EXECUTIVE SUMMARY

This is one of a series of river assessments to be prepared by Michigan Department of Natural Resources (MDNR), Fisheries Division, for Michigan rivers. This report describes characteristics of the Flint River and its biological communities.

River assessments are prepared to provide a comprehensive reference for citizens and agency personnel who desire information about a particular fisheries resource. These assessments will provide an approach to identifying opportunities and solving problems related to aquatic resources in watersheds. It is hoped that this river assessment will increase public awareness of the Flint River and its challenges and serve to promote a sense of public stewardship and advocacy for the resources of the watershed. The ultimate goal is to increase public involvement in the decision making process to benefit the river and resources.

This document consists of four parts: an introduction, a river assessment, management options, and public comments and responses. The river assessment is the nucleus of the report. The characteristics of the Flint River and its watershed are described in twelve sections: geography, history, geology and hydrology, soil and land use patterns, channel morphology, dams and barriers, special jurisdictions, water quality, biological communities, fishery management, recreational use, and citizen involvement.

The management options section of the report identifies a variety of challenges and opportunities. These management options are categorized and presented following the organization of the main sections of the river assessment. It must be stressed that the options listed are not necessarily recommended by MDNR, Fisheries Division. They are intended to provide groundwork for public discussion and comment.

The Flint River and its tributaries form a network draining approximately 1,332 square miles of southeast Michigan. The main river is approximately 142 miles in length and its basin contains portions of the following Michigan counties: Oakland, Lapeer, Tuscola, Sanilac, Genesee, Shiawassee, and Saginaw. The Flint River is a principal tributary of the Shiawassee River, which flows to the Saginaw River and Saginaw Bay of Lake Huron. Its major tributaries include the South and North Branch Flint rivers, and Kearsley, Thread, Swartz, and Misteguay creeks.

For purposes of discussion, the Flint River mainstem is divided into six sections called valley segments. Valley segments represent portions of a river that share common channel and landscape features. They were identified using major changes in hydrology, channel and valley shapes, land cover, and surficial geology. The upper South Branch Flint River segment extends from Horseshoe Lake to Winns Pond. It has moderate groundwater inflow keeping water temperature cool and water flow is moderately stable. The middle South Branch Flint River segment extends from Winns Pond to the Plum Creek confluence, north of Lapeer. Groundwater inflow is reduced, water temperature is warmer, and flow is less stable. The lower South Branch Flint River segment extends from the confluence of Plum Creek to the confluence of the South Branch Flint River with the North Branch Flint River and includes the North Branch Flint River tributary. In this segment, groundwater inflow is low, water temperature is warm, and flow is moderately unstable. The upper Flint River segment extends from the confluence of the North and South branches to the Swartz Creek confluence in Flint. Flow is greater in this segment but is regulated by a number of dams (Holloway, Mott, Utah, and Hamilton). Groundwater inflow is low and water temperature is warm. The middle Flint River segment extends from the confluence of Swartz Creek to the Saginaw County line north of Montrose. Groundwater inflow is low, water temperature is warm, and flow is unstable and event responsive. The lower Flint River segment extends from the Saginaw County line to the confluence of the Flint

with the Shiawassee River. Groundwater inflow is low, water temperature is warm, and flow remains unstable and event responsive.

The hydrology of the Flint River is strongly influenced by glacial deposits and watershed development. Surficial geology is generally of two types: permeable sandy loam and gravel providing moderate groundwater inflow, and less permeable clay-rich loam providing little groundwater inflow and greater surface water runoff. Unstable and event responsive flow is found in the majority of the basin. Much of the Flint River basin has been channelized for drainage exacerbating unstable flow. Moderately stable flow is found in the upper South Branch Flint River and in the headwater reaches of some tributaries (i.e. Kearsley and Thread creeks).

The average gradient of the mainstem Flint River is 2.9 feet per mile with a range of 0-10 feet per mile. The highest gradient (> 5 feet per mile) is located in the upper South Branch Flint River and the middle Flint River in the Flushing area. The lowest gradient (< 1 foot per mile) occurs in the lower Flint River. Fish and other aquatic animals are typically most diverse and productive in river sections with higher gradient and well established riffle-pool sequences with good hydraulic diversity.

Land use in the Flint River watershed is dominated by agriculture (49%) followed by forested (16%), non-forested (15%), urban development (15%), wetland (3%), and water (1%). The loss of wetlands from channelization and tiling has decreased flow stability, increased erosion and sedimentation, and altered stream temperature regimes. Urban development along the river has had significant affects on water quality. Continued growth and development in the watershed is expected to exacerbate unstable flow and degraded water quality conditions.

The channel of the mainstem Flint River has been adversely altered. High gradient reaches in the upper Flint River have been impounded, inundating natural rock and gravel substrates, altering stream flow, reducing stream habitat continuity, and interrupting sediment and nutrient transport. Unstable flow has widened the mainstem channel by increased erosion resulting in gradual bank sloping. Erosion has reduced aquatic stream bank habitat and overhanging vegetative cover. Removal of riparian vegetation has reduced important habitat associated with large woody structure in the channel. Most tributaries have been straightened and continue to be dredged on a routine basis.

There are 93 dams and water-control structures in the Flint River basin registered with the Michigan Department of Environmental Quality (MDEQ). Four major dams are on the mainstem. Dams alter flow and fragment river systems turning high gradient river habitat into lentic habitat. These high-gradient riverine areas are essential spawning habitat for several species of fish. Dams impede fish movements to refuge habitats, isolate populations, and block spawning migrations. Hamilton Dam on the mainstem, in the city of Flint, is the first barrier blocking upstream movement of potamodromous fish. Dams also act as sediment, nutrient, and woody debris traps. Holloway Reservoir and Mott Impoundment have experienced increases in sediments and nutrients affecting their aquatic communities. Sediment-free water released from dams has high erosive power that can cause bank erosion and increase sediment transport downstream.

Despite their effects on natural river function, dams provide some human benefit. They provide water supply to municipalities, industries, and fire stations vital to the community. Impoundments created by Holloway and Mott dams provide valuable recreational uses to the Flint area where water-based recreational opportunities are lacking. Impoundments in the Lapeer State Game Area and upper Thread Creek provide valuable wildlife habitat and refuge.

Historically, the Flint River basin has suffered from poor water quality due to unregulated discharges by industries and municipalities and from channelization. Point source pollution has decreased over the past thirty years through restrictive discharge regulations and with improved technology and managerial practices. Pollution from point sources will continue to be reduced as municipal

wastewater treatment plants upgrade their facilities, transport lines, and technology, and with tighter restrictions on industrial discharge permits.

Nonpoint source pollution is the greatest factor that degrades water quality in the Flint River watershed. This type of pollution consists of sediments, nutrients, bacteria, organic chemicals, and inorganic chemicals from agricultural fields, construction sites, parking lots, roads and road crossings, and septic seepage. Extensive channelization facilitates pollutant transport by eliminating the filtering capacity of wetlands. Reduced nonpoint source pollution can occur through implementation of best management practices. However, drainage ditches will continue to transport pollutants at an accelerated rate unless corrective and rehabilitative efforts to restore wetlands in the watershed are implemented.

Based on post-1950 records, the present fish community of the Flint River watershed is composed of 77 species. Seven fish species (brassy minnow, redfin shiner, silver redhorse, greater redhorse, tadpole madtom, coho salmon, pirate perch) have been recorded in the Flint River but their current status is unknown. Five indigenous species are believed extirpated: lake sturgeon, lake trout, lake herring, lake whitefish, and muskellunge. These extirpated fish species are associated with Lake Huron and historically used the Flint River for spawning. Thirteen species of the present fish community have been introduced or have colonized in the basin. No State or Federally threatened or endangered fish species occur in the Flint River watershed. Although the diversity of fish species present in the Flint River remains relatively high, certain species have declined in abundance. Affects of watershed development have favored tolerant species with broad habitat requirements. Silt-tolerant fish species have increased in the watershed, whereas fishes requiring clean gravel substrate or clean cooler water have declined. Degraded water quality, unstable flow, and stream habitat loss from channelization are the three principal factors that have resulted in significant changes in fish species composition in the Flint River basin. Also, dams and lake-level control structures have affected fish communities by fragmenting the river system, altering flow, increasing erosion, blocking fish movement, and changing lotic habitat to sediment laden and nutrient rich lentic habitat.

Fisheries management of the Flint River and its tributaries has been limited due to degraded water quality, unstable flow, and habitat loss. Future fisheries management depends on improvement of these limitations. The re-establishment of the Saginaw Bay walleye run in the Flint River is an example of how improved water quality teamed with fish stocking can result in fisheries rehabilitation and improvement. Other fisheries improvements may be made in localized areas with fish stocking and habitat rehabilitation. Identifying and protecting river reaches of good water quality and habitat, and rehabilitating degraded reaches is necessary to establish and maintain self-sustaining populations. Fish communities in isolated areas and in some inland lakes are now being enhanced with fish stocking. Creel census and an angler reporting system would provide valuable insight for future fisheries management.

Recreational use of the Flint River is high in areas where public access is available. Many people use the river and corridor for fishing, canoeing, swimming, picnicking, and hunting. However, recreational use suffers because of limited access and pollution (bacteria). To achieve recreation potential, new access areas throughout the watershed need to be purchased. Corrective actions on reducing bacterial contamination must also be taken to assure full body contact recreation is permissible in the river system.

Interest in the Flint River watershed is increasing and gaining public support. Several organizations work on various aspects of the river including fishing, hunting, and other recreational use. Interest from groups outside of the Flint River watershed stems from the role the Flint River plays as a component of the Saginaw Bay watershed. The Flint River Watershed Coalition has taken a lead role in watershed education. With decreases in governmental funding and personnel, public involvement

through local and watershed organizations is important to ensure that habitat protection and enhancement of water quality and recreational opportunities continues to move forward in the Flint River basin.