

Fact Sheet for Antidegradation Assessment  
For Metropolitan Water Reclamation District of Greater Chicago  
IEPA Log No. C-0687-11  
COE Log No. LRC-2011-772  
Contact: Diane Shasteen (217) 558-2012  
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Metropolitan Water Reclamation District of Greater Chicago (MWRDGC, “Applicant”) has applied for a 401 Water Quality Certification for impacts associated with Melvina Ditch streambank stabilization project in Section 7, Township 37 North, Range 13 East, near Oak Lawn, Cook County, Illinois. The project site is located to the east of Nashville Avenue between 95<sup>th</sup> and 99<sup>th</sup> Streets in the Villages of Chicago Ridge and Oak Lawn. The proposed project will fully encapsulate the ditch for 148’ south of 95<sup>th</sup> Street, stabilize the right and left banks from the encapsulation to 99<sup>th</sup> Street, install toe protection along the regraded portion of the right bank, and restore the site with native vegetation. Encapsulation will utilize twin 8’ X 7’ reinforced concrete box culverts (RCBCs) and bank stabilization will include a structural wall on the left bank and a regraded slope of 2:1 (horizontal: vertical) on the right bank. Due to the narrowness of the site, the ditch channel will be shifted to the east to accommodate a stable naturalized right side streambank. The purpose of this project is to provide protection for property, roadway, and utility structures at risk due to the extreme erosion of Melvina Ditch. Impacts of the proposed project include temporary (1.51 acres) and permanent (0.11 acres) impacts to waters of the U.S. to be mitigated with the purchase of credits from a mitigation bank at a ratio to be determined by the USACE.

Information used in this review was obtained from the applicant in a document entitled, Melvina Ditch Streambank Restoration Project Joint Permit Application, dated April, 2014.

### **Identification and Characterization of the Affected Water Body.**

Melvina Ditch (No Segment Code), a direct tributary to Stoney Creek (IL\_GIBB), is a General Use Water with an estimated zero cfs 7Q10 flow. According to the draft 2014 Illinois Integrated Water Quality Report and Section 303(d) List, Melvina Ditch has not been assessed by Illinois EPA. Melvina Ditch is not listed as a biologically significant stream in the 2008 Illinois Department of Natural Resources Publication *Integrating Multiple Taxa in a Biological Stream Rating System*; nor is it given an integrity rating in that document. Melvina Ditch is not designated as an enhanced water pursuant to the dissolved oxygen water quality standard.

Stoney Creek (IL\_GIBB) is a General Use Water with an estimated zero cfs 7Q10 flow. According to the draft 2014 Illinois Integrated Water Quality Report and Section 303(d) List, Stoney Creek has not been assessed by Illinois EPA. Stoney Creek is not listed as a biologically significant stream in the 2008 Illinois Department of Natural Resources Publication *Integrating Multiple Taxa in a Biological Stream Rating System*; nor is it given an integrity rating in that document. Stoney Creek is not designated as an enhanced water pursuant to the dissolved oxygen water quality standard.

According to the Applicant, Melvina Ditch is a manmade perennial channel that was excavated in the early 1960s, realigned in the 1970s, drains a heavily sewered and developed area of approximately 8.5 square miles, and is fully encapsulated in sewers upstream of the proposed

project site. According to the USGS Illinois Streamstats basin characteristics program, the drainage area of the fully encapsulated portion of Melvina Ditch is 6.5 acres, leaving a drainage area of approximately 2 acres downstream of 95<sup>th</sup> Street. The existing aquatic habitat at the site is limited due to the channel morphology, scouring urban stormwater flows, and the small drainage area. The Applicant noted that no fish or fish-eating species of birds were observed while walking the length of the channel. A study in 1988 by MWRDGC on the Calumet-Sag Channel, the receiving stream of Stoney Creek, noted the fish community was dominated by *Dorosoma cepedianum* (gizzard shad), *Cyprinus carpio* (carp), *Carassius auratus* (goldfish), and *Lepomis cyanellus* (green sunfish), while oligochaete worms dominated the benthic invertebrate community. All of these species are tolerant to degradation and thrive in low dissolved oxygen and high turbidity. If aquatic species do reside in Melvina Creek, it is assumed they would be similar to the species located in the Calumet-Sag Channel due to proximity and similarity of the watershed. No emergent or submergent vegetation was observed in the channel bottom likely due to the flashiness of the system. The streambanks are steep sloped (1H:1V) and the channel is bordered by a low quality riparian community consisting of *Acer negundo* (box elder), *Populus deltoids* (cottonwood), *Fraxinus pennsylvanica* (green ash), *Rhamnus cathartica* (buckthorn), *Morus alba* (white mulberry), and *Prunus serotina* (black cherry).

No wetlands were identified in the project area.

#### **Identification of Proposed Pollutant Load Increases or Potential Impacts on Uses.**

The pollutant load increases that would occur from this project include some possible increases in total suspended solids (TSS). These increases, a normal and unavoidable result of bank grading and stabilization, may occur in the ditch at the point of project activity. All construction activities will be completed “in the dry” to reduce the probability of TSS increases.

Benthic habitat will be disturbed in the project area, particularly in the encapsulation and structural wall portions of the project where approximately 8,150 CY of the channel bottom will be excavated. Fill materials to be used at the site include approximately 1,250 CY clean earth fill, 8,050 CY of stone bedding material (CA-7), and 31 CY of concrete. If additional excavated materials are clean and suitable for reuse, they will be utilized in replacement of CA-7. Restoration of the site will include approximately 16,766 SY of 12” deep topsoil and plantings of native vegetation.

#### **Fate and Effect of Parameters Proposed for Increased Loading.**

The increase in suspended solids will be local and temporary. Bank erosion and downcutting has resulted in the increased siltation of Melvina Ditch and Stoney Creek. Although the benthic habitat will be disturbed by the project; it is anticipated to recover and improve over time. The encapsulation of the ditch, streambank grading, and structural wall placement, along with reestablishment of native vegetation will aid in the stabilization of the streambank and reduce the influx of sediment into Melvina Ditch and Stoney Creek.

#### **Purpose and Social & Economic Benefits of the Proposed Activity.**

The purpose of the proposed project is to provide long-term stabilization of the eroding banks of Melvina Ditch from 95<sup>th</sup> to 99<sup>th</sup> Street. Previous attempts at bank stabilization including gabion baskets, broken concrete, H-piles, and retaining structures are visible at the proposed site. The retaining structures have rotted away and erosion continues behind and around the gabion baskets and broken concrete. The man-made ditch cuts through a highly developed area with the Chicago Ridge Mall located to the east, a residential subdivision to the west, commercial properties to the north, and industrial properties to the south of the proposed site. Alleviating the erosional issues will provide protection for these areas along with the roadways and utility structures located near the ditch.

### **Assessments of Alternatives for Less Increase in Loading or Minimal Environmental Degradation.**

The Applicant previously proposed encapsulating Melvina Ditch from 95<sup>th</sup> to 99<sup>th</sup> Streets; however due to agency and public feedback, this option was dropped from consideration and seven other alternatives were explored. Three alternatives were considered but dismissed (reason in parenthesis) including 1) regrading both banks with stable shallow slopes (space limitations), 2) installing sheet piling along each side of the channel (stiff clay make installation difficult and cost prohibitive), and 3) using biotechnology options, such as vegetated geogrids, coconut fiber logs, live woody stakes, etc. (space limitations, channel geometry and hydrology). Other Alternatives considered include:

#### **Alternative 1: Structural Wall and Vegetated Slope – Preferred Option**

- Impacts to waters of the U.S. – 0.11 acres for encapsulation of 148’
- Left Bank
  - Install soldier pile and panel wall or interlocking concrete block wall “in the dry”
  - Backfill behind wall with clean material, top with 12” of topsoil
  - Restore topsoil area with native vegetation
- Right Bank
  - Earthen slope with regraded 2:1 slope
  - Remove tree stumps and roots
  - Backfill where necessary, install 12” of topsoil, and restore native vegetation
  - Install seed and erosion control blanket on exposed topsoil to prevent erosion

#### **Alternative 2: Gabions and Alternative 3: Concrete Wall**

- Similar construction activities for both activities
- Install approximately 2,504 feet of streambank restoration structures, either gabion wall or concrete wall, along both streambanks
- Structures to be placed approximately 8’ from the channel centerline with walls 8-9’ high
- Installation would include excavation of the toe of the wall and some embankment excavation
- Installation of a safety fence along the top of both banks
- Restore overbank areas with native vegetation

- Impacts to waters of the U.S. would be 0.59 acres (0.11 acres for encapsulation and 0.48 acres due to installation of the structural walls)

#### Alternative 4: No Action

- Does not directly impact waters of the U.S.
- Inaction would allow for continued bank failure and erosion
- Continued degradation of water quality in Melvina Ditch and receiving water bodies due to sedimentation

Alternatives 1 – 3 would provide similar protection of the waterbody, improve water quality by preventing bank erosion, and not have a significant effect on current water patterns or normal water fluctuations. These alternatives also include several common actions:

- Construction of twin 8' X 7' RCBCs extending 148' south of 95<sup>th</sup> Street
- Control water during construction including completing excavation and installation of concrete or bedding materials "in the dry"
- Remove equipment and materials from the ditch channel if flows exceed a predetermined maximum flow rate
- Install and maintain temporary erosion control measures
- Remove and replace sanitary sewer crossings
- Connect existing storm sewers to the structural streambank restoration
- Maintain utility crossings in present locations
- Stockpile excavated material that can be reused at site-stockpiles to have perimeter erosion barriers
- Dispose of excavated material unsuitable for reuse as backfill offsite
- Restore site using native vegetation, restore staging areas to original condition, and remove temporary access ramps

Alternative 2 and 3 were not chosen as the preferred option due to the following reasons:

- Increased impacts to waters of the U.S. (0.59 acres versus 0.11 acres for Alternative 1)
- Previous installation of gabions shown to be ineffective (based on photographic evidence included in the application)
- Sheet pile does not provide habitat value
- Isolation of channel bottom from streambanks

Alternative 1 is the preferred option for this project due to the following reasons:

- Least amount of impacts to waters of the U.S.
- Allows for safe access to the channel bottom via the naturalized streambank
- Creates connectivity between the streambank and the channel
- Enhances the upland habitat value by installing native vegetation on the created slope

#### Conclusion:

The proposed project will follow conditions set forth by the Agency and USACE. The least intrusive alternative would be to not complete the project. This is not an acceptable alternative

given previous failed attempts to control erosion and the need to protect the Chicago Ridge Mall and residential, commercial, and industrial properties located near the proposed site. Alleviating the erosional issues will provide protection for these areas and the associated infrastructure located near the ditch as well as improve water quality in Melvina Ditch and Stoney Creek by limiting the addition of sediment into the system.

### **Summary Comments of the Illinois Department of Natural Resources, Regional Planning Commissions, Zoning Boards or Other Entities**

An EcoCAT endangered species consultation submitted on June 4, 2014 to the Illinois Department of Natural Resources resulted in no record of State-listed threatened or endangered species or protected areas in the vicinity of the project and consultation for IDNR Project #1411915 was immediately terminated.

### **Agency Conclusion.**

This preliminary assessment was conducted pursuant to the Illinois Pollution Control Board regulation for Antidegradation found at 35 Ill. Adm. Code 302.105 (antidegradation standard) and was based on the information available to the Agency at the time the draft 401 Water Quality Certification was written. We tentatively find that the proposed activity will result in the attainment of water quality standards; that all technically and economically reasonable measures to avoid or minimize the extent of the proposed increase in pollutant loading have been incorporated into the proposed activity; and that this activity will benefit Melvina Ditch and the surrounding area by providing a more stable streambank which will reduce downcutting and streambank erosion and in turn, reduce siltation of the ditch and Stoney Creek. The project will also provide protection for at risk residential, commercial, and industrial areas and their related infrastructure due to the extreme erosion of Melvina Ditch. Comments received during the 401 Water Quality Certification public notice period will be evaluated before a final decision is made by the Agency.