2. PURPOSE AND NEED FOR ACTION

The purpose of the proposed Project is, to ~~the greatest extent reasonably possible, revitalize, enhance, and restore,~~ maintain and improve 3,527 feet~~1,075 meters~~ of the rapids in the Grand River in downtown Grand Rapids from I-196 to Fulton Street. The ~~revitalization, enhancement, and maintenance~~ goal of the ~~rapids~~ proposed P~~p~~roject is ~~expected~~ to facilitate incidental benefits, such as expanded public access and use of the river, expanded recreational use of the river, improved aquatic habitat diversity, and improved public health and safety. More specifically, the Project's purpose is to:

1. restore aquatic habitat diversity and suitability for native Great Lakes drainage fish and mussel species, especially threatened, endangered, and special concern native species, in the Grand River downstream of I-196 to Fulton Street;
2. reduce ~~or eliminate~~ public safety hazards generated by the existing hydraulic low-head dams; and
3. install diversified hydraulic features that would improve habitat and create/enhance recreation opportunities such as whitewater paddling, rafting, tubing, and angling in the Grand River.

The need for the proposed P~~p~~roject action arises from the degraded condition of the river, which is a ~~significant~~important natural resource for Grand Rapids and the state, and several recognized safety problems associated with that degraded condition. Historic physical changes made to the Grand River as it flows through downtown Grand Rapids, including construction of four, low-head beautification dams and removal of natural substrate, have impacted native and listed species of fish and mussels, limited public recreational activities, and have altered habitat. Studies have determined that the diversity and productivity of listed species of fish and mussel community are currently much lower than what is possible. For example, according to the *Lake Sturgeon Habitat* report completed by River Restoration in 2013, "The Grand River is one of only four rivers on the eastern shoreline of Lake Michigan where a known remnant population of lake sturgeon (*Acipenser fulvescens*) successfully reproduces (Smith, MDNR unpublished data). The availability of spawning and staging habitats in rivers is considered a major factor limiting the recovery of lake sturgeon in Lake Michigan (Daugherty et. al, 2009, Auer 1999). Furthermore, remnant sturgeon populations throughout the Great Lakes Basin have been found to be genetically unique, with the Grand River population likely included, and protection of each population is a priority of Federal, State and Tribal agencies (Welsh et al. 2010 Holey et al. 2000). Recently numerous sturgeon restoration projects have begun (Holtgren et al. 2007), however, very few have focused on increasing spawning and staging habitat in Michigan."

Past development has significantly reduced habitat diversity in the river. Along the reach of the river that courses through downtown Grand Rapids, the Grand River drops ~~an impressive~~ 18.5 feet, representing the steepest grade anywhere along its entire length. Only one percent of the river habitat in the lower peninsula of Michigan is comprised of rapid-type habitat, which is important to the life cycle of many aquatic species. Rapid-type habitat is defined as a river system with a steep energy gradient, coarse bed substrates, and non-uniform distribution of instream velocities. Historic physical alterations to the Grand River have altered habitat, impacted fish and mussel communities, and limited public recreational opportunities. In particular, the four low-head beautification dams have altered sediment transport, flow velocity, fish passage, and substrate suitability and have resulted in public safety hazards, including

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multiple deaths. As a result, habitat diversity has been significantly reduced, and fish and mussel community diversity and productivity are currently much lower than pre-development conditions.

~~If funded under PL 83-566, the~~The proposed Pproject opportunities that could be realized include:

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- Improved habitat diversity and suitability over 3,300 feet and 47 acres of the Grand River;
- Increased Great Lakes native fish and mussel diversity and productivity;
- Protection of threatened and endangered fish and mussel species including the lake sturgeon, river redhorse, and snuffbox mussel;
- Creation of new recreational opportunities with improved, safe public access in an urbanized Great Lakes river corridor;
- Scour protection to the existing bridge structures; and
- Improved shoreline access.

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