

Section 4. Public Health Problem Evaluation and Report (Task 4)

The potential for adverse human health impacts resulting from direct contact with surface waters and sediments, consumption of biota taken from the study area, and/or exposure to mosquitos (or other biological agents [e.g., bacteria]) within the Grand Canal study area was assessed. The evaluation involved analysis of chemical, microbiological, and vector data for the study area. Most of the data examined for the health assessment was collected by CA in 2014, 2015 and 2016, and is described in Section 3 of this document. The discussion of the public health analysis and its findings are described in the ‘Grand Canal Public Health Evaluation Report and Sediment Risk Assessment’ (Appendix C).

The public health evaluation for the Grand Canal found that water quality in the canal has been significantly impacted by nutrient enrichment; nitrogen and phosphorus levels were found to exceed recommended benchmarks (description of benchmarks provided in Appendix C). Dissolved oxygen (DO) readings were frequently below levels necessary for healthy aquatic life. In terms of bacteriological quality, neither the Grand Canal nor the reference area surface waters (collected from an area east of the Grand Canal study area) are likely to be safe for primary contact recreation. Additionally, the quality of the fish inhabiting the Grand Canal may be compromised (e.g., for purposes of human consumption) by the microbiological contamination. It should be noted that the bacterial levels in the Canal significantly exceeded those reported for the reference area locations.

Based on the chemical monitoring for standard-list volatile and semi-volatile organic chemicals and pesticides in the Grand Canal, the chemical profile of the study area surface waters indicated low-level contamination by typical anthropogenic sources (e.g., surface water run-off). None of the cancer risk estimates for the surface waters of the Canal (developed assuming occasional swimming in or occasional consumption of fish taken from the Canal) exceeded the USEPA’s target risk range. However, the cancer risk estimates for the fish ingestion exposure pathway did exceed the conservative end of the USEPA cancer risk management range. None of the risk

estimates for the direct contact exposure pathways (i.e., assuming occasional swimming) exceeded the USEPA's target risk range.

4.0 Presentation of Data Evaluation in the Public Health Assessment (Subtask 4a)

The public health evaluation for the Grand Canal and adjacent wetlands was performed using the physical, chemical, and microbiological data collected from the Grand Canal and adjacent wetlands under Tasks 2 and 3 of the project. Additionally, the public health evaluation considered data (including vector data) provided by SCDHS and data readily available as a result of internet web searches. Descriptions of the specific data used for the public health assessment have been described throughout the 'Grand Canal Public Health Evaluation Report and Sediment Risk Assessment' (Appendix C).

4.1 Development of Public Health Evaluation Methodology (Subtask 4b)

The methodology for the Grand Canal health evaluation report was developed in conjunction with Suffolk County's Department Division of Environmental Quality. A detailed description of the methodology has been provided in Section 2 of the 'Grand Canal Public Health Evaluation Report and Sediment Risk Assessment' (Appendix C).

Table 15. Key Public Health Factors That Can Be Improved Through Actions

Category	Impaired Factor	Threshold for Action	Predicted Improvement by Action
Water Quality	Direct Human Contact	• Exceedance of recommended thresholds of NY Codes, Rules and Regulations 6CRR-NY 703.3, 703.4, and 703.5.	Increasing water flow into the canal and surrounding wetlands will help improve the overall water quality regarding health risks. Action must be taken to eliminate anthropogenic sources of contamination that are contributing to the organic chemical, nutrient, and microbiological loading into the surface waters of the canal. These sources may affect residents and recreational uses through direct contact such as dermal contact and incidental ingestion; or indirect exposure such as consumption of biota taken from the canal.
	Consumption of Biota	• Exceedance of recommended thresholds of NYDOH LI Health Advice on Eating Fish You Catch. • Exceedance USEPA Recreational Screening levels (direct contact and fish consumption).	
'Sediment Management	Sediment Contaminations	• Exceedance of recommended thresholds of NYS Codes, Rules and Regulations 6NYCRR Part 375 • Exceedance of recommended thresholds of	Analysis of the sediment appears to indicate elevated levels of pesticides and metal, and removing of the fine sediments within the canal may eliminate some of these contaminants. However, it would be difficult to remediate and control the resuspension of

		NYSDEC Technical and Operational Guidance Series (TOGS0 5.1.9.)	this sediment into the water column which may increase human health concerns. In addition, if action is not taken to eliminate the anthropogenic sources of these contaminants the issues causing this contamination will continue to exist.
Viral Infection	Mosquito Breeding	SCDHS sampling and testing resulting in positive presence of Vector Borne Disease	By initiating the recommended action of Integrated Marsh Management (IMM) which has been proven to be an effective method to reduce mosquito breeding. IMM practices in the surrounding wetlands may result in the reduction of mosquito breeding and reduce the need for chemical treatment.

4.2 Application of Public Health Evaluation Methodology to Study Area Data (Subtask 4c)

The public health evaluation for the Grand Canal was performed in accordance with the methodology established in the work plan. A detailed description of the methodology has been provided in Section 2 of the 'Grand Canal Public Health Evaluation Report and Sediment Risk Assessment' (Appendix C).

4.3 Preparation of Draft Report (Subtask 4d) and Preparation of Revised Draft Report (Subtask 4e)

A draft of the public health report was submitted to the County in November 2015. The draft report was reviewed by Suffolk County's Department Division of Environmental Quality. Comments were incorporated into the revised version, which is included here as an Appendix.