3" diameter metal pipe wedged in MH and sewer itself
5.0 ft.		DAE				10	☐	2 / 10		2		
20.0 ft.		MMS					☐	5 /		2		
25.0 ft.		DAE				10	☐	3 / 5		2		
48.0 ft.		DAE	S01			5	☐	7 / 5		2		
80.0 ft.		IW					☐	3 /		2		
80.0 ft.		MMS					☐	3 /		2		
150.0 ft.		DAE	F01			5	☐	7 / 5		2		
150.0 ft.		DAE	S02			10	☐	7 / 5		2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
250.0 ft.		ID					☐	12 /		3		
300.0 ft.		MMS	S03				☐	5 /	7	2		
305.0 ft.		H					☐	3 /		3		
305.0 ft.		MMS	F03				☐	5 /	7	2		
305.0 ft.		DB	S07				☐	4 /	8	3		At 4 and 8
315.0 ft.		DB	F07				☐	4 /	8	3		
350.0 ft.		DAE	F02			10	☐	7 /	5	2		
350.0 ft.		DAE	S04			5	☐	7 /	5	2		
400.0 ft.		DAE	F04			5	☐	7 /	5	2		
405.0 ft.		MMS					☐	4 /		2		
405.0 ft.		DB					☐	7 /	8	3		
425.0 ft.		MMS					☐	5 /	7	2		
425.0 ft.		H					☐	4 /		3		
425.0 ft.		DB					☐	4 /	8	3		At 4 and 8
489.0 ft.		TBC		24.000			☐	8 /		2		
489.0 ft.		TBD		24.000			☐	11 /		3		Active, rough tap repair needed. Offset joints within tap itself.
625.0 ft.		H					☐	4 /		3		
625.0 ft.		MMS					☐	5 /	7	2		
625.0 ft.		DB					☐	4 /	8	3		
650.0 ft.		DAE	S05			10	☐	7 /	5	2		
685.0 ft.		ID					☐	11 /		3		
685.0 ft.		ID					☐	12 /		3		
685.0 ft.		ID					☐	12 /		3		
685.0 ft.		ID					☐	1 /		3		
685.0 ft.		ID					☐	1 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
685.0 ft.		ID					☐	2 /		3		
685.0 ft.		TBD		8.000	12.000		☐	11 /		3		Active, rough tap repair needed.
700.0 ft.		DAE	S06			5	☐	7 /	5	2		
700.0 ft.		DAE	F05			10	☐	7 /	5	2		
816.0 ft.		DAE	F06			5	☐	7 /	5	2		
816.0 ft.		AMH					☐	/				SMH138109. Some missing steps, infiltration.

CUES, Inc.
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Orlando, FL 32805
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Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220131 08:16

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection Status:	Consequence of failure:	Pressure value:
D				

Location:

Drainage area:	Pipe segment ref.:	Street:
	SGM66896	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Sewer use:	Height:	Width:	Shape:	Material:	Lining method:
	87 in.		C	BR	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year laid:	Year renewed:
			812.0 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SMH13810						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SMH47328						

Coordinate system:	Vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	5	5	19	4132	1.90	0	0	448	3E2Z	2.15	467	2.14		
2	2	4				176	352							
3	2	6				32	96							
4	1	4				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				5	☐	/				
0.0 ft.		DAE	S01			5	☐	7 / 5		2		
0.0 ft.		AMH					☐	/				SMH13810, missing MH steps, weeping and dripping infiltration
15.0 ft.		ID					☐	1 /		3		
25.0 ft.		ID					☐	12 /		3		
25.0 ft.		ID					☐	1 /		3		
30.0 ft.		ID					☐	1 /		3		
45.0 ft.		ID					☐	12 /		3		
45.0 ft.		DSC	S02			10	☐	6 /		2		
45.0 ft.		ID					☐	12 /		3		
55.0 ft.		DSC	F02			10	☐	6 /		2		
125.0 ft.		TB		24.000			☐	2 /				
125.0 ft.		DAE				15	☐	2 / 5		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
125.0 ft.		H					☐	2 /		3		On side of tap
135.0 ft.		DSC	S03			5	☐	6 /		2		
138.0 ft.		H					☐	3 /		3		
165.0 ft.		ID					☐	1 /		3		
175.0 ft.		DSC	F03			5	☐	6 /		2		
175.0 ft.		SRI	S04				☐	6 /		1		
200.0 ft.		SRI	F04				☐	6 /		1		
225.0 ft.		ID					☐	12 /		3		
225.0 ft.		IW					☐	2 /		2		
240.0 ft.		ID					☐	1 /		3		
250.0 ft.		ID					☐	12 /		3		
280.0 ft.		ID					☐	1 /		3		
325.0 ft.		IW					☐	2 /		2		
375.0 ft.		DSZ				5	☐	6 /		2		Ragging debris
380.0 ft.		IS					☐	2 /				
380.0 ft.		CL	S05				☐	3 /		2		
380.0 ft.		DAE	S06			15	☐	2 /	5	3		
390.0 ft.		CL	F05				☐	3 /		2		
390.0 ft.		DAE	F06			15	☐	2 /	5	3		
400.0 ft.		LD				15	☐	/		2		
450.0 ft.		ID					☐	12 /		3		
467.0 ft.		TBA		24.000			☐	2 /				
490.0 ft.		ID					☐	12 /		3		
520.0 ft.		ID					☐	12 /		3		
525.0 ft.		ID					☐	12 /		3		
535.0 ft.		ID					☐	12 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
535.0 ft.		ID					☐	12 /		3		
545.0 ft.		ID					☐	11 /		3		
545.0 ft.		ID					☐	12 /		3		
545.0 ft.		ID					☐	1 /		3		
556.0 ft.		TBD		12.000	16.000		☐	12 /		3		Missing material around. Curved elbow tap
575.0 ft.		ID					☐	12 /		3		
575.0 ft.		ID					☐	12 /		3		
575.0 ft.		ID					☐	12 /		3		
590.0 ft.		ID					☐	12 /		3		
625.0 ft.		ID					☐	12 /		3		
625.0 ft.		ID					☐	12 /		3		
625.0 ft.		ID					☐	12 /		3		
700.0 ft.		MB					☐	2 /		4		
750.0 ft.		ID					☐	12 /		3		
795.0 ft.		TBA		24.000			☐	2 /				Good condition.
812.0 ft.		DAE	F01			5	☐	7 /	5	2		
812.0 ft.		AMH					☐	/				SMH47328, TBI with dripping infiltration

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220131 09:35

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection Status:	Consequence of failure:	Pressure value:
D				

Location:

Drainage area:	Pipe segment ref.:	Street:
	SGM47203	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Sewer use:	Height:	Width:	Shape:	Material:	Lining method:
	87 in.		C	BR	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year laid:	Year renewed:
			425.0 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SMH47328						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SMH40450						

Coordinate system:	Vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	7	7	9	2117	1.13	0	0	113	392G	2.17	122	2.03		
2	1	2				43	86							
3	0	0				9	27							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				5	☐	/				
0.0 ft.		AMH					☐	/				SMH47328
10.0 ft.		ID					☐	12 /		3		
10.0 ft.		ID					☐	10 /		3		
15.0 ft.		SRI	S01				☐	6 /		1		
25.0 ft.		ID					☐	12 /		3		
50.0 ft.		SRI	F01				☐	6 /		1		
175.0 ft.		ID					☐	11 /		3		
176.0 ft.		DAR				10	☐	7 /		2		
200.0 ft.		DAE	S02			5	☐	7 /	5	2		
225.0 ft.		ID					☐	12 /		3		
225.0 ft.		ID					☐	12 /		3		
250.0 ft.		IW					☐	3 /	5	2		
250.0 ft.		DAE				10	☐	2 /	5	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
260.0 ft.		MMS					☐	3 /		2		
325.0 ft.		DAE	F02			5	☐	7 /	5	2		
327.0 ft.		TBD		24.000			☐	2 /		3		Missing material around circumfrence, rough tap repair needed. Crack in pipe
350.0 ft.		DAE	S03			5	☐	7 /	5	2		
415.0 ft.		ID					☐	12 /		3		
415.0 ft.		ID					☐	12 /		3		
425.0 ft.		DAE	F03			5	☐	7 /	5	2		
425.0 ft.		AMH					☐	/				SMH40450. Brick MH, active tap and infiltration.

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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220131 15:57

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection Status:	Consequence of failure:	Pressure value:
D				

Location:

Drainage area:	Pipe segment ref.:	Street:
	SGM60229	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Sewer use:	Height:	Width:	Shape:	Material:	Lining method:
	87 in.		C	BR	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year laid:	Year renewed:
			470.0 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SMH40450						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SMH26856						

Coordinate system:	Vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
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Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	12	3400	3.00	0	0	211	352R	2.05	223	2.08		
2	0	0				98	196							
3	4	12				5	15							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				5	☐	/				
0.0 ft.		DAE	S01			5	☐	7 /	5	2		
0.0 ft.		AMH					☐	/				SMH40450
10.0 ft.		ID					☐	12 /		3		
10.0 ft.		ID					☐	12 /		3		
10.0 ft.		IW					☐	3 /		2		
31.0 ft.		MMM	S02				☐	7 /	8	3		
31.0 ft.		MMM					☐	4 /		3		
36.0 ft.		MMM	F02				☐	7 /	8	3		
37.0 ft.		TBA		60.000			☐	9 /				60x36 egg shaped
37.0 ft.		IW					☐	3 /		2		
37.0 ft.		DAE				10	☐	3 /	5	2		
65.0 ft.		MMM					☐	5 /		3		
175.0 ft.		ID					☐	12 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
190.0 ft.		ID					☐	12 /		3		
190.0 ft.		ID					☐	12 /		3		
222.0 ft.		TBI		24.000	4.000		☐	3 /		2		Active, good condition.
250.0 ft.		MMM					☐	9 /		3		
300.0 ft.		MGO					☐	/				Steam, lower visibility
300.0 ft.		DAE	F01			5	☐	7 /	5	2		
300.0 ft.		DAE	S03			10	☐	7 /	5	2		
470.0 ft.		DAE	F03			10	☐	7 /	5	2		
470.0 ft.		AMH					☐	/				SMH26856

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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220201 08:54

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection Status:	Consequence of failure:	Pressure value:
D				

Location:

Drainage area:	Pipe segment ref.:	Street:
	SGM0846	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Sewer use:	Height:	Width:	Shape:	Material:	Lining method:
	87 in.		C	BR	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year laid:	Year renewed:
			926.0 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SMH26856						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
WWMH401685						

Coordinate system:	Vertical datum:	GPS accuracy:

Additional Information:

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3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	9	3123	2.25	0	0	343	352Z	2.03	352	2.03		
2	3	6				164	328							
3	1	3				5	15							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				5	☐	/				
0.0 ft.		MGO					☐	/				MH steps missing at top, instrumentation in MH
0.0 ft.		DAE	S01			5	☐	7 /	5	2		Occasional mineral deposits throughout.
0.0 ft.		AMH					☐	/				SMH26856. Brick MH, wires from instrumentation, missing steps at top.
11.0 ft.		TBA		18.000			☐	2 /				Offset joints w/in. Good condition.
125.0 ft.		CL					☐	8 /		2		
180.0 ft.		MMS					☐	9 /		2		
249.0 ft.		MMM					☐	9 /		3		
355.0 ft.		ID					☐	12 /		3		
400.0 ft.		DAE				10	☐	4 /	5	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
411.0 ft.		TBD		15.000	4.000		☐	11 /		3		Pipe cracked w/in. Missing material around. Rough tap repair needed.
415.0 ft.		TBI		36.000	13.000		☐	9 /		2		Active, good condition.
433.0 ft.		DAE				15	☐	7 /	9	3		
433.0 ft.		TBD		24.000	3.000		☐	9 /		3		May connect to MH. Rough tap repair needed,
530.0 ft.		ID					☐	12 /		3		
650.0 ft.		DAE	F01			5	☐	7 /	5	2		
657.0 ft.		TBA		6.000			☐	3 /				Some missing material around but recessed into wall so no repair needed.
700.0 ft.		DAE	S02			5	☐	7 /	5	2		
750.0 ft.		DAE	F02			5	☐	7 /	5	2		
808.0 ft.		TBI		24.000	6.000		☐	9 /		2		Good condition
808.0 ft.		CL					☐	8 /		2		Below tap
825.0 ft.		DAE	S03			5	☐	7 /	5	2		
848.0 ft.		TBI		12.000	36.000		☐	1 /		2		Elbow tap, inactive
926.0 ft.		DAE	F03			5	☐	7 /	5	2		
926.0 ft.		AMH					☐	/				Unknown MH

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220201 09:38

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SGM17189	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	87 in.		C	BR	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			725.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
Unknown MH						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SMH7059						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	415	3M2R	2.4	415	2.4	4.0	
2	0	0				98	196							
3	0	0				73	219							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				5	☐	/				
0.0 ft.		MGO					☐	/				Brick MH, steps missing at top
0.0 ft.		AMH					☐	/				Unknown MH. Brick MH with missing steps.
10.0 ft.		TBA		48.000			☐	5 /				Horseshoe and drop connection, may be to relief sewer
10.0 ft.		DAE	S01			10	☐	7 /	5	2		
12.0 ft.		OBS				15	☐	6 /		3		May be a dam downstream of connection
75.0 ft.		ID					☐	12 /		3		
75.0 ft.		ID					☐	12 /		3		
80.0 ft.		ID					☐	12 /		3		
80.0 ft.		ID					☐	12 /		3		
90.0 ft.		ID					☐	12 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
90.0 ft.		ID					☐	12 /		3		
90.0 ft.		ID					☐	12 /		3		
90.0 ft.		ID					☐	12 /		3		
90.0 ft.		ID					☐	12 /		3		
100.0 ft.		MSC		90.000			☐	/				
125.0 ft.		ID					☐	12 /		3		
125.0 ft.		ID					☐	12 /		3		
125.0 ft.		ID					☐	12 /		3		
145.0 ft.		ID					☐	11 /		3		
145.0 ft.		ID					☐	11 /		3		
145.0 ft.		ID					☐	12 /		3		
150.0 ft.		ID					☐	12 /		3		
150.0 ft.		ID					☐	12 /		3		
150.0 ft.		ID					☐	12 /		3		
155.0 ft.		ID					☐	12 /		3		
155.0 ft.		ID					☐	12 /		3		
155.0 ft.		ID					☐	12 /		3		
155.0 ft.		ID					☐	12 /		3		
160.0 ft.		ID					☐	1 /		3		
175.0 ft.		ID					☐	12 /		3		
195.0 ft.		ID					☐	1 /		3		
195.0 ft.		ID					☐	1 /		3		
198.0 ft.		ID					☐	12 /		3		
198.0 ft.		ID					☐	12 /		3		
198.0 ft.		ID					☐	12 /		3		
200.0 ft.		ID					☐	12 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
215.0 ft.		ID					☐	12 /		3		
215.0 ft.		ID					☐	12 /		3		
215.0 ft.		ID					☐	12 /		3		
225.0 ft.		ID					☐	12 /		3		
225.0 ft.		ID					☐	12 /		3		
225.0 ft.		ID					☐	12 /		3		
240.0 ft.		ID					☐	12 /		3		
240.0 ft.		ID					☐	12 /		3		
245.0 ft.		ID					☐	12 /		3		
245.0 ft.		ID					☐	12 /		3		
245.0 ft.		ID					☐	12 /		3		
245.0 ft.		ID					☐	12 /		3		
253.0 ft.		ID					☐	12 /		3		
253.0 ft.		ID					☐	12 /		3		
253.0 ft.		ID					☐	12 /		3		
260.0 ft.		ID					☐	12 /		3		
260.0 ft.		ID					☐	12 /		3		
260.0 ft.		ID					☐	12 /		3		
275.0 ft.		ID					☐	12 /		3		
275.0 ft.		ID					☐	12 /		3		
275.0 ft.		ID					☐	12 /		3		
280.0 ft.		ID					☐	12 /		3		
280.0 ft.		ID					☐	1 /		3		
340.0 ft.		ID					☐	12 /		3		
340.0 ft.		ID					☐	12 /		3		
340.0 ft.		ID					☐	1 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
345.0 ft.		ID					☐	12 /		3		
370.0 ft.		ID					☐	12 /		3		
370.0 ft.		ID					☐	12 /		3		
370.0 ft.		ID					☐	12 /		3		
405.0 ft.		ID					☐	12 /		3		
405.0 ft.		ID					☐	12 /		3		
405.0 ft.		ID					☐	12 /		3		
415.0 ft.		ID					☐	11 /		3		
500.0 ft.		ID					☐	12 /		3		
500.0 ft.		ID					☐	12 /		3		
500.0 ft.		ID					☐	12 /		3		
500.0 ft.		DAE	F01			10	☐	7 /	5	2		
565.0 ft.		ID					☐	12 /		3		
565.0 ft.		ID					☐	12 /		3		
565.0 ft.		ID					☐	12 /		3		
596.0 ft.		TBA		54.000			☐	8 /				Angled, 4.5'x5.4', good condition.
610.0 ft.		ID					☐	12 /		3		
610.0 ft.		ID					☐	12 /		3		
725.0 ft.		AMH					☐	/				SMH7059

GLWA Contract 2300150
Rehabilitation of the 7 Mile Sewer System

7 Mile Sewer Segment 3
PACP Reports

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220201 11:26

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN2132	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	138 in.		C	CP	XX

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			45.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR1459						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR1460						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	1	1	1	1100	1.0	0	0	14	2700	2.0	15	1.9	2.7	
2	0	0				7	14							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				10	☐	/				
0.0 ft.		MGO					☐	/				MH in good condition
0.0 ft.		AMH					☐	/				SSR1459. Precast, good condition
5.0 ft.		OBS	S01			10	☐	3	9	2		Inflatable dam
10.0 ft.		CC					☐	9	3	1		
40.0 ft.		OBS	F01			10	☐	3	9	2		
45.0 ft.		AMH					☐	/				SSR1460. precast, good condition, some instrumentation in MH

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
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Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220201 14:09

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0744	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	138 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			842.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR1460						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0916						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	1,606	4Z2Z	3.4	0	0	182	3C2K	2.2	1,788	3.2	5.0	
2	147	294				61	122							
3	0	0				20	60							
4	328	1.312				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				10	☐	/				
0.0 ft.		MGO					☐	/				MH in good condition, level sensor instrumentation
0.0 ft.		DSC				10	☐	6 /		2		
0.0 ft.		AMH					☐	/				SSR1460, Good condition
3.0 ft.		TBA		24.000			☐	9 /				
23.0 ft.		ID					☐	2 /		3		
25.0 ft.		DAE				10	☑	7 /	5	2		
30.0 ft.		ID					☐	12 /		3		
30.0 ft.		CL	S02				☐	12 /		2		At 3 and 9
30.0 ft.		SAM	S03				☐	4 /		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity.

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
30.0 ft.		SAM	S01				☐	8 /		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity.
108.0 ft.		TBD		12.000			☑	12 /		3		Missing material around pipe
121.0 ft.		TBA		24.000			☐	2 /				
150.0 ft.		SSS					☐	4 /		2		
175.0 ft.		DAE				10	☐	4 /	5	2		
175.0 ft.		ID					☐	4 /		3		
255.0 ft.		DAE				10	☑	6 /		2		
280.0 ft.		RPPD					☐	3 /		4		Patch material soft, separation.
280.0 ft.		RPPD					☐	9 /		4		Patch material soft, separation.
285.0 ft.		ID					☐	12 /		3		
285.0 ft.		ID					☐	12 /		3		
297.0 ft.		TBD		12.000			☐	12 /		3		Some void around tap
315.0 ft.		TBD		8.000			☐	10 /		3		Void around tap.
315.0 ft.		SAM					☐	8 /		4		2 sf, deep repair needed. Instance of more severity of continuining SAM
325.0 ft.		DAE				10	☐	3 /	5	2		Patch repair soft, missing
325.0 ft.		MGO					☐	/				SAM at water line is in worse condition, especially at 8:00
330.0 ft.		IW					☐	10 /		2		
379.0 ft.		TB		60.000			☐	9 /				Drop down connection.
385.0 ft.		TB		60.000			☐	9 /				Drop down connection.
400.0 ft.		CL	F02				☐	12 /		2		
404.0 ft.		TBA		60.000			☐	7 /				Drop connection

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
417.0 ft.		RPPD					☐	12 /		4		Steel plate in crown, corroded.
417.0 ft.		TBD		12.000			☐	12 /		3		Tap itself in poor condition, corroded.
425.0 ft.		TB		36.000			☐	8 /				
464.0 ft.		TBA		24.000			☐	2 /				In good condition.
477.0 ft.		SSS					☑	6 /	6	2		
477.0 ft.		IDJ					☑	12 /		3		
500.0 ft.		CL	S04				☐	12 /		2		At 3, 9, 12.
505.0 ft.		SSS					☐	12 /		2		
505.0 ft.		ID					☐	12 /		3		
525.0 ft.		DAE				10	☐	7 /	8	2		
548.0 ft.		DAE				10	☐	7 /	8	2		
550.0 ft.		ID					☐	12 /		3		
550.0 ft.		ID					☐	12 /		3		
550.0 ft.		ID					☐	12 /		3		
560.0 ft.		TBA		12.000			☐	1 /				
560.0 ft.		DSC				20	☐	5 /	6	3		
575.0 ft.		DSC	S06			10	☐	6 /		2		
591.0 ft.		ID					☐	1 /		3		
592.0 ft.		ID					☐	12 /		3		
625.0 ft.		MGO					☐	/				More severity in SAM at 8 and 4 until 640. Concrete soft outside that area as well.
640.0 ft.		ID					☐	12 /		3		
652.0 ft.		TBD		12.000			☐	12 /		3		Missing material around pipe.

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
652.0 ft.		MGO					☐	/				Increased severity of SAM at waterline at 8 and 4. For less than 10 ft.
660.0 ft.		SSS					☑	6 /	6	2		
670.0 ft.		MGO					☐	/				At 3 and 9, easy to remove material, missing aggregate in 6 inch area. Concrete hollow surrounding. Depth in some areas of 6+ in. Until 750
760.0 ft.		DSZ				15	☐	6 /		3		CIPP liner bag
785.0 ft.		SSS					☑	6 /	6	2		
842.0 ft.		DSC	F06			10	☐	6 /		2		
842.0 ft.		SAM	F01				☐	8 /		4		
842.0 ft.		SAM	F03				☐	4 /		4		
842.0 ft.		CL	F04				☐	12 /		2		
842.0 ft.		AMH					☐	/				SSR0916

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220208 15:49

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0504	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	138 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			967.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0916						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0657						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	1,955	4Z3B	3.4	0	0	590	413X	2.6	2,545	3.1	5.0	
2	175	350				104	208							
3	15	45				126	378							
4	390	1.560				1	4							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MGO					☐	/				Previous manhole did not have a number, so had called it SEV016. Marking this one as SEV016b to avoid confusion.
0.0 ft.		SAM	S01				☐	4 /		4		2" width by usually 1" depth of deterioration. Will call out areas of increased severity.
0.0 ft.		SAM	S02				☐	8 /		4		2" width by usually 1" depth of deterioration. Will call out areas of increased severity.
0.0 ft.		MWL				5	☐	/				
0.0 ft.		AMH					☐	/				SSR0916
10.0 ft.		TBI		24.000	12.000		☐	9 /		2		Active, good condition.
10.0 ft.		DSC				10	☐	6 /		2		
23.0 ft.		ID					☐	2 /		3		
48.0 ft.		ID					☐	12 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
48.0 ft.		SSS					☐	8 /	9	2		
56.0 ft.		SSS					☐	8 /	10	2		
56.0 ft.		SAP					☐	8 /	10	3		
64.0 ft.		TBI		8.000	12.000		☐	2 /		2		
64.0 ft.		MGO					☐	/				Increased deterioration and SAM at water line
68.0 ft.		ID					☐	10 /		3		
95.0 ft.		ID					☐	12 /		3		
95.0 ft.		CL	S03				☐	12 /		2		Wanders between 10 and 12
110.0 ft.		SAM					☐	8 /	9	4		Branching/diagonal deterioration
148.0 ft.		TB		12.000			☐	1 /				Heavy mineral deposits around.
150.0 ft.		DSC	S06			18	☐	6 /		3		2+ feet of debris. Compact, can walk on top of, but can get rebar through to bottom.
155.0 ft.		DAE				10	☑	7 /	5	2		
175.0 ft.		DAE	S04			10	☐	3 /	9	2		
184.0 ft.		ID					☐	11 /		3		
190.0 ft.		DAE	F04			10	☐	3 /	9	2		
200.0 ft.		CL	S05				☐	1 /		2		
226.0 ft.		ID					☐	2 /		3		
226.0 ft.		ID					☐	2 /		3		
230.0 ft.		DAE				10	☐	2 /	5	2		
231.0 ft.		ID					☐	12 /		3		
231.0 ft.		ID					☐	12 /		3		
231.0 ft.		ID					☐	12 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
231.0 ft.		ID					☐	1 /		3		
231.0 ft.		IR					☐	12 /		4		
245.0 ft.		ID					☐	12 /		3		
248.0 ft.		ID					☐	12 /		3		
302.0 ft.		ID					☐	10 /		3		
305.0 ft.		ID					☐	10 /		3		
305.0 ft.		DAE				15	☐	7 /	10	3		
305.0 ft.		ID					☐	12 /		3		
305.0 ft.		ID					☐	12 /		3		
305.0 ft.		ID					☐	12 /		3		
308.0 ft.		TBD		12.000			☐	1 /		3		Void around tap and some spalling
312.0 ft.		ID					☐	9 /		3		
312.0 ft.		ID					☐	10 /		3		
312.0 ft.		ID					☐	10 /		3		
318.0 ft.		ID					☐	10 /		3		
318.0 ft.		ID					☐	10 /		3		
330.0 ft.		DSC				15	☐	6 /		3		
341.0 ft.		TBD		24.000	6.000		☐	3 /		3		Deep void around pipe
341.0 ft.		H					☐	3 /		4		Deep void around pipe.
369.0 ft.		TB		12.000			☐	12 /				
376.0 ft.		SSS					☑	6 /	6	2		
376.0 ft.		ID					☐	1 /		3		
376.0 ft.		ID					☐	2 /		3		
376.0 ft.		ID					☐	3 /		3		
376.0 ft.		DAE				10	☑	7 /	5	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
387.0 ft.		ID					☐	12 /		3		
387.0 ft.		ID					☐	12 /		3		
410.0 ft.		ID					☐	12 /		3		
410.0 ft.		ID					☐	12 /		3		
412.0 ft.		ID					☐	12 /		3		
412.0 ft.		ID					☐	12 /		3		
433.0 ft.		ID					☐	2 /		3		
450.0 ft.		DAE				10	☑	7 /	5	2		
486.0 ft.		SMW					☐	3 /	5	5		Loss of section greater than 6"
505.0 ft.		DSC	F06			18	☐	6 /		3		
505.0 ft.		CL	F05				☐	1 /		2		
505.0 ft.		MWL				20	☐	/				
505.0 ft.		DSC	S08			10	☐	6 /		2		
525.0 ft.		TBA		88.000			☐	9 /				Large incoming brick sewer
525.0 ft.		CM	S07				☐	10 /	2	3		At 2 and 10
558.0 ft.		TBD		12.000			☐	12 /		3		Void around outside
578.0 ft.		ID					☐	12 /		3		
578.0 ft.		MGO					☐	/				Increase in severity of deterioration at water line. Up to 4" deep.
597.0 ft.		CM	F07				☐	10 /	2	3		
597.0 ft.		IDJ					☑	12 /		3		
597.0 ft.		IDJ					☑	12 /		3		
597.0 ft.		DAE				5	☑	7 /	5	2		
600.0 ft.		SAM					☐	3 /	5	4		Loss of section
606.0 ft.		TBC		24.000			☐	3 /				

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
606.0 ft.		ID					☐	11 /		3		
610.0 ft.		TBA		24.000			☐	3 /				Some missing material around outside but in OK condition.
650.0 ft.		CL	F03				☐	12 /		2		
675.0 ft.		H					☐	8 /		4		At water line condition, 6" deep
690.0 ft.		ID					☐	12 /		3		
722.0 ft.		TB		6.000			☐	10 /				
740.0 ft.		ID					☐	1 /		3		
740.0 ft.		ID					☐	10 /		3		
740.0 ft.		ID					☐	9 /		3		
753.0 ft.		TBD		12.000			☐	12 /		3		Missing material around
785.0 ft.		ID					☐	12 /		3		
785.0 ft.		ID					☐	9 /		3		
821.0 ft.		TB		60.000			☐	3 /				Drop connection from pipe
833.0 ft.		TB		12.000			☐	1 /				Relatively good condition.
864.0 ft.		IDJ					☑	10 /		3		
864.0 ft.		IDJ					☑	12 /		3		
864.0 ft.		IDJ					☑	10 /		3		
864.0 ft.		IDJ					☑	10 /		3		
864.0 ft.		IDJ					☑	10 /		3		
864.0 ft.		IDJ					☑	10 /		3		
864.0 ft.		DAE				10	☑	7 /	5	2		
964.0 ft.		DSC	F08			10	☐	6 /		2		
964.0 ft.		SAM	F01				☐	4 /		4		
964.0 ft.		SAM	F02				☐	8 /		4		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
964.0 ft.		AMH					☐	/				SSR0657. Steps in poor condition, minor infiltration, some infiltration. Precast with brick top

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220201 16:16

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0614	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	138 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			964.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0657						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR1051						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	1	1	2,054	4Z3E	3.4	0	0	468	3C2Z	2.1	2,522	3.0	5.0	
2	171	342				198	396							
3	33	99				24	72							
4	403	1.612				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				10	☐		/			
0.0 ft.		DSC	S02			10	☐	6	/	2		15-18"
0.0 ft.		CL	S01				☐	12	/	2		
0.0 ft.		SAM	S11				☐	8	/	4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity.
0.0 ft.		SAM	S12				☐	4	/	4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity.
0.0 ft.		AMH					☐		/			SSR0657
50.0 ft.		TBD		12.000			☐	12	/	3		Void around pipe.
67.0 ft.		ID					☐	12	/	3		
67.0 ft.		ID					☐	12	/	3		
81.0 ft.		ID					☐	12	/	3		
91.0 ft.		TBA		24.000			☐	9	/			

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
107.0 ft.		MGO					☐	/				Missing aggregate more severe in depth at 8
120.0 ft.		IDJ					☑	1 /		3		
132.0 ft.		TBD		12.000			☐	12 /		3		Active, gap between pipe and wall.
155.0 ft.		TBC		12.000			☐	12 /				
195.0 ft.		SSS					☐	4 /		2		
200.0 ft.		CM	S03				☐	9 /	10	3		Parallel longitudinal cracks.
235.0 ft.		ID					☐	10 /		3		
235.0 ft.		DAE				20	☐	10 /		3		
240.0 ft.		CM	F03				☐	9 /	10	3		
250.0 ft.		MGO					☐	/				Increased deterioration at waterline
275.0 ft.		RPPD	S04				☑	8 /		4		Joint deterioration, patching missing or soft.
284.0 ft.		TBA		12.000			☐	12 /				
330.0 ft.		RPPD	F04				☐	8 /		4		Patch repair missing or soft.
343.0 ft.		ID					☐	11 /		3		
343.0 ft.		ID					☐	12 /		3		
343.0 ft.		ID					☐	1 /		3		
363.0 ft.		TBI		24.000	8.000		☐	2 /		2		
396.0 ft.		ID					☐	10 /		3		
416.0 ft.		ID					☐	11 /		3		
416.0 ft.		ID					☐	12 /		3		
436.0 ft.		ID					☐	12 /		3		
436.0 ft.		ID					☐	12 /		3		
436.0 ft.		CC					☑	8 /	4	1		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
436.0 ft.		ID					☐	12 /		3		
436.0 ft.		ID					☐	12 /		3		
436.0 ft.		SSS					☐	4 /		2		
436.0 ft.		MGO					☐	/				Increase in severity of SAM at 4 and 8 until 475'
450.0 ft.		RPPD					☐	4 /		4		Patch material soft or missing, easily removed.
484.0 ft.		ID					☐	12 /		3		
486.0 ft.		MGO					☐	/				6+ inches missing
512.0 ft.		ID					☐	12 /		3		
512.0 ft.		DAE				10	☐	9 /	7	2		
520.0 ft.		ID					☐	12 /		3		
525.0 ft.		SSS					☐	4 /		2		
538.0 ft.		DAE				10	☐	8 /		2		
539.0 ft.		RPP					☐	7 /	8			Deteriorating patch.
539.0 ft.		TBD		12.000			☐	12 /		3		Active, small void around outside.
550.0 ft.		CH3	S07				☐	9 /	3	3		
550.0 ft.		CL	F01				☐	12 /		2		
640.0 ft.		TBI		24.000	6.000		☐	10 /		2		Active
640.0 ft.		TB		12.000			☐	11 /				Good condition.
650.0 ft.		CH3	F07				☐	9 /	3	3		
650.0 ft.		CL	S06				☐	12 /		2		
700.0 ft.		RPPD					☐	4 /	5	4		Patching easily removed.
736.0 ft.		TBA		6.000			☐	11 /				
736.0 ft.		IDC					☐	11 /		3		
786.0 ft.		TB		6.000			☐	10 /				Good condition.

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
850.0 ft.		CL	F06				☐	12 /		2		
850.0 ft.		CM	S08				☐	11 /	1	3		Crown crack breaks off into three segments.
853.0 ft.		ID					☐	12 /		3		
873.0 ft.		CM	F08				☐	11 /	1	3		
873.0 ft.		CL	S09				☐	12 /		2		
873.0 ft.		TBA		12.000			☐	12 /				Some gapping, but good condition.
900.0 ft.		RPPD	S10				☐	4 /	5	4		Delamination of previous patch materials.
920.0 ft.		RPPD	F10				☐	4 /	5	4		Patching material failing.
960.0 ft.		DAE				10	☐	9 /	7	2		
964.0 ft.		CL	F09				☐	12 /		2		
964.0 ft.		DSC	F02			10	☐	6 /		2		
964.0 ft.		AMH					☐	/				SSR1051. 2 taps, mineral deposits, steps in poor condition
964.0 ft.		SAM	F11				☐	8 /		4		
964.0 ft.		SAM	F12				☐	4 /		4		

CUES, Inc.
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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220204 10:26

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0615	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	127 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			1,005.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR1051						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR1047						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
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Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	1,681	4Z31	3.9	0	0	426	342Z	2.0	2,107	3.3	5.0	
2	31	62				207	414							
3	1	3				4	12							
4	404	1.616				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				10	☐	/				
0.0 ft.		DSC	S01			10	☐	6 /		2		
0.0 ft.		CL	S02				☐	12 /		2		
0.0 ft.		SAM	S04				☐	4 /		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity.
0.0 ft.		SAM	S05				☐	8 /		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity.
0.0 ft.		AMH					☐	/				SSR1051
110.0 ft.		SAM					☐	4 / 8		4		Area of greater deterioration at 4 and 8. Up to 1" depth
130.0 ft.		TBA		12.000			☐	3 /				Good condition.
150.0 ft.		CL	F02				☐	12 /		2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
206.0 ft.		TBD		24.000			☐	9 /		3		Active, gap between tap and pipe of up to 1'
223.0 ft.		TB		6.000			☐	11 /				Filled with mineral deposits but in good condition.
223.0 ft.		DSC	F01			10	☐	6 /		2		
223.0 ft.		DSC	S03			5	☐	6 /		2		
223.0 ft.		SAM					☐	4 /	8	4		Instance of more severe deterioration at water line. Instance of spalling and deterioration of previous patching at 4 and 8.
315.0 ft.		DAE				10	☐	7 /	9	2		
329.0 ft.		TBD		12.000			☐	1 /		3		Active, space between tap and wall all around.
340.0 ft.		ID					☐	2 /		3		
345.0 ft.		ID					☐	12 /		3		
345.0 ft.		DAE				5	☑	6 /	6	2		
345.0 ft.		MGO					☐	/				Condition of SAM along water line increased in severity. Greater width and depth.
430.0 ft.		SAP					☐	8 /	9	3		At and above the water line SAM defect
478.0 ft.		TB		72.000			☐	4 /				72x48 egg shaped. Good condition.
550.0 ft.		MGO					☐	/				SAM at waterline in better condition.
597.0 ft.		TB		12.000			☐	1 /				
597.0 ft.		DSC	S06			10	☐	5 /		2		
615.0 ft.		DSC	F06			10	☐	5 /		2		
755.0 ft.		TBA		12.000			☐	10 /				

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
758.0 ft.		TBA		15.000			☐	2 /				
759.0 ft.		SSS					☐	2 /		2		
792.0 ft.		TB		12.000			☐	1 /				
960.0 ft.		MGO					☐	/				Back to typical level of severity at the water line for SAM
1,005.0 ft.		DSC	F03			5	☐	6 /		2		
1,005.0 ft.		SAM	F04				☐	4 /		4		
1,005.0 ft.		SAM	F05				☐	8 /		4		
1,005.0 ft.		AMH					☐	/				SSR1047. ID, brick construction

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220209 10:02

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection Status:	Consequence of failure:	Pressure value:
D				

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0934	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Sewer use:	Height:	Width:	Shape:	Material:	Lining method:
	138 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year laid:	Year renewed:
			995.0 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR1047						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0522						

Coordinate system:	Vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
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Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	1,885	4Z31	3.62	0	0	446	3A2Z	2.06	2,331	3.16		
2	99	198				202	404							
3	1	3				14	42							
4	421	1.684				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				10	☐	/				
0.0 ft.		DSF	S01			5	☐	6 /		2		
0.0 ft.		SAM	S03				☐	8 /		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity.
0.0 ft.		SAM	S02				☐	4 /		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity.
0.0 ft.		AMH					☐	/				SSR1047
101.0 ft.		TBD		12.000			☐	2 /		3		Filled with mineral deposits, space around outside.
154.0 ft.		CL	S04				☐	12 /		2		
154.0 ft.		ID					☐	9 /		3		
154.0 ft.		ID					☐	12 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
190.0 ft.		SAM					☐	4 /	8	4		Below the water line and existing SAM at 4 and 8 as well.
200.0 ft.		CL	F04				☐	12 /		2		
203.0 ft.		ID					☐	12 /		3		
278.0 ft.		ID					☐	3 /		3		
278.0 ft.		DAE				10	☐	4 /	5	2		
300.0 ft.		MGO					☐	/				Greater deterioration at 8 until 450'. 4" wide, greater than 2" deep. Previous patching material either gone or easily removed.
325.0 ft.		TBA		12.000			☐	2 /				Good condition
331.0 ft.		TBD		24.000	4.000		☐	2 /		3		Bottom of pipe intrudes. Active flow. Cavity extending at least a foot back at bottom right.
350.0 ft.		ID					☐	12 /		3		
424.0 ft.		ID					☑	12 /		3		
424.0 ft.		ID					☑	10 /		3		
424.0 ft.		ID					☐	11 /		3		
550.0 ft.		CL	S06				☐	11 /		2		Intermittent
579.0 ft.		SAP					☐	7 /	8	3		2 instances of honeycombing
596.0 ft.		TBA		12.000			☐	12 /				
596.0 ft.		SAM	S05				☐	4 /	8	4		Increased severity of the water line SAM and below.
634.0 ft.		TBA		12.000			☐	10 /				
685.0 ft.		TB		72.000			☐	3 /				Brick drop connection
700.0 ft.		SAM	F05				☐	4 /	8	4		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
750.0 ft.		DAE				10	☑	6	6	2		
755.0 ft.		DAE				20	☐	6	8	3		
835.0 ft.		SAM					☐	4	5	4		
850.0 ft.		MGO					☐					Deterioration at water line less severe.
904.0 ft.		TB		12.000			☐	1				
910.0 ft.		DAE				15	☐	7	9	3		
937.0 ft.		TBD		12.000			☐	3		3		Gap behind of almost 2'
950.0 ft.		SSS					☐	2	4	2		
950.0 ft.		DAE				10	☐	3	5	2		
995.0 ft.		DAE				15	☑	7	9	3		
995.0 ft.		SAM	F03				☐	8		4		
995.0 ft.		SAM	F02				☐	4		4		
995.0 ft.		DSF	F01			10	☐	6		2		
995.0 ft.		CL	F06				☐	12		2		
995.0 ft.		AMH					☐					SSR0522. 3 taps, one bulkheaded. Precast, steps in poor condition, minor infiltration

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220209 13:43

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0403	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	138 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			973.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0522						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0405						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	1,868	4Z2Z	3.4	0	0	504	3E2Z	2.1	2,372	3.0	5.0	
2	154	308				201	402							
3	0	0				34	102							
4	390	1.560				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				10	☐	/				
0.0 ft.		DSF	S03			10	☐	6 /		2		
0.0 ft.		SAM	S01				☐	8 /		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity.
0.0 ft.		SAM	S02				☐	4 /		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity.
0.0 ft.		AMH					☐	/				SSR0522
50.0 ft.		DAE				15	☐	7 /	9	3		
50.0 ft.		CL	S04				☐	12 /		2		
92.0 ft.		DAE				20	☐	10 /		3		
92.0 ft.		ID					☐	10 /		3		
92.0 ft.		ID					☐	10 /		3		
92.0 ft.		ID					☐	10 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
92.0 ft.		ID					☐	10 /		3		
120.0 ft.		SAM					☐	3 /		4		3" deep
122.0 ft.		TBD		24.000	6.000		☐	9 /		3		Active, intruding. Cavity about 1' deep on left hand side.
383.0 ft.		ID					☐	10 /		3		
383.0 ft.		DAE				20	☐	10 /		3		
471.0 ft.		TB		12.000			☐	2 /				
475.0 ft.		SAM					☐	4 /	6	4		
520.0 ft.		DSGV	S05			10	☐	6 /		2		
525.0 ft.		DAE				20	☐	10 /		3		
525.0 ft.		ID					☐	10 /		3		
525.0 ft.		ID					☐	10 /		3		
525.0 ft.		ID					☐	10 /		3		
532.0 ft.		TBD		18.000			☐	2 /		3		Void up to 18" between tap and pipe at bottom right corner of tap.
535.0 ft.		DSGV	F05			10	☐	6 /		2		
543.0 ft.		ID					☐	10 /		3		
543.0 ft.		ID					☐	12 /		3		
543.0 ft.		ID					☐	1 /		3		
594.0 ft.		ID					☐	12 /		3		
645.0 ft.		ID					☐	12 /		3		
695.0 ft.		ID					☐	11 /		3		
695.0 ft.		ID					☐	12 /		3		
700.0 ft.		TBA		24.000			☐	10 /				
700.0 ft.		CL	F04				☐	12 /		2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
744.0 ft.		ID					☐	11 /		3		
744.0 ft.		ID					☐	12 /		3		
744.0 ft.		ID					☐	1 /		3		
769.0 ft.		ID					☐	12 /		3		
784.0 ft.		TBD		12.000			☐	1 /		3		Gap between tap and pipe.
784.0 ft.		ID					☐	12 /		3		
784.0 ft.		ID					☐	2 /		3		
784.0 ft.		DAE				10	☐	1 /	5	2		
819.0 ft.		IDJ					☑	12 /		3		
819.0 ft.		DAE				5	☐	7 /	5	2		
860.0 ft.		CL	S06				☐	12 /		2		
869.0 ft.		ID					☐	12 /		3		
869.0 ft.		ID					☐	11 /		3		
919.0 ft.		IDJ					☑	12 /		3		
919.0 ft.		DAE				5	☐	7 /	5	2		
925.0 ft.		SSS					☐	5 /	7	2		
970.0 ft.		ID					☐	10 /		3		
970.0 ft.		ID					☐	12 /		3		
971.0 ft.		SAM	F01				☐	8 /		4		
971.0 ft.		SAM	F02				☐	4 /		4		
973.0 ft.		DSF	F03			10	☐	6 /		2		
973.0 ft.		CL	F06				☐	12 /		2		
973.0 ft.		AMH					☐	/				SSR0405. 1 tap, preconstructed, mineral deposits, some infiltration.

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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220209 14:44

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection Status:	Consequence of failure:	Pressure value:
D				

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN1124	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Sewer use:	Height:	Width:	Shape:	Material:	Lining method:
	138 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year laid:	Year renewed:
			714.0 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0405						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0658						

Coordinate system:	Vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	1,438	4Z2Z	3.34	0	0	336	3A2Z	2.07	1,774	2.99		
2	143	286				150	300							
3	0	0				12	36							
4	288	1.152				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				10	☐	/				
0.0 ft.		SAM	S01				☐	8 /		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity.
0.0 ft.		SAM	S02				☐	4 /		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity.
0.0 ft.		DSGV	S03			5	☐	6 /		2		
0.0 ft.		CL	S04				☐	12 /		2		Intermittent
0.0 ft.		AMH					☐	/				SSR0405
46.0 ft.		ID					☑	12 /		3		
46.0 ft.		DAE				5	☑	7 /	5	2		
55.0 ft.		SAM					☐	5 /		4		
121.0 ft.		ID					☐	12 /		3		
124.0 ft.		TB		54.000			☐	3 /				Steep drop down

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
250.0 ft.		TBA		12.000			☐	12 /				Good condition
272.0 ft.		ID					☐	11 /		3		
272.0 ft.		ID					☐	12 /		3		
272.0 ft.		DAE				10	☐	7 /	5	2		
292.0 ft.		TBA		36.000			☐	9 /				
300.0 ft.		DAE				10	☑	7 /	5	2		
321.0 ft.		ID					☐	12 /		3		
321.0 ft.		DAE				10	☐	7 /	5	2		
363.0 ft.		TBD		12.000			☐	1 /		3		Gap around tap
363.0 ft.		MGO					☐	/				Increased deterioration at water line for 10'
460.0 ft.		DAE				15	☐	2 /	5	3		
521.0 ft.		ID					☐	2 /		3		
541.0 ft.		TB		12.000			☐	10 /				Good condition.
571.0 ft.		ID					☐	10 /		3		
595.0 ft.		DAE				10	☑	7 /	5	2		
595.0 ft.		ID					☑	10 /		3		
615.0 ft.		DAE				10	☑	7 /	5	2		
673.0 ft.		DAE				5	☐	7 /	5	2		
673.0 ft.		TB		24.000			☐	11 /				
683.0 ft.		MSC		11.400	11.500		☐	/				Horseshoe shaped. 11.4' tall, 11.5' wide.
695.0 ft.		SAM					☑	7 /	5	4		2-4" deep
695.0 ft.		ID					☑	11 /		3		
695.0 ft.		ID					☑	12 /		3		
714.0 ft.		SAM	F01				☐	8 /		4		
714.0 ft.		SAM	F02				☐	4 /		4		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
714.0 ft.		DSGV	F03			5	☐	6	/	2		
714.0 ft.		CL	F04				☐	12	/	2		
714.0 ft.		AMH					☐		/			SSR0658. CIP to Brick to brick upported by steel bars, some infiltration.

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Orlando, FL 32805
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Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220210 08:21

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection Status:	Consequence of failure:	Pressure value:
D				

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0765	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Sewer use:	Height:	Width:	Shape:	Material:	Lining method:
SW	138 in.	136 in.	H	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year laid:	Year renewed:
			1,247.0 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0658						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0404						

Coordinate system:	Vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	1	1	2,119	4Z21	3.99	0	0	600	413C	2.09	2,719	3.32		
2	1	2				262	524							
3	0	0				24	72							
4	529	2.116				1	4							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				10	☐	/				
0.0 ft.		SAM	S01				☐	8 /		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity.
0.0 ft.		SAM	S02				☐	4 /		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity.
0.0 ft.		DSGV	S03			5	☐	6 /		2		
0.0 ft.		AMH					☐	/				SSR0658
24.0 ft.		TB		6.000			☐	11 /				
24.0 ft.		ID					☐	1 /		3		
24.0 ft.		SAM					☐	7 /	8	4		Larger area of SAM, extends amost 2', couple inches deep.

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
30.0 ft.		SAM					☑	3	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8. Up to 6" deterioration
62.0 ft.		TBI		6.000	6.000		☐	7		2		
63.0 ft.		SAM					☑	3	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8.
90.0 ft.		TBD		4.000			☐	11		3		75% plugged with mineral deposits.
101.0 ft.		SAM					☑	3	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8.
149.0 ft.		SAM					☑	3	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8. 6"+ deep
194.0 ft.		SAM					☑	3	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8. Up to 6" deterioration
219.0 ft.		SAM					☑	3	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8. Up to 6" deterioration
223.0 ft.		TBD		12.000			☐	1		3		Gap between tap and host pipe.
234.0 ft.		TBA		30.000			☐	9				Good condition
236.0 ft.		TB		4.000			☐	10				Good condition.
246.0 ft.		SAM					☑	3	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8. Up to 6" deterioration
259.0 ft.		SAM					☐	9		4		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
291.0 ft.		SAM					☑	3	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8. Up to 6" deterioration
328.0 ft.		SAM					☑	3	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8. Up to 6" deterioration
342.0 ft.		SAM					☑	3	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8. Up to 6" deterioration
351.0 ft.		TB		4.000			☐	12				Good condition.
366.0 ft.		DAE				10	☑	7	5	2		
366.0 ft.		ID					☑	12		3		
366.0 ft.		ID					☑	3		3		
380.0 ft.		DAE				10	☑	7	5	2		
390.0 ft.		DAE				10	☑	7	5	2		
440.0 ft.		SAM					☑	3	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8. Up to 6" deterioration
464.0 ft.		SAM					☑	3	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8. Up to 6" deterioration
480.0 ft.		TBD		12.000			☐	1		3		Gap between host pipe and incoming tap.
493.0 ft.		TBA		24.000			☐	2				
515.0 ft.		DAE				10	☑	7	5	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
515.0 ft.		MGO					☐	/				Longitudinal defect at 8 and 4 lessened, appears more sound.
567.0 ft.		ID					☐	12 /		3		
567.0 ft.		DAE				10	☐	7 /	5	2		
587.0 ft.		DAE				10	☐	7 /	5	2		
587.0 ft.		ID					☐	9 /		3		
587.0 ft.		ID					☐	9 /		3		
587.0 ft.		ID					☐	9 /		3		
661.0 ft.		ID					☑	11 /		3		
661.0 ft.		ID					☑	2 /		3		
661.0 ft.		ID					☑	1 /		3		
661.0 ft.		ID					☑	12 /		3		
661.0 ft.		SAM					☑	3 /	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8. Up to 6" deterioration
668.0 ft.		TB		12.000			☐	2 /				Good condition.
687.0 ft.		IR					☑	12 /		4		
687.0 ft.		ID					☑	12 /		3		
687.0 ft.		ID					☐	1 /		3		
687.0 ft.		MGO					☐	/				Longitudinal defect worsened 4' before and after joint.
687.0 ft.		DAE				10	☑	7 /	5	2		
687.0 ft.		SAM					☑	3 /	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8. Up to 6" deterioration

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
797.0 ft.		TBC		24.000			☐	2 /		2		Heavy mineral deposits built up.
801.0 ft.		TBI		24.000	6.000		☐	10 /		2		Good condition.
809.0 ft.		SAM					☑	3 /	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8. Up to 6" deterioration
857.0 ft.		ID					☑	3 /		3		
857.0 ft.		ID					☑	12 /		3		
857.0 ft.		SAM					☑	3 /	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8. Up to 6" deterioration
883.0 ft.		ID					☑	11 /		3		
883.0 ft.		SAM					☑	3 /	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8. Up to 6" deterioration
889.0 ft.		SAM					☐	2 /	5	4		Large area max of 15" wide
900.0 ft.		DAE				10	☑	7 /	5	2		
910.0 ft.		CC					☐	7 /	9	1		
910.0 ft.		SAM					☑	3 /	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8. Up to 6" deterioration
956.0 ft.		ID					☑	12 /		3		
956.0 ft.		SAM					☑	3 /	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8. Up to 6" deterioration
974.0 ft.		DAE				10	☑	7 /	5	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
974.0 ft.		MGO					☐	/				Longitudinal joint condition increases in severity.
974.0 ft.		SAM					☑	3	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8. Up to 6" deterioration
990.0 ft.		SSS					☐	2	/	2		
1,030.0 ft.		SAM					☑	3	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8. Up to 6" deterioration
1,051.0 ft.		TBA		24.000			☐	2	/			Good condition.
1,051.0 ft.		SAM					☐	2	/	4		Below tap.
1,067.0 ft.		TBA		12.000			☐	1	/			Good condition.
1,085.0 ft.		ID					☐	2	/	3		
1,085.0 ft.		SAM					☑	3	5	4		3'x2', over 6" of depth.
1,103.0 ft.		SAM					☑	1	4	4		Deteriorated joint.
1,103.0 ft.		ID					☑	12	/	3		
1,103.0 ft.		ID					☑	2	/	3		
1,103.0 ft.		SAM					☑	8	10	4		Deteriorated joint, depth of up to 10"
1,178.0 ft.		SAM					☑	3	9	4		At joint, deterioration and spalling. Largest sections of deterioration at 4 and 8. Up to 6" deterioration

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
1,178.0 ft.		ID					☑	12 /		3		
1,178.0 ft.		DAE				10	☑	7 /	5	2		
1,219.0 ft.		SAM					☐	2 /		4		
1,247.0 ft.		SAM	F01				☐	8 /		4		
1,247.0 ft.		SAM	F02				☐	4 /		4		
1,247.0 ft.		DSGV	F03			5	☐	6 /		2		
1,247.0 ft.		AMH					☐	/				SSR0404. Roots from MH, brick constructed MH, pipe coming down through MH.

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220214 10:47

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN1018	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	138 in.	132 in.	H	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			1,012.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0658						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0404						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	1,650	4Z29	4.0	0	0	528	3E2Z	2.1	2,178	3.3	5.0	
2	9	18				219	438							
3	0	0				30	90							
4	408	1.632				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				10	☐	/				
0.0 ft.		DSF	S01			5	☐	6 /		2		
0.0 ft.		SAM	S02				☐	4 /		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity.
0.0 ft.		SAM	S03				☐	8 /		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity.
0.0 ft.		AMH					☐	/				SSR0404
44.0 ft.		SSS					☐	8 /	9	2		
54.0 ft.		SSS					☐	1 /	3	2		
61.0 ft.		SSS					☐	4 /	5	2		
79.0 ft.		SSS					☐	2 /	4	2		
79.0 ft.		SSS					☐	8 /	10	2		
107.0 ft.		SSS					☐	3 /	4	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
107.0 ft.		ID					☐	12 /		3		
107.0 ft.		SAM					☐	7 /	8	4		
113.0 ft.		TBA		24.000			☐	9 /				Good condition.
116.0 ft.		TBA		6.000			☐	2 /				Good condition.
116.0 ft.		SSS					☐	3 /	4	2		
152.0 ft.		SAM					☑	7 /	5	4		Large sections missing or deteriorated around joint.
227.0 ft.		DAE				10	☑	7 /	5	2		
227.0 ft.		ID					☑	3 /		3		
260.0 ft.		DAE				10	☐	3 /	4	2		
275.0 ft.		DAE				10	☑	7 /	5	2		
275.0 ft.		IDJ					☑	2 /		3		
318.0 ft.		SSS					☐	9 /		2		2'x1.5'
330.0 ft.		DAE				10	☑	7 /	5	2		
341.0 ft.		SSS					☐	8 /	10	2		
352.0 ft.		DAE				10	☑	7 /	5	2		
400.0 ft.		DAE				10	☑	7 /	5	2		
419.0 ft.		TB		12.000			☐	2 /				Good condition.
426.0 ft.		DAE				10	☑	7 /	5	2		
426.0 ft.		IDJ					☑	3 /		3		
454.0 ft.		IDJ					☑	11 /		3		
454.0 ft.		IDJ					☑	12 /		3		
454.0 ft.		IDJ					☑	12 /		3		
454.0 ft.		IDJ					☑	1 /		3		
454.0 ft.		IDJ					☑	2 /		3		
454.0 ft.		DAE				10	☑	7 /	5	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
572.0 ft.		SAM					☑	9 /	10	4		
572.0 ft.		DAE				10	☑	7 /	5	2		
640.0 ft.		DAE				10	☐	3 /	5	2		
647.0 ft.		DAE				10	☑	7 /	5	2		
647.0 ft.		IDJ					☑	12 /		3		
647.0 ft.		IDJ					☑	1 /		3		
647.0 ft.		IDJ					☑	2 /		3		
656.0 ft.		TBI		24.000	6.000		☐	9 /		2		
656.0 ft.		TBD		4.000			☐	12 /		3		Fully plugged
656.0 ft.		IDC					☐	12 /		3		
656.0 ft.		IDC					☐	12 /		3		
670.0 ft.		IDJ					☑	12 /		3		
683.0 ft.		TB		60.000			☐	3 /				Egg shaped tap drops away 5x4
720.0 ft.		TBC		48.000			☐	9 /				
720.0 ft.		TB		2.000			☐	9 /				
721.0 ft.		SAM					☑	7 /	5	4		
721.0 ft.		IDJ					☑	10 /		3		
752.0 ft.		DAE				10	☑	7 /	5	2		
752.0 ft.		IDJ					☑	3 /		3		
752.0 ft.		IDJ					☑	11 /		3		
752.0 ft.		IDJ					☑	10 /		3		
752.0 ft.		IDJ					☑	9 /		3		
798.0 ft.		IDJ					☑	12 /		3		
798.0 ft.		DAE				10	☑	7 /	5	2		
798.0 ft.		IDJ					☑	11 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
798.0 ft.		IDJ					☑	10 /		3		
810.0 ft.		IDJ					☑	12 /		3		
810.0 ft.		IDJ					☑	3 /		3		
810.0 ft.		DAE				10	☑	7 /	5	2		
851.0 ft.		OBS				15	☐	3 /		3		Either tap fully plugged with mineral deposits or proturding rebar with mineral deposits.
869.0 ft.		IDJ					☑	12 /		3		
869.0 ft.		IDJ					☑	1 /		3		
869.0 ft.		DAE				10	☑	7 /	5	2		
943.0 ft.		DAE				10	☑	7 /	5	2		
943.0 ft.		IDJ					☑	12 /		3		
976.0 ft.		TBA		24.000			☐	2 /				Good condition
985.0 ft.		TBA		30.000			☐	10 /				Good condition.
1,012.0 ft.		DSF	F01			5	☐	6 /		2		
1,012.0 ft.		SAM	F02				☐	4 /		4		
1,012.0 ft.		SAM	F03				☐	8 /		4		
1,012.0 ft.		AMH					☐	/				SSR0529. Some ragging, steps offset in poor condition, some infiltration and mineral deposits.

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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220215 07:25

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection Status:	Consequence of failure:	Pressure value:
D				

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN1000	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Sewer use:	Height:	Width:	Shape:	Material:	Lining method:
	138 in.	132 in.	H	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year laid:	Year renewed:
			1,000.0 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0529						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0659						

Coordinate system:	Vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	1,674	4Z21	4.00	0	0	482	3B2Z	2.08	2,156	3.31		
2	1	2				214	428							
3	0	0				18	54							
4	418	1.672				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				10	☐	/				
0.0 ft.		DSF	S01			5	☐	6 /		2		About 6" debris
0.0 ft.		SAM	S02				☐	4 /	5	4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity. Additional peeling of lower corners near low water line.
0.0 ft.		SAM	S03				☐	7 /	8	4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity. Additional peeling of lower corners near low water line.
0.0 ft.		AMH					☐	/				SSR0529
7.0 ft.		DAE				10	☑	7 /	5	2		
7.0 ft.		ID					☑	3 /		3		
7.0 ft.		ID					☑	11 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
107.0 ft.		SAM					☑	7	11	4		3' wide, up to 10" deep
107.0 ft.		SAM					☑	2	4	4		3' wide, up to 10" deep
150.0 ft.		MGO					☐					Less severe defects at water line
180.0 ft.		DAE				5	☑	7	5	2		
180.0 ft.		SAM					☑	7	10	4		3' wide, over 1' deep in sections
180.0 ft.		SAM					☑	2	4	4		18" wide
180.0 ft.		MGO					☐					Lower corners defects worsened
221.0 ft.		TBA		12.000			☑	12				
221.0 ft.		DSC	S04			5	☐	6		2		
225.0 ft.		DSF	F01			5	☐	6		2		
256.0 ft.		DAE				10	☑	7	5	2		
305.0 ft.		TBA		12.000			☐	10				3-4" space between tap and wall
330.0 ft.		DAE				5	☑	7	5	2		
335.0 ft.		MGO					☐					Corner points condition worsening with spalls and missing materials
373.0 ft.		TBA		12.000			☐	12				
404.0 ft.		DAE				10	☑	7	5	2		
404.0 ft.		ID					☑	11		3		
460.0 ft.		DAE				20	☐	3		3		Mineral deposit build up
460.0 ft.		ID					☐	3		3		
475.0 ft.		SAM					☐	4		4		Section of 1'x3' of missing aggregate, softer within
480.0 ft.		ID					☑	3		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
480.0 ft.		DAE				10	☐	7 / 5		2		
554.0 ft.		SAM					☑	1 / 3		4		Section loss of 2'x1', 6-8" depth
554.0 ft.		SAM					☑	10 / 11		4		Section loss of 2'x3', 6-8" depth
554.0 ft.		ID					☑	12 /		3		
587.0 ft.		TB		4.000			☐	11 /				
587.0 ft.		SAM					☐	8 / 9		4		3'x2' section
615.0 ft.		TB		30.000			☐	3 /				Brick side of structure
629.0 ft.		DAE				5	☑	7 / 5		2		
629.0 ft.		SAM					☑	2 / 5		4		
629.0 ft.		SAM					☑	8 / 11		4		
629.0 ft.		ID					☑	10 /		3		
640.0 ft.		TBI		24.000	6.000		☐	9 /		2		Active
655.0 ft.		DAE				5	☑	7 / 5		2		
655.0 ft.		SAM					☑	10 / 11		4		
655.0 ft.		SAM					☑	1 / 3		4		
660.0 ft.		DSGV				10	☐	6 /		2		
692.0 ft.		TB		6.000			☐	10 /				
692.0 ft.		SSS					☐	9 /		2		Below the tap
696.0 ft.		TBA		6.000			☐	10 /				
696.0 ft.		DAE				5	☐	7 / 10		2		
706.0 ft.		SAM					☑	8 / 11		4		up to 1' in depth
706.0 ft.		ID					☑	1 /		3		
706.0 ft.		SAM					☑	2 / 5		4		
732.0 ft.		ID					☑	1 /		3		
732.0 ft.		ID					☑	3 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
780.0 ft.		SAM					☑	2	5	4		2' wide, 1' deep section of spalling
780.0 ft.		ID					☐	12		3		
855.0 ft.		SAM					☑	2	4	4		
855.0 ft.		SAM					☑	8	11	4		2' wide, 6" deep
855.0 ft.		ID					☑	11		3		
890.0 ft.		ID					☑	12		3		
890.0 ft.		ID					☑	2		3		
930.0 ft.		SAM					☑	2	4	4		
930.0 ft.		ID					☑	11		3		
930.0 ft.		ID					☐	12		3		
962.0 ft.		TB		6.000			☐	2				
962.0 ft.		DAE				10	☐	3	5	2		
962.0 ft.		TBD		6.000			☐	4		3		Heavy mineral deposits within tap. Trickling flow.
1,000.0 ft.		SAM	F02				☐	4	5	4		
1,000.0 ft.		SAM	F03				☐	7	8	4		
1,000.0 ft.		DSC				5	☐	6		2		
1,000.0 ft.		DSC	F04			5	☐	6		2		
1,000.0 ft.		AMH					☐					SSR0659. staggered steps, 2 taps and one bulkheaded, minor infiltration.

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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220215 09:50

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0879	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	138 in.	132 in.	H	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			734.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0659						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0184						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	1,318	4Z2G	3.8	0	0	474	423F	2.2	1,792	3.2	5.0	
2	41	82				179	358							
3	0	0				36	108							
4	309	1.236				2	8							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				10	☐	/				
0.0 ft.		SAM	S01				☐	4 /	5	4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity. Additional peeling of lower corners near low water line.
0.0 ft.		SAM	S02				☐	7 /	8	4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity. Additional peeling of lower corners near low water line.
0.0 ft.		DSF	S04			5	☐	6 /		2		6"
0.0 ft.		AMH					☐	/				SSR0659
5.0 ft.		SAM					☑	10 /		4		
15.0 ft.		TBD		12.000			☐	1 /		3		Low flow, 3-4" void around pipe wall

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
29.0 ft.		RPP					☑	7	5			Joint previously repaired. Some slight spalling but in good condition.
50.0 ft.		MGO					☐					Condition of defects at water line is better than typical
58.0 ft.		SAM					☐	8		4		
80.0 ft.		SAM					☑	1	4	4		SAM or material easily removed
104.0 ft.		ID					☐	12		3		
114.0 ft.		ID					☐	12		3		
114.0 ft.		IW					☑	7	5	2		
128.0 ft.		DAE				5	☐	7	10	2		
128.0 ft.		TBA		6.000			☐	10				Trickle flow, 10% filled with mineral deposits, slight voide around outside but otherwise in good condition.
128.0 ft.		DAE				5	☐	7	10	2		
130.0 ft.		MGO					☐					Condition at corner point worsens at 8:00
140.0 ft.		IW					☐	2		2		
156.0 ft.		DAE				5	☑	7	5	2		
201.0 ft.		TBA		6.000			☐	9				Dripping, 60% covered in mineral deposits
231.0 ft.		DAE				5	☑	7	5	2		
231.0 ft.		SAM					☑	1	4	4		1-2" depth
255.0 ft.		IWJ					☑	12		2		
255.0 ft.		DAE				5	☑	7	5	2		
294.0 ft.		TBA		12.000			☐	12				
296.0 ft.		TBA		24.000			☐	3				

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
296.0 ft.		DSZ				10	☐	5 /		2		Construction debris
304.0 ft.		CL					☐	8 /		2		
304.0 ft.		DAE				10	☐	7 /	8	2		
305.0 ft.		TBA		24.000			☐	8 /				
315.0 ft.		TB		4.000			☐	11 /				
370.0 ft.		IW					☐	3 /		2		
380.0 ft.		IDJ					☑	11 /		3		
380.0 ft.		IDJ					☑	12 /		3		
380.0 ft.		SAM					☑	8 /	11	4		
380.0 ft.		SAM					☑	2 /	4	4		
380.0 ft.		IDJ					☑	3 /		3		
404.0 ft.		SAM					☑	2 /	4	4		
404.0 ft.		IDJ					☑	12 /		3		
484.0 ft.		IDJ					☑	12 /		3		
484.0 ft.		DAE				5	☑	7 /	5	2		
494.0 ft.		DSC				15	☐	7 /		3		Debris built up below connection
494.0 ft.		TBA		24.000			☐	9 /				
528.0 ft.		SAM					☑	8 /	11	4		Depths of up to 6"
528.0 ft.		SAM					☑	1 /	4	4		Depths of up to 6"
552.0 ft.		DAE				5	☑	2 /	4	2		
585.0 ft.		TBA		8.000			☐	10 /				
600.0 ft.		SAM					☐	3 /		4		
600.0 ft.		DAE				5	☐	3 /	5	2		
600.0 ft.		DAE	S03			5	☐	7 /	11	2		
600.0 ft.		DAE	S05			5	☐	1 /	5	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
613.0 ft.		IDJ					☑	10 /		3		
613.0 ft.		IDJ					☑	11 /		3		
613.0 ft.		IDJ					☑	12 /		3		
613.0 ft.		IDJ					☑	12 /		3		
620.0 ft.		ID					☐	12 /		3		
620.0 ft.		ID					☑	12 /		3		
620.0 ft.		ID					☐	1 /		3		
625.0 ft.		ID					☐	10 /		3		
625.0 ft.		ID					☐	10 /		3		
625.0 ft.		ID					☐	10 /		3		
631.0 ft.		ID					☐	12 /		3		
631.0 ft.		ID					☐	10 /		3		
636.0 ft.		ID					☐	10 /		3		
636.0 ft.		SSS					☐	3 /		2		
636.0 ft.		SSS					☐	9 /		2		
636.0 ft.		DAE	F03			5	☐	7 /	11	2		
636.0 ft.		DAE	F05			5	☐	1 /	5	2		
640.0 ft.		SAV	S06				☐	9 /		2		
640.0 ft.		SAV	S07				☐	3 /		2		
651.0 ft.		ID					☐	1 /		3		
651.0 ft.		ID					☐	1 /		3		
651.0 ft.		ID					☐	1 /		3		
651.0 ft.		IW					☐	9 /		2		
651.0 ft.		DAE				5	☐	7 /	9	2		
672.0 ft.		SAM					☐	2 /	4	4		
675.0 ft.		ID					☐	2 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
693.0 ft.		DAE				5	☑	7	5	2		
693.0 ft.		IDJ					☑	1		3		
693.0 ft.		IDJ					☑	12		3		
693.0 ft.		IRJ					☑	9		4		
711.0 ft.		ID					☐	12		3		
711.0 ft.		ID					☐	12		3		
711.0 ft.		ID					☐	12		3		
711.0 ft.		ID					☐	1		3		
711.0 ft.		ID					☐	1		3		
712.0 ft.		SAM					☑	8	10	4		
712.0 ft.		DAE				10	☑	7	5	2		
717.0 ft.		ID					☐	10		3		
717.0 ft.		ID					☐	10		3		
717.0 ft.		ID					☐	10		3		
725.0 ft.		H					☐	3		4		Small holes, 1-2" deep
725.0 ft.		H					☐	9		4		Small holes, 1-2" deep
729.0 ft.		H					☐	9		4		
730.0 ft.		IR					☐	9		4		
730.0 ft.		RPP					☐	12				Wood patch in crown
734.0 ft.		SAM	F02				☐	7	8	4		
734.0 ft.		SAM	F01				☐	4	5	4		
734.0 ft.		DSF	F04			5	☐	6		2		
734.0 ft.		SAV	F06				☐	9		2		
734.0 ft.		SAV	F07				☐	3		2		
734.0 ft.		AMH					☐					SSR0184. Brick MH chimney with one tap

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220215 14:14

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0506	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	138 in.	132 in.	H	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			1,097.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0184						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0526						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	1,693	514Z	3.9	0	0	643	413I	2.2	2,336	3.2	5.1	
2	18	36				243	486							
3	0	0				51	153							
4	413	1.652				1	4							
5	1	5				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				10	☐	/				
0.0 ft.		SSS	S01				☐	7 /	5	2		
0.0 ft.		DSF	S04			5	☐	6 /		2		
0.0 ft.		AMH					☐	/				SSR0184
6.0 ft.		IR					☐	9 /		4		
18.0 ft.		IDJ					☑	12 /		3		
18.0 ft.		SAM					☐	8 /	9	4		
25.0 ft.		H					☐	9 /		4		
37.0 ft.		IDJ					☑	12 /		3		
37.0 ft.		IDJ					☑	10 /		3		
71.0 ft.		IDJ					☑	12 /		3		
71.0 ft.		IDJ					☑	12 /		3		
71.0 ft.		IDJ					☑	11 /		3		
81.0 ft.		IDJ					☑	10 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
81.0 ft.		DAE				15	☐	7	10	3		
81.0 ft.		IDJ					☑	1		3		
81.0 ft.		IDJ					☑	2		3		
91.0 ft.		MLC					☐					Previous lining method continues
91.0 ft.		ID					☐	2		3		
91.0 ft.		SSS	F01				☐	7	5	2		
91.0 ft.		SAM	S02				☐	4		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity. Additional peeling of lower corners near low water line. Condition worse at joints.
91.0 ft.		SAM	S03				☐	8		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity. Additional peeling of lower corners near low water line. Condition worse at joints.
118.0 ft.		DAE				10	☑	7	5	2		
142.0 ft.		DAE				10	☑	7	5	2		
211.0 ft.		DAE				10	☐	7	9	2		
211.0 ft.		IW					☐	9		2		
258.0 ft.		DAE				5	☐	3	5	2		
260.0 ft.		DAE				5	☐	7	9	2		
266.0 ft.		IDJ					☑	12		3		
276.0 ft.		TBD		24.000			☐	9		3		Active. Voids visible of up to 2'.
280.0 ft.		TB		12.000			☐	12				

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
293.0 ft.		DAE				15	☐	12 / 4		3		
293.0 ft.		IDJ					☑	12 /		3		
293.0 ft.		IDJ					☑	12 /		3		
293.0 ft.		TBD		6.000			☑	12 /		3		Tap 70% filled with mineral deposits. Active flow.
307.0 ft.		SAM					☐	3 /		4		Missing material, up to 2" depth
320.0 ft.		DAE				10	☑	7 / 5		2		
320.0 ft.		IDJ					☑	10 /		3		
320.0 ft.		IDJ					☑	12 /		3		
357.0 ft.		IW					☐	3 /		2		
368.0 ft.		DAE				5	☑	7 / 5		2		
368.0 ft.		IDJ					☑	9 /		3		
382.0 ft.		SAM					☐	3 /		4		
413.0 ft.		IDC					☐	2 /		3		
413.0 ft.		TB		12.000			☐	2 /				
432.0 ft.		IW					☐	2 / 5		2		
432.0 ft.		DAE				10	☐	2 / 5		2		
435.0 ft.		MGO					☐	/				435-445' at 4:00 more severe SAM along water line
442.0 ft.		IDJ					☑	1 /		3		
442.0 ft.		DAE				10	☑	7 / 5		2		
445.0 ft.		MGO					☐	/				lower corner points in better condition
516.0 ft.		IDJ					☑	12 /		3		
516.0 ft.		DAE				10	☑	7 / 5		2		
534.0 ft.		TB		6.000			☐	11 /				

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
539.0 ft.		TBC		48.000			☐	9 /				
539.0 ft.		TB		6.000			☐	9 /				
539.0 ft.		DAE				5	☐	7 /	9	2		
583.0 ft.		DAE				10	☐	3 /	5	2		
583.0 ft.		ID					☐	3 /		3		
583.0 ft.		ID					☐	3 /		3		
583.0 ft.		ID					☐	3 /		3		
584.0 ft.		ID					☐	12 /		3		
584.0 ft.		TF		48.000			☐	3 /				
590.0 ft.		TBI		4.000	8.000		☑	12 /		2		Mostly filled with mineral deposits
590.0 ft.		IDJ					☑	10 /		3		
590.0 ft.		DAE				5	☑	7 /	5	2		
596.0 ft.		TBA		10.000			☐	10 /				Mostly filled with mineral deposits, active tap
596.0 ft.		DAE				10	☐	10 /		2		
606.0 ft.		TBA		12.000			☐	12 /				Missing aggregate around connection but in good condition
666.0 ft.		IDJ					☑	12 /		3		
666.0 ft.		IDJ					☑	1 /		3		
740.0 ft.		DAE				10	☑	7 /	5	2		
740.0 ft.		IDJ					☑	11 /		3		
740.0 ft.		IDJ					☑	12 /		3		
740.0 ft.		IDJ					☑	1 /		3		
740.0 ft.		IDJ					☑	3 /		3		
814.0 ft.		IDJ					☑	10 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
814.0 ft.		IDJ					☑	2 /		3		
814.0 ft.		SAM					☑	3 /		4		
816.0 ft.		SAM					☑	9 /		4		
816.0 ft.		DAE				10	☑	7 /	5	2		
816.0 ft.		IDJ					☑	9 /		3		
816.0 ft.		IDJ					☑	11 /		3		
816.0 ft.		IDJ					☑	12 /		3		
816.0 ft.		IDJ					☑	1 /		3		
866.0 ft.		SAM					☑	4 /		4		18" circular section
891.0 ft.		TBA		36.000			☐	9 /				
891.0 ft.		DSC				15	☐	7 /		3		
891.0 ft.		IDC					☐	9 /		3		Below tap, may be coming from slight void
893.0 ft.		TBI		24.000	12.000		☐	2 /		2		Active flow, DAE below tap. Some void around tap but overall in good condition.
893.0 ft.		DAE				5	☐	3 /	5	2		
893.0 ft.		IDC					☐	2 /		3		Below tap, may be coming from slight void under tap.
900.0 ft.		MGO					☐	/				Conditions of lower corner points of SAM at 8 and 4 worsened.
915.0 ft.		DAE				10	☐	7 /	5	2		
915.0 ft.		HSV					☐	4 /		5		Hole at water line. Cam stick rebar in up to 24" in certain sections. Rebar could be touching soil on outside of pipe when inserted into large crack.

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
915.0 ft.		DSZ				15	☐	6 /		3		Construction debris in the invert.
939.0 ft.		SAM					☐	12 /		4		
939.0 ft.		ID					☑	1 /		3		
939.0 ft.		ID					☐	12 /		3		
939.0 ft.		SAM					☐	3 /		4		
945.0 ft.		IDJ					☑	12 /		3		
945.0 ft.		TB		6.000			☐	12 /				
988.0 ft.		IDJ					☑	12 /		3		
988.0 ft.		IDJ					☑	12 /		3		
988.0 ft.		SAM					☑	3 /		4		
1,033.0 ft.		IDJ					☑	12 /		3		
1,033.0 ft.		DAE				10	☑	12 /	5	2		
1,068.0 ft.		IDJ					☑	1 /		3		
1,068.0 ft.		SAM					☑	1 /	4	4		2' wide, 3-4" depth
1,097.0 ft.		SAM	F02				☐	4 /		4		
1,097.0 ft.		SAM	F03				☐	8 /		4		
1,097.0 ft.		DSF	F04			5	☐	6 /		2		
1,097.0 ft.		AMH					☐	/				SSR0526, concrete with brick, intruding tap, infiltration

CUES, Inc.
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Orlando, FL 32805
Phone: 407-849-0190
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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220314 15:01

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0120	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	137 in.	134 in.	H	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			1,137.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0526						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0656						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	918	4Z2B	3.9	0	0	507	3J2Z	2.2	1,425	3.1	5.0	
2	17	34				171	342							
3	0	0				55	165							
4	221	884				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				10	☐	/				
0.0 ft.		AMH					☐	/				SSR0526
9.0 ft.		TBD		6.000			☐	10 /		3		Tap with root build up
15.0 ft.		SSS					☐	8 /	3	2		Up to 2' wide sections
65.0 ft.		IDJ					☑	12 /		3		
65.0 ft.		SAM	S01				☐	5 /	7	4		Missing material or easily removed at lower corner points of chamber. Increased severity at joints.
65.0 ft.		SAM					☑	7 /	5	4		Up to 18" wide, 6" deep
72.0 ft.		SSS					☐	4 /		2		
84.0 ft.		SSS					☐	8 /	10	2		
140.0 ft.		IDJ					☑	12 /		3		
140.0 ft.		IDJ					☑	1 /		3		
140.0 ft.		SSS					☑	7 /	5	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
140.0 ft.		DAE				10	☑	7	5	2		
192.0 ft.		IDJ					☑	12		3		
192.0 ft.		IDJ					☑	1		3		
192.0 ft.		IDJ					☑	3		3		
192.0 ft.		SSS					☑	7	5	2		
209.0 ft.		DSC				15	☐	5		3		
214.0 ft.		SSS					☐	2		2		
218.0 ft.		ID					☐	9		3		
218.0 ft.		DAE				10	☐	9		2		
265.0 ft.		IDJ					☑	10		3		
265.0 ft.		IDJ					☑	12		3		
265.0 ft.		IDJ					☑	2		3		
265.0 ft.		DAE				10	☐	7	5	2		
265.0 ft.		SAM					☑	7	5	4		Up to 1' wide, 6" deep
291.0 ft.		TBA		12.000			☐	2				Rough around edges
315.0 ft.		IDJ					☑	11		3		
315.0 ft.		IDJ					☑	12		3		
315.0 ft.		IDJ					☑	3		3		
315.0 ft.		SSS					☑	7	5	2		
360.0 ft.		TBA		36.000			☐	9				Brick connection
370.0 ft.		TB		66.000			☐	4				Overflow connection. Some infiltration within connection
370.0 ft.		DSGV	S02			10	☐	6		2		6-10"
415.0 ft.		IDJ					☑	12		3		
415.0 ft.		DAE				5	☑	7	5	2		
415.0 ft.		SSS					☑	8	9	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
415.0 ft.		SSS					☐	2 /	4	2		
426.0 ft.		TBD		24.000			☐	3 /		3		Bulkheaded with infiltration running from behind, intruding about 4" into pipe
426.0 ft.		DAE				5	☐	3 /	5	2		
466.0 ft.		IDJ					☑	9 /		3		
466.0 ft.		IDJ					☑	2 /		3		
466.0 ft.		SSS					☑	7 /	5	2		
540.0 ft.		IDJ					☑	11 /		3		
540.0 ft.		IDJ					☑	12 /		3		
540.0 ft.		IDJ					☑	1 /		3		
540.0 ft.		IDJ					☑	2 /		3		
540.0 ft.		SAM					☑	9 /	2	4		Up to 1' wide, 3-4" depth
540.0 ft.		DAE				5	☐	7 /	5	2		
605.0 ft.		SSS					☑	8 /	3	2		
605.0 ft.		DAE				10	☑	7 /	5	2		
605.0 ft.		IDJ					☑	10 /		3		
605.0 ft.		IDJ					☑	12 /		3		
616.0 ft.		DAE				10	☑	8 /	4	2		
616.0 ft.		IDJ					☑	10 /		3		
616.0 ft.		SSS					☑	8 /		2		
616.0 ft.		SSS					☑	3 /		2		
637.0 ft.		TBA		24.000			☐	2 /				Rough around edges
715.0 ft.		SAM					☑	8 /	4	4		2' wide of spalls, up to 6" deep
715.0 ft.		IDJ					☑	12 /		3		
715.0 ft.		IDJ					☑	1 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
715.0 ft.		IDJ					☑	2 /		3		
715.0 ft.		IDJ					☑	3 /		3		
739.0 ft.		ID					☐	1 /		3		
739.0 ft.		ID					☐	2 /		3		
790.0 ft.		DAE				5	☑	7 /	5	2		
790.0 ft.		SSS					☑	8 /	4	2		
795.0 ft.		TB		12.000			☐	1 /				
839.0 ft.		DAE				10	☐	7 /	5	2		
839.0 ft.		IDJ					☑	12 /		3		
839.0 ft.		IDJ					☑	3 /		3		
840.0 ft.		H					☐	5 /		4		Up to 6" deep
853.0 ft.		DAE				10	☐	3 /	5	2		
888.0 ft.		IDJ					☑	12 /		3		
888.0 ft.		IDJ					☑	3 /		3		
888.0 ft.		DAE				10	☑	7 /	5	2		
888.0 ft.		IDJ					☑	9 /		3		
937.0 ft.		SAM					☑	8 /	11	4		
937.0 ft.		DAE				10	☑	7 /	5	2		
937.0 ft.		IDJ					☑	1 /		3		
959.0 ft.		TBA		24.000			☐	1 /				Tap with dripping infiltration, slight void around outside
986.0 ft.		IDJ					☑	10 /		3		
986.0 ft.		IDJ					☑	12 /		3		
986.0 ft.		SSS					☑	2 /	4	2		1-2" depth
986.0 ft.		DAE				10	☑	7 /	5	2		
1,012.0 ft.		IDJ					☑	12 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
1,012.0 ft.		IDJ					☑	12 /		3		
1,012.0 ft.		IDJ					☑	1 /		3		
1,012.0 ft.		IDJ					☑	1 /		3		
1,012.0 ft.		SSS					☑	10 /	1	2		
1,012.0 ft.		DAE				10	☑	7 /	5	2		
1,013.0 ft.		SSS					☐	3 /		2		
1,037.0 ft.		IDJ					☑	10 /		3		
1,037.0 ft.		IDJ					☑	1 /		3		
1,037.0 ft.		DAE				10	☑	7 /	5	2		
1,051.0 ft.		DAE				15	☐	3 /	5	3		
1,055.0 ft.		TBD		12.000			☐	2 /		3		Void between tap and pipe wall, infiltration observed around the opening
1,067.0 ft.		IDJ					☑	12 /		3		
1,067.0 ft.		IDJ					☑	1 /		3		
1,067.0 ft.		DAE				10	☑	7 /	5	2		
1,090.0 ft.		IDJ					☑	10 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
1,090.0 ft.		IDJ					☑	11 /		3		
1,090.0 ft.		IDJ					☑	12 /		3		
1,090.0 ft.		IDJ					☑	1 /		3		
1,090.0 ft.		SAM					☑	8 /	9	4		
1,090.0 ft.		DAE				10	☑	7 /	5	2		
1,137.0 ft.		DSF				20	☐	5 /	7	3		Increased debris under manhole
1,137.0 ft.		SAM	F01				☐	5 /	7	4		
1,137.0 ft.		DSGV	F02			10	☐	6 /		2		
1,137.0 ft.		AMH					☐	/				SSR0656. Concrete to brick chimney, staggered steps, minor infiltration

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220216 13:16

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0181	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	138 in.	132 in.	H	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			946.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0656						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0917						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	1,622	4Z2E	3.9	0	0	441	3A2Z	2.1	2,063	3.2	5.0	
2	31	62				201	402							
3	0	0				13	39							
4	390	1.560				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				10	☐	/				
0.0 ft.		DSF	S03			5	☐	6 /		2		
0.0 ft.		SAM	S01				☐	5 /		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity. Additional peeling of lower corners near low water line. Worsens at joints.
0.0 ft.		SAM	S02				☐	7 /		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity. Additional peeling of lower corners near low water line. Worsens at joints.
0.0 ft.		AMH					☐	/				SSR0656

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
14.0 ft.		H					☐	3 /		4		Looks like there were previous attempt to plug holes with bricks.
14.0 ft.		H					☐	4 /		4		Looks like there were previous attempt to plug holes with bricks. 12" in depth.
14.0 ft.		H					☐	9 /		4		Looks like there were previous attempt to plug holes with bricks. 6" depth.
14.0 ft.		H					☐	7 /		4		Looks like there were previous attempt to plug holes with bricks. 6" depth.
23.0 ft.		TB		6.000			☐	1 /				Full of mineral deposits.
24.0 ft.		DAE				5	☑	7 /	5	2		
24.0 ft.		IDJ					☑	12 /		3		
56.0 ft.		CL					☐	3 /		2		
57.0 ft.		IDJ					☑	12 /		3		
57.0 ft.		IDJ					☑	1 /		3		
100.0 ft.		ID					☐	1 /		3		
105.0 ft.		MGO					☐	/				Surface material at 5 and 7 easily removed by rebar.
142.0 ft.		TBI		24.000	4.000		☐	9 /		2		Active flow, slight void between tap and host pipe but overall in good condition.
147.0 ft.		TBA		6.000			☑	12 /				
153.0 ft.		IDJ					☑	1 /		3		
153.0 ft.		DAE				10	☑	8 /	1	2		
153.0 ft.		MGO					☐	/				Void at 7:00 of 2-3" depth
177.0 ft.		IDJ					☑	11 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
177.0 ft.		IDJ					☑	12 /		3		
177.0 ft.		IDJ					☑	1 /		3		
177.0 ft.		DAE				10	☑	7 /	5	2		
195.0 ft.		DAE				10	☐	7 /	9	2		
200.0 ft.		DAE				10	☐	7 /	9	2		
210.0 ft.		TBA		4.000			☐	10 /				15% full of mineral deposits.
210.0 ft.		DAE				10	☐	7 /	10	2		
213.0 ft.		H					☐	9 /		4		Hole in confined area. 6" circular, up to 2" deep.
220.0 ft.		MGO					☐	/				Worsening deterioration at 7:00 corner point.
226.0 ft.		SAM					☑	7 /	10	4		6 areas of spalling, roughly 1' circular sections, in this area
226.0 ft.		SAM					☑	1 /	2	4		Instances of SAM at joint
226.0 ft.		IDJ					☑	12 /		3		
280.0 ft.		SAM					☐	8 /	10	4		Multiple circular areas of SAM, 1' areas
288.0 ft.		TB		6.000			☐	10 /				Guessed tap size, could not see because of camera angle. 60% filled with mineral deposits.
288.0 ft.		DAE				5	☐	7 /	10	2		
288.0 ft.		IDC					☐	10 /		3		
326.0 ft.		DAE				5	☑	7 /	5	2		
326.0 ft.		MGO					☐	/				Lower corner points in better condition following this point
424.0 ft.		TBA		12.000			☐	2 /				Unknown tap size based on camera angle.

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
450.0 ft.		MGO					☐	/				Lower corner points in better condition.
471.0 ft.		SAM					☑	9 /	10	4		
496.0 ft.		MGO					☐	/				Surface material easily removed at lower corner points, worsened condition.
570.0 ft.		TBA		6.000			☐	2 /				Unable to determine actual pipe diameter based on camera angle.
600.0 ft.		CL	S04				☐	9 /		2		Occasional spalls with the crack, but mostly just hairline
619.0 ft.		SAM					☑	9 /		4		
640.0 ft.		H					☐	5 /		4		6" deep section, 2' long
673.0 ft.		IWJ					☑	3 /		2		
673.0 ft.		IDJ					☑	2 /		3		
673.0 ft.		DAE				10	☑	2 /	5	2		
750.0 ft.		CL	F04				☐	9 /		2		
768.0 ft.		IDJ					☑	12 /		3		
768.0 ft.		SAM					☑	8 /	10	4		
800.0 ft.		MGO					☐	/				Corner points in better condition
813.0 ft.		DAE				10	☑	1 /	3	2		
813.0 ft.		IDJ					☑	1 /		3		
900.0 ft.		TBA		12.000			☐	12 /				Cannot determine tap size because of camera angle.
908.0 ft.		TBA		48.000			☐	4 /				Rough connection
915.0 ft.		TB		6.000			☐	12 /				Could not determine tap size because of camera angle.
920.0 ft.		TBA		24.000			☐	9 /				Clay pipe with CIP liner

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
933.0 ft.		TBA		6.000			☐	11 /				40% filled with mineral deposits
933.0 ft.		TBC		72.000			☐	3 /				Brick bulkhead
941.0 ft.		MSC		11.500	11.500		☐	/				Entered square sewer. No measurments taken.
946.0 ft.		DSF	F03			5	☐	6 /		2		
946.0 ft.		SAM	F01				☐	5 /		4		
946.0 ft.		SAM	F02				☐	7 /		4		
946.0 ft.		AMH					☐	/				SSR0917. Birck chimney, 3 connection with flow.

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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220217 08:17

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0182	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	172 in.	172 in.	S	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			924.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0917						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0535						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	1,594	4Z3F	3.9	0	0	428	3A2Z	2.1	2,022	3.3	5.0	
2	12	24				193	386							
3	38	114				14	42							
4	364	1.456				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				10	☐	/				
0.0 ft.		DSF	S05			5	☐	6 /		2		6-8" sandy debris
0.0 ft.		AMH					☐	/				SSR0917
18.0 ft.		MSC		14.300	8.000		☐	/				Dam that reduces height of chamber to 8'
40.0 ft.		TB		8.000			☐	10 /				Exposed aggregate around tap
40.0 ft.		DSZ				5	☐	6 /		2		Construction debris in invert
40.0 ft.		TBC		48.000			☐	9 /				Bulkheaded brick connection with tap in middle.
40.0 ft.		TB		6.000			☐	9 /				In middle of bulkheaded connection.
40.0 ft.		IW					☐	8 /		2		From below bulkheaded connection.
40.0 ft.		DAE				5	☐	7 /	8	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
40.0 ft.		SAM	S01				☐	4 /		4		Missing material or easily removed at lower corner points of chamber. Increased severity at joints.
40.0 ft.		SAM	S02				☐	8 /		4		Missing material or easily removed at lower corner points of chamber. Increased severity at joints.
46.0 ft.		TBC		60.000			☐	3 /				
55.0 ft.		TBA		48.000			☐	9 /				Brick connection.
55.0 ft.		MGO					☐	/				Pipe wall below the tap at 9:00 is all hollow
55.0 ft.		SAP	S03				☐	3 /	5	3		
55.0 ft.		SAP	S04				☐	7 /	8	3		
78.0 ft.		TB		12.000			☐	12 /				Unable to determine tap size based on camera angle.
85.0 ft.		IDJ					☑	12 /		3		
130.0 ft.		SAM					☑	2 /	4	4		3-4' wide
130.0 ft.		SAM					☑	8 /	10	4		2-3' wide
130.0 ft.		IDJ					☑	12 /		3		
130.0 ft.		IDJ					☑	12 /		3		
150.0 ft.		SAP	F03				☐	3 /	5	3		
150.0 ft.		SAP	F04				☐	8 /	10	3		
155.0 ft.		SAM					☐	8 /	9	4		
157.0 ft.		TB		4.000			☐	2 /				
157.0 ft.		SAM					☐	2 /		4		3'x3' around the tap
181.0 ft.		TBI		24.000	12.000		☐	9 /		2		CIPP lined, active flow.
205.0 ft.		SAM					☑	9 /		4		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
205.0 ft.		IDJ					☑	12 /		3		
205.0 ft.		SAM					☑	1 /	3	4		
205.0 ft.		IDJ					☑	3 /		3		
255.0 ft.		SSS					☑	8 /	9	2		
255.0 ft.		SSS					☐	3 /	4	2		
330.0 ft.		SSS					☐	8 /	10	2		
330.0 ft.		SSS					☐	2 /	4	2		
355.0 ft.		IDJ					☑	12 /		3		
363.0 ft.		TB		6.000			☐	12 /				Could not determine tap diameter becuase of camera angle.
368.0 ft.		SSS					☐	7 /	9	2		
368.0 ft.		SSS					☐	3 /	5	2		
406.0 ft.		IDJ					☑	12 /		3		
406.0 ft.		IDJ					☑	9 /		3		
455.0 ft.		SAM					☑	2 /	4	4		
455.0 ft.		SAM	S06				☐	3 /		4		
465.0 ft.		SAM	F06				☐	3 /		4		
500.0 ft.		MGO					☐	/				Lower corner points continue to have SAM defect
524.0 ft.		SAM					☑	2 /	4	4		
531.0 ft.		ID					☐	3 /		3		
582.0 ft.		IDJ					☑	9 /		3		
582.0 ft.		SSS					☑	9 /	11	2		
633.0 ft.		IDJ					☑	12 /		3		
633.0 ft.		SSS					☑	1 /	3	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
662.0 ft.		TB		12.000			☐	12 /				Could not determine actual tap size because of camera angle
678.0 ft.		SSS					☑	8 /	10	2		
678.0 ft.		IDJ					☑	12 /		3		
678.0 ft.		SSS					☑	1 /	4	2		
753.0 ft.		IWJ					☑	1 /		2		
800.0 ft.		IDJ					☑	1 /		3		
800.0 ft.		SAM					☑	1 /	2	4		
800.0 ft.		SSS					☑	9 /		2		
835.0 ft.		DAR				5	☐	3 /		2		Ragging and mineral deposit build up
876.0 ft.		IDJ					☑	2 /		3		
876.0 ft.		SAM					☑	3 /	5	4		18" wide, 6" deep
876.0 ft.		SSS					☑	8 /	10	2		Less than 1" depth.
905.0 ft.		DAE				10	☐	9 /		2		
905.0 ft.		IW					☐	9 /		2		
922.0 ft.		SAM	F01				☐	4 /		4		
922.0 ft.		SAM	F02				☐	8 /		4		
924.0 ft.		DSF	F05			5	☐	6 /		2		
924.0 ft.		AMH					☐	/				SSR0535. concrete MH with brick chimney. One lateral connection in the chimney.

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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220217 14:58

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0410	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	138 in.	132 in.	H	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			837.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0535						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0536						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

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Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	1,422	4Z23	4.0	0	0	490	473E	2.2	1,912	3.3	5.0	
2	3	6				180	360							
3	0	0				34	102							
4	354	1.416				7	28							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				10	☐	/				
0.0 ft.		SAM	S01				☐	4 /		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity. Additional peeling of lower corners near low water line. Increased severity at joints.
0.0 ft.		SAM	S02				☐	8 /		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity. Additional peeling of lower corners near low water line. Increased severity at joints.
0.0 ft.		DSF	S03			5	☐	6 /		2		4-5" depth
0.0 ft.		AMH					☐	/				SSR0535
6.0 ft.		IDJ					☑	3 /		3		
6.0 ft.		IDJ					☑	2 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
6.0 ft.		IDJ					☑	1 /		3		
6.0 ft.		IDJ					☑	12 /		3		
6.0 ft.		IDJ					☑	9 /		3		
6.0 ft.		SAM					☐	8 /	10	4		
75.0 ft.		DAE				10	☐	3 /	4	2		
77.0 ft.		DAE				10	☑	7 /	5	2		
77.0 ft.		IDJ					☑	9 /		3		
77.0 ft.		IDJ					☑	10 /		3		
77.0 ft.		IDJ					☑	12 /		3		
77.0 ft.		IDJ					☑	12 /		3		
77.0 ft.		IDJ					☑	1 /		3		
77.0 ft.		IDJ					☑	1 /		3		
77.0 ft.		IDJ					☑	2 /		3		
77.0 ft.		IDJ					☑	3 /		3		
77.0 ft.		SSS					☑	2 /	4	2		
77.0 ft.		SSS					☑	8 /	10	2		
125.0 ft.		DAE				10	☑	7 /	5	2		
125.0 ft.		IDJ					☑	2 /		3		
125.0 ft.		IRJ					☑	12 /		4		
125.0 ft.		IDJ					☑	10 /		3		
125.0 ft.		SAM					☑	11 /	1	4		
125.0 ft.		SAM					☑	2 /	4	4		
173.0 ft.		DAE				10	☑	7 /	5	2		
173.0 ft.		IDJ					☑	9 /		3		
173.0 ft.		IDJ					☑	9 /		3		
173.0 ft.		IDJ					☑	9 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
173.0 ft.		IRJ					☑	9 /		4		
173.0 ft.		IRJ					☑	10 /		4		
173.0 ft.		IRJ					☑	12 /		4		
173.0 ft.		IRJ					☑	12 /		4		
173.0 ft.		IDJ					☑	12 /		3		
173.0 ft.		IDJ					☑	12 /		3		
173.0 ft.		IDJ					☑	12 /		3		
173.0 ft.		IDJ					☑	2 /		3		
173.0 ft.		IDJ					☑	3 /		3		
173.0 ft.		SAM					☑	11 /	4	4		
173.0 ft.		SAM					☑	9 /		4		
245.0 ft.		IDJ					☑	10 /		3		
245.0 ft.		IDJ					☑	1 /		3		
245.0 ft.		SAM					☑	2 /	4	4		
245.0 ft.		DAE				10	☑	7 /	5	2		
245.0 ft.		SAM					☑	8 /	10	4		
289.0 ft.		SAM					☑	2 /	4	4		
289.0 ft.		IRJ					☑	10 /		4		
289.0 ft.		IDJ					☑	1 /		3		
289.0 ft.		DAE				10	☑	7 /	5	2		
327.0 ft.		TB		12.000			☐	1 /				Difficult to tell condition due to mineral deposit build up
338.0 ft.		DAE				10	☑	7 /	5	2		
338.0 ft.		SAM					☑	2 /	4	4		
338.0 ft.		IRJ					☑	10 /		4		
338.0 ft.		IDJ					☑	12 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
338.0 ft.		IDJ					☑	3 /		3		
338.0 ft.		SSS					☑	8 /	9	2		
390.0 ft.		IDJ					☑	12 /		3		
390.0 ft.		DAE				10	☑	2 /	4	2		
400.0 ft.		MGO					☐	/				Defect at 8 and 4 less severe
457.0 ft.		IDJ					☑	12 /		3		
505.0 ft.		DAE				5	☑	7 /	5	2		
505.0 ft.		SAM					☑	2 /	4	4		
505.0 ft.		SAM					☑	8 /	9	4		
577.0 ft.		DAE				5	☑	7 /	5	2		
577.0 ft.		SAM					☑	2 /	4	4		
625.0 ft.		DAE				5	☑	7 /	5	2		
625.0 ft.		IDJ					☑	3 /		3		
625.0 ft.		SAM					☑	2 /	4	4		
675.0 ft.		IDJ					☑	12 /		3		
697.0 ft.		SAM					☑	2 /	4	4		
697.0 ft.		SAM					☑	8 /	9	4		
697.0 ft.		DAE				5	☑	7 /	5	2		
701.0 ft.		TBA		12.000			☐	12 /				Good condition.
740.0 ft.		SAM					☐	3 /	4	4		Multiple areas of SAM, aggregate visible, protruding, and missing.
744.0 ft.		IDJ					☑	12 /		3		
744.0 ft.		SAM					☑	8 /	10	4		
744.0 ft.		SAM					☑	2 /	4	4		
792.0 ft.		DAE				5	☑	7 /	5	2		
792.0 ft.		IDJ					☑	2 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
792.0 ft.		SAM					☑	2 /	4	4		
792.0 ft.		SAM					☑	8 /	10	4		
837.0 ft.		SAM	F01				☐	4 /		4		
837.0 ft.		SAM	F02				☐	8 /		4		
837.0 ft.		DSF	F03			5	☐	6 /		2		
837.0 ft.		AMH					☐	/				SSR0536. 4 lateral connections, steps in poor condition. Brick chimney.

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			7 Mile	20220221 11:04

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0790	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	138 in.	132 in.	H	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			597.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0536						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
Junction Chamber						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	1	1	485	4V24	3.9	0	0	402	443K	2.4	887	3.0	5.0	
2	4	8				103	206							
3	0	0				60	180							
4	119	476				4	16							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				10	☐	/				
0.0 ft.		DSF	S01			5	☐	6 /		2		
0.0 ft.		SAM	S02				☐	4 /		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity. Additional peeling of lower corners near low water line. Increased severity at the joints.
0.0 ft.		SAM	S03				☐	8 /		4		Deterioration at water line. About 2" wide and 1" deep. Will call out instances of increased severity. Additional peeling of lower corners near low water line. Increased severity at the joints.
0.0 ft.		AMH					☐	/				SSR0536

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
3.0 ft.		CC					☐	7	5	1		
3.0 ft.		ID					☐	1		3		
3.0 ft.		SAM					☐	8	10	4		
3.0 ft.		SAM					☐	2	4	4		
51.0 ft.		SAM					☑	8	10	4		
51.0 ft.		SAM					☑	2	4	4		
51.0 ft.		DAE				5	☑	7	5	2		
100.0 ft.		DAE				5	☑	7	5	2		
100.0 ft.		IDJ					☑	12		3		
100.0 ft.		SAM					☑	8	9	4		
100.0 ft.		SAM					☑	3		4		
125.0 ft.		SAM					☑	3	4	4		
125.0 ft.		SAM					☑	1	2	4		
125.0 ft.		IWJ					☑	12		2		
155.0 ft.		TBA		12.000			☐	10				Strong chemical odor, milky flow. Tap in good condition.
173.0 ft.		DAE				5	☑	7	5	2		
173.0 ft.		IDJ					☑	1		3		
173.0 ft.		IDJ					☑	2		3		
173.0 ft.		IDJ					☑	10		3		
173.0 ft.		IDJ					☑	11		3		
173.0 ft.		SAM					☐	2	4	4		
173.0 ft.		SAM	F03				☐	8		4		
173.0 ft.		SAM	F02				☐	4		4		
197.0 ft.		IDJ					☑	9		3		
197.0 ft.		DAE				10	☐	7	5	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
220.0 ft.		IDJ					☑	3 /		3		
220.0 ft.		DAE				5	☑	7 /	5	2		
220.0 ft.		SAM					☑	2 /	4	4		
243.0 ft.		IDJ					☑	9 /		3		
243.0 ft.		IDJ					☑	9 /		3		
243.0 ft.		DAE				10	☑	7 /	5	2		
243.0 ft.		TBC		6.000			☑	9 /				Hard to determine based on mineral deposits if tap is underneath. Could not determine size.
243.0 ft.		MLC					☐	/				Form work went from plates to boards.
246.0 ft.		TBC		12.000			☐	2 /				Plugged with gravel and concrete.
246.0 ft.		SAM	S04				☐	8 /		4		Missing material or easily removed at lower corner points of chamber. Increased severity at joints.
246.0 ft.		SAM	S05				☐	4 /		4		Missing material or easily removed at lower corner points of chamber. Increased severity at joints.
264.0 ft.		TBA		12.000			☐	11 /				Good condition, dripping infiltration from within tap.
270.0 ft.		ID					☐	12 /		3		
270.0 ft.		ID					☐	2 /		3		
274.0 ft.		DAE				5	☑	7 /	5	2		
274.0 ft.		IDJ					☑	11 /		3		
274.0 ft.		SAM					☐	8 /	9	4		
274.0 ft.		SAM					☐	2 /	4	4		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
280.0 ft.		TBI		24.000	6.000		☐	9 /		2		Active
286.0 ft.		IDJ					☑	2 /		3		
286.0 ft.		IDJ					☑	1 /		3		
286.0 ft.		IDJ					☑	11 /		3		
286.0 ft.		IDJ					☑	10 /		3		
286.0 ft.		DAE				10	☑	4 /	1	2		
286.0 ft.		SSS					☐	3 /		2		
292.0 ft.		ID					☑	11 /		3		
292.0 ft.		ID					☐	11 /		3		
292.0 ft.		ID					☐	10 /		3		
292.0 ft.		ID					☐	10 /		3		
297.0 ft.		SSS					☑	2 /	4	2		
297.0 ft.		IDJ					☑	2 /		3		
297.0 ft.		IDJ					☑	2 /		3		
297.0 ft.		IDJ					☑	10 /		3		
297.0 ft.		SSS					☐	8 /	10	2		
308.0 ft.		SSS					☐	3 /	4	2		
308.0 ft.		MGO					☐	/				Water still milky
318.0 ft.		DAE				10	☑	7 /	5	2		
318.0 ft.		IDJ					☑	10 /		3		
318.0 ft.		IDJ					☑	11 /		3		
338.0 ft.		IDJ					☑	12 /		3		
338.0 ft.		SAM	F04				☐	8 /		4		
338.0 ft.		SAM	F05				☐	4 /		4		
357.0 ft.		IDJ					☑	12 /		3		
357.0 ft.		IDJ					☑	12 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
357.0 ft.		IRJ					☑	12 /		4		
357.0 ft.		IDJ					☑	10 /		3		
357.0 ft.		DAE				10	☐	3 /	5	2		
363.0 ft.		ID					☐	2 /		3		
363.0 ft.		DAE				10	☐	2 /	5	2		
369.0 ft.		ID					☐	10 /		3		
374.0 ft.		DAE				10	☐	3 /	4	2		
382.0 ft.		ID					☐	11 /		3		
394.0 ft.		DAE				10	☑	2 /	5	2		
394.0 ft.		IRJ					☑	3 /		4		
394.0 ft.		TBD		6.000			☐	2 /		3		Tap filling with mineral deposits from outside of tap, not within. Trickle flow. Void below tap that appears to be filling in with mineral deposits.
394.0 ft.		TB		24.000			☐	11 /				No active flow
394.0 ft.		DAE				5	☐	7 /	11	2		
403.0 ft.		ID					☐	2 /		3		
422.0 ft.		RPP					☐	12 /				Rectangular cut out in top of pipe. Can see wood above. May be a previous access point?
424.0 ft.		MSC		10.500			☐	/				Not measured at time of transition. Now a circular brick chamber.
424.0 ft.		MMC					☐	/				Brick. Below springline is white brick, above is red. 424-432 is still a transition section where the invert is concrete.

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
424.0 ft.		DSF	F01			5	☐	6 /		2		
424.0 ft.		DSF				10	☐	6 /		2		1' deep
424.0 ft.		LR				50	☐	/		4		
432.0 ft.		RPPD					☐	5 /	7	4		Transition chamber filled in at invert with 2x4
442.0 ft.		TFC		67.000			☐	9 /				Steep tap, bulkheaded but does have one tap incoming through bulkhead upstream.
442.0 ft.		TBA		8.000			☐	9 /				At the end of the bulkhead
442.0 ft.		TBA		8.000			☐	9 /				At 11:00 within the bulkheaded connection.
456.0 ft.		ID					☐	12 /		3		
456.0 ft.		TB		24.000			☐	11 /				
462.0 ft.		ID					☐	11 /		3		
472.0 ft.		LR				50	☐	/		4		
472.0 ft.		ID					☐	12 /		3		
485.0 ft.		ID					☐	12 /		3		
485.0 ft.		MWL				20	☐	/				
496.0 ft.		TBC		24.000			☐	9 /				
504.0 ft.		MMC					☐	/				Brick to concrete
504.0 ft.		DSC				20	☐	6 /		3		Debris pile over 3' tall
504.0 ft.		MSC		14.800			☐	/				Entered large junction chamber. 14'8"
523.0 ft.		MGO					☐	/				Concrete in good condition throughout transition chamber.
523.0 ft.		MSC		13.000			☐	/				13'
523.0 ft.		DSC	S06			20	☐	7 /		3		3' high

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
523.0 ft.		MGO					☐	/				Note: continued with stationing after junction chamber. Did not create a separate task associated with the small section of E Seven Mile.
551.0 ft.		DAE				10	☐	2 / 5		2		
551.0 ft.		ID					☐	1 /		3		
567.0 ft.		IDJ					☑	1 /		3		
567.0 ft.		IDJ					☑	1 /		3		
567.0 ft.		IDJ					☑	12 /		3		
567.0 ft.		IDJ					☑	12 /		3		
597.0 ft.		DSC	F06			20	☐	7 /		3		
597.0 ft.		AMH					☐	/				Junction Chamber. Good condition.

GLWA Contract 2300150
Rehabilitation of the 7 Mile Sewer System

West 7 Mile Relief Sewer
PACP Reports

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			W. 7 Mile Rd.	20220803 15:28

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
U		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SSR0520 to Evergreen Farmington Relief Sewer	Prairie Rd,

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	120 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			622.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
Evergreen Farmington						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0520						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	12	2600	2.0	1	1	26	312A	2.0	38	2.0	3.1	
2	6	12				11	22							
3	0	0				1	3							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SSR0520
0.0 ft.		MWL				10	☐	/				
50.0 ft.		IWJ					☑	3 /		2		
148.0 ft.		DAE				5	☑	8 /	4	2		
148.0 ft.		IWJ					☑	3 /		2		
148.0 ft.		IDJ					☑	1 /		3		
200.0 ft.		DAE				5	☑	8 /	4	2		
250.0 ft.		DAE				5	☑	8 /	11	2		
300.0 ft.		DAE				5	☑	7 /	5	2		
313.0 ft.		TBA		96.000			☐	3 /				8' tap
313.0 ft.		SAV	S01				☐	9 /		2		
328.0 ft.		SAV	F01				☐	9 /		2		
338.0 ft.		SSS					☐	3 /		2		Right before connection.
340.0 ft.		TB		8.000			☐	3 /				Connection, not a tap. 8', flowing in.

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
340.0 ft.		DAE				5	☐	1 / 5		2		Around connection
361.0 ft.		TB		36.000			☐	3 /				Looks like manhole/sump chamber on other side. Minor flow.
361.0 ft.		DAE				10	☐	4 / 5		2		
384.0 ft.		LU				10	☐	/		1		
384.0 ft.		MSC		78.000			☐	/				Transition to 6'-6" pipe.
384.0 ft.		MWL				5	☐	/				
435.0 ft.		DAE				5	☑	7 / 5		2		
520.0 ft.		DAE				5	☑	7 / 5		2		
550.0 ft.		SAV					☑	7 / 8		2		
550.0 ft.		SAV					☑	4 / 5		2		
600.0 ft.		DAE				5	☑	8 / 9		2		
622.0 ft.		AMH					☐	/				SSR0520, precast, good condition.

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			W. 7 Mile Rd.	20220803 15:12

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection Status:	Consequence of failure:	Pressure value:
U				

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0942	Check

City:	Location code:	Location details:
Detroit		

Pipe:

Sewer use:	Height:	Width:	Shape:	Material:	Lining method:
	120 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year laid:	Year renewed:
			120.0 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
San Juan St.						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0520						

Coordinate system:	Vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	8	2400	2.00	0	0	4	2200	2.00	12	2.00		
2	4	8				2	4							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SSR 0520
0.0 ft.		MWL				10	☐	/				
0.0 ft.		MGO					☐	/				320' upstream of SSR 0520. Transition is on the right-side of the main sewer facing upstream.
0.0 ft.		SSS					☐	9 /		2		At the transition section
5.0 ft.		IW					☐	3 /		2		
5.0 ft.		DAE				5	☐	3 /		2		
30.0 ft.		SSS	S01				☐	8 /		2		Flaking surface material at the spring line. 8" wide section, extends 15 ft.
45.0 ft.		SSS	F01				☐	8 /		2		
83.0 ft.		MGO					☐	/				Gate chamber with slide gate, metal grating above. Slide gate in good condition, minor rust/ DAE build up.

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
120.0 ft.		AOC					☐	/				Another access chamber with some instrumentation. Extends from STA 1+10 - STA 1+20

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			W. 7 Mile Rd.	20220804 10:38

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection Status:	Consequence of failure:	Pressure value:
D				

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN1912	Prarie

City:	Location code:	Location details:
Detroit		

Pipe:

Sewer use:	Height:	Width:	Shape:	Material:	Lining method:
	117 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year laid:	Year renewed:
			489.0 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0520						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0648						

Coordinate system:	Vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	6	2300	2.00	0	0	35	332A	2.19	41	2.16		
2	3	6				13	26							
3	0	0				3	9							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SSR0520
0.0 ft.		MWL				10	☐	/				
5.0 ft.		SSS					☐	7 /	9	2		Flaking surface material
25.0 ft.		ID					☑	12 /		3		
25.0 ft.		DAE				5	☑	12 /	5	2		
25.0 ft.		IW					☑	12 /		2		
64.0 ft.		DAE				5	☑	7 /	5	2		
107.0 ft.		SSS					☑	10 /	2	2		
150.0 ft.		DAE				5	☐	9 /	12	2		
200.0 ft.		ID					☑	1 /		3		
200.0 ft.		DAE				5	☑	3 /		2		
235.0 ft.		DAE				5	☑	2 /	4	2		
235.0 ft.		IW					☑	2 /		2		
280.0 ft.		DAE				5	☑	3 /	5	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
331.0 ft.		DAE				5	☑	8	4	2		
375.0 ft.		DAE				5	☑	3	5	2		
375.0 ft.		IW					☑	3	5	2		
418.0 ft.		ID					☑	1		3		
418.0 ft.		DAE				5	☑	1	3	2		
470.0 ft.		DAE				5	☑	8	4	2		
479.0 ft.		SSS					☐	2	4	2		Surface material easily removed
489.0 ft.		AMH					☐					SSR0648, dripping infiltration around the manhole, ragging on steps, precast structure.

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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			W. 7 Mile Rd.	20220808 13:32

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN1910	Check

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	120 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			838.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0648						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR1121						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	38	412B	2.1	1	1	28	3329	2.2	66	2.1	4.1	
2	17	34				9	18							
3	0	0				3	9							
4	1	4				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SSR0648
0.0 ft.		MWL				10	☐	/				
10.0 ft.		SSS	S01				☐	9 /		2		
25.0 ft.		SSS	F01				☐	9 /		2		
30.0 ft.		SSS					☐	3 /		2		
30.0 ft.		SSS					☐	9 /		2		
47.0 ft.		DAE				5	☑	2 /	4	2		6-8" into the pipe
47.0 ft.		DAE				5	☑	8 /	10	2		6-8" into the pipe
47.0 ft.		IDJ					☑	12 /		3		
50.0 ft.		SSS					☐	3 /		2		
50.0 ft.		SSS					☐	9 /		2		Pipe wall sound behind flaking material
98.0 ft.		IDJ					☑	12 /		3		
98.0 ft.		DAE				5	☐	8 /	9	2		
98.0 ft.		DAE				5	☑	2 /	4	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
150.0 ft.		DAE				5	☑	7	5	2		
155.0 ft.		SSS	S02				☐	9		2		
170.0 ft.		SSS	F02				☐	9		2		
200.0 ft.		DAE				5	☑	7	5	2		
250.0 ft.		IDJ					☑	12		3		
250.0 ft.		IWJ					☑	9		2		
311.0 ft.		TBA		24.000			☐	3				24" connection with active flow, good condition. MH seen through connection.
400.0 ft.		SAV					☑	7	5	2		Not easily removed with hammer, rough.
500.0 ft.		SAM	S03				☐	9		4		1/2" of aggregate deterioration
500.0 ft.		LR				10	☐			1		
505.0 ft.		SAM	F03				☐	9		4		
640.0 ft.		SSS					☑	8		2		
650.0 ft.		SSS	S04				☐	9		2		
660.0 ft.		SSS	F04				☐	9		2		
705.0 ft.		SSS					☐	3		2		
750.0 ft.		IWJ					☑	2	3	2		
750.0 ft.		DAE				5	☑	2	4	2		
805.0 ft.		SSS					☐	9		2		
835.0 ft.		SSS					☐	9		2		
838.0 ft.		AMH					☐					SSR1121

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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			W. 7 Mile Rd.	20220811 08:30

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN1911	Warrington

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	120 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			650.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR1121						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0725						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	6	2300	2.0	0	0	32	322A	2.1	38	2.1	3.2	
2	3	6				13	26							
3	0	0				2	6							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SSR1121
0.0 ft.		MWL				10	☐	/				
5.0 ft.		DAE				5	☑	2 /	4	2		
100.0 ft.		IWJ					☑	3 /		2		
100.0 ft.		IDJ					☑	12 /		3		
100.0 ft.		DAE				5	☑	3 /	4	2		
150.0 ft.		IWJ					☑	3 /		2		
150.0 ft.		DAE				5	☑	3 /	4	2		
245.0 ft.		DAE				5	☑	9 /		2		
245.0 ft.		SSS					☐	9 /		2		Flaking surface material
300.0 ft.		DAE				5	☑	9 /		2		
345.0 ft.		DAE				5	☑	8 /	9	2		
445.0 ft.		DAE				5	☑	2 /	4	2		
445.0 ft.		IWJ					☑	10 /		2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
445.0 ft.		SSS	S01				☐	3 /		2		Less than 12" in height
455.0 ft.		SSS	F01				☐	3 /		2		
550.0 ft.		IDJ					☑	2 /		3		
550.0 ft.		DAE				5	☑	2 /	4	2		
600.0 ft.		DAE				5	☑	3 /	4	2		
600.0 ft.		IWJ					☑	3 /		2		
650.0 ft.		AMH					☐	/				SSR0725. Infiltration from MH opening, ragging on steps.

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Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			W. 7 Mile Rd.	20220808 15:18

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0891	Check

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	120 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			830.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0725						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR1120						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	8	2400	2.0	0	0	13	3125	2.2	21	2.1	3.1	
2	4	8				5	10							
3	0	0				1	3							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				
0.0 ft.		MWL				10	☐	/				
5.0 ft.		SSS					☑	2 /	5	2		Flaking surface material, sound beneath
175.0 ft.		SSS					☐	12 /		2		
185.0 ft.		SSS					☐	12 /		2		
275.0 ft.		IDJ					☑	12 /		3		
275.0 ft.		IWJ					☑	4 /		2		
275.0 ft.		IWJ					☑	9 /		2		
275.0 ft.		SSS					☐	12 /		2		
370.0 ft.		TBA		24.000			☐	3 /				Drop manhole on other side, tap in good condition
400.0 ft.		DAE				5	☑	3 /	4	2		
600.0 ft.		IWJ					☑	3 /		2		
692.0 ft.		TB		24.000			☐	3 /				

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
692.0 ft.		DAE				5	☐	4 /		2		
830.0 ft.		AMH					☐	/				SSR1120. Ragging build-up on steps.

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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			W. 7 Mile Rd.	20220810 16:18

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0402	Muirland

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	120 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			646.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR1120						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR1139						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
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Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	8	2400	2.0	1	1	14	3125	2.0	22	2.0	3.1	
2	4	8				5	10							
3	0	0				1	3							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				5	☐	/				
0.0 ft.		AMH					☐	/				SSR1120. Ragging built up at bottom of steps.
148.0 ft.		TBA		24.000			☐	3 /				Manhole/catch basin on other side.
148.0 ft.		DAE				5	☐	3 /	4	2		
340.0 ft.		SSS	S01				☐	9 /		2		
350.0 ft.		SSS	F01				☐	9 /		2		
390.0 ft.		DAE				5	☑	7 /	5	2		
432.0 ft.		DAE				5	☑	7 /	5	2		
446.0 ft.		TB		24.000			☐	3 /				
446.0 ft.		SSS					☐	3 /		2		Around connection
460.0 ft.		SSS					☐	9 /		2		
515.0 ft.		IDJ					☑	12 /		3		
515.0 ft.		LD				10	☐	/		1		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
515.0 ft.		MSC		12.500			☐	/				Transitions from 10' diameter to 12.5' diameter.
540.0 ft.		TBA		84.000			☐	9 /				6-8' connection with active flow
560.0 ft.		TBA		48.000			☐	9 /				
580.0 ft.		DAE				5	☐	7 /	8	2		Beneath tap
640.0 ft.		DAE				5	☐	8 /	10	2		
646.0 ft.		AMH					☐	/				SSR1139. Ragging built up on manhole steps

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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			W. 7 Mile Rd.	20220811 08:55

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN1913	Parkside

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	150 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			684.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR1139						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR1118						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

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Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	32	322A	2.1	32	2.1	3.2	
2	0	0				13	26							
3	0	0				2	6							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		MWL				5	☐	/				
0.0 ft.		AMH					☐	/				SSR1139
50.0 ft.		IWJ					☑	12 /		2		
50.0 ft.		DAE				5	☑	7 /	5	2		
209.0 ft.		DAE				5	☑	8 /	10	2		
219.0 ft.		IDJ					☑	12 /		3		
270.0 ft.		DAE				5	☑	3 /	4	2		
390.0 ft.		DAE				5	☑	2 /	4	2		
390.0 ft.		IWJ					☑	12 /		2		
410.0 ft.		DSC				5	☐	6 /		2		Small debris pile
450.0 ft.		DAE				5	☑	1 /	5	2		
450.0 ft.		IDJ					☑	2 /		3		
450.0 ft.		DAE				5	☑	8 /	9	2		
510.0 ft.		DAE				5	☑	2 /	4	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
510.0 ft.		DAE				5	☑	8 /	10	2		
630.0 ft.		DAE				5	☑	12 /		2		
682.0 ft.		DAE				5	☑	8 /	12	2		
684.0 ft.		AMH					☐	/				SSR1118

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			W. 7 Mile Rd.	20220809 08:23

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN1176	Strathcona

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	148 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			807.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR1118						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0237						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	8	4200	4.0	1	1	64	352C	2.1	72	2.3	4.2	
2	0	0				24	48							
3	0	0				5	15							
4	2	8				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SSR1118
0.0 ft.		MWL				5	☐	/				
46.0 ft.		DAE				5	☑	9 /	2	2		
150.0 ft.		IDJ					☑	12 /		3		
150.0 ft.		DAE				5	☑	9 /	10	2		
150.0 ft.		DAE				5	☑	12 /		2		
150.0 ft.		IDJ					☑	12 /		3		
190.0 ft.		IWJ					☑	11 /		2		
190.0 ft.		DAE				5	☑	11 /	2	2		
190.0 ft.		IDJ					☑	1 /		3		
195.0 ft.		DAE				5	☐	8 /	10	2		
295.0 ft.		IWJ					☑	9 /		2		
330.0 ft.		DAE				5	☑	2 /	4	2		
330.0 ft.		IWJ					☑	2 /	4	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
390.0 ft.		DAE				5	☑	11 /		2		
390.0 ft.		DAE				5	☑	4 /		2		
430.0 ft.		DAE				5	☑	8 /	11	2		
430.0 ft.		DAE				5	☑	2 /	4	2		
430.0 ft.		IWJ					☑	3 /		2		
468.0 ft.		DAE				5	☑	2 /	4	2		
506.0 ft.		IDJ					☑	12 /		3		
527.0 ft.		IWJ					☑	3 /	4	2		
527.0 ft.		DAE				5	☑	3 /	4	2		
550.0 ft.		LR				10	☐	/		1		
555.0 ft.		DAE				5	☑	3 /	4	2		
555.0 ft.		DAE				5	☑	8 /	9	2		
608.0 ft.		TBA		48.000			☐	9 /				4' connection with active flow
615.0 ft.		DAE				5	☐	8 /	9	2		
655.0 ft.		DAE				5	☑	9 /	12	2		
705.0 ft.		DAE				5	☑	3 /	4	2		
705.0 ft.		DAE				5	☑	8 /	9	2		
710.0 ft.		SAM					☐	4 /	5	4		Missing aggregate below the dry weather flow lines
750.0 ft.		IDJ					☑	11 /		3		
750.0 ft.		DAE				5	☑	11 /		2		
755.0 ft.		SAM					☐	4 /	5	4		May have been poured that way, smooth edges.
807.0 ft.		AMH					☐	/				SSR0237

GLWA Contract 2300150
Rehabilitation of the 7 Mile Sewer System

East 7 Mile Relief Sewer
PACP Reports

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			E 7 Mile Relief Sewer	20220311 10:50

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0847	E 7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	108 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			772.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0541						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0540						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	1	1	289	2Z11	2.0	0	0	363	352Z	2.0	652	2.0	3.5	
2	144	288				174	348							
3	0	0				5	15							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SEV0E002
0.0 ft.		MWL				10	☐	/				
0.0 ft.		CC					☐	11 /	1	1		
0.0 ft.		DSF	S01			5	☐	6 /		2		
50.0 ft.		CL	S02				☐	12 /		2		
82.0 ft.		DAE				5	☐	3 /	4	2		
82.0 ft.		IW					☐	3 /		2		
316.0 ft.		DAE				5	☐	8 /	10	2		
595.0 ft.		DAE				5	☐	2 /	3	2		
595.0 ft.		ID					☐	2 /		3		
641.0 ft.		DAE				5	☐	2 /	4	2		
700.0 ft.		DAE	S03			5	☐	4 /	8	2		Buildup along the lower corner points, soft and sandy
726.0 ft.		TFA		84.000			☐	9 /				Offshoot sewer

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
746.0 ft.		DAE				5	☐	7 /	5	2		
746.0 ft.		ID					☐	9 /		3		
746.0 ft.		ID					☐	9 /		3		
746.0 ft.		ID					☐	11 /		3		
746.0 ft.		ID					☐	11 /		3		
772.0 ft.		AMH					☐	/				Precast set at a slant, DAE and infiltration.
772.0 ft.		DAE	F03			5	☐	4 /	8	2		
772.0 ft.		CL	F02				☐	12 /		2		
772.0 ft.		DSF	F01			5	☐	6 /		2		

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			E 7 Mile Relief Sewer	20220310 14:38

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0487	E 7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	108 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			888.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0541						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0540						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	1	1	323	2Z11	2.0	0	0	379	372Z	2.0	702	2.0	3.7	
2	161	322				179	358							
3	0	0				7	21							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SEV0E003
0.0 ft.		MWL				10	☐	/				
0.0 ft.		MGO					☐	/				Low visibility due to cold temperatures above ground
0.0 ft.		CL	S02				☐	12 /		2		Crown crack present though intermittent and sometimes faint, at times filled with mineral deposits.
0.0 ft.		DSF	S01			5	☐	6 /		2		1-4 inches of debris
290.0 ft.		SAV					☐	12 /		2		
435.0 ft.		DAE				10	☐	8 /	10	2		
463.0 ft.		TB		60.000			☐	3 /				Drop connection to the 7 Mile Sewer
597.0 ft.		CC					☐	7 /	5	1		
630.0 ft.		ID					☐	2 /		3		
630.0 ft.		ID					☐	2 /		3		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
630.0 ft.		ID					☐	2 /		3		
630.0 ft.		ID					☐	2 /		3		
630.0 ft.		ID					☐	2 /		3		
630.0 ft.		ID					☐	2 /		3		
800.0 ft.		CL	F02				☐	12 /		2		
845.0 ft.		ID					☐	12 /		3		
888.0 ft.		DSF	F01			5	☐	6 /		2		
888.0 ft.		AMH					☐	/				Precast, infiltration

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			E 7 Mile Relief Sewer	20220310 13:13

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN1105	E 7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	108 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			782.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0186						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0541						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	2	2	286	2Z12	2.0	0	0	5	3121	2.5	291	2.0	3.1	
2	142	284				1	2							
3	0	0				1	3							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SEV0E004
0.0 ft.		MWL				10	☐	/				
50.0 ft.		CL	S01				☐	12 /		2		Faint at times and intermittent
195.0 ft.		CC					☐	12 / 4		1		
227.0 ft.		CC					☐	7 / 5		1		
227.0 ft.		DAE				5	☐	7 / 5		2		
227.0 ft.		IDJ					☑	2 /		3		
290.0 ft.		SSS					☑	7 / 5		2		
300.0 ft.		SAV					☐	12 /		2		
375.0 ft.		CL	F01				☐	12 /		2		
410.0 ft.		CL	S02				☐	12 /		2		
500.0 ft.		CL					☐	1 /		2		
782.0 ft.		CL	F02				☐	12 /		2		
782.0 ft.		AMH					☐	/				Precast, DAE, ID

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			E 7 Mile Relief Sewer	20220309 14:12

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0720	E 7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	108 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			725.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0414						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0186						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	1	1	291	2Z11	2.0	0	0	310	322Z	2.0	601	2.0	3.2	
2	145	290				152	304							
3	0	0				2	6							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SEV0E005
0.0 ft.		MWL				10	☐	/				
0.0 ft.		MGO					☐	/				Minor mineral deposits at joints
0.0 ft.		DSF	S01			5	☐	6 /		2		0-4"
0.0 ft.		CL	S02				☐	12 /		2		Crown crack present, though faint and intermittent.
245.0 ft.		IW					☐	10 /		2		
350.0 ft.		IDJ					☑	12 /		3		
350.0 ft.		IDJ					☑	1 /		3		
373.0 ft.		TB		48.000			☐	9 /				
405.0 ft.		TB		48.000			☐	8 /				Runner and dripper within the connection.
450.0 ft.		TBA		48.000			☐	9 /				
460.0 ft.		DAE				5	☑	7 /	5	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
490.0 ft.		DAE				5	☑	7	5	2		
600.0 ft.		CC					☐	12	3	1		
610.0 ft.		DAE				5	☑	7	5	2		
640.0 ft.		DAE				5	☑	7	5	2		
660.0 ft.		DAE				5	☑	7	5	2		
690.0 ft.		DAE				5	☑	7	5	2		
725.0 ft.		AMH					☐					Precast, good condition, 5-7 ID, DAE
725.0 ft.		CL	F02				☐	12		2		
725.0 ft.		DSF	F01			5	☐	6		2		

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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			E 7 Mile Relief Sewer	20220309 09:19

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0849	E 7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	108 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			743.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0543						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0414						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	298	2Z00	2.0	0	0	24	3426	2.4	322	2.0	3.4	
2	149	298				6	12							
3	0	0				4	12							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SEV0E006
0.0 ft.		MWL				10	☐	/				
0.0 ft.		CL	S01				☐	12 /		2		
34.0 ft.		MSC		9.000			☐	/				Decrease to 9' diameter
115.0 ft.		IDJ					☑	10 /		3		
115.0 ft.		IWJ					☑	8 /	10	2		
205.0 ft.		IW					☐	3 /		2		
270.0 ft.		IWJ					☑	3 /		2		
356.0 ft.		DAE				5	☑	7 /	5	2		
380.0 ft.		IDJ					☑	12 /		3		
380.0 ft.		IDJ					☑	1 /		3		
380.0 ft.		DAE				5	☑	7 /	5	2		
380.0 ft.		IDJ					☑	2 /		3		
725.0 ft.		DAE				10	☑	7 /	5	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
743.0 ft.		CL	F01				☐	12 /		2		Intermittent and faint at times
743.0 ft.		AMH					☐	/				Precast, DAE and infiltration

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			E 7 Mile Relief Sewer	20220308 14:01

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN1248	E 7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	138 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			917.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0303						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0543						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	298	2Z00	2.0	0	0	368	2Z00	2.0	666	2.0	3.0	
2	149	298				184	368							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SEV0E007
0.0 ft.		MWL				10	☐	/				
0.0 ft.		DSF	S01			5	☐	6 /		2		
0.0 ft.		MGO					☐	/				Ridge in the invert, typ. of previous segments
170.0 ft.		CL	S02				☐	12 /		2		Intermittent, faint at times
370.0 ft.		DAE				5	☑	7 /	5	2		
861.0 ft.		TB		60.000			☐	3 /				Adjacent drop structure within, good condition. MH within
917.0 ft.		CL	F02				☐	12 /		2		
917.0 ft.		DSF	F01			5	☐	6 /		2		
917.0 ft.		AMH					☐	/				Precast MH, good condition, DAE and some infiltration

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Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			E 7 Mile Relief Sewer	20220308 11:23

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0498	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	138 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			852.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0153						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0303						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	310	2Z00	2.0	0	0	355	332Z	2.0	665	2.0	3.3	
2	155	310				173	346							
3	0	0				3	9							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SEV0E007
0.0 ft.		MWL				10	☐	/				
0.0 ft.		MGO					☐	/				Raised invert, typ. of previous sections
0.0 ft.		DSF	S02			5	☐	6 /		2		
20.0 ft.		IDJ					☑	10 /		3		
20.0 ft.		IDJ					☑	2 /		3		
20.0 ft.		DAE				5	☑	7 /	5	2		
60.0 ft.		DAE				10	☑	7 /	10	2		
75.0 ft.		CL	S01				☐	12 /		2		
129.0 ft.		TB		60.000			☐	9 /				Rough break-in
152.0 ft.		TB		60.000			☐	9 /				
445.0 ft.		TBA		60.000			☐	10 /				
445.0 ft.		TB		60.000			☐	2 /				
560.0 ft.		DAE				10	☑	2 /	5	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
560.0 ft.		IDJ					☑	1 /		3		
852.0 ft.		DSF	F02			5	☐	6 /		2		
852.0 ft.		AMH					☐	/				Brick with precast above. DAE and infiltration around. Steel pipe (previous instrumentation?) suspended in chimney.
852.0 ft.		CL	F01				☐	12 /		2		

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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			E 7 Mile Relief Sewer	20220308 08:50

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0391	E 7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	138 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			806.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0174						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0153						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	1	1	11	2511	1.8	0	0	335	332Z	2.0	346	2.0	3.3	
2	5	10				163	326							
3	0	0				3	9							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SEV0E009
0.0 ft.		MWL				10	☐	/				
0.0 ft.		MGO					☐	/				Invert condition continues. Raised right down center of pipe.
0.0 ft.		DSF	S01			5	☐	6 /		2		
140.0 ft.		IDJ					☑	3 /		3		
140.0 ft.		DAE				5	☑	2 /	5	2		
250.0 ft.		CL	S02				☐	12 /		2		
260.0 ft.		CC					☐	8 /	4	1		
275.0 ft.		CL	F02				☐	12 /		2		
560.0 ft.		IDJ					☑	11 /		3		
560.0 ft.		IDJ					☑	2 /		3		
560.0 ft.		DAE				10	☑	7 /	5	2		
806.0 ft.		DSF	F01			5	☐	6 /		2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
806.0 ft.		AMH					☐	/				Precast. Heavy mineral deposits and some infiltration.

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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			E 7 Mile Relief Sewer	20220307 14:06

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0612	E 7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	138 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			822.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0267						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0174						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
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Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	2	2100	2.0	0	0	340	2Z00	2.0	342	2.0	3.0	
2	1	2				170	340							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SEV0E010
0.0 ft.		MWL				10	☐	/				
0.0 ft.		MGO					☐	/				Raised invert condition still present
0.0 ft.		DSF	S01			5	☐	6 /		2		0-4"
175.0 ft.		IWJ					☑	9 /		2		
175.0 ft.		DAE				5	☑	7 /	5	2		
310.0 ft.		DAE				5	☑	12 /	4	2		
410.0 ft.		DAE				10	☐	7 /	9	2		
550.0 ft.		DAE				5	☑	7 /	5	2		
685.0 ft.		SSS					☐	3 /		2		
715.0 ft.		DAE				10	☐	1 /	5	2		
822.0 ft.		DSF	F01			5	☐	6 /		2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
822.0 ft.		AMH					☐	/				Brick and precast sections. Crack in uppermost precast column.

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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			E 7 Mile Relief Sewer	20220307 11:13

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0873	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	138 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			687.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0267						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0503						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	278	2Z00	2.0	278	2.0	3.0	
2	0	0				139	278							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SEV0E011
0.0 ft.		MWL				10	☐	/				
0.0 ft.		MGO					☐	/				Slight ridge in invert, typ. of past segments.
0.0 ft.		DSF	S01			5	☐	6 /		2		0-6"
284.0 ft.		TB		48.000			☐	9 /				Cross connection. Brick in good condition
305.0 ft.		TBA		48.000			☐	9 /				
335.0 ft.		TB		36.000			☐	9 /				
335.0 ft.		TB		36.000			☐	2 /				Egg-shaped
550.0 ft.		DAE				5	☑	3 /	5	2		
590.0 ft.		DAE				5	☑	2 /	5	2		
687.0 ft.		AMH					☐	/				SEV0E010. Brick followed by pracast above (typ.) DAE and infiltration
687.0 ft.		DSF	F01			5	☐	6 /		2		

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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			E 7 Mile Relief Sewer	20220307 08:51

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN1260	E 7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	138 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			757.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0149						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0503						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	307	312Z	2.0	307	2.0	3.1	
2	0	0				152	304							
3	0	0				1	3							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SEV0E012
0.0 ft.		MWL				10	☐	/				
0.0 ft.		MGO					☐	/				Slightly raised invert condition
0.0 ft.		DSF	S01			5	☐	6 /		2		
24.0 ft.		DAE				5	☐	2 /	5	2		
214.0 ft.		TBA		24.000			☐	9 /				
214.0 ft.		TB		24.000			☐	2 /				
530.0 ft.		TBD		6.000			☐	10 /		3		50% filled with mineral deposits
757.0 ft.		AMH					☐	/				Brick portion with precast above. Some infiltration.
757.0 ft.		DSF	F01			5	☐	6 /		2		

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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			E 7 Mile Relief Sewer	20220307 08:28

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0874	E 7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	138 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			683.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0148						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0149						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
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Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	282	322Z	2.0	282	2.0	3.2	
2	0	0				138	276							
3	0	0				2	6							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SEV0E013
0.0 ft.		MWL				10	☐	/				
0.0 ft.		DSGV	S01			5	☐	6 /		2		1-4"
190.0 ft.		ID					☐	12 /		3		
386.0 ft.		IDJ					☑	12 /		3		
560.0 ft.		DAE				10	☐	7 /	5	2		
683.0 ft.		AMH					☐	/				Brick and precast above. Some infiltration around perimeter.
683.0 ft.		DSGV	F01			5	☐	6 /		2		

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PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			E 7 Mile Relief Sewer	20220307 07:57

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0388	E 7 Mile Rd

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	138 in.		C	CAS	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			910.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0171						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0514						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

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Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	16	2800	2.0	0	0	0	0000	0.0	16	2.0	2.8	
2	8	16				0	0							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SEV0E015
0.0 ft.		MWL				5	☐	/				
0.0 ft.		MGO					☐	/				Raised ridge in the middle of the invert, typ.
96.0 ft.		TBA		24.000			☐	9 /				
120.0 ft.		TB		48.000			☐	3 /				Brick connection. IR (3) within connection
362.0 ft.		CL	S01				☐	12 /		2		
400.0 ft.		CL	F01				☐	12 /		2		
800.0 ft.		MSC		11.750			☐	/				11'9"
910.0 ft.		AMH					☐	/				SEV0E014. Precast, some infiltration

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			E 7 Mile Relief Sewer	20220307 07:34

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0871	E 7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	154 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			677.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0908						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0171						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	4	2200	2.0	0	0	282	322Z	2.0	286	2.0	3.2	
2	2	4				138	276							
3	0	0				2	6							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SEV0E016
0.0 ft.		MWL				5	☐	/				
0.0 ft.		DSF	S01			5	☐	6 /		2		1-4"
90.0 ft.		CL					☐	3 /		2		
224.0 ft.		IWJ					☑	11 / 1		2		
307.0 ft.		MGO					☐	/				Steel plate in crown
510.0 ft.		ID					☐	10 /		3		
510.0 ft.		DAE				5	☐	7 / 10		2		
569.0 ft.		MSC		11.000			☐	/				11' pipe
569.0 ft.		DAE				10	☑	7 / 5		2		
569.0 ft.		IDJ					☑	12 /		3		
675.0 ft.		SSS					☐	3 /		2		
677.0 ft.		AMH					☐	/				SEV0E015. Precast. ID (3)
677.0 ft.		DSF	F01			5	☐	6 /		2		

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			E 7 Mile Relief Sewer	20220304 16:20

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN0409	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	154 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			649.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0779						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0908						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	260	2Y00	2.0	260	2.0	3.0	
2	0	0				130	260							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SEV0E017
0.0 ft.		MWL				10	☐	/				
0.0 ft.		DSF	S01			5	☐	6 /		2		
13.0 ft.		TBC		60.000			☐	9 /				
26.0 ft.		TB		48.000			☐	9 /				
38.0 ft.		TB		48.000			☐	9 /				This is a 38' parallel connection. MH within connection. Good condition.
649.0 ft.		AMH					☐	/				SEV-E016. Brick MH. 3 laterals. DAE around perimeter and ID. Missing steps.
649.0 ft.		DSF	F01			5	☐	6 /		2		

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			E 7 Mile Relief Sewer	20220303 11:30

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
D		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN1555	7 Mile Rd

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SS	156 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			777.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0669						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0779						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	224	2U00	2.0	0	0	51	3B23	2.8	275	2.1	4.0	
2	112	224				3	6							
3	0	0				15	45							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SEV0E018
0.0 ft.		OBS				20	☐	6 /		3		Dam
0.0 ft.		CL	S01				☐	12 /		2		
0.0 ft.		DSC				5	☐	6 /		2		
0.0 ft.		MWL				5	☐	/				
350.0 ft.		IWJ					☑	12 /		2		
477.0 ft.		IDJ					☑	1 /		3		
477.0 ft.		IDJ					☑	1 /		3		
477.0 ft.		IDJ					☑	1 /		3		
477.0 ft.		IDJ					☑	1 /		3		
477.0 ft.		DAE				5	☑	2 /	5	2		
500.0 ft.		MWL				10	☐	/				
500.0 ft.		CL	F01				☐	12 /		2		
650.0 ft.		DSC	S02			15	☐	7 /		3		18" debris pile

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
658.0 ft.		TBA		36.000			☐	9 /				
700.0 ft.		DSC	F02			15	☐	7 /		3		
700.0 ft.		CL	S03				☐	10 /		2		
720.0 ft.		CL	F03				☐	10 /		2		Hairline
726.0 ft.		TBA		60.000			☐	9 /				
735.0 ft.		CL	S04				☐	10 /		2		
739.0 ft.		TBA		48.000			☐	4 /				
777.0 ft.		AMH					☐	/				SEV017, instrumentation in MH.
777.0 ft.		CL	F04				☐	10 /		2		

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			E 7 Mile Relief Sewer	20220303 09:00

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
U		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN1423	E 7 Mile Rd

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	156 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			732.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0669						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0190						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	284	2Z00	2.0	0	0	311	352Z	2.0	595	2.0	3.5	
2	142	284				148	296							
3	0	0				5	15							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SEV0E019
0.0 ft.		MWL				15	☐	/				
0.0 ft.		CL					☐	12 /		2		
0.0 ft.		DSF	S01			5	☐	6 /		2		
25.0 ft.		CL	S02				☐	12 /		2		
80.0 ft.		ID					☐	12 /		3		
183.0 ft.		ID					☐	12 /		3		
183.0 ft.		ID					☐	12 /		3		
183.0 ft.		ID					☐	12 /		3		
330.0 ft.		DAE				5	☐	3 /	5	2		
427.0 ft.		IDJ					☑	12 /		3		
427.0 ft.		DAE				10	☑	7 /	9	2		
566.0 ft.		TFA		24.000			☐	9 /				
732.0 ft.		CL	F02				☐	12 /		2		Intermittent

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
732.0 ft.		DSF	F01			5	☐	6 /		2		
732.0 ft.		AMH					☐	/				Precast MH in good condition

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

PACP v7.0 Inspections and Scoring

General Information:

Surveyed by:	Certificate number:	Reviewed by:	Reviewer certificate no.	Owner:	Customer:
Zanna Leciejewski	P0033548-092021			GLWA	

P/O number:	Work order no.:	Media label:	Project name:	Start date/time:
			E 7 Mile Relief Sewer	20220301 15:13

Sheet number:	Weather:	Pre-cleaning:	Date cleaned:	Flow control:	Purpose:
		N			

Direction:	Technology used:	Inspection status:	Consequence of failure:	Pressure value:
U		CI		

Location:

Drainage area:	Pipe segment ref.:	Street:
	SMN1363	7 Mile Rd.

City:	Location code:	Location details:
Detroit		

Pipe:

Pipe use:	Height:	Width:	Shape:	Material:	Lining method:
SW	156 in.		C	CP	

Coating method:	Pipe joint length:	Total length:	Length surveyed:	Year constructed:	Year renewed:
			677.000 ft.		

Measurements:

Upstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR0190						

Downstream MH No:	Rim to invert:	Rim to grade:	Grade to invert:	Northing:	Easting:	Elevation:
SSR1060						

MH coordinate system:	MH vertical datum:	GPS accuracy:

Additional Information:

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Pipe Ratings

Grade	Structural: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	O&M: Amount of Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Overall: Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	2	2100	2.0	0	0	337	3B2Z	2.1	339	2.1	4.0	
2	1	2				143	286							
3	0	0				17	51							
4	0	0				0	0							
5	0	0				0	0							

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	2nd	%	Joint	Circumferential Location At/From	To	Rating	Image Ref.	Remarks
0.0 ft.		AMH					☐	/				SEV-020
0.0 ft.		MWL				20	☐	/				
0.0 ft.		DSC	S01			20	☐	7 /		3		Compact debris shelf
0.0 ft.		DSF	S02			5	☐	6 /		2		6-8"
25.0 ft.		LR				20	☐	/		2		
63.0 ft.		DSC	F01			20	☐	7 /		3		
146.0 ft.		DAE				15	☑	1 /	5	3		
200.0 ft.		DAE				5	☑	7 /	5	2		
245.0 ft.		DAE				5	☐	7 /	5	2		
275.0 ft.		DAE				5	☑	7 /	5	2		
380.0 ft.		ID					☑	11 /		3		
476.0 ft.		DAE				5	☑	7 /	5	2		
478.0 ft.		IDJ					☑	12 /		3		
528.0 ft.		DAE				5	☑	7 /	5	2		

Observations

Distance	Video Ref.	PACP Code	Continuous	Value Inches (mm) 1st	Value Inches (mm) 2nd	%	Joint	Circumferential Location At/From	Circumferential Location To	Rating	Image Ref.	Remarks
528.0 ft.		IDJ					☑	12 /		3		
575.0 ft.		SSS					☑	7 /	5	2		
575.0 ft.		DAE				10	☑	7 /	5	2		
581.0 ft.		DAE				5	☑	7 /	5	2		
677.0 ft.		DSF	F02			5	☐	6 /		2		
677.0 ft.		AMH					☐	/				SEV-E019. MH precast. Heavy mineral deposits

GLWA Contract 2300150
Rehabilitation of the 7 Mile Sewer System

State Revolving Fund Project Plan
Appendix E

- **Public Hearing Notice**
- **Project Plan Summary**
- **Public Hearing Presentation (to be included in final Project Plan)**
- **Public Hearing Transcript (to be included in final Project Plan)**
- **Public Hearing Comments (to be included in final Project Plan)**

GREAT LAKES WATER AUTHORITY

PUBLIC HEARING NOTICE FOR
FY 2025 STATE REVOLVING FUND (SRF) PROJECT

The Great Lakes Water Authority (GLWA) announces a Public Hearing regarding its Project Plan for the GLWA Contract 2300150 Rehabilitation of the 7 Mile Sewer System Project. The purpose of this public hearing is not only to inform, but to gather feedback from people who will be affected.

The Rehabilitation of the 7 Mile Sewer System Project consists of the rehabilitation of several large diameter combined sewers including Segments 1, 2, and 3 of the 7 Mile Sewer, the East 7 Mile Relief Sewer, and the West 7 Mile Relief Sewer. These 5 sewers comprise the 7 Mile Sewer System and are located along 7 Mile Road extending from Five Points Street to the west and the Grand Trunk Railroad to the east throughout the City of Detroit. The 7 Mile Sewer System transports dry and wet weather flow to other GLWA assets including the Seven Mile Sewer Retention Treatment Basin (RTB) Facility and other large diameter sewers that transport flow to the Water Resource Recovery Facility (WRRF). The East and West 7 Mile Relief Sewers allow several large diameter collector sewers to relieve and overflow into the relief sewers preventing negative upstream hydraulic impacts such as basement flooding.

The current condition of portions of the 7 Mile Sewer System is very poor with risk of failure. The positive impacts of the project include structural rehabilitation of the sewers which will extend their service lives by another 25 to 30 years and allow them to continue to convey flow to the GLWA WRRF and provide relief to other components of the regional conveyance system during wet weather events. Sewer repairs are proposed to consist of, but are not limited to, various types of spot repairs; in-depth structural repairs within Segment 3 of the 7 Mile Sewer; debris/sludge removal; manhole frame and cover replacements; and more.

Adverse impacts on historical, archaeological, geographic, or cultural areas are not expected. However, if any potential impacts arise, construction will be halted, and the proper steps will be taken to proceed following all appropriate guidelines.

The cost of the project is currently estimated at approximately $30,000,000 and is eligible for participation in the Michigan Department of Environment, Great Lakes, and Energy (EGLE) low interest Clean Water State Revolving Fund (CWSRF) financing program. GLWA intends to pursue this low interest funding opportunity for FY 2025.

The Public Hearing on the FY 2025 CWSRF Project proposed by GLWA will be held for the purpose of receiving comments from interested persons. A presentation at the Public Hearing will be presented and provide a description of the improvements, its evaluation, and estimated costs, as well as the cost per household impact for customer communities. Comments and viewpoints from the public are requested. Information on the Project Plan will be available for review online after XXXXX, XX, 2024, at the **GLWA Website** XXXXXXXX.

THE MEETING WILL BE HELD ON:

DATE: Wednesday, April 24, 2024

TIME: XXXXXXX

PLACE: **In person, Zoom Videoconferencing, and Telephonic Hearing**

Join Zoom Meeting
https://glwater.zoom.us/j/87537144694?pwd=TEI2cXJxdElja2xRVGtYOU5pRFIzdz09

Meeting ID: XXXXXXXX
Passcode: XXXXXXXX

In Person (subject to capacity)
Board Room, 5th Floor
735 Randolph Street
Detroit, Michigan 48226

Telephonic
Public Call-In Number: 877-853-5247 US Toll-Free
888-788-0099 US Toll-Free
Meeting ID: XXXXXX
Passcode: XXXXXX

Members of the public may offer comments in the following manner:

By Zoom videoconferencing: Members of the public who wish to use Zoom videoconferencing to attend the meeting and/or offer public comment may utilize the following link to attend:

https://glwater.zoom.us/j/87537144694?pwd=TEI2cXJxdElja2xRVGtYOU5pRFIzdz09

During the portions of the hearing designated for public participation may "raise their hand" by using that feature within the software program.

In Person (subject to capacity): Members of the public who, subject to capacity, wish to attend the meeting and/or offer public comment in person may attend the meeting in the Board Room, 5th Floor, 735 Randolph, Detroit, MI 48226.

By Telephone: Members of the public who wish to attend the meeting and/or offer public comment by telephone should call in at the number indicated above, press *9 on their keypad to "raise their hand for public comment." During other portions of the meeting, members of the public are asked to mute their line by pressing *6 on their keypad to mute or unmute their line.

By E-Mail: Members of the public may provide written comments to the Board by emailing those comments to CEO@glwater.org on or before 5:00 p.m. EST. on Wednesday, April 26, 2024, and should reference "April 24, 2024 Public Hearing on proposed FY 2025 Clean Water State Revolving Fund (CWSRF) Projects" in the subject line of the e-mail. The opportunity to submit written comments by e-mail may remain open throughout the duration of the Public Hearing.

By U.S. Mail: Members of the public may provide written comments by United States mail addressed to:

Suzanne R. Coffey, P.E., Chief Executive Officer
Great Lakes Water Authority
735 Randolph
Detroit, Michigan, 48226

Written comments by U.S. mail should reference "April 24, 2024 Public Hearing FY 2025 Clean Water State Revolving Fund (CWSRF) Projects" in the letter. The opportunity to submit written comments by U.S. mail may remain open throughout the duration of the Public Hearing.

If a member of the public requires accommodation due to a disability, please contact CEO@glwater.org or (844) 455-GLWA (4592) not less than 72 hours prior to the date of the meeting.

PROJECT PLAN SUMMARY

Rehabilitation of the 7 Mile Sewer System

GLWA
Great Lakes Water Authority

Detroit, Michigan

April 24, 2024

Excellence in Infrastructure and Underground Engineering

FK ENGINEERING

1.0 Introduction

The purpose of this Project Plan Summary is to provide an overview of the Great Lakes Water Authority (GLWA) Rehabilitation of the 7 Mile Sewer System Project. The following sections provide a project summary, project needs and proposed improvements, environmental evaluations, estimated user cost impact, and proposed project schedule. The formal Project Plan document is in process and will be presented under separate cover.

2.0 Project Summary

The Great Lakes Water Authority (GLWA) wastewater conveyance system consists of over 180 miles of large diameter collector and interceptor sewers which convey wastewater flows from member communities outside of Detroit to the Water Resource Recovery Facility (WRRF) located in southwest Detroit.

As part of the Rehabilitation of the 7 Mile Sewer System project, rehabilitation of several large diameter combined sewers including Segments 1, 2, and 3 of the 7 Mile Sewer, the East 7 Mile Relief Sewer, and the West 7 Mile Relief Sewer are planned to be rehabilitated. These five sewers comprise the 7 Mile Sewer System and are located along 7 Mile Road extending from Five Points Street to the west and the Grand Trunk Railroad to the east throughout the City of Detroit.

The 7 Mile Sewer System transports dry and wet weather flow to other GLWA assets including the Seven Mile Sewer Retention Treatment Basin (RTB) Facility and other large diameter sewers that transport flow to the WRRF. The East and West 7 Mile Relief Sewers allow several large collector sewers to relieve and overflow into the relief sewers preventing negative upstream hydraulic impacts such as basement flooding.

3.0 Project Needs

The current condition of portions of the 7 Mile Sewer System is very poor with risk of failure. Maintaining and repairing the sewers is necessary in continuing to allow the sewers to convey flow to the GLWA WRRF and provide relief to other components of the regional conveyance system.

Structural rehabilitation of the sewers will also extend their service lives by an additional 25 to 30 years and allow them to continue to provide positive impacts to the system.

4.0 Proposed Improvements

This sewer rehabilitation project consists of repairing five separate combined sewers located along 7 Mile Road in Detroit, Michigan. Sewer repairs are proposed to consist of the following:

- Debris/sludge removal.
- Manhole frame and cover replacement.
- Spot repairs consisting of deep concrete repair, open joint repair, epoxy crack repair, tuckpointing, deteriorated brick repair, chemical grouting of leaks, removal of mineral deposits and roots, and rough tap repairs.
- In-depth structural repairs within Segment 3 of the 7 Mile Sewer.

As previously mentioned, rehabilitation of the 7 Mile Sewer System will extend the service lives of the sewers and allow them to continue to provide relief to other components of the regional conveyance system during wet weather events. Multiple structural repair alternatives were considered during the study phase of this project. The repair options were evaluated to minimize construction costs, minimize disruptions to the ground surface, traffic, adjacent utilities, and the environment.

5.0 Environmental Evaluation

Throughout the design of this project, the engineering team has evaluated environmental impacts that could occur from the operation of this project. The review included cultural and historical resources in the project area and the natural environment which includes air quality, wetlands, sensitive floodplains and high-risk erosion areas, rivers and surface waters, recreational facilities, agricultural resources, and the presence of rare and endangered species of plants and animals. It has been determined that any negative environmental impacts are short-term and will be limited to the anticipated 2-year construction phase of the project.

The majority of the construction work will be below ground, although some work at the ground surface is planned, such as manhole frame and cover replacements, will take place at the ground surface. Excavation methods for manhole frame and cover replacements will be developed to minimize any disturbances to the area.

Short-term environmental impacts such as increased noise or dust and potential traffic disruption will be minimized by limiting the contractor working hours and the development of soil erosion and sedimentation plans and traffic control plans as necessary.

The location of the project extends along 7 Mile Road primarily through commercial areas. The project site does not extend throughout any floodplains, wetlands, or endangered species areas. Therefore, it is not expected that large amounts of environmental disturbance will be caused during construction. No long-term negative impacts are expected to occur from this project.

6.0 Estimated User Cost Impact

This proposed project is anticipated to directly impact approximately 631,982 GLWA customers and indirectly impact approximately 639,212 GLWA customers. The total project cost of $30,000,000 will be distributed between the entire GLWA user-base of approximately 2.9 million residents in approximately 1.16 million households. The estimated cost per household annual user has been determined to be $1.63.

7.0 Proposed Implementation Schedule

Proposed Project Schedule	
Design Notice to Proceed	**June 2021**
30% Design	**April 2023**
60% Design	**April 2023**
90% Design	**March 2024**
Bid Due	**November 2024**
Construction Notice to Proceed	**April 2025**
Construction Final Completion	**July 2027**

GLWA Contract 2300150
Rehabilitation of the 7 Mile Sewer System

State Revolving Fund Project Plan
Appendix F

- **NPDES Permit**

PERMIT NO. MI0022802

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, 33 U.S.C., Section 1251 *et seq*., as amended; Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); Part 41, Sewerage Systems, of the NREPA; and Michigan Executive Order 2011-1,

City of Detroit Water and Sewerage Department
735 Randolph
Detroit, MI 48226

and

Great Lakes Water Authority
735 Randolph
Detroit, MI 48226

are authorized to discharge from the **Great Lakes Water Authority Water Resource Recovery Facility** located at

9300 W. Jefferson
Detroit, MI 48209

designated as **GLWA WRRF**

to the receiving water named the Detroit River and the Rouge River, and from combined sewer overflow facilities to the receiving waters named the Detroit River, the Rouge River, and Conner Creek in accordance with effluent limitations, monitoring requirements, and other conditions set forth in this permit.

This permit is based on a complete application submitted on March 29, 2017 and amended through May 25, 2017.

This permit takes effect on July 1, 2019. The provisions of this permit are severable. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term in accordance with applicable laws and rules. On its effective date, this permit shall supersede National Pollutant Discharge Elimination System (NPDES) Permit No. MI0022802 (expiring October 1, 2017).

This permit and the authorization to discharge shall expire at midnight on **October 1, 2022**. In order to receive authorization to discharge beyond the date of expiration, the permittees shall submit an application that contains such information, forms, and fees as are required by the Michigan Department of Environment, Great Lakes, and Energy (Department) by **April 4, 2022**.

Issued: June 28, 2019

Original signed by Christine Alexander
Christine Alexander, Manager
Permits Section
Water Resources Division

PERMIT FEE REQUIREMENTS

In accordance with Section 324.3120 of the NREPA, the permittees shall make payment of an annual permit fee to the Department for each October 1 the permit is in effect regardless of occurrence of discharge. The permittees shall submit the fee in response to the Department's annual notice. The fee shall be postmarked by January 15 for notices mailed by December 1. The fee is due no later than 45 days after receiving the notice for notices mailed after December 1.

Annual Permit Fee Classification: Municipal Major, 500 MGD or greater (IP)

In accordance with Section 324.3132 of the NREPA, the permittees shall make payment of an annual biosolids land application fee to the Department if the permittees land applies biosolids. In response to the Department's annual notice, the permittees shall submit the fee, which shall be postmarked no later than January 31 of each year.

CONTACT INFORMATION

Unless specified otherwise, all contact with the Department required by this permit shall be made to the Southeast Michigan District Office of the Water Resources Division. The Southeast Michigan District Office is located at 27700 Donald Court, Warren, MI, 48092-2793, Telephone: 586-753-3700, Fax: 586-751-4690.

CONTESTED CASE INFORMATION

Any person who is aggrieved by this permit may file a sworn petition with the Michigan Administrative Hearing System within the Michigan Department of Licensing and Regulatory Affairs, c/o the Michigan Department of Environment, Great Lakes, and Energy, setting forth the conditions of the permit which are being challenged and specifying the grounds for the challenge. The Department of Licensing and Regulatory Affairs may reject any petition filed more than 60 days after issuance as being untimely.

PART I

Section A. Limitations and Monitoring Requirements

1. Effluent Limitations, Monitoring Point 049F

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittees are authorized to discharge treated municipal wastewater from Monitoring Point 049F through Outfall 049 (DRO). Outfall 049 (DRO) discharges to the Detroit River. Such discharge shall be limited and monitored by the permittees as specified below.

Until the initiation of operation of the Rouge River Outfall (RRO) Disinfection Project, this discharge shall consist of secondary treated municipal wastewater and additional primary treated municipal wastewater up to the hydraulic capacity of Outfall 049 (DRO). After initiation of operation of the RRO Disinfection Project, this discharge shall consist of secondary treated municipal wastewater typically, but primary treated municipal wastewater and additional secondary treated municipal wastewater up to the hydraulic capacity of Outfall 049 (DRO) during wet weather events. During such wet weather events, the permittees are approved to discharge primary treated municipal wastewater from 049A thorough Outfall 049 (DRO).

Whenever Outfall 049 (DRO) is out of service for repairs, the permittees may discharge through Outfall 050 (RRO). All effluent authorized for discharge from Outfall 049F, and the monitoring, limitations and other requirements specified below shall apply to the discharge through Outfall 050 (RRO) unless otherwise specified. At least 10 days in advance of scheduled maintenance and within 24-hours after initiation of diversion due to emergency conditions, the permittees shall notify the Department of the reason for the diversion and the expected duration of the diversion.

	Maximum Limits for Quantity or Loading				Maximum Limits for Quality or Concentration				Monitoring	Sample
Parameter	Monthly	7-Day	Daily	Units	Monthly	7-Day	Daily	Units	Frequency	Type
Flow	(report)	---	(report)	MGD	---	---	---	---	Daily	Report Total Daily Flow
Fecal Coliform Bacteria	---	---	---	---	200	400	---	cts/100 ml	Daily	Grab
Total Residual Chlorine	---	---	---	---	---	---	0.11	mg/l	Daily	Grab
Oil & Grease	---	---	---	---	---	15	---	mg/l	Daily	Grab
Total Polychlorinated Biphenyls (PCBs)										
Aroclor 1016	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
Aroclor 1221	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
Aroclor 1232	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
Aroclor 1242	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
Aroclor 1248	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
Aroclor 1254	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
Aroclor 1260	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
					Maximum PCB Aroclor					
See I.A.1.g.	---	---	---	---	<0.1	---	---	µg/l	Monthly	See I.A.1.g.
Acute Toxicity	---	---	---	---	---	---	(report)	TU_A	Quarterly	24-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5)										
	---	---	(report)	lbs/day	---	---	(report)	mg/l	Daily	24-Hr Composite
Ammonia Nitrogen (as N)		---	(report)	lbs/day	(report)	---	(report)	mg/l	Daily	24-Hr Composite
Available Cyanide	---	---	(report)	lbs/day	---	---	(report)	µg/l	Monthly	Grab

Perfluorooctane sulfonate (PFOS)	(report)	---	(report)	lbs/day	(report)	---	(report)	ng/l	Quarterly	Grab
Perfluorooctanoic acid (PFOA)	(report)	---	(report)	lbs/day	(report)	---	(report)	ng/l	Quarterly	Grab
Total Copper	---	---	(report)	lbs/day	---	---	(report)	µg/l	Quarterly	24-Hr Composite
					Minimum Daily		**Maximum Daily**			
pH	---	---	---	---	6.0	---	9.0	S.U.	Daily	Grab
Dissolved Oxygen	---	---	---	---	(report)	---	---	mg/l	Daily	Grab

The following design flow was used in determining the above limitations, but is not to be considered a limitation or actual capacity: a combined 930 MGD of secondary treated effluent.

a. Narrative Standard
The receiving water shall contain no turbidity, color, oil films, floating solids, foams, settleable solids, or deposits as a result of this discharge in unnatural quantities which are or may become injurious to any designated use.

b. Sampling Locations
The sampling locations for the pollutants indicated in Part I.A.1. of this permit shall be representative of the effluent and consistent with the locations approved by the Department. The Department may approve alternate sampling locations that are demonstrated by the permittees to be representative of the effluent.

c. Quarterly Monitoring
Quarterly samples shall be taken during the months of January, April, July, and October. If the facility does not discharge during these months, the permittees shall sample the next discharge occurring during the period in question. If the facility does not discharge during the period in question, a sample is not required for that period. For any month in which a sample is not taken, the permittees shall enter "*G" on the Discharge Monitoring Report (DMR).

d. Total Residual Chlorine (TRC)
Compliance with the TRC limit shall be determined on the basis of one or more grab samples. If more than one (1) sample per day is taken, the additional samples shall be collected in near equal intervals over approximately eight (8) hours. The samples shall be analyzed immediately upon collection and the average reported as the daily concentration. Samples shall be analyzed in accordance with Part II.B.2. of this permit.

e. Monitoring Frequency Reduction for Perfluorooctane Sulfonate (PFOS) and/or Perfluorooctanoic Acid (PFOA)
After the submittal of 24 months of data, the permittee may request, in writing, Department approval of a reduction in monitoring frequency for PFOS and/or PFOA. This request shall contain an explanation as to why the reduced monitoring is appropriate. Upon receipt of written approval and consistent with such approval, the permittee may reduce the monitoring frequency indicated in Part I.A.1. of this permit. The monitoring frequency for PFOS and/or PFOA, shall not be reduced to less than annually. The Department may revoke the approval for reduced monitoring at any time upon notification to the permittee.

f. Analytical Methods and Quantification Levels for Available Cyanide and Total Copper
The sampling procedures, preservation and handling, and analytical protocol for compliance monitoring for Available Cyanide shall be in accordance with EPA Method OIA-1677. The quantification level for Available Cyanide and Total Copper shall be 2.0 µg/l and 1.0 µg/l respectively unless a higher level is appropriate because of sample matrix interference. Justification for higher quantification levels shall be submitted to the Department within 30 days of such determination. Upon approval from the

Department, the permittees may use alternate analytical methods (for parameters with methods specified in Title 40 of the Code of Federal Regulations (CFR), Part 136, the alternate methods are restricted to those listed in 40 CFR, Part 136).

g. Limits Below the Quantification Level – Total Polychlorinated Biphenyls (PCBs)
The sampling procedures, preservation and handling, and analytical protocol for compliance monitoring for Total PCBs shall be in accordance with EPA Method 608.3. Upon approval from the Department, the permittees may use alternate analytical methods (for parameters with methods specified in 40 CFR, Part 136, the alternate methods are restricted to those listed in 40 CFR, Part 136). The quantification level shall be 0.1 ug/l unless a higher level is appropriate because of sample matrix interference. Justification for a higher quantification level shall be submitted to the Department within 30 days of such determination.

The water quality-based effluent limitation for Total PCBs is $2.6x10^{-5}$ µg/l ($2.0x10^{-4}$ lbs/day) maximum monthly average. This is less than the quantification level. Control requirements are therefore established consistent with R 323.1213. **The discharge of any individual aroclor at or above the quantification level of 0.1 ug/l is a specific violation of this permit**. If concentrations of all aroclors representing a monitoring period are less than their quantification levels, the permittees will be considered to be in compliance with the permit for the monitoring period that the analyses represent, provided that the permittees are also in full compliance with the Pollutant Minimization Program for Total PCBs set forth in Part I.A.10 of this permit. For the purpose of reporting on the Daily tab of the DMR, individual aroclor results less than the quantification level shall be reported as "<0.1." For the purpose of reporting on the Summary tab of the DMR, the value reported under “Maximum PCB Aroclor” shall be the highest aroclor concentration observed during the monitoring period. This permit condition does not authorize the discharge of PCBs at levels that are injurious to the designated uses of the waters of the state or that constitute a threat to the public health or welfare.

h. Acute Toxicity Requirements
Test species shall include *Ceriodaphnia dubia*. Testing and reporting procedures shall follow procedures contained in EPA-821-R-02-012, “Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms” (Fifth Edition). When the effluent ammonia nitrogen (as N) concentration is greater than 5 mg/l, the pH of the toxicity test shall be maintained at the pH of the effluent at the time of sample collection. The acute toxic unit (TU_A) value for **each species tested** shall be reported on the DMR. For **each species not tested**, the permittees shall enter **"*W"** on the DMR. Completed toxicity test reports for each test conducted shall be retained by the permittees in accordance with the requirements of Part II.B.5. of this permit and shall be available for review by the Department upon request. Toxicity test data acceptability is contingent upon the validation of the test method by the testing laboratory. Such validation shall be submitted to the Department upon request.

The Department will review the toxicity data submitted by the permittees to determine if the acute toxicity requirements of R 323.1219 are being satisfied.

1) If the data indicate persistent exceedance of the acute toxicity requirements of R 323.1219, upon written notification by the Department, the following conditions apply. Within 90 days of the above notification, the permittees shall implement a Toxicity Reduction Evaluation (TRE). The objective of the TRE shall be to reduce the toxicity of the final effluent from Monitoring Point 049F to <3.0 TU_A within three (3) years of notification. The following documents are available as guidance to reduce toxicity to acceptable levels: Phase I, EPA/600/6-91/003; Phase II, EPA/600/R-92/080; Phase III, EPA/600/R-92/081; and Publicly Owned Treatment Works, EPA/833B-99/002. The tests shall be conducted and reported as specified above. Upon approval from the Department, the acute toxicity tests may be performed using the more sensitive species identified in the acute toxicity database. If a more sensitive species cannot be identified, the acute toxicity tests shall be performed with both species. Annual progress reports shall be submitted to the Department within 30 days of the completion of the last test of each annual cycle.

2) This permit may be modified in accordance with applicable laws and rules to include additional whole effluent toxicity control requirements as necessary.

2. Effluent Limitations, Monitoring Point 049A

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittees are approved to discharge treated municipal wastewater and treated storm water runoff from Monitoring Point 049A through Outfall 049 (DRO). Outfall 049 (DRO) discharges to the Detroit River. Such discharge shall be limited and monitored by the GLWA as specified below.

Monitoring Point 049A is a primary treated effluent conduit. There shall be no discharge from Monitoring Point 049A directly to the Detroit River through Outfall 049 (DRO) unless the discharge from Monitoring Point 049B exceeds a peak hourly flow of 930 MGD (which includes recycle) or in accordance with an approved GLWA Wet Weather Operational Plan (see Part I.A.11.). Discharges from Monitoring Point 049A shall be limited and monitored by the permittees as specified below.

	Maximum Limits for Quantity or Loading			Maximum Limits for Quality or Concentration			Monitoring	Sample
Parameter	**Monthly**	**Daily**	**Units**	**Monthly**	**Daily**	**Units**	**Frequency**	**Type**
Flow	(report)	(report)	MGD	---	---	---	Daily	Report Total Daily Flow
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	---	---	---	40	(report)	mg/l	Daily	24-Hr Composite
Total Suspended Solids	---	---	---	70	(report)	mg/l	Daily	24-Hr Composite
Total Phosphorus (as P)	---	---	---	1.5	(report)	mg/l	Daily	24-Hr Composite
Ammonia Nitrogen (as N)	---	---	---	(report)	(report)	mg/l	Daily	24-Hr Composite
Total Mercury								
– Corrected	(report)	(report)	lbs/day	(report)	(report)	ng/l	2x Monthly	Grab
– Uncorrected	---	---	---	---	(report)	ng/l	2x Monthly	Grab
– Field Duplicate	---	---	---	---	(report)	ng/l	2x Monthly	Grab
– Field Corrected	---	---	---	---	(report)	ng/l	2x Monthly	Grab
– Laboratory Method Blank	---	---	---	---	(report)	ng/l	2x Monthly	Grab

	12-Month Rolling Average				12-Month Rolling Average					
Total Mercury	0.19	---	---	lbs/day	25	---	---	ng/l	Monthly	Calculation

a. Sampling Locations
The sampling locations for the pollutants in Part 1.A.2. of this permit shall be representative of the effluent and consistent with the locations approved by the Department. Samples for CBOD5, Total Suspended Solids, Ammonia Nitrogen, Total Mercury, and Total Phosphorus shall be taken prior to mixing with other waste streams. The Department may approve alternate sampling locations that are demonstrated by the permittees to be representative of the effluent

b. Sampling of Short-Term Wet Weather Events
If the first calendar day of the discharge event through Monitoring Point 049A includes less than three hours of flow but continues into the next calendar day, the sampling can be included as a part of the subsequent event the following day.

c. Final Effluent Limitation for Total Mercury
The final limit for total mercury is the Discharge Specific Level Currently Achievable (LCA) based on a multiple discharger variance from the WQBEL of 1.3 ng/l, pursuant to Rule 1103(9) of the Water Quality Standards. Compliance with the LCA shall be determined as a 12-month rolling average, the calculation of which may be done using blank-corrected sample results. The 12-month rolling average shall be determined by adding the present monthly average result to the preceding 11 monthly average results then dividing the sum by 12. For facilities with quarterly monitoring requirements for total mercury, quarterly monitoring shall be equivalent to three (3) months of monitoring in calculating the

12-month rolling average. Facilities that monitor more frequently than monthly for total mercury must determine the monthly average result, which is the sum of the results of all data obtained in a given month divided by the total number of samples taken, in order to calculate the 12-month rolling average. If the 12-month rolling average for any month is less than or equal to the LCA, the GLWA will be considered to be in compliance for total mercury for that month, provided the GLWA is also in full compliance with the Pollutant Minimization Program for Total Mercury, set forth in Part I.A.10. of this permit.

The permittee may choose to demonstrate that an alternate site-specific LCA is appropriate and request a permit modification. Such request and supporting documentation shall be submitted in writing to the Department. Supporting documentation shall include a minimum of 12 samples taken over 12-month period in accordance with EPA Method 1631. Upon approval, this permit may be modified in accordance with applicable laws and rules to incorporate the alternate site-specific LCA as the effluent limitation for Total Mercury.

After a minimum of 12 monthly data points have been collected, the permittees may request a reduction in the monitoring frequency for total mercury. This request shall contain an explanation as to why the reduced monitoring is appropriate and shall be submitted to the Department. Upon receipt of written approval and consistent with such approval, the permittees may reduce the monitoring frequency for total mercury indicated in Part I.A.2. of this permit. The Department may revoke the approval for reduced monitoring at any time upon notification to the permittees.

d. Total Mercury Testing and Additional Reporting Requirements

The analytical protocol for total mercury shall be in accordance with EPA Method 1631, Revision E, "Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry." The quantification level for total mercury shall be 0.5 ng/l, unless a higher level is appropriate because of sample matrix interference. Justification for higher quantification levels shall be submitted to the Department within 30 days of such determination.

The use of clean technique sampling procedures is required unless the permittees can demonstrate to the Department that an alternate sampling procedure is representative of the discharge. Guidance for clean technique sampling is contained in EPA Method 1669, Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels (Sampling Guidance), EPA-821-R96-001, July 1996. Information and data documenting the permittee's sampling and analytical protocols and data acceptability shall be submitted to the Department upon request.

In order to demonstrate compliance with EPA Method 1631E and EPA Method 1669, the permittees shall report, on the daily sheet, the analytical results of all field blanks and field duplicates collected in conjunction with each sampling event, as well as laboratory method blanks when used for blank correction. The permittees shall collect at least one (1) field blank and at least one (1) field duplicate per sampling event. If more than ten (10) samples are collected during a sampling event, the permittees shall collect at least one (1) additional field blank AND field duplicate for every ten (10) samples collected. Only field blanks or laboratory method blanks may be used to calculate a concentration lower than the actual sample analytical results (i.e., a blank correction). Only one (1) blank (field OR laboratory method) may be used for blank correction of a given sample result, and only if the blank meets the quality control acceptance criteria. If blank correction is not performed on a given sample analytical result, the permittees shall report under "Total Mercury – Corrected" the same value reported under "Total Mercury – Uncorrected." The field duplicate is for quality control purposes only; its analytical result shall not be averaged with the sample result.

3. Effluent Limitations, Monitoring Point 049B

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittees are authorized to discharge treated municipal wastewater from Monitoring Point 049B through Outfall 049 (DRO), or through Outfall 050 (RRO) when there is reduced hydraulic capacity through DRO or during wet weather, once the RRO Disinfection Project is completed. Outfall 049 (DRO) discharges to the Detroit River. Outfall 050 (RRO) discharges to the Rouge River. In addition, the permittees are authorized to discharge treated municipal wastewater from Monitoring Point 049B through Outfall 050 to the Rouge River as provided in Part I.A.4.

Outfall 049B is the combined secondary treated effluent conduit for all dry weather flows and all wet weather flows up to and including a peak hourly flow of 930 MGD (which includes recycle).

Discharges from Monitoring Point 049B shall be limited and monitored by the permittees as specified below.

	Maximum Limits for Quantity or Loading				Maximum Limits for Quality or Concentration				Monitoring	Sample
Parameter	**Monthly**	**7-Day**	**Daily**	**Units**	**Monthly**	**7-Day**	**Daily**	**Units**	**Frequency**	**Type**
Flow	(report)	---	(report)	MGD	---	---	---	---	Daily	Report Total Daily Flow
(This flow measurement is all secondary flow minus recycle and buffer flows)										
Recycled Flow (Screened Final Effluent)	(report)	---	(report)	MGD	---	---	---	---	Daily	Report Total Daily SFE Flow
Buffer Flow	(report)	---	(report)	MGD	---	---	---	---	Daily	Report Total Daily Flow
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)										
	194,000	310,000	---	lbs/day	25	40	(report)	mg/l	Daily	24-Hr Composite
Total Suspended Solids										
	233,000	349,000	---	lbs/day	30	45	---	mg/l	Daily	24-Hr Composite
Ammonia Nitrogen (as N)		---	---	---	(report)	---	(report)	mg/l	Daily	24-Hr Composite
Total Mercury										
– Corrected	(report)	---	(report)	lbs/day	(report)	---	(report)	ng/l	Quarterly	Grab
– Uncorrected	---	---	---	---	---	---	(report)	ng/l	Quarterly	Grab
– Field Duplicate	---	---	---	---	---	---	(report)	ng/l	Quarterly	Grab
– Field Corrected	---	---	---	---	---	---	(report)	ng/l	Quarterly	Grab
– Laboratory Method Blank										
	---	---	---	---	---	---	(report)	ng/l	Quarterly	Grab
	12 Month Rolling Average				**12 Month Rolling Average**					
Total Mercury	0.023	---	---	lbs/day	3.0	---	---	ng/l	Monthly	Calculation
					Minimum Daily		**Maximum Daily**			
pH	---	---	---	---	6.0		9.0	S.U.	Daily	Grab
Total Phosphorus (as P)										
	5400	---	---	lbs/day	0.7	---	(report)	mg/l	Daily	24-Hr Composite
	Six Month Average (April - Sept.)				**Six Month Average (April - Sept.)**					
Total Phosphorus	4600	---	---	lbs/day	0.6	---	---	mg/l	(see I.A.3.c)	Calculation

				Minimum Monthly					
$CBOD_5$ Minimum % Removal	---	---	---	85	---	---	%	Monthly	Calculation
Total Suspended Solids Minimum % Removal			---	85	---	---	%	Monthly	Calculation

a. Sampling Locations
Samples for $CBOD_5$, Total Suspended Solids, Ammonia Nitrogen, Total Phosphorus, Total Mercury and pH shall be taken prior to mixing with other waste streams. Samples for pH shall be collected only during periods of discharge from Monitoring Point 049A through Outfall 049 (DRO).

b. Percent Removal Requirements
These requirements shall be calculated based on the monthly (30-day) effluent CBOD5 and TSS concentrations and the monthly influent concentrations for approximately the same period.

c. Total Phosphorus Six Month Average Limit (April - September)
The six month average shall be determined by adding the six monthly average results from April through September and dividing the sum by six. For the purpose of reporting on the Discharge Monitoring Reports, the permittees shall calculate and report the six month average on the October Discharge Monitoring Report.

d. Final Effluent Limitation for Total Mercury
The final limit for total mercury is the Discharge Specific Level Currently Achievable (LCA) based on a multiple discharger variance from the WQBEL of 1.3 ng/l, pursuant to Rule 1103(9) of the Water Quality Standards. Compliance with the LCA shall be determined as a 12-month rolling average, the calculation of which may be done using blank-corrected sample results. The 12-month rolling average shall be determined by adding the present monthly average result to the preceding 11 monthly average results then dividing the sum by 12. For facilities with quarterly monitoring requirements for total mercury, quarterly monitoring shall be equivalent to three (3) months of monitoring in calculating the 12-month rolling average. Facilities that monitor more frequently than monthly for total mercury must determine the monthly average result, which is the sum of the results of all data obtained in a given month divided by the total number of samples taken, in order to calculate the 12-month rolling average. If the 12-month rolling average for any month is less than or equal to the LCA, the permittees will be considered to be in compliance for total mercury for that month, provided the permittees are also in full compliance with the Pollutant Minimization Program for Total Mercury, set forth in Part I.A.10. of this permit.

The permittee may choose to demonstrate that an alternate site-specific LCA is appropriate and request a permit modification. Such request and supporting documentation shall be submitted in writing to the Department. Supporting documentation shall include a minimum of 12 samples taken over 12-month period in accordance with EPA Method 1631. Upon approval, this permit may be modified in accordance with applicable laws and rules to incorporate the alternate site-specific LCA as the effluent limitation for Total Mercury.

After a minimum of 12 monthly data points have been collected, the permittees may request a reduction in the monitoring frequency for total mercury. This request shall contain an explanation as to why the reduced monitoring is appropriate and shall be submitted to the Department. Upon receipt of written approval and consistent with such approval, the permittees may reduce the monitoring frequency for total mercury indicated in Part I.A.3. of this permit. The Department may revoke the approval for reduced monitoring at any time upon notification to the permittees.

e. Total Mercury Testing and Additional Reporting Requirements
The analytical protocol for total mercury shall be in accordance with EPA Method 1631, Revision E, "Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry." The quantification level for total mercury shall be 0.5 ng/l, unless a higher level is appropriate because of sample matrix interference. Justification for higher quantification levels shall be submitted to the Department within 30 days of such determination.

The use of clean technique sampling procedures is required unless the permittees can demonstrate to the Department that an alternate sampling procedure is representative of the discharge. Guidance for clean technique sampling is contained in EPA Method 1669, Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels (Sampling Guidance), EPA-821-R96-001, July 1996. Information and data documenting the permittee's sampling and analytical protocols and data acceptability shall be submitted to the Department upon request.

In order to demonstrate compliance with EPA Method 1631E and EPA Method 1669, the permittees shall report, on the daily sheet, the analytical results of all field blanks and field duplicates collected in conjunction with each sampling event, as well as laboratory method blanks when used for blank correction. The permittees shall collect at least one (1) field blank and at least one (1) field duplicate per sampling event. If more than ten (10) samples are collected during a sampling event, the permittees shall collect at least one (1) additional field blank AND field duplicate for every ten (10) samples collected. Only field blanks or laboratory method blanks may be used to calculate a concentration lower than the actual sample analytical results (i.e., a blank correction). Only one (1) blank (field OR laboratory method) may be used for blank correction of a given sample result, and only if the blank meets the quality control acceptance criteria. If blank correction is not performed on a given sample analytical result, the permittees shall report under "Total Mercury – Corrected" the same value reported under "Total Mercury – Uncorrected." The field duplicate is for quality control purposes only; its analytical result shall not be averaged with the sample result.

4. Interim Effluent Limitations, Monitoring Point 050A

During the period beginning on the effective date of this permit and lasting until initiation of operation of the RRO Disinfection Project, the permittees are approved to discharge treated municipal wastewater and treated storm water runoff from Monitoring Point 050A through Outfall 050 (RRO). Normally, the discharge may consist of only primary treated effluent when the discharge is necessary due to hydraulic constraints resulting from wet weather events. There shall be no discharge from Monitoring Point 050A unless the discharge from Monitoring Point 049B exceeds a peak hourly flow of 930 MGD (which includes recycle) or in accordance with an approved GLWA WRRF Wet Weather Operational Plan (see Part I.A.11.). Discharge from Outfall 050 (RRO) is not allowed unless hydraulically or structurally necessary. Outfall 050 (RRO) discharges to the Rouge River.

Other options for discharge from Outfall 050 include, 1) when Outfall 049 (DRO) is out-of-service, the discharge may consist of secondary or secondary and primary treated wastewater, 2) when Outfall 049 (DRO) has reduced hydraulic capacity the discharge may consist of secondary or secondary and primary treated wastewater, and 3) when there is department approved limited secondary capacity when Outfall 049 cannot be used due to construction, the discharge may consist of secondary or secondary and primary treated wastewater. Discharges from Monitoring Point 050A shall be limited and monitored by the permittees as specified below.

	Maximum Limits for Quantity or Loading				Maximum Limits for Quality or Concentration				Monitoring	Sample
Parameter	**Monthly**	**7-Day**	**Daily**	**Units**	**Monthly**	**7-Day**	**Daily**	**Units**	**Frequency**	**Type**

Limitations and monitoring requirements in effect when Outfall 049 is out-of-service and prior to initiation of operation of the RRO Disinfection Project:

All limitations and monitoring specified in Part I.A.1. apply except for the Available Cyanide monitoring requirement, Total Residual Chlorine requirement, and the Fecal Coliform Bacteria limitations, which are replaced with the limitations and monitoring requirements specified below with the Total Residual Chlorine monitoring and limitation removed:

Available Cyanide	---	---	---	---	---	89	µg/l	Daily	Grab
Fecal Coliform Bacteria	---	---	---	---	(report)	(report)	---	cts/100 ml	Daily	Grab

a. Sampling of Short-Term Wet Weather Events
If the first calendar day of the discharge event through Monitoring Point 050A includes less than three hours of flow but continues into the next calendar day, the sampling can be included as a part of the subsequent event the following day.

4. Interim Effluent Limitations, Monitoring Point 050A (continued)

Parameter	Maximum Limits for Quantity or Loading Monthly	7-Day	Daily	Units	Maximum Limits for Quality or Concentration Monthly	7-Day	Daily	Units	Monitoring Frequency	Sample Type
Limitations and monitoring requirements in effect during other periods of discharge from Monitoring Point 050A and prior to Initiation of operation of the RRO Disinfection Project:										
Flow	(report)	---	(report)	MGD	---	---	---	---	Daily	Report Total Daily Flow
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	---	---	---	---	40	---	(report)	mg/l	Daily	24-Hr Composite
Total Suspended Solids	---	---	---	---	70	---	(report)	mg/l	Daily	24-Hr Composite
Total Phosphorus (as P)	---	---	---	---	1.5	---	(report)	mg/l	Daily	24-Hr Composite
Available Cyanide	---	---	---	---	---	---	89	µg/l	Daily	Grab
Fecal Coliform Bacteria	---	---	---	---	(report)	---	(report)	cts/100 ml	Daily	Grab
Ammonia Nitrogen (as N)		---	---	---	(report)	---	(report)	mg/l	Daily	24-Hr Composite
Total Copper	---	---	---	---	---	---	(report)	µg/l	Daily	24-Hr Composite
Total Polychlorinated Biphenyls (PCBs)										
Aroclor 1016	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
Aroclor 1221	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
Aroclor 1232	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
Aroclor 1242	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
Aroclor 1248	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
Aroclor 1254	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
Aroclor 1260	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
					Maximum PCB Aroclor					
See I.A.4.e.	---	---	---	---	(report)	---	---	µg/l	Monthly	See I.A.4.e.
					Minimum Daily		**Maximum Daily**			
pH	---	---	---	---	6.0		9.0	S.U.	Daily	Grab
Dissolved Oxygen	---	---	---	---	(report)		---	mg/l	Daily	Grab

a. Narrative Standard
The receiving water shall contain no turbidity, color, oil films, floating solids, foams, settleable solids, or deposits as a result of this discharge in unnatural quantities which are or may become injurious to any designated use.

b. Sampling Locations
The sampling locations for the pollutants in Part 1.A.4. of this permit shall be representative of the effluent and consistent with the locations approved by the Department. The Department may approve alternate sampling locations that are demonstrated by the GLWA to be representative of the effluent.

c. Sampling of Short-Term Wet Weather Events
If the first calendar day of the discharge event through Monitoring Point 050A includes less than three hours of flow but continues into the next calendar day, the sampling can be included as a part of the subsequent event the following day.

d. Analytical Methods and Quantification Levels for Available Cyanide and Total Copper
The sampling procedures, preservation and handling, and analytical protocol for compliance monitoring for Available Cyanide shall be in accordance with EPA Method OIA-1677. The quantification levels for Available Cyanide and Total Copper shall be 2.0 µg/l and 1.0 µg/l respectively unless a higher level is appropriate because of sample matrix interference. Justification for higher quantification levels shall be submitted to the Department within 30 days of such determination. Upon approval of the Department, the permittees may use alternate analytical methods (for parameters with methods specified in 40 CFR 136, the alternate methods are restricted to those listed in 40 CFR 136).

e. Limits Below the Quantification Level – Total Polychlorinated Biphenyls (PCBs) The sampling procedures, preservation and handling, and analytical protocol for compliance monitoring for Total PCBs shall be in accordance with EPA Method 608.3. Upon approval from the Department, the permittees may use alternate analytical methods (for parameters with methods specified in 40 CFR, Part 136, the alternate methods are restricted to those listed in 40 CFR, Part 136). The quantification level shall be 0.1 ug/l unless a higher level is appropriate because of sample matrix interference. Justification for a higher quantification level shall be submitted to the Department within 30 days of such determination.

For the purpose of reporting on the Daily tab of the DMR, individual aroclor results less than the quantification level shall be reported as "<0.1." This permit condition does not authorize the discharge of PCBs at levels that are injurious to the designated uses of the waters of the state or that constitute a threat to the public health or welfare.

5. Final Effluent Limitations, Monitoring Point 050A

Upon initiation of operation of the RRO Disinfection Project, the permittees are approved to discharge secondary treated municipal wastewater and primary treated municipal wastewater when hydraulically necessary from Monitoring Point 050A through Outfall 050 (RRO). Outfall 050 (RRO) discharges to the Rouge River. Discharge from Outfall 050 (RRO) is approved when the hydraulic capacity of Outfall 049 (DRO) is not sufficient to meet the approved GLWA wet weather operational plan (see Part I.A.11.). Such discharge shall be limited and monitored by the permittees as specified below.

	Maximum Limits for Quantity or Loading				Maximum Limits for Quality or Concentration				Monitoring	Sample
Parameter	**Monthly**	**7-Day**	**Daily**	**Units**	**Monthly**	**7-Day**	**Daily**	**Units**	**Frequency**	**Type**
Flow	(report)	---	(report)	MGD	---	---	---	---	Daily	Report Total Daily Flow
Available Cyanide	---	---	---	---	---	---	44	µg/l	Daily	Grab
Total Copper	---	---	---	---	---	---	(report)	µg/l	Monthly	24-Hr Composite
Fecal Coliform Bacteria	---	---	---	---	200	400	---	cts/100 ml	Daily	Grab
Total Residual Chlorine	---	---	---	---	---	---	38	µg/l	Daily	Grab
Oil & Grease	---	---	---	---	---	15	---	mg/l	Daily	Grab
Total Polychlorinated Biphenyls (PCBs)										
Aroclor 1016	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
Aroclor 1221	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
Aroclor 1232	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
Aroclor 1242	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
Aroclor 1248	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
Aroclor 1254	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
Aroclor 1260	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
					Maximum PCB Aroclor					
See I.A,5.f.	---	---	---	---	<0.1	---	---	µg/l	Monthly	See I.A.5.f.
					Minimum Daily		**Maximum Daily**			
pH	---	---	---	---	6.0	---	9.0	S.U.	Daily	
Dissolved Oxygen	---	---	---	---	3.0	---	---	mg/l	Daily	Grab

a. Narrative Standard
The receiving water shall contain no turbidity, color, oil films, floating solids, foams, settleable solids, suspended solids, or deposits as a result of this discharge in unnatural quantities which are or may become injurious to any designated use.

b. Sampling Locations
The sampling locations for the pollutants in Part I.A.5. of this permit shall be representative of the effluent and consistent with the locations approved by the Department. The Department may approve alternate sampling locations that are demonstrated by the permittees to be representative of the effluent.

c. Sampling of Short-Term Wet Weather Events
If the first calendar day of the discharge event includes less than three hours of flow but continues into the next calendar day, the sampling can be included as part of the subsequent event the following day.

d. Total Residual Chlorine (TRC)
Compliance with the TRC limit shall be determined on the basis of one or more grab samples. If more than one (1) sample per day is taken, the additional samples shall be collected in near equal intervals over approximately eight (8) hours. The samples shall be analyzed immediately upon collection and the average reported as the daily concentration. Samples shall be analyzed in accordance with Part II.B.2. of this permit.

e. Analytical Methods and Quantification Levels for Available Cyanide and Total Copper
The sampling procedures, preservation and handling, and analytical protocol for compliance monitoring for Available Cyanide shall be in accordance with EPA Method OIA-1677. The quantification levels for Available Cyanide and Total Copper shall be 2.0 µg/l and 1.0 µg/l, respectively, unless a higher level is appropriate because of sample matrix interference. Justification for higher quantification levels shall be submitted to the Department within 30 days of such determination. Upon approval of the Department, the permittees may use alternate analytical methods (for parameters with methods specified in 40 CFR 136, the alternate methods are restricted to those listed in 40 CFR 136).

f. Limits Below the Quantification Level – Total Polychlorinated Biphenyls (PCBs)
The sampling procedures, preservation and handling, and analytical protocol for compliance monitoring for Total PCBs shall be in accordance with EPA Method 608.3. Upon approval from the Department, the permittees may use alternate analytical methods (for parameters with methods specified in 40 CFR, Part 136, the alternate methods are restricted to those listed in 40 CFR, Part 136). The quantification level shall be 0.1 ug/l unless a higher level is appropriate because of sample matrix interference. Justification for a higher quantification level shall be submitted to the Department within 30 days of such determination.

The water quality-based effluent limitation for Total PCBs is 2.6×10^{-5} µg/l (2.0×10^{-4} lbs/day) maximum monthly average. This is less than the quantification level. Control requirements are therefore established consistent with R 323.1213. **The discharge of any individual aroclor at or above the quantification level of 0.1 ug/l is a specific violation of this permit**. If concentrations of all aroclors representing a monitoring period are less than their quantification levels, the permittees will be considered to be in compliance with the permit for the monitoring period that the analyses represent, provided that the permittees are also in full compliance with the Pollutant Minimization Program for Total PCBs set forth in Part I.A.10 of this permit. For the purpose of reporting on the Daily tab of the DMR, individual aroclor results less than the quantification level shall be reported as "<0.1." For the purpose of reporting on the Summary tab of the DMR, the value reported under “Maximum PCB Aroclor” shall be the highest aroclor concentration observed during the monitoring period. This permit condition does not authorize the discharge of PCBs at levels that are injurious to the designated uses of the waters of the state or that constitute a threat to the public health or welfare.

g. Schedule of Implementation
The permittees shall implement the following for Outfall 050 (RRO) Disinfection Program:

1) On or before February 1, 2010 (submitted), the permittees shall submit for review and approval a basis of design report for the previously proposed Outfall 084 (RRO2).

2) On or before March 1, 2011 (submitted), the permittees shall submit for review and approval complete plans and specifications for Segment 1 of the previously proposed Outfall 084 (RRO2) project. Segment 1 consists of improvements undertaken at the WRRF consistent with the approved Basis of Design report.

3) On or before July 1, 2012 (submitted), the permittees shall commence construction of Segment 1, consistent with the approved plans and specifications.

4) On or before July 1, 2013 (submitted), the permittees shall submit a construction progress report for Segment 1 of the previously proposed Outfall 084 (RRO2).

5) On or before March 1, 2015, (completed) the permittees shall complete construction of Segment 1 of the previously proposed Outfall 084 (RRO2) project.

6) On or before June 1, 2016, (submitted) the permittees shall submit for review and approval a complete basis of design report, and complete plans and specifications, for the Outfall 050 (RRO) Disinfection Project (if design, bid, build). Alternatively, if DWSD chooses to pursue design-build for the Outfall 050 (RRO) Disinfection Project, DWSD shall submit on or before June 1, 2016, (submitted) a detailed engineering report for the overall project, a permitting plan (that includes a description of the construction segments), a timetable for Part 41 permit application submittal, and sufficient project schematics for the overall project.

7) On or before November 1, 2016, (completed) the permittees shall submit complete plans and specifications for at a minimum the first segment to be construction under a design-build contract.

8) On or before April 1, 2017, (commenced) the permittees shall commence construction of the RRO Disinfection Project, consistent with the approved plans and specifications.

9) On or before April 1, 2018, (submitted) the permittees shall submit a construction progress report for RRO Disinfection Project.

10) On or before April 1, 2019, (completed) the permittees shall complete construction of RRO Disinfection Project and place into full operation the facilities to achieve final effluent limits specified in Part I.A.5.

6. Combined Sewer Overflow Retention Treatment Basin Discharge Authorization, Monitoring Points 101A, 102A, 103A, 104A, 108A and 109A

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittees are authorized to discharge treated combined sewage from the Hubbell/Southfield Combined Sewer Overflow (CSO) Retention Treatment Basin (RTB), Monitoring Point 101A, through Outfall 101; from the Puritan/Fenkell CSO RTB, Monitoring Point 102A, through Outfall 102; from the Seven Mile CSO RTB, Monitoring Point 103A, through Outfall 103; from the Belle Isle RTB, Monitoring Point 108A, through Outfall 108; from the Oakwood RTB, Monitoring Point 109A, through Outfall 109; and from the Conner Creek CSO RTB Monitoring Point 104A, through Outfall 104 when the basins are full and wastewater flows exceed downstream interceptor capacity. Outfall 101, Outfall 102, Outfall 103, and Outfall 109 discharge to the Rouge River. Outfall 108 discharges to the Detroit River. Outfall 104 discharges to Conner Creek. Such discharges shall be limited and monitored by the permittees as specified below:

Influent Characteristics	Maximum Limits for Quantity or Loading Monthly	7-Day	Daily	Units	Maximum Limits for Quality or Concentration Monthly	7-Day	Event	Units	Monitoring Frequency	Sample Type
Flow	(report)	---	(report)	MGD	---	---	---	---	Daily	Report Total Daily Flow
Effluent Characteristics										
Flow	(report)	---	(report)	MGD	---	---	---	---	Daily	Report Total Daily Flow
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	---	---	---	---	(report)	---	(report)	mg/l	Event	Composite
Total Suspended Solids	---	---	---	---	(report)	---	(report)	mg/l	Event	Composite
Ammonia Nitrogen (as N)	---	---	---	---	(report)	---	(report)	mg/l	Event	Composite
Total Phosphorus (as P)	---	---	---	---	(report)	---	(report)	mg/l	Event	Composite
Fecal Coliform Bacteria										
May 1 – October 31	---	---	---	---	---	---	400	cts/100 ml	See I.A.6.a.	Grab
November 1 – April 30	---	---	---	---	---	---	1000	cts/100 ml	See I.A.6.a.	Grab
					Event Average		**Event Maximum**			
Total Residual Chlorine										
Any Event	---	---	---	---	(report)	---	(report)	mg/l	See I.A.6.a.	Grab

(See additional controls specified in Part I.A.8.)

Effluent Characteristics	Maximum Limits for Quantity or Loading Monthly	7-Day	Daily	Units	Maximum Limits for Quality or Concentration Monthly	7-Day	Event	Units	Monitoring Frequency	Sample Type
Oil & Grease (Monitoring Point 109A only)	---	---	---	---	(report)	---	(report)	mg/l	Daily During Discharge	Grab
					Event Minimum		**Event Maximum**			
pH	---	---	---	---	(report)	---	(report)	S.U.	Daily During Discharge	Grab
Dissolved Oxygen	---	---	---	---	(report)	---	---	mg/l	Daily During Discharge	Grab

a. Retention Basin Monitoring and Reporting
The permittee shall conduct retention basin monitoring and report consistent with the requirements of Part II.C.2. of this permit. The permittee shall supply the results of each sample analyzed during each discharge period.

An Event starts when combined sewage is discharged into a facility, and ends when effluent flow (if any) ceases and does not resume within 24 hours.

Influent flow shall be reported for all wet weather events where combined sewage is discharged into the facility. Influent flow reporting shall also indicate the component of the total influent flow that is dewatered to the interceptor from the facility during an event and shall be reported in the comment section of the monthly Discharge Monitoring Reports (DMR). Alternate procedures may be approved by the Department.

Effluent flow shall be reported for all events that cause discharge from the facility to the receiving waters.

Effluent sampling for $CBOD_5$, TSS, Ammonia Nitrogen (as N), and Total Phosphorus (as P) shall be by effluent flow-weighted composite sampling over the entire event. Alternate procedures for determining an event composite may be approved by the Department if existing equipment cannot reliably determine a flow-weighted composite. For purposes of reporting for a discharge event that occurs on multiple calendar days, the composite pollutant concentrations for the event shall be reported on the day the discharge event ended. Individual events shall be determined by a lack of effluent discharge for 24 hours.

For **effluent pH,** report the maximum value of any individual sample taken during the month in the "Maximum" column under "Quality or Concentration" on the monthly DMRs and the minimum value of any individual sample taken during the month in the "Minimum" column under "Quality or Concentration" on the monthly DMRs. The individual values taken during the month shall be reported on the daily DMRs.

For **effluent dissolved oxygen**, report the lowest concentration of any individual sample in the "Minimum" column under the "Quantity or Concentration" on the monthly DMRs. The individual values taken during the month shall be reported on the daily DMRs.

For **effluent Fecal Coliform Bacteria and Total Residual Chlorine,** grab samples shall be collected every two (2) hours for the first six (6) hours of the discharge and every four (4) hours thereafter for the duration of the discharge; the first sample shall be collected as soon as practical after the discharge begins. For fecal coliform, the "event maximum" shall be reported on the daily DMRs as the geometric mean of all samples taken during an event, provided that three (3) or more samples are collected. For TRC, report the average of all samples in an event as the "Event Average" and the maximum individual sample in an event as the "Event Maximum" on the daily DMRs. The goal of the effluent sampling program is to collect at least three samples during each discharge event, and samples shall be collected at shorter intervals at the onset of the event, if the permittee estimates that the event duration may be less than six hours. For purposes of reporting for a discharge event that occurs on multiple calendar days, the pollutant concentrations for the event shall be reported on the day the discharge event ended. The highest event averages for Fecal Coliform and TRC shall also be reported in the "Maximum" columns under "Quality and Concentration" on the monthly DMRs.

b. Retention Treatment Basin Dewatering

The retention treatment basin shall be promptly dewatered as in accordance with the Department Approved Consolidated Annual Report following the need to divert flow to the basin and shall be maintained in readiness for use. The discharge of sludge or residual accumulations from the basin to the surface waters is prohibited. These sludges shall be promptly removed and disposed in accordance with procedures approved by the Department.

For this permit while the Regional Operational Plan is being revised, if up to 930 MGD (including recycle) is being processed with secondary treatment at the WRRF and no primary flow is being discharged, then tributary combined or sanitary storage basins in the GLWA system may be dewatered. Such dewatering will not be considered a violation of this permit, even if contrary to the Wet Weather Event definition (see Part II.A.). Once a revised Regional Operation Plan is developed, it shall be implemented once reviewed and approved by the Department.

c. Narrative Standard

The receiving water shall contain no turbidity, color, oil films, floating solids, foams, settleable solids, or deposits as a result of this discharge in unnatural quantities which are or may become injurious to any designated use.

d. Operation and Maintenance Plan

The permittee shall assure that discharges only occur in response to rainfall (or snowmelt) events and cease soon thereafter. Any rehabilitation and maintenance needs shall be addressed to ensure adequate sewer capacity and functionality. This may be accomplished through continued implementation of the approved Operation and Maintenance Plan.

7. Combined Sewer Overflow Screening and Disinfection Facilities Discharge Authorization, Monitoring Points 105A, 106A and 107A

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittees are authorized to discharge treated combined sewage from the Leib Combined Sewer Overflow (CSO) Screening and Disinfection Facility Monitoring Point 105A through Outfall 105, from the St. Aubin CSO Screening and Disinfection Facility Monitoring Point 106A through Outfall 106, and from the Baby Creek CSO Screening and Disinfection Facility Monitoring Point 107A through Outfall 107 when the wastewater flows exceed downstream interceptor capacities. Outfall 105 and Outfall 106 discharge to the Detroit River. Outfall 107 discharges to the Rouge River. Such discharges shall be limited and monitored by the permittees as specified below:

Effluent Characteristics	Maximum Limits for Quantity or Loading Monthly	7-Day	Daily	Units	Maximum Limits for Quality or Concentration Monthly	7-Day	Daily	Units	Monitoring Frequency	Sample Type
Flow	(report)	---	(report)	MGD	---	---	---	---	Daily	Report Total Daily Flow
Carbonaceous Biochemical Oxygen Demand (CBOD5)	---	---	---	---	(report)	---	(report)	mg/l	Quarterly	Grab
Total Suspended Solids	---	---	---	---	(report)	---	(report)	mg/l	Quarterly	Grab
Ammonia Nitrogen (as N)	---	---	---	---	(report)	---	(report)	mg/l	Quarterly	Grab
Total Phosphorus (as P)	---	---	---	---	(report)	---	(report)	mg/l	Quarterly	Grab
Oil & Grease (Baby Creek CSO Screening & Disinfection Facility, only)	---	---	---	---	(report)	---	(report)	mg/l	Daily During Discharge	Grab
							Event Maximum			
Fecal Coliform Bacteria										
May 1 – October 31	---	---	---	---	---	---	400	cts/100 ml	See I.A.7.a.	Grab
November 1 – April 30	---	---	---	---	---	---	1000	cts/100 ml	See I.A.7.a.	Grab
					Event Average		**Event Maximum**			
Total Residual Chlorine Any Event (see additional controls specified in Part 1.A.8.)	---	---	---	---	(report)	---	(report)	mg/l	See I.A.7.a.	Grab
					Event Minimum		**Event Maximum**			
pH	---	---	---	---	(report)	---	(report)	S.U.	Daily During Discharge	Grab
Dissolved Oxygen	---	---	---	---	(report)	---	---	mg/l	Daily During Discharge	Grab

a. Screening and Disinfection Facilities Monitoring and Reporting
The permittees shall monitor screening and disinfection facilities performance and report the monitoring consistent with the requirements of Part II.C.2. of this permit. The permittees shall supply the results of each sample taken during each discharge period.

Effluent flow shall be reported for all events that cause discharge from the facility to the receiving waters.

For **effluent pH**, report the maximum value of any individual sample taken during the month in the "Maximum" column under "Quality or Concentration" on the monthly DMRs and the minimum value of any individual sample taken during the month in the "Minimum" column under "Quality or Concentration" on the monthly DMRs. The individual values taken during the month shall be reported on the daily DMRs.

For **effluent dissolved oxygen**, report the lowest concentration of any individual sample in the "Minimum" column under the "Quantity or Concentration" on the monthly DMRs. The individual values taken during the month shall be reported on the daily DMRs.

For **effluent Fecal Coliform Bacteria and Total Residual Chlorine**, grab samples shall be collected every two (2) hours for the first six (6) hours of the discharge and every four (4) hours thereafter for the duration of the discharge; the first sample shall be collected as soon as practical after the discharge begins. For fecal coliform, the "event maximum" shall be reported on the daily DMRs as the geometric mean of all samples taken during an event, provided that three (3) or more samples are collected. For TRC, report the average of all samples in an event as the "Event Average" and the maximum individual sample in an event as the "Event Maximum" on the daily DMRs. The goal of the effluent sampling program is to collect at least three samples during each discharge event, and samples shall be collected at shorter intervals at the onset of the event, if the permittees estimate that the event duration may be less than six hours. For purposes of reporting for a discharge event that occurs on multiple calendar days, the pollutant concentrations for the event shall be reported on the day the discharge event ended. The highest event averages for Fecal Coliform and TRC shall also be reported in the "Maximum" columns under "Quality and Concentration" on the monthly DMRs.

b. Narrative Standard
The receiving water shall contain no turbidity, color, oil films, floating solids, foams, settleable solids, or deposits as a result of this discharge in unnatural quantities which are or may become injurious to any designated use.

c. Sampling Locations
The sampling locations for the pollutants indicated in Part I.A.7 of this permit shall be representative of the effluent and consistent with the locations approved by the Department.

d. Operation and Maintenance Plan
The permittees shall assure that discharges only occur in response to rainfall (or snowmelt) events and cease soon thereafter. Any rehabilitation and maintenance needs shall be addressed to ensure adequate sewer capacity and functionality. This may be accomplished through continued implementation of the approved Operation and Maintenance Plan.

e. Treatment Facility Dewatering
The treatment facility shall be promptly dewatered (if applicable) in accordance with the Department Approved Consolidated Annual Report possible following the need to divert flow to the facility and shall be maintained in readiness for use. The discharge of sludge or residual accumulations from the facility to the surface waters is prohibited.

For this permit while the Regional Operational Plan is being revised, if up to 930 MGD (including recycle) is being processed with secondary treatment at the WRRF and no primary flow is being discharged, then tributary combined or sanitary storage basins in the GLWA system may be dewatered. Such dewatering will not be considered a violation of this permit, even if contrary to the Wet Weather Event definition (see Part II.A). Once a revised Regional Operation Plan is developed, it shall be implemented once reviewed and approved by the Department.

8. Total Residual Chlorine Minimization Program

The goal of the Total Residual Chlorine (TRC) Minimization Program is operate the CSO RTBs and the CSO screening and disinfection facilities in a manner that will provide consistent, effective disinfection while minimizing the discharge of TRC, recognizing the overall goal is compliance with the TRC Final Acute Value of 0.038 mg/l at any point in the receiving stream, unless it is determined by the Department by a permit action that a higher level is acceptable.

In addition, the Operational Goals for this facility are 1.5 mg/l TRC as an event average value and 2.0 mg/l (November – April) or 3.0 mg/l (May – October) TRC as an event instantaneous maximum value.

a. TRC Minimization Assessment (Assessment) (submitted)
The permittees shall prepare and conduct a program to assess the capability of each of the 5 CSO RTBs and screening and disinfection facilities as agreed to (a subset of those listed in Part I.A.6. and Part I.A.7.), to minimize the discharge of TRC. Each Assessment shall be conducted according to a schedule acceptable to the Department. Compliance with the Fecal Coliform Bacteria effluent limits set forth in Part I.A.6. and Part I.A.7. of this permit shall be maintained during each Assessment. Each Assessment shall include an evaluation of various operational practices under a variety of wet weather events to identify measures which can be taken to reduce TRC discharge concentrations. Upon notification by the Department, the permittees shall begin conducting each Assessment over an 18-month period and shall submit a report summarizing the results to the Department within 60 days of completion. An extension of an Assessment period beyond 18 months may be requested by the permittees for approval by the Department in the event that a sufficient number of CSO discharge events have not occurred to allow for an adequate assessment of operational procedures.

Each Assessment report shall include the expected achievable TRC discharge concentrations, recommendations as to specific protocols to be used to manage sodium hypochlorite (NaOCl) dosage rates under various conditions to achieve the Operational Goals, and recommended facility modifications to enhance the ability to control TRC levels while maintaining compliance with the Fecal Coliform Bacteria limits. Specific procedures for adjustment of NaOCl feed rates to minimize the discharge of TRC shall be submitted as part of the Operational Plan (and revised as appropriate in annual updates), as required by Part I.A.15.e. of this permit. The TRC minimization procedures, developed as part of each Assessment, shall be implemented upon approval by the Department.

b. Operational Goals
Upon completion of each Assessment, the permittees shall operate the facility with a goal of 1.5 mg/l TRC as an event average value and a goal of 2.0 mg/l (November – April) or 3.0 mg/l (May – October) TRC as an event instantaneous maximum value. If upon completion of an Assessment, the permittees determine the facility can achieve lower TRC goals than those specified above, then the permittees shall operate the facility to achieve the lower TRC levels. If either TRC goal is exceeded for a CSO discharge event, the permittees shall submit a written report to the Department within seven (7) days explaining the cause of the exceedance and describing the corrective measures that will be undertaken to prevent a future recurrence.

c. In-Stream TRC Effluent Plume Evaluation (submitted)
The permittees shall conduct an evaluation of the in-stream TRC effluent plume attributable to each of the agreed-to 5 CSO RTBs screening and disinfection facility discharges. The evaluation shall identify the location and size of the TRC effluent plume during and after CSO discharge events and identify the maximum TRC concentrations in-stream at various downstream locations. Upon notification by the Department to begin conducting each Assessment (Part I.A.8.a.), the permittees shall have 60 days to submit a TRC effluent plume work plan describing the proposed evaluation including sampling locations and a proposed implementation schedule such that the In-Stream TRC Effluent Plume Evaluation shall occur after completion of each Assessment and when the operational goals begin. The permittees shall implement the In-Stream TRC Effluent Plume Evaluation following the schedule upon Department approval of the TRC effluent plume work plan. The permittees shall submit a report documenting the results of the TRC Effluent Plume Evaluation within 90 days after completion of the field work.

d. Permit Re-Opener Clause
Upon completion of each TRC Minimization Assessment and each In-Stream TRC Effluent Plume Evaluation, the Department may reevaluate the need for TRC effluent limitations. This permit may be

modified in accordance with applicable laws and rules to incorporate such revisions as may be necessary to comply with Water Quality Standards at the time of discharge.

e. Best Management Practices/Operator Coordination Work Group (Work Group)
The permittees shall attend and participate in at least quarterly Work Group meetings with representatives from other CSO facilities in Southeast Michigan to exchange information and share experiences relating to the operation and maintenance of CSO control facilities. Such Work Group meetings shall be used to develop Best Management Practices (BMPs) relating to CSO RTB operation, with an initial focus on actions to minimize the TRC discharge levels. At a minimum, the Work Group shall include representatives of the following CSO facilities: Birmingham CSO RTB, Bloomfield Village CSO RTB, Dearborn CSO, GLWA WRRF CSO Facilities, Inkster-Dearborn Heights CSO, Oakland County-Acacia Park (Acacia Park CSO Drainage District, Village of Beverly Hills, City of Birmingham), Redford Township CSO, River Rouge CSO, Wayne County – Dearborn Heights CSO, Wayne County – Inkster CSO, Wayne County – Inkster – Dearborn Heights CSO, and Wayne County – Redford – Livonia CSO. The Work Group shall submit an annual report summarizing the meetings and BMPs developed to the Department by March 1st of each year.

9. Additional Monitoring Requirements

As a condition of this permit, the permittees shall monitor the discharge from monitoring points 049F and 050A for the constituents identified below. This monitoring is an application requirement of 40 CFR 122.21(j), effective December 2, 1999. Testing shall be conducted in October 2019, May 2020, March 2021, and August 2021. Grab samples shall be collected for total phenols, and the Volatile Organic Compounds identified below. For all other parameters, 24-hour composite samples shall be collected.

Test species for whole effluent toxicity monitoring shall include fathead minnow **and** *Ceriodaphnia dubia*. If the permittees have received Department approval to conduct chronic toxicity testing using the more sensitive species identified in the toxicity database, the first three (3) tests required above may be performed using the more sensitive species. The last (4th) test shall be conducted using both species. Testing and reporting procedures shall follow procedures contained in EPA-821-R-02-013, “Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms” (Fourth Edition). When the effluent ammonia nitrogen (as N) concentration is greater than 3 mg/l, the pH of the toxicity test shall be maintained at a pH of 8 Standard Units. Acute and chronic toxicity data shall be included in the reporting for the toxicity test results. Toxicity test data acceptability is contingent upon the validation of the test method by the testing laboratory. Such validation shall be submitted to the Department upon request.

For selected parameters required under this section, the maximum acceptable quantification levels and analytical methods shall be as specified under Quantification Levels and Analytical Methods for Selected Parameters, below, unless a higher quantification level is appropriate because of sample matrix interference. Justification for higher quantification levels shall be submitted to the Department within 30 days of such determination.

The results of such additional monitoring shall be submitted with the application for reissuance (see the cover page of this permit for the application due date). The permittees shall notify the Department within 14 days of completing the monitoring for each month specified above in accordance with Part II.C.5. Additional reporting requirements are specified in Part II.C.11. The permittees shall report to the Department any whole effluent toxicity test results greater than 1.0 TU_A or 1.0 TU_C within five (5) days of becoming aware of the result. If, upon review of the analysis, it is determined that additional requirements are needed to protect the receiving waters in accordance with applicable water quality standards, the permit may then be modified by the Department in accordance with applicable laws and rules.

Whole Effluent Toxicity
chronic toxicity

Hardness
calcium carbonate

Metals (Total Recoverable), Cyanide and Total Phenols

antimony	arsenic	barium	
beryllium	boron	cadmium	chromium
copper	lead	nickel	
selenium	silver	thallium	zinc
total phenolic compounds			

Volatile Organic Compounds

acrolein	acrylonitrile	benzene	bromoform
carbon tetrachloride	chlorobenzene	chlorodibromomethane	chloroethane
2-chloroethylvinyl ether	chloroform	dichlorobromomethane	1,1-dichloroethane
1,2-dichloroethane	trans-1,2-dichloroethylene	1,1-dichloroethylene	1,2-dichloropropane
1,3-dichloropropylene	ethylbenzene	methyl bromide	methyl chloride
methylene chloride	1,1,2,2,-tetrachloroethane	tetrachloroethylene	toluene
1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethylene	vinyl chloride

Acid-Extractable Compounds

4-chloro-3-methylphenol	2-chlorophenol	2,4-dichlorophenol	2,4-dimethylphenol
4,6-dinitro-o-cresol	2,4-dinitrophenol	2-nitrophenol	4-nitrophenol
Pentachlorophenol	phenol	2,4,6-trichlorophenol	

Base/Neutral Compounds

acenaphthene	acenaphthylene	anthracene	benzidine
benzo(a)anthracene	benzo(a)pyrene	3,4-benzofluoranthene	benzo(ghi)perylene
benzo(k)fluoranthene	bis(2-chloroethoxy)methane	bis(2-chloroethyl)ether	bis(2-chloroisopropyl)ether
bis(2-ethylhexyl)phthalate	4-bromophenyl phenyl ether	butyl benzyl phthalate	2-chloronaphthalene
4-chlorophenyl phenyl ether	chrysene	di-n-butyl phthalate	di-n-octyl phthalate
dibenzo(a,h)anthracene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
3,3'-dichlorobenzidine	diethyl phthalate	dimethyl phthalate	2,4-dinitrotoluene
2,6-dinitrotoluene	1,2-diphenylhydrazine	fluoranthene	fluorene
Hexachlorobenzene	hexachlorobutadiene	hexachlorocyclo-pentadiene	hexachloroethane
indeno(1,2,3-cd)pyrene	isophorone	naphthalene	nitrobenzene
n-nitrosodi-n-propylamine	n-nitrosodimethylamine	n-nitrosodiphenylamine	phenanthrene
pyrene	1,2,4-trichlorobenzene		

Quantification Levels and Analytical Methods for Selected Parameters

Parameter	**Quantification Level**		**Analytical Method**
1,2-Diphenylhydrazine (as Azobenzene)	3.0	ug/l	
2,4,6-Trichlorophenol	5.0	ug/l	
2,4-Dinitrophenol	19	ug/l	
3,3’-Dichlorobenzidine	1.5	ug/l	EPA Method 605
4-chloro-3-methylphenol	7.0	ug/l	
4,4’-DDD	0.05	ug/l	EPA Method 608
4,4’-DDE	0.01	ug/l	EPA Method 608
4,4’-DDT	0.01	ug/l	EPA Method 608
Acrylonitrile	1.0	ug/l	
Aldrin	0.01	ug/l	EPA Method 608
Alpha-Hexachlorocyclohexane	0.01	ug/l	EPA Method 608
Antimony, Total	1	ug/l	
Arsenic, Total	1	ug/l	
Barium, Total	5	ug/l	
Benzidine	0.1	ug/l	EPA Method 605
Beryllium, Total	1	ug/l	
Beta-Hexachlorocyclohexane	0.01	ug/l	EPA Method 608

Parameter	Quantification Level		Analytical Method
Bis (2-Chloroethyl) Ether	1.0	ug/l	
Boron, Total	20	ug/l	
Cadmium, Total	0.2	ug/l	
Chlordane	0.01	ug/l	EPA Method 608
Chromium, Hexavalent	5	ug/l	
Chromium, Total	10	ug/l	
Copper, Total	1	ug/l	
Cyanide, Available	2	ug/l	EPA Method OIA 1677
Cyanide, Total	5	ug/l	
Delta-Hexachlorocyclohexane	0.01	ug/l	EPA Method 608
Dieldrin	0.01	ug/l	EPA Method 608
Di-N-Butyl Phthalate	9.0	ug/l	
Endosulfan I	0.01	ug/l	EPA Method 608
Endosulfan II	0.01	ug/l	EPA Method 608
Endosulfan Sulfate	0.01	ug/l	EPA Method 608
Endrin	0.01	ug/l	EPA Method 608
Endrin Aldehyde	0.01	ug/l	EPA Method 608
Fluoranthene	1.0	ug/l	
Heptachlor	0.01	ug/l	EPA Method 608
Heptachlor Epoxide	0.01	ug/l	EPA Method 608
Hexachlorobenzene	0.01	ug/l	EPA Method 612
Hexachlorobutadiene	0.01	ug/l	EPA Method 612
Hexachlorocyclopentadiene	0.01	ug/l	EPA Method 612
Hexachloroethane	5.0	ug/l	
Lead, Total	1	ug/l	
Lindane	0.01	ug/l	EPA Method 608
Lithium, Total	10	ug/l	
Mercury, Total	0.5	**ng/l**	EPA Method 1631E
Nickel, Total	5	ug/l	
PCB-1016	0.1	ug/l	EPA Method 608.3
PCB-1221	0.1	ug/l	EPA Method 608.3
PCB-1232	0.1	ug/l	EPA Method 608.3
PCB-1242	0.1	ug/l	EPA Method 608.3
PCB-1248	0.1	ug/l	EPA Method 608.3
PCB-1254	0.1	ug/l	EPA Method 608.3
PCB-1260	0.1	ug/l	EPA Method 608.3
Pentachlorophenol	1.8	ug/l	
Perfluorooctane sulfonate (PFOS)	2.0	ng/l	ASTM D7979 or an isotope dilution method (sometimes referred to as Method 537 modified)
Perfluorooctanoic acid (PFOA)	2.0	ng/l	ASTM D7979 or an isotope dilution method (sometimes referred to as Method 537 modified)
Phenanthrene	1.0	ug/l	
Selenium, Total	1.0	ug/l	

Parameter	Quantification Level		Analytical Method
Silver, Total	0.5	ug/l	
Strontium, Total	1000	ug/l	
Sulfide, Dissolved	20	ug/l	
Thallium, Total	1	ug/l	
Toxaphene	0.1	ug/l	EPA Method 608
Vinyl Chloride	0.25	ug/l	
Zinc, Total	10	ug/l	

10. Pollutant Minimization Program for Total Mercury and PCBs

The goal of the Pollutant Minimization Program is to maintain the effluent concentration of total mercury at or below 1.3 ng/l and the final effluent limitations for Total Polychlorinated Biphenyls (PCBs). The permittees shall continue to implement the Pollutant Minimization Program approved on November 9, 1995, and updated in October, 1996, and modifications thereto, to proceed toward the goal. The Pollutant Minimization Program includes the following:

a. an annual review and semi-annual monitoring of potential sources of mercury and PCBs entering the wastewater collection system, including wet weather sources such as runoff/contributions from contaminated sites in the collection area;

b. a program for quarterly monitoring of influent and periodic monitoring of sludge for mercury and PCBs; and

c. implementation of reasonable cost-effective control measures when sources of mercury and/or PCBs are discovered. Factors to be considered include significance of sources, economic considerations, and technical and treatability considerations.

On or before October 1st of each year, the permittees shall submit a status report for the previous calendar year to the Department that includes 1) the monitoring results for the previous year, 2) an updated list of potential mercury and/or PCB sources, and 3) a summary of all actions taken to reduce or eliminate identified sources of mercury and/or PCBs.

Any information generated as a result of the Pollutant Minimization Program set forth in this permit may be used to support a request to modify the approved program or to demonstrate that the Pollutant Minimization Program requirement has been completed satisfactorily.

A request for modification of the approved program and supporting documentation shall be submitted in writing to the Department for review and approval. The Department may approve modifications to the approved program (approval of a program modification does not require a permit modification), including a reduction in the frequency of the requirements under items a. and b.

This permit may be modified in accordance with applicable laws and rules to include additional mercury and/or PCB conditions and/or limitations as necessary.

11. Water Resource Recovery Facility Wet Weather Operational Plan

The approved Water Resource Recovery Facility Wet Weather Operational Plan provides the protocol for operations during the interim period before full completion of the Long-term CSO Control Plan. This plan details the necessary requirements to maximize wet weather treatment at the WRRF, while complying with effluent limits and all other conditions of this permit, and minimizing untreated combined sewage discharges in the tributary collection system.

The GLWA WRRF Wet Weather Operational Plan shall be coordinated with the Collection System and CSO Treatment Facilities Operational Plan that is required in accordance with Part I.A.15.d. of this permit. Annually, on or before April 1st, the permittees shall submit an update of the Water Resource Recovery Facility Wet Weather Operational Plan in conjunction with the Collection System and CSO Treatment Facilities Operational Plan update as part of the Consolidated Annual Report to the Department for review and approval.

12. Facilities Improvement Program

The permittees shall continue to meet the sludge dewatering, conveyance, and final disposal requirements; submit and implement the solids disposal plans; correct the alum sludge issue; submit the WRRF shutdown schedules; and develop and implement the asset management program as detailed below.

a. WRRF Solids Processing Requirements and Corrections

1) Capacity for sludge dewatering, conveyance, and final disposal; Required maximum solids inventory loads.

The permittees shall ensure that sludge dewatering equipment, sludge conveyance equipment, and final sludge disposal capability is available at the GLWA WRRF as follows:

a) The permittees shall ensure that the WRRF sludge dewatering equipment, sludge conveyance equipment, and final sludge disposal capability are maintained for use; and in good operational working order to meet the following requirements:

(1) Average capacity of 500 dry tons per day (dtpd), calculated as a calendar monthly average;

(2) Peak capacity of 850 dtpd, calculated as a 10-day average;

(3) The peak 10-day average shall be available during any wet weather event when the WRRF is operated in the “Storm Period” of the currently approved WRRF Wet Weather Operational Plan as required by Part I.A.11.

The permittees shall also:

(4) Notify the Department within one business day if solids are recycled from the gravity thickeners to the head of the WRRF for more than 72 hours and provide an explanation for the recycled solids. Recycled solids are defined as a TSS overflow concentration of 1000 mg/l or greater from Complex A thickeners;

(5) Maintain a monthly average solids inventory of less than 750 dtpd, when there are less than 5 days of discharge from Outfall 049A during the month, and maintain a calendar quarterly average solids inventory not to exceed 1000 dtpd. Solids inventory is defined as the total solids in gravity thickener complexes A and B, determined daily in dtpd;

(6) This Section will be reviewed during the next NPDES reissuance based on WRRF performance; and

(7) The permittees are allowed to submit to the Department for review and approval a request to modify the numerical levels specified in Part I.A.12.a. of this permit. This modification request shall include supporting rationale for the revised numerical levels.

2) Long-Term Solids Disposal Plan

a) The permittees submitted to the Department for review and approval a Long-Term Solids Disposal Plan (LTSDP). This Solids Disposal Plan is designed to ensure the availability of sufficient sludge dewatering equipment and sludge disposal capability to meet the capacity requirements specified in Parts I.A.12.a.1).a).(1)&(2) of this permit. The permittees shall implement the LTSDP in accordance with the following schedule:

(1) On or before December 31, 2018, (submitted) the permittees shall submit for approval, a disposal plan for 250 dtpd. This requirement is based on the LTSDP approved on September 24, 2013. Upon notification from the Department, the permittees shall implement the approved disposal plan;

(2) On or before December 31, 2025, the permittees shall complete implementation of the approved plan referenced in item (1) above;

b) The GLWA are advised that implementation of individual elements of the LTSDP may require Part 41 wastewater construction permits or may require other Department approvals.

3) Alum Sludge Correction
The permittees shall continue to implement the approved plan to correct the solids dewatering concerns at the WRRF due to alum sludge discharges from GLWA water treatment plants (WTPs) into the collection system.

Annually, on or before September 1st the permittees shall submit a report to the Department describing if the implemented plan continued to meet the conditions specified above for the preceding fiscal year (July 1 – June 30).

Part 41 construction permits at the WRRF and/or Act 399 construction permits at the specific WTPs may be needed depending on the components of the approved plan.

b. WRRF Quarterly Shutdown Schedules
On or before December 1, March 1, June 1, and September 1, the permittees shall submit quarterly WRRF Shutdown Schedules, until notified in writing by the Department. Consistent with the quarterly dates indicated above, these schedules shall be submitted to the Department in a mutually agreeable format one month prior to the start of each calendar quarter for review and approval. Each quarterly schedule shall detail the primary treatment capacity, secondary treatment capacity, and sludge processing capacity that is planned to be available during the upcoming quarter, considering coordinated shutdowns necessary to complete all rehabilitation and other projects. The shutdown schedules shall be proposed to minimize environmental impact and maximize available treatment during construction of all projects, consistent with the requirements of the rules associated with Act 451, Part 41, being 299.2943 and 299.2955(1) and (3).

c. Operation, Maintenance & Replacement/Asset Management
The permittees shall at all times properly operate and maintain all facilities (i.e., sewer system, treatment works, as defined in Part 41 of Act 451, 1994 as amended, and control systems) that are installed or used by the permittees to operate the treatment works and sewer system and achieve and maintain compliance with the conditions of this permit. The requirements of an asset management program contain goals of effective performance, adequate funding, and adequate operator staffing and training. Asset management is a planning process focused on gaining optimum value for each asset and providing the financial resources to rehabilitate and replace them when necessary; Asset management is centered on a framework of five (5) core elements: the current state of the assets, the required sustainable level of service, the assets critical to sustained performance, the best-value life-cycle costs, and the best long-term funding strategy.

1) The permittees shall continue to implement the approved Asset Management Program that addresses the following items:

- A comprehensive fixed asset inventory that is maintained, managed, and updated within a computerized maintenance management system (CMMS),

- A comprehensive inventory of the collection system fixed assets and collection system map,
- A Preventive Maintenance Program that may include predictive and reliability centered maintenance,
- A Needs Assessment updated every five years as part of the Project Plan (due on or before October 1, 2021), including condition assessment and evaluation of service level,
- An assessment of asset criticality and risk management,
- A capital planning process,
- A Scheduled Replacement Program (SRP) for assets,
- Monitoring and periodic performance evaluation through Key Performance Indicators (KPIs),
- Management oversight of system performance.

The permittees' Asset Management Program submitted on January 1, 2014, was approved on January 14, 2014, and substantially revised on September 29, 2017.

2) An Annual Report covering implementation of the Asset Management Program during the prior Fiscal Year (July 1 – June 30) shall be prepared by the permittees and submitted to the Department on or before October 1st. The Annual Report shall include:

a) A description and evaluation of the sufficiency of the staffing levels maintained during the year,

b) A description and evaluation of the sufficiency and adequacy of inspections and maintenance activities conducted and corrective actions taken during the previous year,

c) Expenditures for collection system maintenance activities, treatment works maintenance activities, corrective actions, and capital investment during the previous year, compared with budged/projected expenditures, including an evaluation of the sufficiency of expenditures,

d) A summary of asset/areas identified for inspection/action (including capital improvement) in the upcoming year based on the five (5) core elements and the criticality and risk analysis,

e) A maintenance budget and capital improvement budget for the upcoming year, based on implementation of an effective asset management program that meets the five (5) core elements,

f) An updated estimate of the revenue necessary to complete anticipated OM&R activities, the associated rate schedule impact, and an assessment of the adequacy of the revenue to perform necessary OM&R work, and

g) A description of the progress made towards completion of the outstanding tasks as described in the previous year's Asset Management Annual Report and an updated schedule for completion of any outstanding tasks.

d. Staffing Plan

A Staffing Plan, as required by ACO-00131, has been approved by the Department. The GLWA shall provide an adequate staffing level, in accordance with the approved Staffing Plan, to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit. During the term of ACO-00131, a change in the minimum staffing level may be requested by the GLWA by submittal of a revised Staffing Plan, including training requirements, and may be revised only by mutual agreement in writing between the GLWA and the Department. Should ACO-00131 be terminated, then the staffing plan shall be updated as required by the Operations and Maintenance Manual (Part II.C.14 of this permit), and an up to date copy of the manual shall be kept at the WRRF. The Department may review the manual in whole or in part (i.e. staffing) at their discretion and require modifications to it if portions are determined to be inadequate.

e. Key Performance Indicator Monthly Report
The permittee shall update the Key Performance Indicator (KPI) report monthly. If Administrative Consent Order No. ACO-000131, as amended, is terminated, the KPI report shall be submitted by the last day of the month following the termination of the ACO.

f. Public Participation
The permittees will participate in Department initiated public outreach meetings during the term of this permit as resources allow and provided there is adequate notification by the Department.

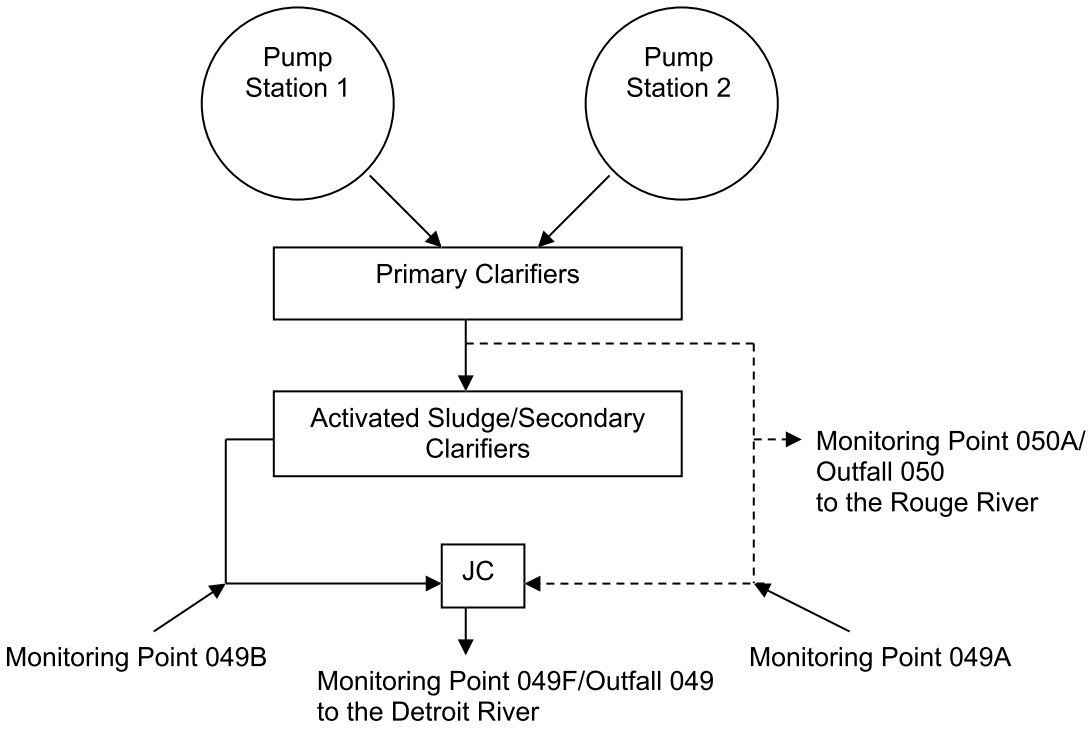
13. Reopener for Primary and Secondary Treatment Capacity

The permittees are required to maintain a wet weather primary treatment capacity of 1700 MGD (raw) and wet weather secondary treatment capacity of 930 MGD (which includes recycle). When the elevation of the influent wet well is greater than 85 feet and the facility is not pumping at 1700 MGD (raw), the discharge from untreated combined sewage overflow (CSO) upstream of the facility are not authorized, unless caused by localized storm conditions.

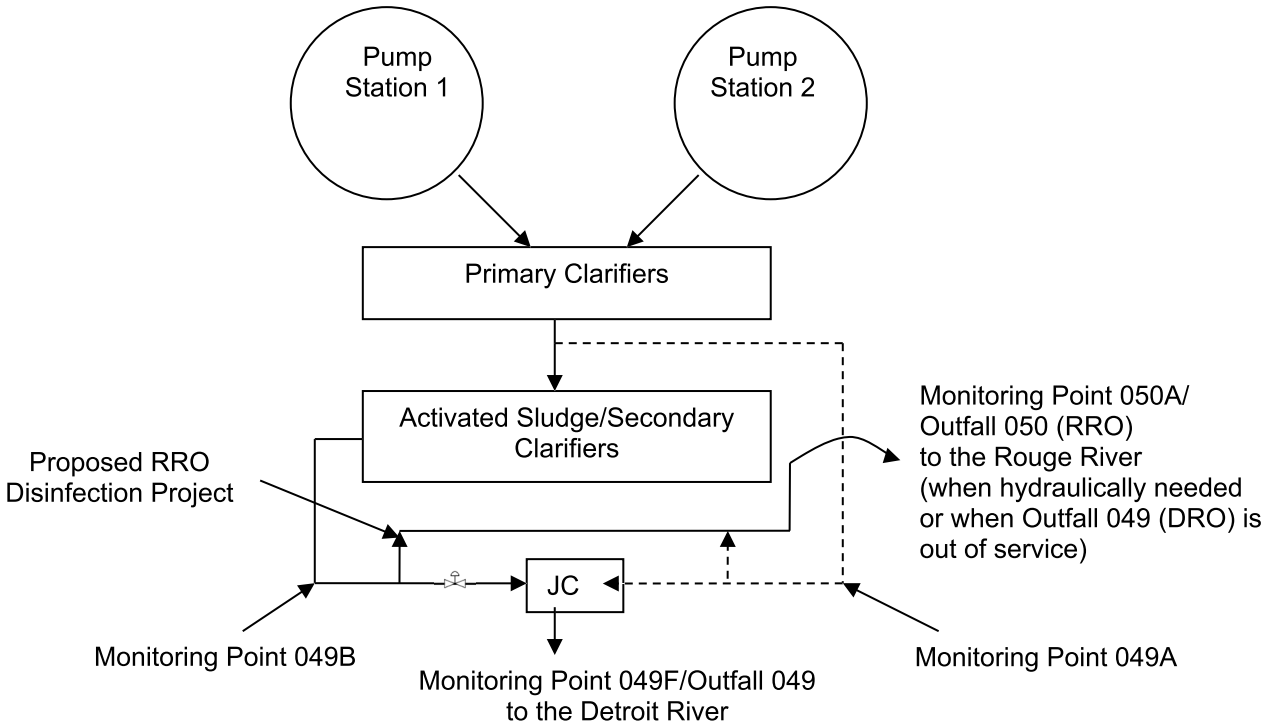
These required wet weather treatment capacities may be revised if new/altered wet weather conditions (such as initiation of operation of upstream CSO facilities, etc.) indicate that either less or more flow can be effectively processed. The criteria used to determine whether the required wet weather primary treatment capacities should be revised must include additional plant evaluation under the updated conditions, using testing procedures approved by the Department.

For reference, outfall/monitoring point designations are shown on the following diagrams:

Prior to Initiation of Operation of RRO Disinfection Project



After Initiation of Operation of RRO Disinfection Project



14. Outfalls Prohibited from Discharge to Combined Sewer System

The following Outfalls are prohibited from discharge except as provided for in Part II.C.9.:

OUTFALL	LOCATION	LAT/LONG	RECEIVING STREAM
004	Fairview (DWF) Pump Station (P28 through P31) Parkview & Detroit River - **Emergency only**	42°21'20" 082°58'01"	Discharge to Detroit River (Stop-logged)
014	Dubois (B12) Dubois & Detroit River	42°20'01" 083°01'19"	Detroit River
051	Carbon (B46) Carbon & Rouge River	42°17'07" 083°08'17"	Rouge River
054	Fort St. (DWSD Northwest) Interceptor) (B50) South Fort St. & Rouge River (West Shore)	42°17'25" 083°08'35"	Rouge River
056	Fort St. (Oakwood District) (B49) South Fort St. & Rouge River (West Shore)	42°17'27" 083°08'33"	Rouge River
080	Fox Creek Backwater Gates (B01) East Jefferson & Fox Creek.	42°22'28" 082°56'27"	Fox Creek to Detroit River

The permittees shall provide for ongoing monitoring (Flow, Duration) for these outfalls should they discharge. This monitoring shall be used to comply with the requirements of Section 324.3112(a) of The Michigan Act (See Part I.A.16.).

15. Discharges from Combined Sewer System

a. Limited Discharge Authorization

The permittees are required to utilize, to the maximum extent practicable, available sewerage system transportation capabilities for the delivery of combined sewage to treatment facilities. For an interim period during which the amended Long-Term CSO Control Plan is to be implemented, the permittees are authorized to discharge during wet weather events (see Part II.A.) combined sewage from the outfalls and locations listed below in accordance with the following conditions:

1) a flow rate equivalent to the peak dry weather flow rate has been conveyed to the secondary treatment facilities for treatment without bypass,

2) the total sewerage system storage and transportation capacity for conveyance of wet weather flows to the treatment facilities for treatment has been utilized within the hydraulic design constraints of the system,

3) all primary treatment plant capacity and secondary treatment plant capacity has been utilized in accordance with the approved WRRF Wet Weather Operation Plan (Part 1.A.11.), unless a storm event is localized to the extent that the hydraulic capacity of a portion of the collection system (considering storage) is exceeded prior to reaching plant capacities, and

4) the permittees are in full compliance with all requirements as set forth in Part I.A.16. Combined Sewer Overflow discharges to the Rouge River, the Detroit River, and the Old Channel of the Rouge River are authorized until prohibited, eliminated, or adequately treated to meet water quality standards at times of discharge in accordance with the requirements below, and as specified in Part 1.A.15.f. and g.

5) the outfalls that immediately follow this paragraph are included in the Limited Discharge Authorization. There are some untreated CSO outfalls that appear to discharge only during extreme events. Extreme is defined as; (a) no more than one untreated discharge in ten years from a CSO outfall during the April 1 through October 31 growth period, (b) modeled to not discharge at the 25 year – 24 hour event (during growth period, with normal soil moisture, rainfall distributed to a SCS Type II distribution), or (c) monitored to occur only at rainfalls greater than 4 inches in a 24 hour period. The Department does not intend to require construction of treatment facilities at the following outfalls should they continue to only discharge at the extreme event. This addresses CSO outfalls consistently with SSO outfalls according to the 2002 SSO Policy and 2003 Clarification Statement. The list of untreated CSO outfalls that only discharge at the extreme event is flexible and may be adjusted with the adaptive management CSO correction program.

OUTFALL	LOCATION	LAT/LONG	RECEIVING STREAM
029	Rosa Parks (B27) Rosa Parks & Detroit River	42°19'13" 083°03'56"	Detroit River
030	Vermont (B28) Vermont (extended) & Detroit River	42°19'06" 083°04'09"	Detroit River
037	McKinstry (B35) McKinstry & Detroit River	42°18'19" 083°05'13"	Detroit River
042	Campbell (B40) Campbell & Detroit River	42°18'01" 083°05'30"	Detroit River
048	Pulaski (B59A &B) Pulaski & Rouge River	42°17'21" 083°07'11"	Old Channel Rouge River

6) the outfalls that immediately follow this paragraph are also included in the Limited Discharge Authorization. There are some untreated CSOs that appear to discharge at a minimal frequency and volume. Minimal discharge is defined as actual monitoring of a volume less than 0.3 MG of discharge over a five year period. The Department does not intend to require construction of treatment facilities at the following outfalls should they continue to only discharge at this minimal frequency and volume. The list of untreated CSO outfalls that only discharge at a minimal frequency and volume is flexible and may be adjusted with the adaptive management CSO correction program.

OUTFALL	LOCATION	LAT/LONG	RECEIVING STREAM
024	Griswold (B22) Griswold & Detroit River	42°19'35" 083°02'28"	Detroit River
032	Twenty-First St. (B30) Twenty-First St. & Detroit River	42°18'53" 083°04'31"	Detroit River
034	West Grand Blvd. (B32) West Grand Blvd. & Detroit River	42°18'41" 083°04'50"	Detroit River
035	Swain (B33) Swain & Detroit River	42°18'35" 083°04'56"	Detroit River
036	Scotten (B34) Scotten & Detroit River	42°18'31" 083°05'02"	Detroit River
041	Junction (B39) Junction & Detroit River	42°18'07" 083°05'25"	Detroit River
043	Dragoon (Livernois Relief) (B41) Dragoon (extended) & Detroit River	42°17'49" 083°05'41"	Detroit River
047	Dearborn St. (B45) Dearborn St. & Rouge River	42°17'26" 083°06'59"	Old Channel Rouge River
073	Riverdale (B79) Florence & Rouge River	42°24'36" 083°16'13"	Rouge River

7) the outfalls that immediately follow this paragraph are also included in the Limited Discharge Authorization. These are untreated CSOs that represent the remaining non-core outfalls that will be required to be addressed under the adaptive management CSO correction program. They include the high-priority non-core CSOs. Note that the list of untreated CSO outfalls is flexible and may be adjusted with the adaptive management CSO correction program.

OUTFALL	LOCATION	LAT/LONG	RECEIVING STREAM
005	McClellan (B03) McClellan (extended) & Detroit River	42°21'20" 082°58'02"	Detroit River
006	Fischer (B04) Fischer & Detroit River	42°21'16" 082°59'15"	Detroit River
007	Iroquois (B05) Iroquois & Detroit River	42°21'14" 082°59'21"	Detroit River
008	Helen (B06) Helen & Detroit River	42°20'40" 083°00'06"	Detroit River
009	Mt. Elliott (B07) Mt. Elliott & Detroit River	42°20'24" 083°00'28"	Detroit River
011	Adair (B09) Adair & Detroit River	42°20'16" 083°00'41"	Detroit River
012	Joseph Campau (B10) Joseph Campau & Detroit River	42°10'08" 083°01'02"	Detroit River
016	Orleans Relief (B15) Orleans (Eastside of) & Detroit River	42°19'54" 083°01'36"	Detroit River
017	Orleans (B14) Orleans (Westside of) & Detroit River	42°19'53" 083°01'37"	Detroit River
018	Riopelle (B16) Riopelle & Detroit River	42°19'52" 083°01'42"	Detroit River
019	Rivard (B17) Rivard & Detroit River	42°19'48" 083°01'55"	Detroit River
020	Hastings (B18) Schweizer Place & Detroit River	42°19'46" 083°02'03"	Detroit River
021	Randolph (B19) Randolph & Detroit River	42°19'29" 083°02'26"	Detroit River
022	Bates (B20) Bates & Detroit River	42°19'38" 083°02'32"	Detroit River
023	Woodward (B21) Woodward & Detroit River	42°19'37" 083°02'35"	Detroit River
025	First-Hamilton (B23) First (extended) & Detroit River	42°19'30" 083°02'57"	Detroit River
026	Third St. (B24) Third St. & Detroit River	42°19'28" 083°03'07"	Detroit River

OUTFALL	LOCATION	LAT/LONG	RECEIVING STREAM
027	Cabacier (B25) Brooklyn (extended) & Detroit River	42°19'24" 083°03'26"	Detroit River
028	Eleventh St. (B26) Eleventh St. & Detroit River	42°19'17" 083°03'46"	Detroit River
031	Eighteenth St. (B29) Eighteenth St. & Detroit River	42°18'57" 083°04'31"	Detroit River
033	Twenty-Fourth St. (B31) Twenty-Fourth St. & Detroit River	42°18'47" 083°04'42"	Detroit River
038	Summit-Clark (B36) Summit & Detroit River	42°18'14" 083°05'18"	Detroit River
039	Ferdinand (B37) Ferdinand & Detroit River	42°18'13" 083°05'19"	Detroit River
040	Morrell (B38) Morrell & Detroit River	42°18'10" 083°05'22"	Detroit River
044	Schroeder (B42) Schroeder & West Jefferson	42°17'32" 083°06'00"	Detroit River
046	Cary (B44) Cary & Rouge River	42°17'29" 083°06'47"	Old Channel Rouge River
059	Warren (B54) West Warren & Rouge River	42°20'34" 083°14'57"	Rouge River
060	Tireman (B56, 57 & 58) Tireman & Rouge River	42°20'59" 083°14'51"	Rouge River
061	West Chicago (B60, 61 & 62) West Chicago & Rouge River (East Shore)	42°21'46" 083°14'56"	Rouge River
062	West Chicago (B63) West Chicago & Rouge River (West Shore)	42°21'52" 083°15'18"	Rouge River
063	Plymouth (B64) Plymouth & Rouge River	42°22'18" 083°15'21"	Rouge River
064	Glendale Relief (B65) Rouge Park Golf Course	42°22'33" 083°14'52"	Rouge River
065	Lahser (Dolson) (B67 & 68) Lahser & Rouge River	42°22'52" 083°15'23"	Rouge River
066	Schoolcraft (B70) Jeffries Freeway, I-96 & Rouge River	42°23'07" 083°16'02"	Rouge River

OUTFALL	LOCATION	LAT/LONG	RECEIVING STREAM
067	West Parkway (B69) Jeffries Freeway, I-96 & Rouge River	42°23'07" 083°16'02"	Rouge River
068	Brammel (B71) Ray & Rouge River	42°23'30" 083°15'56"	Rouge River
069	Lyndon (B72) Lyndon & Rouge River	42°23'35" 083°15'57"	Rouge River
072	Puritan (B77) Puritan & Rouge River (East Shore)	42°24'28" 083°16'14"	Rouge River
074	McNichols (B80 & 81) West McNichols & Rouge River	42°24'52" 083°15'59"	Rouge River
075	Glenhurst (B82) Glenhurst & Rouge River	42°25'32" 083°16'19"	Rouge River
077	Seven Mile (B85) West Seven Mile & Rouge River (East Shore)	42°25'44" 083°16'09"	Rouge River
079	Pembroke (B87) Frisbee & East Shore Rouge River	42°26'02" 083°16'24"	Rouge River

Nothing in this section of the permit shall be construed to limit the State of Michigan's ability to pursue remedies under the Michigan Act.

b. Qualified Operations and Maintenance Manager for CSO Discharges
The permittees shall place the wastewater collection system under the supervision of a qualified Operations and Maintenance Manager who shall serve as the contact person for the Department regarding combined sewer discharges. The permittees may replace the manager at any time and shall notify the Department within ten days after the replacement.

c. Disconnection of Eaves Troughs and Roof Downspouts
The permittees shall eliminate direct connections of eaves troughs and roof downspouts to the sewer system throughout the service area tributary to the Upper Rouge CSO outfalls (Outfalls 059-069, 072-075, 077, and 079). This requirement shall be completed for residential property and commercial and industrial properties or as approved by the Department consistent with the permittees' implementation of the Green Storm Water Infrastructure program. In addition, the permittees shall eliminate direct connections of eave troughs and roof downspouts in the service areas tributary to the CSO RTBs, to the CSO Screening & Disinfection Facilities, and to the remaining untreated CSOs based upon the plan detailed in the revised Long-term Control Program. This requirement does not apply if the permittees demonstrates that the disconnection of eaves troughs and roof downspouts is not a cost-effective means of reducing the frequency or duration of combined sewer overflows or of maintaining compliance with this permit. Such a demonstration and supporting documentation shall be submitted to the Department for approval.

d. Collection System and CSO Treatment Facilities Operational Plan
The permittees shall continue implementation of the approved Collection System and CSO Treatment Facilities Operational Plan (Operational Plan). The implementation of the Operational Plan shall be coordinated with the WRRF Wet Weather Operational Plan that is required for development and implementation in accordance with Part I.A.11. of this permit.

On or before April 1 (annually), the permittees shall submit a revised Operational Plan for Department review and approval, which incorporates all changes made to the plan during the last calendar year (items 1-12 below), and supplies the annual discharge documentation (item 13 below). Any changes to the Operational Plan that affect the rate, volume, or characteristics of the discharge, or the system

storage and transportation for conveyance of wet weather flows, shall be submitted to the Department and approved prior to implementation. The operational plan shall define the hydraulic design constraints of the system during both dry and wet weather operation.

The plan shall include:

1) the procedures utilized at the permittees' CSO RTBs and Screening & Disinfection Facilities for adjustment of NaOCl disinfectant feed rates to minimize the discharge of total residual chlorine,

2) the procedures and schedule for sampling/monitoring the stored NaOCl disinfectant at the permittees' CSO RTBs and Screening & Disinfection Facilities to determine the concentration of available chlorine and assure that the stored NaOCl is of sufficient strength to provide effective disinfection,

3) the procedures for sampling/monitoring the available chlorine concentration of each load of NaOCl delivered to the permittees' CSO RTBs and Screening & Disinfection Facilities,

4) if applicable, the procedures utilized at the permittees' CSO RTBs and Screening & Disinfection Facilities for adjustment of dehalogenating reagent feed rates to minimize the discharge of excess reagent,

5) the procedures to ensure that the collection and treatment systems are operated to maximize treatment,

6) the procedures to ensure that all dry weather flows are conveyed to the treatment facilities for treatment without bypass,

7) the hydraulic profile and hydraulic operational elevations for system pump stations, regulators, diversion devices, gates, level sensors, interceptors, etc., to ensure the conveyance of all dry weather flows to the treatment facilities for treatment without bypass,

8) the procedures to ensure that the sewerage system hydraulic and storage capacity is identified and fully utilized during wet weather events with eventual treatment of stored flows,

9) the procedures to ensure that the greatest quantity of wet weather flow is conveyed to the treatment facilities for treatment to minimize untreated wastewater discharges within the region tributary to the GLWA WRRF,

10) the hydraulic profile and hydraulic operational elevations for system pump stations, regulators, diversion devices, gates, level sensors, interceptors, etc., to ensure that the greatest quantity of wet weather flow is conveyed to the treatment facilities for treatment to minimize combined sewage discharges,

11) the procedures for ongoing inspection of the sewer system within the permittees' jurisdiction for excessive inflow and infiltration and, where necessary, reduction of the excessive infiltration and inflow sources, and the elimination of unauthorized sewer system connections, and

12) identification of the location of the rain gauges.

13) The permittees shall submit annual reports that supply the documentation of rainfall and the frequency, duration, and volume of all discharge events during the previous 12-month period (from January 1st through December 31st of the previous year).

The permittees shall continue to pursue the coordination of operational plans (Regional Operational Plan) with tributary communities with the intent of maximizing flow conveyance to the GLWA system and minimizing regional CSOs. Once the Regional Operational Plan is approved by the Department, it shall be implemented.

e. New Wastewater Flows

Increased levels of discharge of sanitary sewage from the combined sewer overflow outfalls listed in Part I.A.15.a. of this permit, the CSO RTBs (see Part I.A.6. of this permit), and the CSO Screening and Disinfection Facilities (see Part I.A.7. of this permit) are prohibited unless:

1) the increased discharges are the result of new sanitary wastewater flows which, on the basis of sound professional judgment, are within design peak dry weather transportation capacity, or

2) the permittees have officially adopted and are timely implementing a definite program, satisfactory to the Department, leading to the construction and operation of necessary collection, transportation, or treatment devices.

f. CSO Control Projects

1) Pertinent CSO Program History

The permittees are continuing to implement CSO Control Programs for the various CSO outfalls that discharge to the Rouge River and the Detroit River. Depending upon the particular CSO Control Program and outfall, the permittees are required to provide for the prohibition, elimination, or adequate treatment of combined sewage discharges containing raw sewage, to comply with the Water Quality Standards at times of discharge.

For the CSO outfalls discharging to the Rouge River, the development and implementation of the CSO Control Programs for the various outfalls was initially established based upon the goals of the Rouge River Remedial Action Plan (RAP), which called for a phased approach to solving the water quality problems of the river. Phase I of the Rouge River RAP extended to 1993 and included 1) monitoring and optimization of the existing combined sewer system, 2) detailed local planning for CSO controls and 3) resolution of financing and institutional problems. Phase II of the Rouge River RAP extended to 2005 (2012 for a few limited outfalls) and called for facility construction based on the goal of protection of public health through the elimination of raw sewage discharges and the control of toxic pollutants. Phase III of the Rouge River RAP follows completion of Phase II facilities and includes further improvements, if necessary, to comply with water quality standards at the time of discharge. Due to the demonstrated financial capability of the permittees for City of Detroit residents in 2009, 2012 and 2017, the CSO Control Program for the CSOs discharging to the Rouge River has been revised as reflected below.

For the CSO outfalls discharging to the Detroit River and the Old Channel of the Rouge River, Department approval of the CSO Control Programs is determined on a case-by-case basis with considerations for environmental impacts, public health impacts, technical feasibility, and economic affordability. As was the case for the Rouge River program, the demonstrated financial capability of the permittees for City of Detroit residents in 2009, 2012 and 2017 also affected the CSO Control Program for the Detroit River and the Old Channel of the Rouge River, and has been revised as reflected below.

In addition, the CSO Control Program now includes significant Green Storm water Infrastructure (GSI) requirements that are an important component of the approved Long-Term CSO Control Program.

Previous Long-Term CSO Control Program Documents include:

- Original Long-Term CSO Control Plan (1996)
- Long-Term CSO Control Plan Update (2002)
- Amendment Rouge (2008)
- Amendment Detroit (2008)
- Evaluation of CSO Control Alternative (for the Upper Rouge Outfalls) (December 15, 2009)

- Supplemental Report on Alternative CSO Controls for the Upper Rouge Outfalls) (April 30, 2010)

The implementation and completion of the CSO Control Program indicated in Part I.A.15.f. and g. are a necessary and essential requirement of this permit.

2) CSO Correction Program Moving Forward

The permittees shall control remaining combined sewer discharges, that are not classified as either extreme or minimal (see Part 1.A.15.a.5) & 6)), to eliminate the discharges or provide adequate treatment of the combined sewage discharges to comply with Water Quality Standards at times of discharge. Upon completion of the RRO disinfection project at the GLWA WRRF and commencing final use of Outfall 050A, the permittees will have completed core elements of their CSO control program and will have achieved a very high level of CSO control. It has been determined that this core level of control has routinely achieved adequate treatment of 95% of the annual combined sewer volume to the collection system. While additional CSO control measures are needed to fully comply with Michigan's Water Quality Standards, as the permittees moves into the final phases of the CSO control program it is appropriate to plan and schedule the remaining control measures, taking into account what has been put in place to date and lessons learned, the unique technical and financial situation of the city of Detroit, and the nature of the remaining CSO challenges.

Based on the foregoing, the permittees shall proceed with remaining CSO corrections using an adaptive management approach. This means that as new information is gained from: (1) evaluation of existing CSO projects and new treatment technologies, (2) evaluation of real-time collection system controls, (3) more accurate and complete data on CSO discharge frequency and volume, (4) benefits of less flow to the collection system from green storm water infrastructure (GSI), (5) benefits of less flow to the collection system due to the City's drainage charge program and new storm water ordinance, (6) benefits of less flow to the collection system as the City continues its sewer rehabilitation program, and (7) any other pertinent information, future CSO controls can be adapted to best provide cost-effective elimination of discharges, adequate treatment of discharges, or classification of discharges as minimal or extreme. Note that for purposes of designing CSO correction projects, minimal discharge is defined as less than 0.3 MG of discharge over a five year period, and extreme is defined as; (a) no more than one untreated discharge in ten years from a CSO outfall during the April 1 through October 31 growth period, (b) modeled to not discharge at the 25 year – 24 hour event (during growth period, with normal soil moisture, rainfall distributed to a SCS Type II distribution), or (c) monitored to occur only at rainfalls greater than 4 inches in a 24 hour period. The performance standard can be based on actual monitoring data normalized for a typical and representative 10-year period of rainfall record or predictively determined based on a calibrated and verified continuous model using a typical and representative 10-year period of rainfall record or other method as determined acceptable by the Department.

The permittees shall propose the non-core CSO correction projects to be designed, constructed, and operated to provide CSO elimination or adequate treatment during the subsequent five-year permit cycle, with each permit reapplication beginning in April 2022. High priority non-core outfalls should generally be addressed first, and outfalls thought of as high priority can change at any time due to implementation of the adaptive management approach. City of Detroit residents within the DWSD service area are "high burden" status based on sewer fees paid as a percentage of median annual household income. Planning of CSO control measures may reflect the permittees' financial capacity for City of Detroit residents determined in the Financial Capability Evaluation that is submitted with each permit reapplication. Based on current and projected CSO capital revenue requirements, and the current average cost per Detroit household for wastewater treatment and CSO control as a percentage of Detroit median household income, the Department does not expect the permittees to propose non-core CSO correction projects with this permit. The permittees shall next propose non-core CSO correction projects for review and approval with the permit reapplication required by April 4, 2022 (and then on April 4, 2027, and April 4, 2032). However, this first tier of non-core projects during 2023 through 2027 is expected to be relatively low cost. Discussion between the permittees and the Department have determined that low cost projects can include connection of CSO discharges to existing CSO treatment facilities, limited storage projects based on the performance standard with no disinfection, outfall gates and in-system storage projects, increased regulator flow capacity, separation projects that use smaller sanitary pipes in existing larger combined sewers to carry sanitary sewage to

GLWA interceptors while the existing combined sewer becomes a storm sewer, and others. At each application submittal in 2022, 2027, and 2032, the project proposal shall include an updated Financial Capability Evaluation that may also include other financial factors as appropriate. Reissued permits will then be drafted and issued with schedules for approved CSO correction projects that provide continuing progress toward meeting water quality standards. The permittees shall prepare an evaluation of Financial Capability, consistent with state and federal guidance, and shall submit the evaluation with the applications for reissuance of this permit (see the cover page of this permit for the next application due date). The Financial Capability Report shall be in the form of previous reports utilizing the EPA Financial Capability Guidance Document (USEPA 832-B-97-004; February, 1997), and updated with information as may be available in order to assess the permittees' ability to undertake future capital improvement projects related to the Long-Term CSO Control Program. This permit may be modified in accordance with applicable law and rules to incorporate revisions to conform to pertinent laws or rules, or as necessary to address prevailing situations.

Based on information currently available, the following are lists by water body that are high priority CSOs that require control. These outfalls can be revised at any time by the permittees or the Department, reflecting adaptive management considerations. While either the permittees or Department can propose changes at any time, an agreement between the two parties is required and shall be made in writing. The goal will be to complete projects fully addressing all high priority outfalls before October 1, 2037.

Rouge River non-core CSOs (these can be changed by mutual agreement between the permittees and the Department)

High Priority Outfalls
059, 061, 064, 065, 074

Detroit River non-core CSOs (these can be changed by mutual agreement between the permittees and the Department)

High Priority Outfalls
005, 007, 009, 012, 022, 025, 031, 038

3) Adaptive Management Program for this Permit

The adaptive management approach for this permit, before beginning relatively low cost CSO correction projects from 2023-2027, looks at the (1) evaluation of existing CSO projects and new treatment technologies, (2) evaluation of real-time collection system controls, (3) more accurate and complete data on CSO discharge frequency and volume, (4) benefits of less flow to the collection system from green storm water infrastructure (GSI), (5) benefits of less flow to the collection system due to the City's drainage charge program and new storm water ordinance, (6) benefits of less flow to the collection system as the City continues its sewer rehabilitation program, and (7) any other pertinent information. The permittees shall use the above measures, as appropriate, to further reduce untreated CSO discharges on an ongoing basis from the collection system before starting CSO projects from 2023 - 2037.

On or before April 1st (annually starting in 2020), the permittees shall prepare a joint Progress Report that summarizes; 1) significant real time controls that occurred during the preceding calendar year, 2) GSI implementation work during the preceding year that has been undertaken and completed, including a work plan for GSI implementation projects for the next year, documentation of the annual expenditure for the preceding year, and documentation of a cumulative total-spent-to-date on the GSI program, 3) benefits from the new storm water ordinance and green credit program, and 4) benefits from the City sewer rehabilitation program. The report shall summarize the total benefits from all programs by including; a) an updated estimate of the annual volume of wet weather flow that has been removed from the combined sewer system, b) the resulting frequency, volume and duration of CSO discharges (based on actual monitoring), and c) the predicted change modeled continuously and at design events to frequency, volume and duration of CSO discharges based on the calibrated hydraulic model developed in the Master Plan effort. The report shall reference the CSO discharge report submitted under Part I.A.15.d.(13) of this permit and include the pertinent data as a reference. As part of this reporting process, it shall be documented that an average of $3 million dollars per fiscal year was spent for 2018

and 2019, and $2 million dollars per year for 2020, 2021, and 2022 for the GSI program (these expenditures are an enforceable requirement of this permit).

A more complete description of the adaptive management approach includes:

a) Real-time Control

The GLWA is in the process of determining if real-time control can be used to help further minimize or even eliminate some untreated CSO discharges. One real-time control discussion currently taking place is the Interim Wet Weather Operations Plan (IWOP). The operational changes agreed to between the permittees and the Department in the IWOP will be reported in the Operational Plan Annual Update (Part 1.A.15 d.). The IWOP is evaluating if critical system regulators, gates, pumps, etc., can be adjusted to allow for more treated CSO, and less untreated CSO from the remaining CSO outfalls. Approved adjustments will be at least acceptable until completion of all non-core CSO correction projects and shall be included in Operational Plan Annual Updates. The evaluation shall include all necessary supporting documentation, including hydraulic model runs if appropriate.

b) Green Storm Water Infrastructure (GSI)

For the west side of the City, there is a GSI program in the tributary area to Rouge River Outfalls 059-069, 072-075, 077, and 079. DWSD has developed and is implementing a Department approved GSI Plan for this area consistent with the "Evaluation of CSO Control Alternatives" report dated December 15, 2009. The GSI Plan describes a process for locating, designing, constructing, operating, and evaluating GSI in these sewersheds. GSI implementation shall be planned to capture, reduce, or otherwise control wet weather flows that would otherwise flow into the sewer system and contribute to CSOs, at the permittees' direction. The Plan includes the following elements:

(1) Provisions for disconnection of residential downspouts and disconnection of commercial and industrial downspouts where feasible (see Part I.A.15.c.).

(2) Provisions for demolition and removal of vacant structures and replacement with pervious land cover. Where demolition is planned and implemented at sites that will be re-purposed for GSI, the demolition specifications shall ensure that basements and other impervious surfaces at the sites are removed, that the site is raked to remove large rocks and construction debris, and that engineered soils consisting of an appropriate mix of topsoil, compost, and sand is applied following the demolition to support plant growth and promote infiltration.

(3) Provisions for installation of bioswales along roadways and parking lots to intercept runoff and reduce storm water inputs to the combined sewer system from impervious surfaces.

(4) Provisions for installation of GSI and/or BMPs at commercial and residential properties to capture and retard storm water runoff.

(5) Provisions for tree planting for uptake and evapotranspiration along roadways and open spaces.

(6) Provisions for other GSI implementation projects as determined to be appropriate.

(8) Processes for public outreach and public participation in selecting sites and implementing GSI practices.

(9) Procedures/methods for tracking GSI implementation and measuring effects.

(10) Provisions for ensuring appropriate maintenance of sites where GSI has been implemented, including roles and schedules for maintenance.

(11) Provisions for ensuring storm water management (runoff reduction) benefits associated with GSI implementation continue over time, even as redevelopment may occur in the sewersheds.

The permittees shall continue to implement GSI in these sewersheds. The investment in GSI in these sewersheds shall be an average of 3 million dollars per fiscal year for the ten-year period ending 2019

(for a total of $30 million), and an average of 2 million dollars per year for the following 10 years (for a total of $20 million). GSI implementation will be in accordance with the GSI Plan.

For the near-east side of the City, there has been another GSI program in the tributary area to Detroit River Outfalls 005 - 009, 011, and 012. Because of the potential for some larger-scale green projects due to a relatively large amount of vacant land in the area, it may be possible to eliminate or reduce the size of some previously envisioned CSO treatment facilities for this area using the combination of GSI implementation along with possible sewer separation, and other engineering solutions. With GSI implementation now spreading across the city, it is acceptable for the city to use one-third (1/3) of the total GSI expenditures on projects upstream of untreated CSOs other than Rouge River Outfalls 059-069, 072-075, 077, and 079.

c) Storm Water Control

1) On or before April 1, 2018, (submitted) the permittees shall submit to the Department for review and approval a storm water control requirement for areas of new development and/or redevelopment. This storm water control requirement is primarily a focus within the Rouge Sewer District and Central Sewer District, as it is these two Districts that have untreated CSOs. Therefore, the permittees shall propose a level of storm water control for new development and redevelopment in these two sewer districts, and for the circumstances stated above, that is designed to help further reduce the volume and frequency of untreated CSO discharges, and a procedure and schedule for implementing this control requirement.

2) Storm water runoff from new development and redevelopment that will be conveyed through storm sewers to DWSD's combined sewers will require control to help further reduce volume and frequency of untreated CSO discharges. These are projects that will require construction plan review by the permittees, and a Part 41 construction permit issued by the Department. Please note that in most cases, new combined sewers will no longer be permitted under Part 41 (except for combined sewer relocation projects). Note that this is not a requirement for storm sewers subject to Permit No. MIS040000 issued to the City of Detroit, as the storm sewers under MIS040000 discharge directly to surface waters and are not owned by the DWSD.

d) City Sewer Rehabilitation

DWSD is currently working on a more robust annual program to remove infiltration/inflow (I/I) from its combined collection system. It is the Department's understanding that this program has a budget of about $20 million per year.

g. Combined Sewer Overflow Control Program Schedule

1) West-side Model; Rouge River Outfalls 059-069, Outfalls 072-075, Outfall 077, and Outfall 079. For untreated combined sewer overflows from Outfalls 059-069, Outfalls 072-075, Outfall 077, and Outfall 079, the permittees shall determine the accurate frequency and volume of untreated CSO discharges and amend the "Supplemental Report on Alternative CSO Controls for the Upper Rouge River," dated April 30, 2010 according to the following schedule:

a) The work plan has been approved by the Department that (1) sets forth the monitoring of the 17 CSOs that will be accomplished to accurately determine the frequency and volume of these untreated CSO discharges, (2) uses this monitoring along with the current Ovation monitoring as appropriate in a calibrated and verified model to accurately detail the volume and frequency of the 17 CSOs during a representative and typical 10-year period of rainfall record, and (3) to determine the peak hour flow at the 10 yr – 1 hr event of each of the 17 CSOs. The permittees shall continue to implement the approved work plan.

b) On or before April 15, 2019, (submitted) the permittees shall submit a report to the Department for review and approval that summarizes the determination and provides the volume and frequency of these 17 CSOs over a representative and typical 10-year period of rainfall record and provides the peak hour flow at the 10 yr – 1 hr event for each of these 17 CSOs;

c) On or before November 15, 2022, the permittees shall submit an amendment for Department review and approval to the "Supplemental Report on Alternative CSO Controls for the Upper Rouge River" (dated April 30, 2010) that describes any changes to the recommended long-term CSO control projects for the 17 CSOs. This plan may propose an alternative to the use of 10 minutes of detention at the 10 year – 1 hour event, at the permittees' discretion;

2) Near eastside; Detroit River Outfalls 005-009, 011, and 012. The permittees shall develop a revised CSO Control Plan for this tributary area in accordance with the following schedule:

On or before November 15, 2022, the permittees shall submit to the Department for review and approval an update to their Long-term CSO Control program (Detroit update 2008) for providing elimination or adequate treatment of CSO Outfalls 005-009, Outfall 011, and Outfall 012 to meet water quality standards at times of discharge. This plan shall consider the GI recommendations and potential for storm water reduction from the completed 205(j) report for this area. This plan may propose an alternative control requirement for the Long-term CSO control program.

3) The permittees may choose to offer an entire updated Long-term CSO Control program for all Detroit River CSOs. This updated plan can include a totally revised Detroit update (2008) for all remaining CSOs. Note that CSOs can be prohibited, eliminated, or adequately treated to meet water quality standards at times of discharge. If the permittees decide to pursue this approach, then the revised plan is due on or before November 15, 2022, for Department review and approval.

Following implementation of any phase of any of the approved Control Programs contained in Part I.A.15.f. and g. of this permit, the Control Program(s) may be reevaluated by the permittees or the Department. Future permits may include requirements to conduct water quality evaluations designed to verify that the overall CSO control program is providing adequate treatment to meet water quality standards. This permit may be modified in accordance with applicable laws and rules, to incorporate revisions necessary to conform to pertinent rules or laws, or as necessary to address prevailing situations, such as technical or financial constraints.

h. Notification and Testing Requirements

The federal rule promulgated by the United States Environmental Protection Agency in 40 CFR Part 122 establishing the public notification requirements for CSO discharges to the Great Lakes basin took effect February 7, 2018.

On or before August 7, 2018, (submitted) the permittees shall submit to the Department for approval, a public notification plan in accordance with 40 CFR 122.38(c). Additionally, on or before April 4, 2022, with the application for reissuance, the permittees shall submit to the Department for approval, an updated public notification plan.

Beginning November 7, 2018, all permittees authorized to discharge untreated or treated CSO to the Great Lakes Basin must provide public notification of CSO discharges in accordance with 40 CFR 122.38(a) and the approved public notification plan. The requirements include but are not limited to the following: notification of the local public health department, other potentially affected public entities and the public; and signage, where feasible at discharge points and other potentially impacted public access areas. In addition, in accordance with Section 324.3112a of the NREPA, the permittees shall provide notification to a newspaper of general circulation in the county in which the discharge occurred or is occurring. To the extent that a conflict may arise between Part I.A.15.h. and Part I.A.16., the Department approved Public Notification Plan shall govern.

16. Untreated or Partially Treated Sewage Discharge Reporting and Testing Requirements

In accordance with Section 324.3112a of the NREPA, if untreated or partially treated sewage is directly or indirectly discharged from a sewer system onto land or into the waters of the state, the entity responsible for the sewer system shall immediately, but not more than 24 hours after the discharge begins, notify, by telephone, the Department, local health departments, a daily newspaper of general circulation in the county in which the permittees are located, and a daily newspaper of general circulation in the county or counties in which the municipalities whose waters may be affected by the discharge are located that the discharge is occurring.

The permittees shall also annually contact municipalities, including the superintendent of a public drinking water supply with potentially affected intakes, whose waters may be affected by the permittees' discharge of untreated or partially treated sewage, and, if those municipalities wish to be notified in the same manner as specified above, the permittees shall provide such notification. Such notification shall also include a daily newspaper in the county of the affected municipality.

At the conclusion of the discharge, written notification shall be submitted in accordance with and on the "Report of Discharge Form" available via the internet at: http://www.deq.state.mi.us/csosso/ , or, alternatively for combined sewer overflow discharges, in accordance with notification procedures approved by the Department.

In addition, in accordance with Section 324.3112a of the NREPA, each time a discharge of untreated or partially treated sewage occurs, the permittees shall test the affected waters for Escherichia coli to assess the risk to the public health as a result of the discharge and shall provide the test results to the affected local county health departments and to the Department. The testing shall be done at locations specified by each affected local county health department but shall not exceed ten (10) tests for each separate discharge event. The affected local county health department may waive this testing requirement, if it determines that such testing is not needed to assess the risk to the public health as a result of the discharge event. The results of this testing shall be submitted with the written notification required above, or, if the results are not yet available, submitted as soon as they become available. This testing is not required, if the testing has been waived by the local health department, or if the discharge(s) did not affect surface waters.

Permittees accepting sanitary or municipal sewage from other sewage collection systems are encouraged to notify the owners of those systems of the above reporting and testing requirements.

17. Pollutant Minimization and Source Evaluation Program for Perfluorooctane Sulfonate (PFOS) and/or Perfluorooctanoic Acid (PFOA)

The goal of the Pollutant Minimization and Source Evaluation Program is to identify and address sources of perfluorooctane sulfonate (PFOS) and/or perfluorooctanoic acid (PFOA) and to reduce and maintain the effluent concentrations of PFOS and/or PFOA at or below the water quality standards (WQS) and/or the Water Quality-Based Effluent limit (WQBEL). The WQS is 11 **ng/L** for PFOS and the WQBEL for PFOA is 8.04 **ug/l**.

On or before October 1, 2019, the permittee shall submit an approvable Pollutant Minimization and Source Evaluation Program for PFOS and/or PFOA to proceed toward the goal. The Pollutant Minimization and Source Evaluation Program shall continue work under the IPP Interim Initiative and shall include the following at a minimum:

a. Identification of and strategies to identify any additional potential and probable PFOS and/or PFOA sources

b. Monitoring plan for the permitted facility's influent and effluent and effluent from potential sources

c. Implemented measures thus far to eliminate, reduce, and/or control sources, and an assessment of the degree of success and the strategies used to measure success

d. Proposed measures and implementation schedules for elimination, control, and/or reduction of the identified sources (prioritizing highest loadings and concentrations), and the strategies that will be used to measure success

The Pollutant Minimization and Source Evaluation Program shall be implemented upon approval by the Department.

On or before May 1 of each year following Pollutant Minimization and Source Evaluation Program implementation, the permittee shall submit to the Department a status report for the previous calendar year. Upon written notification by the Department, the permittee may be required to submit more frequent status reports. Status reports at a minimum shall include:

a. Complete listing of PFOS and/or PFOA sources

b. Summary of influent and effluent monitoring data

c. Summary of monitoring data from known or potential sources

d. History and compliance status for sources

e. Implemented measures to eliminate, reduce, or control sources, (prioritizing highest loadings and concentrations), and an assessment of the degree of success and the strategies used to measure success

f. Proposed measures and schedules for elimination, control, or reduction of any newly identified PFOS and/or PFOA sources (prioritizing highest loadings and concentrations), and the strategies that will be used to measure success

g. Barriers to implementation and revisions to the implementation schedule

h. Laboratory reports, if not previously supplied

Any information generated as a result of the Pollutant Minimization and Source Evaluation Program set forth in this permit may be used to support a request to modify the Pollutant Minimization and Source Evaluation Program or to demonstrate that the requirement has been completed satisfactorily.
A request for modification of the approved Pollutant Minimization and Source Evaluation Program shall be submitted in writing to the Department along with supporting documentation for review and approval. The Department may approve modifications to the approved Pollutant Minimization and Source Evaluation Program, including a reduction in the frequency of the influent and known or potential source monitoring requirements. Approval of a Pollutant Minimization and Source Evaluation Program modification does not require a permit modification.

This permit may be modified in accordance with applicable laws and rules to include additional PFOS and/or PFOA conditions and/or limitations as necessary.

18. Collection System Contingency Plan

An emergency condition at the WRRF might occur that requires reduced (or even no) influent flows to the WRRF. Under Rule 299.2959 of Part 41, the permittee is required to minimize discharge of excessive pollutants. On or before July 1, 2020, the permittee shall submit to the Department for review and approval, a report that documents how the collection system and WRRF would be operated if an emergency condition required reduced influent flow (or no flow) to the WRRF to minimize discharge of excessive pollutants per Rule 299.2959 of Part 41 of PA 451. This could involve in-system storage of flows, use of Retention Treatment Basins for storage and potentially treated discharge, rerouting of flow, use of portions of the WRRF as appropriate, etc. The report shall evaluate operation of the collection system and WRRF, considering at least two hypothetical conditions with no influent flow to the WRRF; a duration of six (6) hours of no influent flow, and a duration of 24 hours of no influent flow.

19. Facility Contact

The "Facility Contact" was specified in the application. The permittees may replace the facility contact at any time, and shall notify the Department in writing within 10 days after replacement (including the name, address and telephone number of the new facility contact).

a. The facility contact shall be (or a duly authorized representative of this person):
- for a corporation, a principal executive officer of at least the level of vice president; or a designated representative if the representative is responsible for the overall operation of the facility from which the discharge originates, as described in the permit application or other NPDES form,
- for a partnership, a general partner,
- for a sole proprietorship, the proprietor, or
- for a municipal, state, or other public facility, either a principal executive officer, the mayor, village president, city or village manager or other duly authorized employee.

b. A person is a duly authorized representative only if:
- the authorization is made in writing to the Department by a person described in paragraph a. of this section; and
- the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the facility (a duly authorized representative may thus be either a named individual or any individual occupying a named position).

Nothing in this section obviates the permittees from properly submitting reports and forms as required by law.

20. Monthly Operating Reports

Part 41 of Act 451 of 1994 as amended, specifically Section 324.4106 and associated R 299.2953, requires that the permittees file with the Department, on forms prescribed by the Department, operating reports showing the effectiveness of the treatment facility operation and the quantity and quality of liquid wastes discharged into waters of the state.

Within thirty (30) days of the effective date of this permit, the permittees shall submit to the Department a revised treatment facility monitoring program to address monitoring requirement changes reflected in this permit, or submit justification explaining why monitoring requirement changes reflected in this permit do not necessitate revisions to the treatment facility monitoring program. The permittees shall implement the revised treatment facility monitoring program upon approval from the Department. Applicable forms and guidance are available on the Department's web site at http://www.michigan.gov/deq/0,1607,7-135-3313_44117---,00.html. The permittees may use alternate forms if they are consistent with the approved treatment facility monitoring program. Unless the Department provides written notification to the permittees that monthly submittal of operating reports is required, operating reports that result from implementation of the approved treatment facility monitoring program shall be maintained on site for a minimum of three (3) years and shall be made available to the Department for review upon request.

21. Discharge Monitoring Report – Quality Assurance Study Program

The permittees shall participate in the Discharge Monitoring Report – Quality Assurance (DMR-QA) Study Program. The purpose of the DMR-QA Study Program is to annually evaluate the proficiency of all in-house and/or contract laboratory(ies) that perform, on behalf of the facility authorized to discharge under this permit, the analytical testing required under this permit. In accordance with Section 308 of the Clean Water Act (33 U.S.C. § 1318); and R 323.2138 and R 323.2154 of Part 21, Wastewater Discharge Permits, promulgated under Part 31 of the NREPA, participation in the DMR-QA Study Program is required for all major facilities, and for minor facilities selected for participation by the Department.

Annually and in accordance with DMR-QA Study Program requirements and submittal due dates, the permittees shall submit to the Michigan DMR-QA Study Program state coordinator all documentation required by the DMR-QA Study. DMR-QA Study Program participation is required only for the analytes required under this permit and only when those analytes are also identified in the DMR-QA Study.

If the permitted facility's status as a major facility should change, participation in the DMR-QA Study Program may be reevaluated. Questions concerning participation in the DMR-QA Study Program should be directed to the Michigan DMR-QA Study Program state coordinator.

All forms and instructions required for participation in the DMR-QA Study Program, including submittal due dates and state coordinator contact information, can be found at http://www.epa.gov/compliance/discharge-monitoring-report-quality-assurance-study-program.

Section B. Storm Water Pollution Prevention

This section is not required.

PART I

Section C. Industrial Waste Pretreatment Program

1. Federal Industrial Pretreatment Program

a. The permittees shall implement the Federal Industrial Pretreatment Program approved on June 26, 1997, and any subsequent modifications approved up to the issuance of this permit. Approval of substantial program modifications after the issuance of this permit shall be incorporated into this permit by minor modification in accordance with 40 CFR 122.63.

b. The permittees shall comply with R 323.2301 through R 323.2317 of the Michigan Administrative Code (Part 23 Rules), the General Pretreatment Regulations for Existing and New Sources of Pollution (40 CFR Part 403), and the approved Federal Industrial Pretreatment Program.

c. The permittees shall have the legal authority and necessary interjurisdictional agreements that provide the basis for the implementation and enforcement of the approved Federal Industrial Pretreatment Program throughout the service area. The legal authority and necessary interjurisdictional agreements shall include, at a minimum, the authority to carry out the activities specified in R 323.2306(a).

d. The permittees shall develop procedures which describe, in sufficient detail, program commitments which enable implementation of the approved Federal Industrial Pretreatment Program, 40 CFR Part 403, and the Part 23 Rules in accordance with R 323.2306(c).

e. The permittees shall establish an interjurisdictional agreement (or comparable document) with all tributary governmental jurisdictions. Each interjurisdictional agreement shall contain, at a minimum, the following:

1) identification of the agency responsible for the implementation and enforcement of the approved Federal Industrial Pretreatment Program within the tributary governmental jurisdiction's boundaries; and

2) the provision of the legal authority which provides the basis for the implementation and enforcement of the approved Federal Industrial Pretreatment Program within the tributary governmental jurisdiction's boundaries.

f. The permittees shall prohibit discharges that:

1) cause, in whole or in part, the permittees, failure to comply with any condition of this permit or the NREPA;

2) restrict, in whole or in part, the permittee’s management of biosolids;

3) cause, in whole or in part, operational problems at the treatment facility or in its collection system;

4) violate any of the general or specific prohibitions identified in R 323.2303(1) and (2);

5) violate categorical standards identified in R 323.2311; and

6) violate local limits established in accordance with R 323.2303(4).

g. The permittees shall maintain a list of its nondomestic users that meet the criteria of a significant industrial user as identified in R 323.2302(cc).

h. The permittees shall develop an enforcement response plan which describes, in sufficient detail, program commitments which will enable the enforcement of the approved Federal Industrial Pretreatment Program, 40 CFR Part 403, and the Part 23 Rules in accordance with R 323.2306(g).

i. The Department may require modifications to the approved Federal Industrial Pretreatment Program which are necessary to ensure compliance with 40 CFR Part 403 and the Part 23 Rules in accordance with R 323.2309.

j. The permittees shall not implement changes or modifications to the approved Federal Industrial Pretreatment Program without notification to the Department. Any substantial modification shall be subject to Department public noticing and approval in accordance with R 323.2309.

k. The permittees shall maintain an adequate revenue structure and staffing level for effective implementation of the approved Federal Industrial Pretreatment Program.

l. The permittees shall develop and maintain, for a minimum of three (3) years, all records and information necessary to determine nondomestic user compliance with 40 CFR Part 403, Part 23 Rules and the approved Federal Industrial Pretreatment Program. This period of retention shall be extended during the course of any unresolved enforcement action or litigation regarding a nondomestic user or when requested by the Department or the United States Environmental Protection Agency. All of the aforementioned records and information shall be made available upon request for inspection and copying by the Department and the United States Environmental Protection Agency.

m. The permittees shall evaluate the approved Federal Industrial Pretreatment Program for compliance with the 40 CFR Part 403, Part 23 Rules and the prohibitions stated in item f. (above). Based upon this evaluation, the permittees shall propose to the Department all necessary changes or modifications to the approved Federal Industrial Pretreatment Program no later than the next Industrial Pretreatment Program Annual Report due date (see item o. below).

n. The permittees shall develop and enforce local limits to implement the prohibitions listed in item f above. Local limits shall be based upon data representative of actual conditions demonstrated in a maximum allowable headworks loading analysis. An evaluation of whether the existing local limits need to be revised shall be submitted to the Department by June 1, 2021. The submittal shall provide a technical evaluation of the basis upon which this determination was made which includes information regarding the maximum allowable headworks loading, collection system protection criteria, and worker health and safety, based upon data collected since the last local limits review.

The following pollutants shall be evaluated:

1) Arsenic, Cadmium, Chromium, Copper, Cyanide, Lead, Mercury, Nickel, Silver, and Zinc;

2) Pollutants that are subject to limits or monitoring in this permit;

3) Pollutants that have an existing local limit; and,

4) Other pollutants of concern which would reasonably be expected to be discharged or transported by truck or rail or otherwise introduced into the POTW.

o. On or before April 1 of each year, the permittees shall submit to the Department, as required by R 323.2310(8), an Industrial Pretreatment Program Annual Report on the status of program implementation and enforcement activities. The reporting period shall begin on January 1 and end on December 31. At a minimum, the Industrial Pretreatment Program Annual Report shall include:

1) the Pretreatment Program Report data identified in Appendix A to 40 CFR part 127 – NPDES Electronic Reporting;

2) a summary of changes to the approved IPP that have not been previously reported to the Department;

3) a summary of results of all the sampling and analyses performed of the WRRF's influent, effluent, and biosolids conducted in accordance with approved methods during the reporting period. The summary shall include the monthly average, daily maximum, quantification level, and number of samples analyzed for each pollutant. At a minimum, the results of analyses for all locally limited parameters for at least one monitoring event that tests influent, effluent and biosolids during the reporting period shall be submitted with each report, unless otherwise required by the Department. Sample collection shall be at intervals sufficient to provide pollutant removal rates, unless the pollutant is not measurable; and;

4) any other relevant information requested by the Department.

p, The permittee is required under this permit and R 323.2303(4) of the Michigan Administrative Code to review and update their local limits when:

1) New pollutants are introduced.

2) New pollutants that were previously unevaluated are identified

3) New water quality or biosolids standards are established or additional information becomes available about the nature of pollutants, such as removal rates and accumulation in biosolids.

Substantial increases of pollutants are proposed as required in the notification of new or increased uses in accordance with the provisions of 40 CFR 122.42.

2. Schedule for Notification to Contributing Jurisdictions

On or before May 1st and November 1st of each year, the permittees shall submit to the Department a report demonstrating the efforts and progress toward achieving the requirement of having all contributing jurisdictions adopt a legal authority that is equivalent to or more restrictive than the permittees', including the revised local limits to be incorporated by the permittees as result of the requirements of Part I.C.2. of this permit. This legal authority includes the provisions of Ordinance 08-05 (Detroit City Code Chapter 56, Article III. Division 3) and subsequent revisions to the local limits. These progress reports shall be submitted every six months until the requirement is achieved. The biannual progress reports shall contain:

a. a listing of all contributing jurisdictions,

b. the status of each contributing jurisdiction's adoption of adequate legal authority, and

c. for contributing jurisdictions who have not yet adopted adequate legal authority, a description of the steps/actions the permittees have taken to assure progress toward the contributing jurisdiction's adoption of adequate legal authority.

The permittees shall, to the best of its ability, work with those contributing jurisdictions who did not adopt adequate legal authority by January 1, 2008, to obtain such legal authority.

PART I

Section D. Residuals Management Program

1. Residuals Management Program for Land Application of Biosolids

The permittees are authorized to land-apply bulk biosolids or prepare bulk biosolids for land application in accordance with the permittees' approved Residuals Management Program (RMP) approved on April 22, 2008, and approved modifications thereto, in accordance with the requirements established in R 323.2401 through R 323.2418 of the Michigan Administrative Code (Part 24 Rules). The approved RMP, and any approved modifications thereto, are enforceable requirements of this permit. Incineration, landfilling and other residual disposal activities shall be conducted in accordance with Part II.D.7. of this permit. The Part 24 Rules can be obtained via the internet (http://www.michigan.gov/deq/ and on the left side of the screen click on Water, Biosolids & Industrial Pretreatment, Biosolids then click on Biosolids Laws and Rules Information which is under the Laws & Rules banner in the center of the screen).

a. Annual Report
On or before October 30 of each year, the permittees shall submit an annual report to the Department for the previous fiscal year of October 1 through September 30. The report shall be submitted electronically via the Department's MiWaters system at https://miwaters.deq.state.mi.us. At a minimum, the report shall contain:

1) a certification that current residuals management practices are in accordance with the approved RMP, or a proposal for modification to the approved RMP; and

2) a completed Biosolids Annual Report Form, available at https://miwaters.deq.state.mi.us.

b. Modifications to the Approved RMP
Prior to implementation of modifications to the RMP, the permittees shall submit proposed modifications to the Department for approval. The approved modification shall become effective upon the date of approval. Upon written notification, the Department may impose additional requirements and/or limitations to the approved RMP as necessary to protect public health and the environment from any adverse effect of a pollutant in the biosolids.

c. Record Keeping
Records required by the Part 24 Rules shall be kept for a minimum of five years. However, the records documenting cumulative loading for sites subject to cumulative pollutant loading rates shall be kept as long as the site receives biosolids.

d. Contact Information
RMP related submittals to the Department shall be to the Southeast Michigan District Supervisor of the Water Resources Division. The Southeast Michigan District Office is located at 27700 Donald Court, Warren Michigan, 48092-2793, Telephone: 586-753-3750, Fax: 586-753-3751.

PART II

Part II may include terms and /or conditions not applicable to discharges covered under this permit.

Section A. Definitions

Acute toxic unit (TU_A) means $100/LC_{50}$ where the LC_{50} is determined from a whole effluent toxicity (WET) test which produces a result that is statistically or graphically estimated to be lethal to 50% of the test organisms.

Annual monitoring frequency refers to a calendar year beginning on January 1 and ending on December 31. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Authorized public agency means a state, local, or county agency that is designated pursuant to the provisions of section 9110 of Part 91 of the NREPA to implement soil erosion and sedimentation control requirements with regard to construction activities undertaken by that agency.

Best management practices (BMPs) means structural devices or nonstructural practices that are designed to prevent pollutants from entering into storm water, to direct the flow of storm water, or to treat polluted storm water.

Bioaccumulative chemical of concern (BCC) means a chemical which, upon entering the surface waters, by itself or as its toxic transformation product, accumulates in aquatic organisms by a human health bioaccumulation factor of more than 1000 after considering metabolism and other physiochemical properties that might enhance or inhibit bioaccumulation. The human health bioaccumulation factor shall be derived according to R 323.1057(5). Chemicals with half-lives of less than 8 weeks in the water column, sediment, and biota are not BCCs. The minimum bioaccumulation concentration factor (BAF) information needed to define an organic chemical as a BCC is either a field-measured BAF or a BAF derived using the biota-sediment accumulation factor (BSAF) methodology. The minimum BAF information needed to define an inorganic chemical as a BCC, including an organometal, is either a field-measured BAF or a laboratory-measured bioconcentration factor (BCF). The BCCs to which these rules apply are identified in Table 5 of R 323.1057 of the Water Quality Standards.

Biosolids are the solid, semisolid, or liquid residues generated during the treatment of sanitary sewage or domestic sewage in a treatment works. This includes, but is not limited to, scum or solids removed in primary, secondary, or advanced wastewater treatment processes and a derivative of the removed scum or solids.

Bulk biosolids means biosolids that are not sold or given away in a bag or other container for application to a lawn or home garden.

Certificate of Coverage (COC) is a document, issued by the Department, which authorizes a discharge under a general permit.

Chronic toxic unit (TU_C) means $100/MATC$ or $100/IC_{25}$, where the maximum acceptable toxicant concentration (MATC) and IC_{25} are expressed as a percent effluent in the test medium.

Class B biosolids refers to material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PSRP) in accordance with the Part 24 Rules. Processes include aerobic digestion, composting, anaerobic digestion, lime stabilization and air drying.

Combined sewer system is a sewer system in which storm water runoff is combined with sanitary wastes.

Daily concentration is the sum of the concentrations of the individual samples of a parameter divided by the number of samples taken during any calendar day. If the parameter concentration in any sample is less than the quantification limit, regard that value as zero when calculating the daily concentration. The daily concentration will be used to determine compliance with any maximum and minimum daily concentration limitations (except for pH and dissolved oxygen). When required by the permit, report the maximum calculated daily concentration for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the Discharge Monitoring Reports (DMRs).

For pH, report the maximum value of any *individual* sample taken during the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs and the minimum value of any *individual* sample taken during the month in the "MINIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs. For dissolved oxygen, report the minimum concentration of any *individual* sample in the "MINIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs.

Daily loading is the total discharge by weight of a parameter discharged during any calendar day. This value is calculated by multiplying the daily concentration by the total daily flow and by the appropriate conversion factor. The daily loading will be used to determine compliance with any maximum daily loading limitations. When required by the permit, report the maximum calculated daily loading for the month in the "MAXIMUM" column under "QUANTITY OR LOADING" on the DMRs.

Daily monitoring frequency refers to a 24-hour day. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Department means the Michigan Department of Environment, Great Lakes, and Energy.

Detection level means the lowest concentration or amount of the target analyte that can be determined to be different from zero by a single measurement at a stated level of probability.

Discharge means the addition of any waste, waste effluent, wastewater, pollutant, or any combination thereof to any surface water of the state.

EC_{50} means a statistically or graphically estimated concentration that is expected to cause 1 or more specified effects in 50% of a group of organisms under specified conditions.

Fecal coliform bacteria monthly
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – Fecal coliform bacteria monthly is the geometric mean of all daily concentrations determined during a discharge event. Days on which no daily concentration is determined shall not be used to determine the calculated monthly value. The calculated monthly value will be used to determine compliance with the maximum monthly fecal coliform bacteria limitations. When required by the permit, report the calculated monthly value in the "AVERAGE" column under "QUALITY OR CONCENTRATION" on the DMR. If the period in which the discharge event occurred was partially in each of two months, the calculated monthly value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – Fecal coliform bacteria monthly is the geometric mean of all daily concentrations determined during a reporting month. Days on which no daily concentration is determined shall not be used to determine the calculated monthly value. The calculated monthly value will be used to determine compliance with the maximum monthly fecal coliform bacteria limitations. When required by the permit, report the calculated monthly value in the "AVERAGE" column under "QUALITY OR CONCENTRATION" on the DMR.

Fecal coliform bacteria 7-day
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – Fecal coliform bacteria 7-day is the geometric mean of the daily concentrations determined during any 7 consecutive days of discharge during a discharge event. If the number of daily concentrations determined during the discharge event is less than 7 days, the number of actual daily concentrations determined shall be used for the calculation. Days on which no daily concentration is determined shall not be used to determine the value. The calculated 7-day value will be used to determine compliance with the maximum 7-day fecal coliform bacteria limitations. When required by the permit, report the maximum calculated 7-day geometric mean value for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs. If the 7-day period was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – Fecal coliform bacteria 7-day is the geometric mean of the daily concentrations determined during any 7 consecutive days in a reporting month. If the number of daily concentrations determined is less than 7, the actual number of daily concentrations determined shall be used for the calculation. Days on which no daily concentration is determined shall not be used to determine the value. The calculated 7-day value will be used to determine compliance with the maximum 7-day fecal coliform bacteria limitations. When required by the permit, report the maximum calculated 7-day geometric mean for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs. The first calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

Flow-proportioned sample is a composite sample with the sample volume proportional to the effluent flow.

General permit means a National Pollutant Discharge Elimination System permit issued authorizing a category of similar discharges.

Geometric mean is the average of the logarithmic values of a base 10 data set, converted back to a base 10 number.

Grab sample is a single sample taken at neither a set time nor flow.

IC_{25} means the toxicant concentration that would cause a 25% reduction in a nonquantal biological measurement for the test population.

Illicit connection means a physical connection to a municipal separate storm sewer system that primarily conveys non-storm water discharges other than uncontaminated groundwater into the storm sewer; or a physical connection not authorized or permitted by the local authority, where a local authority requires authorization or a permit for physical connections.

Illicit discharge means any discharge to, or seepage into, a municipal separate storm sewer system that is not composed entirely of storm water or uncontaminated groundwater. Illicit discharges include non-storm water discharges through pipes or other physical connections; dumping of motor vehicle fluids, household hazardous wastes, domestic animal wastes, or litter; collection and intentional dumping of grass clippings or leaf litter; or unauthorized discharges of sewage, industrial waste, restaurant wastes, or any other non-storm water waste directly into a separate storm sewer.

Individual permit means a site-specific NPDES permit.

Inlet means a catch basin, roof drain, conduit, drain tile, retention pond riser pipe, sump pump, or other point where storm water or wastewater enters into a closed conveyance system prior to discharge off site or into waters of the state.

Interference is a discharge which, alone or in conjunction with a discharge or discharges from other sources, both: 1) inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and 2) therefore, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or, of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent state or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including state regulations contained in any state sludge management plan prepared pursuant to Subtitle D of the SWDA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act. [This definition does not apply to sample matrix interference].

Land application means spraying or spreading biosolids or a biosolids derivative onto the land surface, injecting below the land surface, or incorporating into the soil so that the biosolids or biosolids derivative can either condition the soil or fertilize crops or vegetation grown in the soil.

LC_{50} means a statistically or graphically estimated concentration that is expected to be lethal to 50% of a group of organisms under specified conditions.

Maximum acceptable toxicant concentration (MATC) means the concentration obtained by calculating the geometric mean of the lower and upper chronic limits from a chronic test. A lower chronic limit is the highest tested concentration that did not cause the occurrence of a specific adverse effect. An upper chronic limit is the lowest tested concentration which did cause the occurrence of a specific adverse effect and above which all tested concentrations caused such an occurrence.

Maximum extent practicable means implementation of best management practices by a public body to comply with an approved storm water management program as required by a national permit for a municipal separate storm sewer system, in a manner that is environmentally beneficial, technically feasible, and within the public body’s legal authority.

MGD means million gallons per day.

Monthly concentration is the sum of the daily concentrations determined during a reporting period divided by the number of daily concentrations determined. The calculated monthly concentration will be used to determine compliance with any maximum monthly concentration limitations. Days with no discharge shall not be used to determine the value. When required by the permit, report the calculated monthly concentration in the “AVERAGE” column under “QUALITY OR CONCENTRATION” on the DMR.

For minimum percent removal requirements, the monthly influent concentration and the monthly effluent concentration shall be determined. The calculated monthly percent removal, which is equal to 100 times the quantity [1 minus the quantity (monthly effluent concentration divided by the monthly influent concentration)], shall be reported in the "MINIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs.

Monthly loading is the sum of the daily loadings of a parameter divided by the number of daily loadings determined during a reporting period. The calculated monthly loading will be used to determine compliance with any maximum monthly loading limitations. Days with no discharge shall not be used to determine the value. When required by the permit, report the calculated monthly loading in the “AVERAGE” column under “QUANTITY OR LOADING” on the DMR.

Monthly monitoring frequency refers to a calendar month. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Municipal separate storm sewer means a conveyance or system of conveyances designed or used for collecting or conveying storm water which is not a combined sewer and which is not part of a publicly-owned treatment works as defined in the Code of Federal Regulations at 40 CFR 122.2.

Municipal separate storm sewer system (MS4) means all separate storm sewers that are owned or operated by the United States, a state, city, village, township, county, district, association, or other public body created by or pursuant to state law, having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under state law, such as a sewer district, flood control district, or drainage district, or similar entity, or a designated or approved management agency under Section 208 of the Federal Act that discharges to the waters of the state. This term includes systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings.

National Pretreatment Standards are the regulations promulgated by or to be promulgated by the Federal Environmental Protection Agency pursuant to Section 307(b) and (c) of the Federal Act. The standards establish nationwide limits for specific industrial categories for discharge to a POTW.

No observed adverse effect level (NOAEL) means the highest tested dose or concentration of a substance which results in no observed adverse effect in exposed test organisms where higher doses or concentrations result in an adverse effect.

Noncontact cooling water is water used for cooling which does not come into direct contact with any raw material, intermediate product, by-product, waste product or finished product.

Nondomestic user is any discharger to a POTW that discharges wastes other than or in addition to water-carried wastes from toilet, kitchen, laundry, bathing or other facilities used for household purposes.

Outfall is the location at which a point source discharge enters the surface waters of the state.

Part 91 agency means an agency that is designated by a county board of commissioners pursuant to the provisions of section 9105 of Part 91 of the NREPA; an agency that is designated by a city, village, or township in accordance with the provisions of section 9106 of Part 91 of the NREPA; or the Department for soil erosion and sedimentation activities under Part 615, Part 631, or Part 632 pursuant to the provisions of section 9115 of Part 91 of the NREPA.

Part 91 permit means a soil erosion and sedimentation control permit issued by a Part 91 agency pursuant to the provisions of Part 91 of the NREPA.

Partially treated sewage is any sewage, sewage and storm water, or sewage and wastewater, from domestic or industrial sources that is treated to a level less than that required by the permittees' National Pollutant Discharge Elimination System permit, or that is not treated to national secondary treatment standards for wastewater, including discharges to surface waters from retention treatment facilities.

Point of discharge is the location of a point source discharge where storm water is discharged directly into a separate storm sewer system.

Point source discharge means a discharge from any discernible, confined, discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, or rolling stock. Changing the surface of land or establishing grading patterns on land will result in a point source discharge where the runoff from the site is ultimately discharged to waters of the state.

Polluting material means any material, in solid or liquid form, identified as a polluting material under the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code).

POTW is a publicly owned treatment work.

Pretreatment is reducing the amount of pollutants, eliminating pollutants, or altering the nature of pollutant properties to a less harmful state prior to discharge into a public sewer. The reduction or alteration can be by physical, chemical, or biological processes, process changes, or by other means. Dilution is not considered pretreatment unless expressly authorized by an applicable National Pretreatment Standard for a particular industrial category.

Public (as used in the MS4 individual permit) means all persons who potentially could affect the authorized storm water discharges, including, but not limited to, residents, visitors to the area, public employees, businesses, industries, and construction contractors and developers.

Public body means the United States; the state of Michigan; a city, village, township, county, school district, public college or university, or single-purpose governmental agency; or any other body which is created by federal or state statute or law.

Qualified Personnel means an individual who meets qualifications acceptable to the Department and who is authorized by an Industrial Storm Water Certified Operator to collect the storm water sample.

Qualifying storm event means a storm event causing greater than 0.1 inch of rainfall and occurring at least 72 hours after the previous measurable storm event that also caused greater than 0.1 inch of rainfall. Upon request, the Department may approve an alternate definition meeting the condition of a qualifying storm event.

Quantification level means the measurement of the concentration of a contaminant obtained by using a specified laboratory procedure calculated at a specified concentration above the detection level. It is considered the lowest concentration at which a particular contaminant can be quantitatively measured using a specified laboratory procedure for monitoring of the contaminant.

Quarterly monitoring frequency refers to a three month period, defined as January through March, April through June, July through September, and October through December. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Regional Administrator is the Region 5 Administrator, U.S. EPA, located at R-19J, 77 W. Jackson Blvd., Chicago, Illinois 60604.

Regulated area means the permittee's urbanized area, where urbanized area is defined as a place and its adjacent densely-populated territory that together have a minimum population of 50,000 people as defined by the United States Bureau of the Census and as determined by the latest available decennial census.

Secondary containment structure means a unit, other than the primary container, in which significant materials are packaged or held, which is required by State or Federal law to prevent the escape of significant materials by gravity into sewers, drains, or otherwise directly or indirectly into any sewer system or to the surface or ground waters of this state.

Separate storm sewer system means a system of drainage, including, but not limited to, roads, catch basins, curbs, gutters, parking lots, ditches, conduits, pumping devices, or man-made channels, which is not a combined sewer where storm water mixes with sanitary wastes, and is not part of a POTW.

Significant industrial user is a nondomestic user that: 1) is subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N; or 2) discharges an average of 25,000 gallons per day or more of process wastewater to a POTW (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process waste stream which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the permittees as defined in 40 CFR 403.12(a) on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's treatment plant operation or violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Significant materials Significant Materials means any material which could degrade or impair water quality, including but not limited to: raw materials; fuels; solvents, detergents, and plastic pellets; finished materials such as metallic products; hazardous substances designated under Section 101(14) of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (see 40 CFR 372.65); any chemical the facility is required to report pursuant to Section 313 of Emergency Planning and Community Right-to-Know Act (EPCRA); polluting materials as identified under the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code); Hazardous Wastes as defined in Part 111 of the NREPA; fertilizers; pesticides; and waste products such as ashes, slag, and sludge that have the potential to be released with storm water discharges.

Significant spills and significant leaks means any release of a polluting material reportable under the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code).

Special-use area means secondary containment structures required by state or federal law; lands on Michigan's List of Sites of Environmental Contamination pursuant to Part 201, Environmental Remediation, of the NREPA; and/or areas with other activities that may contribute pollutants to the storm water for which the Department determines monitoring is needed.

Stoichiometric means the quantity of a reagent calculated to be necessary and sufficient for a given chemical reaction.

Storm water means storm water runoff, snow melt runoff, surface runoff and drainage, and non-storm water included under the conditions of this permit.

Storm water discharge point is the location where the point source discharge of storm water is directed to surface waters of the state or to a separate storm sewer. It includes the location of all point source discharges where storm water exits the facility, including *outfalls* which discharge directly to surface waters of the state, and *points of discharge* which discharge directly into separate storm sewer systems.

SWPPP means the Storm Water Pollution Prevention Plan prepared in accordance with this permit.

Tier I value means a value for aquatic life, human health or wildlife calculated under R 323.1057 of the Water Quality Standards using a tier I toxicity database.

Tier II value means a value for aquatic life, human health or wildlife calculated under R 323.1057 of the Water Quality Standards using a tier II toxicity database.

Total maximum daily loads (TMDLs) are required by the Federal Act for waterbodies that do not meet water quality standards. TMDLs represent the maximum daily load of a pollutant that a waterbody can assimilate and meet water quality standards, and an allocation of that load among point sources, nonpoint sources, and a margin of safety.

Toxicity reduction evaluation (TRE) means a site-specific study conducted in a stepwise process designed to identify the causative agents of effluent toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in effluent toxicity.

Water Quality Standards means the Part 4 Water Quality Standards promulgated pursuant to Part 31 of the NREPA, being R 323.1041 through R 323.1117 of the Michigan Administrative Code.

Weekly monitoring frequency refers to a calendar week which begins on Sunday and ends on Saturday. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Wet Weather Flow is the wastewater flow (domestic, industrial, commercial and institutional) including infiltration and inflow that occurs as the result of a precipitation or snowmelt event.

Wet Weather Event, for the interim period, is defined as those days on which an average 0.10 inches or more of precipitation was recorded by six strategically located rainfall gauges (as defined in Part I.9.c.(10) of the Operational Plan) in the WRRF's service area, plus two days immediately following days of 0.10 inch to 1.00 inch days of precipitation or three days following days of 1.00 inch or more precipitation. Rainfall days are further limited to those days in which the air temperature exceeds 32° F (0° C) for at least an eight hour period. The permittee may demonstrate that certain events such as snowmelt, and other unforeseen events will be considered rainfall days.

The above definition of wet weather event is not adequate on a long term basis, or for the purposes of planning, designing, or implementing the combined sewer overflow improvements required in this permit. For purposes of planning and designing future CSO improvements, the permittee shall consider the effect of dewatering tributary storage basins on overall system recovery, both at the WRRF and CSO overflow points in the collection system.

For this permit while the Regional Operational Plan is being revised, if up to 930 MGD (including recycle) is being processed with secondary treatment at the WRRF and no primary flow is being discharged, then tributary combined or sanitary storage basins in the GLWA system may be dewatered. Such dewatering will not be considered a violation of this permit, even if contrary to the above Wet Weather Event definition. Once a revised Regional Operation Plan is developed, it shall be implemented once reviewed and approved by the Department.

Upon approval of the Department, an alternate "wet weather event" definition may be used.

WWSL is a wastewater stabilization lagoon.

WWSL discharge event is a discrete occurrence during which effluent is discharged to the surface water up to 10 days of a consecutive 14 day period.

3-portion composite sample is a sample consisting of three equal-volume grab samples collected at equal intervals over an 8-hour period.

7-day concentration
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – The 7-day concentration is the sum of the daily concentrations determined during any 7 consecutive days of discharge during a WWSL discharge event divided by the number of daily concentrations determined. If the number of daily concentrations determined during the WWSL discharge event is less than 7 days, the number of actual daily concentrations determined shall be used for the calculation. The calculated 7-day concentration will be used to determine compliance with any maximum 7-day concentration limitations. When required by the permit, report the maximum calculated 7-day concentration for the WWSL discharge event in the “MAXIMUM” column under “QUALITY OR CONCENTRATION” on the DMR. If the WWSL discharge event was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – The 7-day concentration is the sum of the daily concentrations determined during any 7 consecutive days in a reporting month divided by the number of daily concentrations determined. If the number of daily concentrations determined is less than 7, the actual number of daily concentrations determined shall be used for the calculation. The calculated 7-day concentration will be used to determine compliance with any maximum 7-day concentration limitations in the reporting month. When required by the permit, report the maximum calculated 7-day concentration for the month in the “MAXIMUM” column under “QUALITY OR CONCENTRATION” on the DMR. The first 7-day calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

7-day loading
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – The 7-day loading is the sum of the daily loadings determined during any 7 consecutive days of discharge during a WWSL discharge event divided by the number of daily loadings determined. If the number of daily loadings determined during the WWSL discharge event is less than 7 days, the number of actual daily loadings determined shall be used for the calculation. The calculated 7-day loading will be used to determine compliance with any maximum 7-day loading limitations. When required by the permit, report the maximum calculated 7-day loading for the WWSL discharge event in the "MAXIMUM" column under "QUANTITY OR LOADING" on the DMR. If the WWSL discharge event was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred

FOR ALL OTHER DISCHARGES – The 7-day loading is the sum of the daily loadings determined during any 7 consecutive days in a reporting month divided by the number of daily loadings determined. If the number of daily loadings determined is less than 7, the actual number of daily loadings determined shall be used for the calculation. The calculated 7-day loading will be used to determine compliance with any maximum 7-day loading limitations in the reporting month. When required by the permit, report the maximum calculated 7-day loading for the month in the "MAXIMUM" column under "QUANTITY OR LOADING" on the DMR. The first 7-day calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

24-hour composite sample is a flow-proportioned composite sample consisting of hourly or more frequent portions that are taken over a 24-hour period. In accordance with the Department Approved Wet Weather Operational Plan (See Part I.A.11.), alternate requirements for 24-hour composite sampling may be utilized to satisfy the monitoring requirements of this permit.

PART II

Section B. Monitoring Procedures

1. Representative Samples

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Test Procedures

Test procedures for the analysis of pollutants shall conform to regulations promulgated pursuant to Section 304(h) of the Federal Act (40 CFR Part 136 – Guidelines Establishing Test Procedures for the Analysis of Pollutants), unless specified otherwise in this permit. **Test procedures used shall be sufficiently sensitive to determine compliance with applicable effluent limitations**. Requests to use test procedures not promulgated under 40 CFR Part 136 for pollutant monitoring required by this permit shall be made in accordance with the Alternate Test Procedures regulations specified in 40 CFR 136.4. These requests shall be submitted to the Section Manager of the Permits Section, Water Resources Division, Michigan Department of Environment, Great Lakes, and Energy, P.O. Box 30458, Lansing, Michigan, 48909-7958. The permittees may use such procedures upon approval.

The permittees shall periodically calibrate and perform maintenance procedures on all analytical instrumentation at intervals to ensure accuracy of measurements. The calibration and maintenance shall be performed as part of the permittees' laboratory Quality Control/Quality Assurance program.

3. Instrumentation

The permittees shall periodically calibrate and perform maintenance procedures on all monitoring instrumentation at intervals to ensure accuracy of measurements.

4. Recording Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittees shall record the following information: 1) the exact place, date, and time of measurement or sampling; 2) the person(s) who performed the measurement or sample collection; 3) the dates the analyses were performed; 4) the person(s) who performed the analyses; 5) the analytical techniques or methods used; 6) the date of and person responsible for equipment calibration; and 7) the results of all required analyses.

5. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, or longer if requested by the Regional Administrator or the Department.

PART II

Section C. Reporting Requirements

1. Start-up Notification

If the permittees will not discharge during the first 60 days following the effective date of this permit, the permittees shall notify the Department within 14 days following the effective date of this permit, and then 60 days prior to the commencement of the discharge.

2. Submittal Requirements for Self-Monitoring Data

Part 31 of the NREPA (specifically Section 324.3110(7)); and R 323.2155(2) of Part 21, Wastewater Discharge Permits, promulgated under Part 31 of the NREPA, allow the Department to specify the forms to be utilized for reporting the required self-monitoring data. Unless instructed on the effluent limitations page to conduct "Retained Self-Monitoring," the permittees shall submit self-monitoring data via the Department's MiWaters system.

The permittees shall utilize the information provided on the MiWaters website, located at https://miwaters.deq.state.mi.us, to access and submit the electronic forms. Both monthly summary and daily data shall be submitted to the Department no later than the 20th day of the month following each month of the authorized discharge period(s). The permittees may be allowed to submit the electronic forms after this date if the Department has granted an extension to the submittal date.

3. Retained Self-Monitoring Requirements

If instructed on the effluent limits page (or otherwise authorized by the Department in accordance with the provisions of this permit) to conduct retained self-monitoring, the permittees shall maintain a year-to-date log of retained self-monitoring results and, upon request, provide such log for inspection to the staff of the Department. Retained self-monitoring results are public information and shall be promptly provided to the public upon request.

The permittees shall certify, in writing, to the Department, on or before January 10th (April 1st for animal feeding operation facilities) of each year, that: 1) all retained self-monitoring requirements have been complied with and a year-to-date log has been maintained; and 2) the application on which this permit is based still accurately describes the discharge. With this annual certification, the permittees shall submit a summary of the previous year's monitoring data. The summary shall include maximum values for samples to be reported as daily maximums and/or monthly maximums and minimum values for any daily minimum samples.

Retained self-monitoring may be denied to permittees by notification in writing from the Department. In such cases, the permittees shall submit self-monitoring data in accordance with Part II.C.2., above. Such a denial may be rescinded by the Department upon written notification to the permittees. Reissuance or modification of this permit or reissuance or modification of an individual permittees' authorization to discharge shall not affect previous approval or denial for retained self-monitoring unless the Department provides notification in writing to the permittees.

4. Additional Monitoring by Permittees

If the permittees monitor any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report. Such increased frequency shall also be indicated.

Monitoring required pursuant to Part 41 of the NREPA or Rule 35 of the Mobile Home Park Commission Act (Act 96 of the Public Acts of 1987) for assurance of proper facility operation shall be submitted as required by the Department.

5. Compliance Dates Notification

Within 14 days of every compliance date specified in this permit, the permittees shall submit a *written* notification to the Department indicating whether or not the particular requirement was accomplished. If the requirement was not accomplished, the notification shall include an explanation of the failure to accomplish the requirement, actions taken or planned by the permittees to correct the situation, and an estimate of when the requirement will be accomplished. If a written report is required to be submitted by a specified date and the permittees accomplish this, a separate written notification is not required.

6. Noncompliance Notification

Compliance with all applicable requirements set forth in the Federal Act, Parts 31 and 41 of the NREPA, and related regulations and rules is required. All instances of noncompliance shall be reported as follows:

a. 24-Hour Reporting
Any noncompliance which may endanger health or the environment (including maximum and/or minimum daily concentration discharge limitation exceedances) shall be reported, verbally, within 24 hours from the time the permittees becomes aware of the noncompliance. A written submission shall also be provided within five (5) days.

b. Other Reporting
The permittees shall report, in writing, all other instances of noncompliance not described in a. above at the time monitoring reports are submitted; or, in the case of retained self-monitoring, within five (5) days from the time the permittees become aware of the noncompliance.

Written reporting shall include: 1) a description of the discharge and cause of noncompliance; and 2) the period of noncompliance, including exact dates and times, or, if not yet corrected, the anticipated time the noncompliance is expected to continue, and the steps taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

7. Spill Notification

The permittees shall immediately report any release of any polluting material which occurs to the surface waters or groundwaters of the state, unless the permittees have determined that the release is not in excess of the threshold reporting quantities specified in the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code), by calling the Department at the number indicated on the second page of this permit (or, if this is a general permit, on the COC); or, if the notice is provided after regular working hours, call the Department's 24-hour Pollution Emergency Alerting System telephone number, 1-800-292-4706 (calls from **out-of-state** dial 1-517-373-7660).

Within ten (10) days of the release, the permittees shall submit to the Department a full written explanation as to the cause of the release, the discovery of the release, response (clean-up and/or recovery) measures taken, and preventive measures taken or a schedule for completion of measures to be taken to prevent reoccurrence of similar releases.

8. Upset Noncompliance Notification

If a process "upset" (defined as an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittees) has occurred, the permittees who wishes to establish the affirmative defense of upset, shall notify the Department by telephone within 24 hours of becoming aware of such conditions; and within five (5) days, provide in writing, the following information:

a. that an upset occurred and that the permittees can identify the specific cause(s) of the upset;

b. that the permitted wastewater treatment facility was, at the time, being properly operated and maintained (note that an upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation); and

c. that the permittees has specified and taken action on all responsible steps to minimize or correct any adverse impact in the environment resulting from noncompliance with this permit.

No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

In any enforcement proceedings, the permittees, seeking to establish the occurrence of an upset, has the burden of proof.

9. Bypass Prohibition and Notification

a. Bypass Prohibition
Bypass is prohibited, and the Department may take an enforcement action, unless:

1) bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

2) there were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass; and

3) the permittees submitted notices as required under 9.b. or 9.c. below.

b. Notice of Anticipated Bypass
If the permittees know in advance of the need for a bypass, it shall submit prior notice to the Department, if possible at least ten (10) days before the date of the bypass, and provide information about the anticipated bypass as required by the Department. The Department may approve an anticipated bypass, after considering its adverse effects, if it will meet the three (3) conditions listed in 9.a. above.

c. Notice of Unanticipated Bypass
The permittees shall submit notice to the Department of an unanticipated bypass by calling the Department at the number indicated on the second page of this permit (if the notice is provided after regular working hours, use the following number: 1-800-292-4706) as soon as possible, but no later than 24 hours from the time the permittees becomes aware of the circumstances.

d. Written Report of Bypass
A written submission shall be provided within five (5) working days of commencing any bypass to the Department, and at additional times as directed by the Department. The written submission shall contain a description of the bypass and its cause; the period of bypass, including exact dates and times, and if the bypass has not been corrected, the anticipated time it is expected to continue; steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass; and other information as required by the Department.

e. Bypass Not Exceeding Limitations
The permittees may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to ensure efficient operation. These bypasses are not subject to the provisions of 9.a., 9.b., 9.c., and 9.d., above. This provision does not relieve the permittees of any notification responsibilities under Part II.C.11. of this permit.

f. Definitions

1) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

2) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

10. Bioaccumulative Chemicals of Concern (BCC)

Consistent with the requirements of R 323.1098 and R 323.1215 of the Michigan Administrative Code, the permittees are prohibited from undertaking any action that would result in a lowering of water quality from an increased loading of a BCC unless an increased use request and antidegradation demonstration have been submitted and approved by the Department.

11. Notification of Changes in Discharge

The permittees shall notify the Department, in writing, as soon as possible but no later than 10 days of knowing, or having reason to believe, that any activity or change has occurred or will occur which would result in the discharge of: 1) detectable levels of chemicals on the current Michigan Critical Materials Register, priority pollutants or hazardous substances set forth in 40 CFR 122.21, Appendix D, or the Pollutants of Initial Focus in the Great Lakes Water Quality Initiative specified in 40 CFR 132.6, Table 6, which were not acknowledged in the application or listed in the application at less than detectable levels; 2) detectable levels of any other chemical not listed in the application or listed at less than detection, for which the application specifically requested information; or 3) any chemical at levels greater than five times the average level reported in the complete application (see the first page of this permit, for the date(s) the complete application was submitted). Any other monitoring results obtained as a requirement of this permit shall be reported in accordance with the compliance schedules.

12. Changes in Facility Operations

Any anticipated action or activity, including but not limited to facility expansion, production increases, or process modification, which will result in new or increased loadings of pollutants to the receiving waters must be reported to the Department by a) submission of an increased use request (application) and all information required under R 323.1098 (Antidegradation) of the Water Quality Standards or b) by notice if the following conditions are met: 1) the action or activity will not result in a change in the types of wastewater discharged or result in a greater quantity of wastewater than currently authorized by this permit; 2) the action or activity will not result in violations of the effluent limitations specified in this permit; 3) the action or activity is not prohibited by the requirements of Part II.C.10.; and 4) the action or activity will not require notification pursuant to Part II.C.11. Following such notice, the permit or, if applicable, the facility's COC may be modified according to applicable laws and rules to specify and limit any pollutant not previously limited.

13. Transfer of Ownership or Control

In the event of any change in control or ownership of facilities from which the authorized discharge emanates, the permittees shall submit to the Department 30 days prior to the actual transfer of ownership or control a written agreement between the current permittees and the new permittees containing: 1) the legal name and address of the new owner; 2) a specific date for the effective transfer of permit responsibility, coverage and liability; and 3) a certification of the continuity of or any changes in operations, wastewater discharge, or wastewater treatment.

If the new permittees are proposing changes in operations, wastewater discharge, or wastewater treatment, the Department may propose modification of this permit in accordance with applicable laws and rules.

14. Operations and Maintenance Manual

For wastewater treatment facilities that serve the public (and are thus subject to Part 41 of the NREPA), Section 4104 of Part 41 and associated Rule 2957 of the Michigan Administrative Code allow the Department to require an Operations and Maintenance (O&M) Manual from the facility. An up-to-date copy of the O&M Manual shall be kept at the facility and shall be provided to the Department upon request. The Department may review the O&M Manual in whole or in part at its discretion and require modifications to it if portions are determined to be inadequate.

At a minimum, the O&M Manual shall include the following information: permit standards; descriptions and operation information for all equipment; staffing information; laboratory requirements; record keeping requirements; a maintenance plan for equipment; an emergency operating plan; safety program information; and copies of all pertinent forms, as-built plans, and manufacturer's manuals.

Certification of the existence and accuracy of the O&M Manual shall be submitted to the Department at least sixty days prior to start-up of a new wastewater treatment facility. Recertification shall be submitted sixty days prior to start-up of any substantial improvements or modifications made to an existing wastewater treatment facility.

15. Signatory Requirements

All applications, reports, or information submitted to the Department in accordance with the conditions of this permit and that require a signature shall be signed and certified as described in the Federal Act and the NREPA.

The Federal Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

The NREPA (Section 3115(2)) provides that a person who at the time of the violation knew or should have known that he or she discharged a substance contrary to this part, or contrary to a permit, COC, or order issued or rule promulgated under this part, or who intentionally makes a false statement, representation, or certification in an application for or form pertaining to a permit or COC or in a notice or report required by the terms and conditions of an issued permit or COC, or who intentionally renders inaccurate a monitoring device or record required to be maintained by the Department, is guilty of a felony and shall be fined not less than $2,500.00 or more than $25,000.00 for each violation. The court may impose an additional fine of not more than $25,000.00 for each day during which the unlawful discharge occurred. If the conviction is for a violation committed after a first conviction of the person under this subsection, the court shall impose a fine of not less than $25,000.00 per day and not more than $50,000.00 per day of violation. Upon conviction, in addition to a fine, the court in its discretion may sentence the defendant to imprisonment for not more than 2 years or impose probation upon a person for a violation of this part. With the exception of the issuance of criminal complaints, issuance of warrants, and the holding of an arraignment, the circuit court for the county in which the violation occurred has exclusive jurisdiction. However, the person shall not be subject to the penalties of this subsection if the discharge of the effluent is in conformance with and obedient to a rule, order, permit, or COC of the Department. In addition to a fine, the attorney general may file a civil suit in a court of competent jurisdiction to recover the full value of the injuries done to the natural resources of the state and the costs of surveillance and enforcement by the state resulting from the violation.

16. Electronic Reporting

Upon notice by the Department that electronic reporting tools are available for specific reports or notifications, the permittees shall submit electronically all such reports or notifications as required by this permit, on forms provided by the Department.

PART II

Section D. Management Responsibilities

1. Duty to Comply

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit, more frequently than, or at a level in excess of, that authorized, shall constitute a violation of the permit.

It is the duty of the permittees to comply with all the terms and conditions of this permit. Any noncompliance with the Effluent Limitations, Special Conditions, or terms of this permit constitutes a violation of the NREPA and/or the Federal Act and constitutes grounds for enforcement action; for permit or Certificate of Coverage (COC) termination, revocation and reissuance, or modification; or denial of an application for permit or COC renewal.

It shall not be a defense for permittees in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

2. Operator Certification

The permittees shall have the waste treatment facilities under direct supervision of an operator certified at the appropriate level for the facility certification by the Department, as required by Sections 3110 and 4104 of the NREPA. Permittees authorized to discharge storm water shall have the storm water treatment and/or control measures under direct supervision of a storm water operator certified by the Department, as required by Section 3110 of the NREPA.

3. Facilities Operation

The permittees shall, at all times, properly operate and maintain all treatment or control facilities or systems installed or used by the permittees to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures.

4. Power Failures

In order to maintain compliance with the effluent limitations of this permit and prevent unauthorized discharges, the permittees shall either:

a. provide an alternative power source sufficient to operate facilities utilized by the permittees to maintain compliance with the effluent limitations and conditions of this permit; or

b. upon the reduction, loss, or failure of one or more of the primary sources of power to facilities utilized by the permittees to maintain compliance with the effluent limitations and conditions of this permit, the permittees shall halt, reduce or otherwise control production and/or all discharge in order to maintain compliance with the effluent limitations and conditions of this permit.

5. Adverse Impact

The permittees shall take all reasonable steps to minimize or prevent any adverse impact to the surface waters or groundwaters of the state resulting from noncompliance with any effluent limitation specified in this permit including, but not limited to, such accelerated or additional monitoring as necessary to determine the nature and impact of the discharge in noncompliance.

6. Containment Facilities

The permittees shall provide facilities for containment of any accidental losses of polluting materials in accordance with the requirements of the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code). For a Publicly Owned Treatment Work (POTW), these facilities shall be approved under Part 41 of the NREPA.

7. Waste Treatment Residues

Residuals (i.e. solids, sludges, biosolids, filter backwash, scrubber water, ash, grit, or other pollutants or wastes) removed from or resulting from treatment or control of wastewaters, including those that are generated during treatment or left over after treatment or control has ceased, shall be disposed of in an environmentally compatible manner and according to applicable laws and rules. These laws may include, but are not limited to, the NREPA, Part 31 for protection of water resources, Part 55 for air pollution control, Part 111 for hazardous waste management, Part 115 for solid waste management, Part 121 for liquid industrial wastes, Part 301 for protection of inland lakes and streams, and Part 303 for wetlands protection. Such disposal shall not result in any unlawful pollution of the air, surface waters or groundwaters of the state.

8. Right of Entry

The permittees shall allow the Department, any agent appointed by the Department, or the Regional Administrator, upon the presentation of credentials and, for animal feeding operation facilities, following appropriate biosecurity protocols:

a. to enter upon the permittee's premises where an effluent source is located or any place in which records are required to be kept under the terms and conditions of this permit; and

b. at reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect process facilities, treatment works, monitoring methods and equipment regulated or required under this permit; and to sample any discharge of pollutants.

9. Availability of Reports

Except for data determined to be confidential under Section 308 of the Federal Act and Rule 2128 (R 323.2128 of the Michigan Administrative Code), all reports prepared in accordance with the terms of this permit, shall be available for public inspection at the offices of the Department and the Regional Administrator. As required by the Federal Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Federal Act and Sections 3112, 3115, 4106 and 4110 of the NREPA.

10. Duty to Provide Information

The permittees shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or the facility's COC, or to determine compliance with this permit. The permittees shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

Where the permittees become aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.

PART II

Section E. Activities Not Authorized by This Permit

1. Discharge to the Groundwaters

This permit does not authorize any discharge to the groundwaters. Such discharge may be authorized by a groundwater discharge permit issued pursuant to the NREPA.

2. POTW Construction

This permit does not authorize or approve the construction or modification of any physical structures or facilities at a POTW. Approval for the construction or modification of any physical structures or facilities at a POTW shall be by permit issued under Part 41 of the NREPA.

3. Civil and Criminal Liability

Except as provided in permit conditions on "Bypass" (Part II.C.9. pursuant to 40 CFR 122.41(m)), nothing in this permit shall be construed to relieve the permittees from civil or criminal penalties for noncompliance, whether or not such noncompliance is due to factors beyond the permittee's control, such as accidents, equipment breakdowns, or labor disputes.

4. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittees from any responsibilities, liabilities, or penalties to which the permittees may be subject under Section 311 of the Federal Act except as are exempted by federal regulations.

5. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittees from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Federal Act.

6. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize violation of any federal, state or local laws or regulations, nor does it obviate the necessity of obtaining such permits, including any other Department of Environment, Great Lakes, and Energy permits, or approvals from other units of government as may be required by law.