

WATER QUALITY AND BACTERIAL CONTAMINATION

Key Water Quality Goals

Recommendation No. WQ – 1a

(1992 Rec. 1)

It is recommended that the RAP adopt the environmental conditions listed in Table WQ – 1a as key water quality goals for the Harbour in order to increase the fish habitat, improve benthic fauna diversity and amount, to reduce the toxicity of bottom sediments, and improve water clarity.

Responsible Agencies

All Agencies

Short Term Target

WQ – 1a.1 (2003) Initial targets as listed in Table WQ – 1a are to be met by 2003.

Long Term Target

WQ – 1a.2 (2015) Final targets as listed in Table WQ – 1a are to be met by 2015. Subject to a full assessment by BARC and BAIT of the utility and cost of measures required to reach these final targets.

Table WQ – 1a Water Quality Goals for Hamilton Harbour

	Harbour Initial Goal	Harbour Final Goal	Cootes Paradise	Grindstone Creek Area	Beaches
Phosphorus concentration ($\mu\text{g/L}$)	34	17	60-70	60-70	
Un-ionized Ammonia conc. (mg/L)	<0.02	<0.02	<0.02	<0.02	
Chlorophyll a conc. ($\mu\text{g/L}$)	15-20	5-10	20	20	
Secchi Disk Trans. (m)	2	3	1.5	1	1.2
Min. DO conc. (ppm)	>1	>4	>5	>5	
Submergent/ emergent aquatic plant area (ha)	105	170	240	50	
Suspended Solids (ppm)			25	25	
Bacteria (E. coli organisms/ 100 mL water)					<100

Net Loading Effluent Targets

Recommendation No. WQ – 1b

(1992 Rec. 1)

The net discharge of ammonia, phosphorus and suspended solids at all wastewater treatment plants and industrial facilities in the Harbour and its watershed meet the loading targets specified in Table WQ – 1b. Initial phosphorus targets and initial ammonia targets are to be met at WWTPs by the end of 2003. These targets are not to be exceeded thereafter, notwithstanding population growth.

Responsible Agencies

City of Hamilton, Regional Municipality of Halton

Short Term Target

WQ – 1b.1 **(2003)** Initial targets as listed in Table WQ – 1b are to be met by 2003.

Long Term Target

WQ – 1b.2 **(2015)** Final targets as listed in Table WQ – 1b are to be met by 2015. Subject to a full assessment by BARC and BAIT of the utility and cost of measures required to reach these final targets.

Table WQ – 1b: Net Loading Targets In Kilograms Per Day

	Phosphorus		Ammonia		Suspended Solids	
	Initial	Final	Initial	Final	Initial	Final
Woodward WWTP	140	60	2270	530	3750	900
Skyway WWTP	30	12	470	115	500	200
Dundas WWTP	5		22		28	
Waterdown WWTP	1		5		5	
CSOs	70	5	160	20	1400	200
Streams	90	65				
Industry (combined)			400	270		
Stelco					4000	1500
Dofasco					3500	1500
Totals	336	142	3327	935	13183	4300

Combined Sewer Overflows

Recommendation No. WQ – 1c

(1992 Rec. 1)

It is recommended that the requirements of OMOE Procedure F-5-5 for the Determination of Treatment Requirements for Municipal and Private Combined and Partially Separated Sewer Systems be met, including:

- i) *eliminating the occurrence of dry weather overflows;*
- ii) *minimizing the potential for impacts on human health and aquatic life resulting from CSO;*
- iii) *achieving as a minimum, compliance with body contact recreational provincial water quality objectives (PWQO) for E. coli at beaches impacted by CSO for at least 95% of the four month period (June 1 to Sept. 30) for an average year.*

In addition to the control of all dry weather flow, 90% of the flow volume resulting from wet weather flow should be captured and treated during a seven month period commencing within 15 days of April 1.

Responsible Agencies

City of Hamilton

Short Term Target

WQ – 1c.1 **(2004)** To implement remedial measures for Combined Sewer Overflows (CSOs) into Cootes Paradise Marsh.

WQ – 1c.2 **(2004)** To prepare implementation strategies for the remaining CSOs.

Long Term Target

WQ – 1c.3 **(2015)** To implement remedial measures for the remaining CSOs.

Ongoing Target

WQ – 1c.4 The Public Health Department to continue the beach monitoring program aspects of this recommendation.

Net Loading Trends

Recommendation No. WQ – 1d

(1992 Rec. 1)

In order to track net loading trends, it is recommended that measurement of the loads (as identified in Table WQ – 1b) be made in accordance with OMOE regulations, Certificates of Approval and procedures, and that these data along with useful supplementary data generated by the WWTPs or industries be made public on an annual basis.

Responsible Agencies

City of Hamilton, Regional Municipality of Halton, Dofasco, Stelco

Ongoing Target

WQ – 1d.1 To report annually to BARC and the public.

Monitoring of Harbour Water Conditions

Recommendation No. WQ – 1e

(1992 Rec. 1)

In order to properly gauge the impact of current and proposed remedial measures, it is recommended that the conditions (dissolved oxygen, clarity, algae, ammonia, phosphorus and nitrate) be monitored in the Harbour and Cootes Paradise in accordance with the specifications in Table WQ – 1e, and that confidence in our ability to predict changes be improved by analysis of these data and, if required, by development of models.

Responsible Agencies

EC, OMOE, RBG, City of Hamilton

Ongoing Targets

WQ - 1e.1 To meet the frequency and intensity of specified sampling as listed in Table WQ – 1e immediately.

Table WQ – 1e: Criteria for Determining Compliance with RAP Goals

GOAL	COMPLIANCE FORMULA
Compliance with environmental conditions with respect to Phosphorus, Secchi depth and chlorophyll a	13 out of 13 samples analysed weekly* at the centre station from June to August are at or better than the targeted level.
Compliance with environmental conditions with respect to unionized ammonia	Weekly samples from March to June at the centre station are not to exceed 0.02.
Compliance with environmental conditions with respect to dissolved oxygen	Weekly samples at 1 metre from bottom at centre station, from July to September are at or better than the targeted level.
Compliance with environmental conditions with respect to E. coli	Daily samples meet target on every day that is 48 hours after a rain event.

WWTP Loadings Effect on Cootes Paradise and Grindstone Creek

Recommendation No. WQ – 2

(1992 Rec. 2)

That ambient water quality criteria and sewage treatment plant effluent criteria for Cootes Paradise and Grindstone Creek be reviewed to ensure that loadings (including toxic substances and endocrine disrupting compounds – EDCs) from the sewage treatment plants have no further significant impact on the ecological value of these two areas.

Responsible Agencies

City of Hamilton, EC, DFO, RBG, OMOE, McMaster University

Short Term Targets

- WQ – 2.1 **(2003)** To complete a loadings study for the King Street (Dundas) WWTP by the end of 2003.
- WQ – 2.2 **(2003)** To reassess the King Street (Dundas) WWTP effluent requirements by 2003.
- WQ – 2.3 **(2003)** To complete a loadings study for the Main Street (Waterdown) WWTP by the end of 2003.
- WQ – 2.4 **(2004)** To reassess the Main Street (Waterdown) WWTP effluent requirements by 2004.

Ongoing Target

- WQ – 2.5 EDCs should be factored into any recommendations made with respect to the loadings from the King Street (Dundas) WWTP and the Main Street (Waterdown) WWTP on the Cootes Paradise Marsh and Grindstone Creek estuary respectively.

Alternatives to Chlorination

Recommendation No. WQ – 3

(1992 Rec. 26)

While continuing to disinfect sewage effluent, that alternatives to chlorination or measures to remove the impact of chlorine toxicity by reducing total chlorine levels below 0.02 mg/L be implemented.

Responsible Agencies

City of Hamilton, Regional Municipality of Halton, OMOE

Short Term Targets

- WQ – 3.1 **(2002)** Define the system alternatives to be used to reduce the use of chlorine for disinfecting sewage effluent, or define an appropriate method of dechlorinating sewage effluent to remove the impact of chlorine toxicity in sewage effluent at the Harbour's four WWTPs.
- WQ – 3.2 **(2004)** Implement solutions to remove chlorine toxicity at the Harbour's four WWTPs.



Diversion of WWTP Effluent to Lake Ontario

Recommendation No. WQ – 4

(1992 Rec. 50)

That diversion of WWTP effluent to Lake Ontario be considered only after all other practical and technically feasible options have been implemented.

Responsible Agencies

City of Hamilton and Regional Municipality of Halton

Ongoing Target

WQ – 4.1 To not discharge WWTP effluent to Lake Ontario unless absolutely necessary and if deemed necessary it is to be subject to BARC, BAIT, and public discussion of the issues involved.

URBANIZATION AND LAND MANAGEMENT

Firm Urban Boundaries

Recommendation No. ULM – 1

(2000 Rec. A)

That in considering matters of growth management structure, urban form and design, greater attention and emphasis needs to be placed on growth management and in particular to the establishment of firmer urban boundaries, to encourage more compact urban growth and to discourage urban sprawl; thereby, facilitating the preservation of natural spaces and the rural area. Changes to the urban boundaries should only occur after study, consideration of alternatives within the urban boundary, and having due regard to the impacts on the ecosystem and to its capacity to sustain the related growth.

Responsible Agencies and Targets

City of Hamilton, City of Burlington, Regional Municipality of Halton

Ongoing Target

ULM – 1.1 Immediate action required.



Riparian Buffers

Recommendation No. ULM – 2

(1992 Rec. 4)

As opportunities arise, appropriately scaled riparian buffers be secured adjacent to watercourses throughout the Hamilton Harbour watershed.

In the rural area, the farming community implement Agricultural Best Management Practices, including such measures as conservation tillage, buffer strips, cover crops, crop rotation and structural controls, to minimize sediment loading from agricultural lands.

Responsible Agencies

OMAFRA, agricultural community, Conservation Halton, Hamilton Conservation Authority, City of Hamilton, City of Burlington, Regional Municipality of Halton

Short Term Targets

- ULM – 2.1 **(2003)** Identify extent of riparian buffers within the urban and rural areas of the watershed and identify opportunities for restoration.
- ULM – 2.2 **(2003)** Increase linear extent of riparian buffers by at least 10%.
- ULM – 2.3 **(2003)** Program/study to identify areas where it would be practical to implement riparian buffers within the urban area and appropriate standards.
- ULM – 2.4 **(2003)** Suitable subsidies be made available to encourage landowners to implement erosion control measures and riparian buffers.

Long Term Targets

- ULM – 2.5 **(2015)** Implement best management practices on all agricultural lands adjacent to a watercourse within the Hamilton Harbour watershed.
- ULM – 2.6 **(2015)** All farms adjacent to a watercourse within the Hamilton Harbour watershed participate in the Environmental Farm Plan.
- ULM – 2.7 **(2015)** All rural watercourses within the Hamilton Harbour watershed be buffered by a 15 metre vegetative riparian buffer adjacent to warmwater fish habitat and a 30 metre vegetative buffer adjacent to coldwater fish habitat.
- ULM – 2.8 **(2015)** Establish appropriate riparian buffering in urban watersheds.

Erosion and Sediment Controls

Recommendation No. ULM – 3

(1992 Rec. 5)

Minimize erosion and sedimentation during land clearing and construction activities. Management practices must continue to be developed, adopted and enforced by municipalities and conservation authorities. Training programs for inspectors and construction site supervisors continue to be provided.

Responsible Agencies

City of Hamilton, City of Burlington, Regional Municipality of Halton, Conservation Halton, Hamilton Conservation Authority, OMNR, Hamilton-Halton Home Builders' Association

Short Term Target

ULM – 3.1 **(2003)** All land clearing and construction activities have a sediment and erosion control plan in place and functioning prior to the commencement of any land clearing.

Top Soil Preservation or Site Alteration By-Law

Recommendation No. ULM – 4

(2000 Rec. C)

Municipalities adopt a Top Soil Preservation or Site Alteration By-law to require landowners and developers to implement sediment and erosion control measures and ensure that these measures are functioning effectively during land clearing and site alteration.

Responsible Agencies

City of Hamilton, City of Burlington, Regional Municipality of Halton

Short Term Target

ULM – 4.1 **(2003)** All municipalities adopt a Top Soil Preservation or Site Alteration By-law.



Remediation of Sediment from Inappropriate Land Management

Recommendation No. ULM – 5

(1992 Rec. 6)

ULM – 5a Remediate sources of sediment from inappropriate land management practices identified through watershed, subwatershed and other studies.

ULM – 5b That sediments and contaminants from street cleaning in urban areas be disposed of in a manner consistent with RAP goals and targets.

Responsible Agencies

Conservation Halton, Hamilton Conservation Authority, City of Hamilton, City of Burlington, Regional Municipality of Halton

Short Term Targets

ULM – 5.1 **(2003)** Sites already identified be prioritized and remediated.

ULM – 5.2 **(2003)** Street cleaning in industrial sectors with landfilled disposal.

ULM – 5.3 **(2003)** Through the municipal EMS process, disposal options for snow storage, road sand and salts, be developed which prevent contaminants reaching the Harbour.

Long Term Targets

ULM – 5.4 **(2015)** All identified sites be remediated.

ULM – 5.5 **(2015)** Wastes from street cleaning processes on major highways in the watershed, in industrial areas, and on all parking lots and alleys, be disposed of in landfills.

Control of Urban Storm Runoff

Recommendation No. ULM – 6

(1992 Rec. 25)

Storm runoff is a source of bacterial contamination to the Harbour. Illegal or bad practices or malfunctioning infrastructure should be corrected to minimize bacterial discharge.

Responsible Agencies

City of Hamilton, Regional Municipality of Halton, City of Burlington

Long Term Target

ULM – 6.1 **(2015)** Urban storm runoff be controlled by municipalities through retention ponds, treatment monitoring systems or other means to prevent excessive bacterial and aesthetically deleterious discharges in sensitive areas of the Harbour (marshes, parks, etc.).

Watershed Planning Network

Recommendation No. ULM – 7

(2000 Rec. F)

The Watershed Planning Network (WPN) continue to coordinate and promote consistency in the field of watershed planning for the Hamilton Harbour Watershed. In addition, WPN will provide a forum for open discussion on issues related to watershed planning. The municipalities and agencies involved continue in their resourcing and support of the WPN.

Responsible Agencies

City of Hamilton, City of Burlington, Regional Municipality of Halton, Conservation Halton, Hamilton Conservation Authority, BARC, BAIT, Hamilton Harbour RAP, environmental organizations

Ongoing Target

ULM – 7.1 The WPN to meet a minimum of five times a year.

Shoreline Development

Recommendation No. ULM – 8

(1992 Rec. 36)

The conservation authorities promote the development of the Hamilton Harbour in line with the techniques contained in the recommendations of “Protecting Your Shoreline Naturally: Shoreline Protection Ideas for Fish and Wildlife Enhancement”.

Responsible Agencies

Conservation Halton, Hamilton Conservation Authority, BARC

Target

There is no specific target for this recommendation. The brochure was reprinted in 2001. In addition, the Conservation Authorities are continually promoting the techniques with landowners every opportunity they get. BARC should be involved in this initiative.

Water Conservation Strategies

Recommendation No. ULM – 9

(1992 Rec. 40)

Municipalities (or other water service providers in the watershed) continue to budget for ongoing remediation and undertake strategies to achieve water conservation. Such strategies should include:

- *complete programs to meter all water customers;*
- *provide programs to encourage landowners to retrofit older homes and businesses with water saving devices and to reduce lawn watering;*
- *establish and maintain rate structures to represent the cost of suitable and appropriate water and wastewater system treatment, collection and distribution;*
- *allocation of a set proportion of the funds generated through water and sewer fees to the upgrading of water and sewer infrastructure for the ongoing remediation of the Hamilton Harbour;*
- *create links with other municipal and/or private programs to enhance water saving practices (e.g., grass cycling, rain barrels, downspout disconnect programs). Public agencies should show leadership in their procurement and retrofitting programs;*
- *incorporate in urban design, measures to control non point contaminants and increase, where appropriate, the permeability of hard landscapes; and*
- *initiate and participate in programs to educate the public about the benefits of water conservation.*

Responsible Agencies

City of Hamilton, City of Burlington, Regional Municipality of Halton, BARC, Conservation Halton, Hamilton Conservation Authority

Short Term Targets

ULM – 9.1 **(2003)** Meter all urban water users.

ULM – 9.2 **(2003)** Evaluate the merits of water conservation programs (retrofit older homes, reduction in lawn watering) and develop an implementation plan.

ULM – 9.3 **(2003)** Produce a water conservation action plan.

Long Term Targets

ULM – 9.4 **(2015)** Establish a rate structure to represent the cost of water and wastewater system. Costs should include needed upgrades and maintenance. A seasonal rate structure could be considered.

Watershed Studies

Recommendation No. ULM – 10

(2000 Rec. H)

Complete watershed plans for areas where studies have yet to be undertaken. Implement the recommendations of the completed watershed studies and where land development or secondary plans are proposed, undertake a subwatershed study in advance of the development.

Responsible Agencies

Conservation Halton, Hamilton Conservation Authority

Short Term Target

ULM – 10.1 (2005) Watershed studies be completed for all creeks within the Hamilton Harbour watershed.

Stormwater Management Plans

Recommendation No. ULM – 11

(2000 Rec. I)

Implement stormwater management plans for all greenfield and brownfield development sites in accordance with “Stormwater Management Practices Planning and Design Manual” (OMOE 2000), as updated from time to time.

Encourage landowners to undertake such plans on their existing developed sites where warranted.

Responsible Agencies

City of Hamilton, City of Burlington, Regional Municipality of Halton and Conservation Halton, Hamilton Conservation Authority

Ongoing Targets

ULM – 11.1 Ensure all new greenfield and brownfield developments have proper stormwater management.

ULM – 11.2 Promotion of the concept of stormwater management plans for large-scale private land holdings.



Groundwater Studies and Monitoring Program

Recommendation No. ULM – 12

(2000 Rec. J)

Undertake groundwater studies and ongoing monitoring to identify significant groundwater sites and develop policies for their protection.

Responsible Agencies

OMOE, Conservation Halton, Hamilton Conservation Authority, Regional Municipality of Halton, City of Hamilton

Short Term Target

ULM – 12.1 **(2003)** Undertake groundwater studies and monitoring throughout the Hamilton Harbour watershed.

Inclusion of RAP Goals and Principles in Official Plans

Recommendation No. ULM – 13

(1992 Rec. 42)

Projects, developments, and environmental assessments occurring within the Hamilton Harbour watershed should reflect the goals and principles of the RAP through:

- *Complementary policies in Official Plans, including Secondary Plans;*
- *Updating (modernizing) Zoning By-laws to reflect new Official Plans;*
- *Implementing watershed and subwatershed planning;*
- *Conditions of development applications (plans of subdivision/condominiums, site plans, severances);*
- *Environmental Assessment Project File Reports;*
- *Environmental Study Reports.*

That existing environmental assessment procedures be maintained for all projects conceived within the area that may have an impact on the Harbour ecosystem or on the uses for which the Harbour water quality has been improved.

Responsible Agencies

City of Hamilton, City of Burlington, Regional Municipality of Halton, Hamilton-Halton Home Builders' Association – see Appendix G Policy Map, Conservation Halton, Hamilton Conservation Authority

Short Term Target

ULM – 13.1 **(2005)** All municipalities include the relevant provisions of the RAP in their respective Official plans.

Ongoing Target

ULM – 13.2 Municipalities advise BARC of ongoing Environmental Assessments and Official Plan Amendments (2001).

ULM – 13.3 Conservation Authorities review and report the progress that has been made towards addressing RAP targets through the watershed and subwatershed plans every five years.

Adoption of the RAP by the Development Industry

Recommendation No. ULM – 14

(New Rec. K)

Create opportunities for the development industry to accept and adopt the RAP goals and principles (e.g. education programs, awards recognition, partnerships, and plan review).

Responsible Agencies

Conservation Halton, Hamilton Conservation Authority, City of Hamilton, City of Burlington, Regional Municipality of Halton, BARC, Hamilton-Halton Home Builders' Association

Short Term Target

ULM – 14.1 **(2005)** Conservation Authorities and other partners to meet with the development industry to promote RAP goals and principles and to develop an education program for residents of new developments to address environmental issues that include RAP goals.

Ongoing Target

ULM – 14.2 BARC and other partners recognize achievement in the development industry through appropriate award programs.

TOXIC SUBSTANCES AND SEDIMENT REMEDIATION

Spill Reporting and Handling

Recommendation No. TSSR – 1

(1992 Rec. 7)

That spills into the Harbour and in its watershed are reported publicly, and their severity, frequency and potential for further reduction be monitored. The process of spill handling should be reviewed every two years.

An ongoing public education campaign should inform on the hazards of improper disposal of household materials, on the proper disposal procedures for household materials, as well as encouraging people to report spills to the Ministry's Spills Action Centre.

Responsible Agencies

OMOE, EC, City of Hamilton, Regional Municipality of Halton, City of Burlington, Canadian Coast Guard, Port of Hamilton Spill Control Group

Short Term Targets

- TSSR – 1.1 **(2005)** The process of spill handling, reporting, and public education programs should be reviewed by RAP processes in a biennial report.
- TSSR – 1.2 **(2005)** OMOE to produce a compilation of spills data from the Ministry's Spills Action Centre on an annual basis. The information to be provided will include the following: date, location, estimated volume, nature of the impact, pollutant, and number of spills occurring in the Area of Concern for the RAP.
- TSSR – 1.3 **(2005)** Develop a public education initiative that encourages minimizing spills from private citizens as well as expanding public awareness of programs and procedures in place for reporting of spills.

Wildlife Management Strategy for Confined Disposal Facilities

Recommendation No. TSSR – 2

(1992 Rec. 20)

A management strategy be established and implemented to minimize contaminant uptake in wildlife/waterfowl in the confined disposal facilities (CDF) in Hamilton Harbour.

Responsible Agencies

Hamilton Port Authority, EC - CWS

Short Term Target

TSSR – 2.1 **(2003)** Establish and implement a management strategy to minimize contaminant uptake in wildlife/waterfowl in the confined disposal facilities.

Goal of Zero Discharge of Trace Metals and Organics

Recommendation No. TSSR – 3

(1992 Rec. 28)

To meet the goal of zero discharge or virtual elimination of trace metals and trace organics within as short a time as possible, it is recommended that remedial measures be implemented for industries, public and private organizations and citizens discharging toxic substances to the Harbour, to the watershed or to the municipal sewer systems under both the criteria for 'Best Available Technology that is Economically Achievable' (BATEA), and the criteria deemed necessary to ensure good water and sediment quality in the Harbour and its tributaries and reduction of contaminants in fish and biota to the maximum extent possible.

Responsible Agencies

City of Hamilton, Regional Municipality of Halton, EC, OMOE, Industries

Short Term Targets

Continue work to detect and remediate the discharge of metals and trace organics through but not limited to the following actions:

TSSR – 3.1 **(2001)** Review the status of municipal sewer use bylaws and recommend amendments in 2002/2003.

TSSR – 3.2 **(2001)** Include trace organics in the monitoring of WWTP effluents immediately.

TSSR – 3.3 **(2003)** Review the status of leachate escaping landfill sites in 2002–2003 and prepare a strategy with timelines for containment, clean up or treatment of these toxic substances.

Ongoing Target

TSSR – 3.4 OMOE will continue to report on the MISA program via the Ministry web site.

TSSR – 3.5 Industry to continue implementation of the MISA requirements.

Management Strategies for Contaminated Sediments

Recommendation No. TSSR – 4

(1992 Rec. 29)

The final management strategy needs to be completed for PAH/metals -contaminated sediment at Randle Reef having concentrations greater than 800 µg/g total PAH less naphthalene,

Short Term Targets

TSSR – 4.1 **(2002)** Complete the final management strategy for PAH/metals -contaminated sediment at Randle Reef having concentrations greater than 800 µg/g total PAH less naphthalene.

TSSR – 4.2 **(2003)** Initiate remediation for PAH/metals -contaminated sediment at Randle Reef having concentrations greater than 800 µg/g total PAH less naphthalene.

In addition, a detailed management strategy needs to be developed for:

a) PAH-contaminated sediments at Randle Reef having concentrations greater than the biologically-based clean-up criteria of 200 µg/g total PAH but less than 800 µg/g total PAH less naphthalene,

Short Term Targets

TSSR – 4.3 **(2002)** Complete the final management strategy for PAH-contaminated sediments at Randle Reef having concentrations greater than the biologically-based clean-up criteria of 200 µg/g total PAH but less than 800 µg/g total PAH less naphthalene.

TSSR – 4.4 **(2003)** Initiate remediation for PAH-contaminated sediments at Randle Reef having concentrations greater than the biologically-based clean-up criteria of 200 µg/g total PAH but less than 800 µg/g PAH less naphthalene

b) PAH/PCB/metals-contaminated sediments in the Dofasco boatslip, and

Short Term Targets

TSSR – 4.5 **(2002)** Complete the final management strategy for PAH/PCB/metals-contaminated sediments in the Dofasco boatslip.

TSSR – 4.6 **(2003)** Initiate remediation for PAH/PCB/metals-contaminated sediments in the Dofasco boatslip

c) PAH/PCB-contaminated sediment in Windermere Arm.

Short Term Targets

TSSR – 4.7 **(2001)** Initiate problem definition for PAH/PCB-contaminated sediment in Windermere Arm.

TSSR – 4.8 **(2003)** Complete problem definition for PAH/PCB-contaminated sediment in Windermere Arm.

TSSR – 4.9 **(2004)** Complete the final management strategy for PAH/PCB-contaminated sediment in Windermere Arm.

TSSR – 4.10 **(2005)** Initiate remediation for PAH/PCB-contaminated sediment in Windermere Arm.



The regulatory, jurisdictional, and funding issues potentially associated with contaminated sediment removal, storage, treatment, transport, and disposal should be anticipated, examined and resolved as soon as possible in order to avoid delays.

Responsible Agencies

EC, OMOE, Hamilton Port Authority, City of Hamilton, Dofasco, Stelco, Hamilton Conservation Authority

Household Hazardous Waste Collection Services**Recommendation No. TSSR – 5**

(1992 Rec. 30)

Expand and conveniently locate household hazardous waste collection services, undertaken by municipalities.

Continue to encourage citizens and public and private corporations through education programs to reduce their use of environmentally damaging chemicals and when such products are used, to dispose of them at hazardous waste collection depots.

Responsible Agencies

City of Hamilton, Region of Halton, Citizens

Short Term Targets

- TSSR – 5.1 **(2003)** Report on annual monitoring of amounts collected.
- TSSR – 5.2 **(2003)** Municipalities undertake a study to evaluate progress and success of the existing programs.
- TSSR – 5.3 **(2003)** Undertake study to determine ways of making disposal of household hazardous chemicals more convenient. (e.g., municipalities initiate a pilot curbside hazardous waste pickup program)
- TSSR – 5.4 **(2003)** Advertise to all citizens and businesses to promote reduction in the use of household hazardous chemicals and proper disposal techniques.

Reduction of Pesticide Use

Recommendation No. TSSR – 6

(1992 Rec. 31)

Public and private organizations continue to limit their use of pesticides (herbicides, insecticides, etc.) in maintaining parks, conservation areas, or other lands within the watershed. Public and private organizations increase in number and size naturalized areas; thus reducing the need for lawn maintenance.

Responsible Agencies

City of Hamilton, City of Burlington, Regional Municipality of Halton, Conservation Halton, Hamilton Conservation Authority, private organizations and businesses, Hamilton Naturalists' Club

Short Term Targets

- TSSR – 6.1 **(2003)** All public and private organizations reduce their use of pesticides by at least 10 % per hectare each year and review periodically.
- TSSR – 6.2 **(2003)** All public agencies identify opportunities to naturalize areas that are currently in grass cover (particularly those adjacent to watercourses, valleys and forests) to reduce their requirements for lawn maintenance. Formulate a naturalization plan for each location and initiate implementation of plan.
- TSSR – 6.3 **(2003)** That municipalities adopt policies banning the use of pesticides on public lands except in cases of emergency or exceptional circumstances

Long Term Target

- TSSR – 6.4 **(2015)** The complete elimination of the non- essential use of pesticides.

Air Emission Control

Recommendation No. TSSR – 7

(1992 Rec. 37 + 2001 Rec. L)

That the Ontario program to control air emission sources be continued in order to eliminate visual and odorous emissions, to make the Harbour area more aesthetically pleasing.

Responsible Agencies

OMOE, EC, City of Hamilton, Regional Municipality of Halton, McMaster University, Industries

Short Term Target

TSSR – 7.1 (2003) That an examination of emissions of toxic substances to air be carried out and that the effects of local emissions on the harbour water by direct deposition and through fall out on the watershed and transport via runoff be evaluated with an aim of reducing and eliminating local sources.

Ongoing Targets

TSSR – 7.2 OMOE enforce regulations to limit the emissions, which cause unsightly plumes and foul odours, which detract from the quality of the aquatic environment and its enjoyment by the citizens.

TSSR – 7.3 Industry respond to regulations and to new opportunities to limit air emissions causing problems.

TSSR – 7.4 Workshops be held for air quality scientists and researchers to assess the impact of airborne contaminants on runoff and direct deposition and identify practical short term steps that can be taken.

FISH AND WILDLIFE

Fish & Wildlife Habitat Restoration Project

Recommendation No. FW – 1

(1992 Rec. 12)

Continue to implement the Fish and Wildlife Habitat Restoration Project and maintain the existing projects. Where possible and appropriate, provide public access to the projects and other green spaces.

Responsible Agencies

DFO, City of Hamilton, City of Burlington, Regional Municipality of Halton, Hamilton Port Authority, RBG, McMaster University, EC, Conservation Halton, Hamilton Conservation Authority, OMNR

Short Term Target

FW – 1.1 **(2005)** Maintain the existing projects and continue to advance projects at Fisherman's Pier, Windermere Basin, North Shore, and mouth of Grindstone Creek.

Long Term Targets

FW – 1.2 **(2015)** Provide 500 ha of emergent and submergent aquatic plants in Hamilton Harbour, Cootes Paradise, Grindstone Creek delta, and Grindstone Creek marshes in accordance with the Fish and Wildlife Habitat Restoration Project (360 ha FWHRP sites + 140 ha littoral zone).

FW – 1.3 **(2015)** Provide 15 km of littoral shore.

FW – 1.4 **(2015)** Provide 300 ha of wildlife habitat.

FW – 1.5 **(2015)** Provide 3 ha of colonial nesting bird habitat.

Fish & Wildlife Habitat Restoration Project Steering Committee

Recommendation No. FW – 2

(1992 Rec. 22)

Maintain a Fish and Wildlife Habitat Steering Committee to continue the implementation of the Fish and Wildlife Restoration Projects within the Hamilton Harbour, Cootes Paradise and creek estuaries.

Responsible Agencies

EC, DFO, OMNR, City of Burlington, City of Hamilton, Conservation Halton, Hamilton Conservation Authority, Hamilton Port Authority, RBG, BARC



Coordination of Waterfront and Watershed Projects

Recommendation No. FW – 3

(1992 Rec. 13)

Encourage coordination in the accomplishment of all waterfront and related watershed projects.

Responsible Agencies

All agencies

Ecosystems of Lower Reaches of Harbour Tributaries

Recommendation No. FW – 4

(1992 Rec. 10)

That efforts be undertaken to restore the ecosystems of the lower reaches of the Hamilton Harbour tributaries by:

- *appropriate management of Lake Ontario water levels*
- *improving stream morphology and hydrology*
- *enhancing fish and wildlife habitat*
- *restoring flood plain habitat and providing access for fish and wildlife*
- *improving water quality by removing stresses resulting from discharges from WWTPs, CSOs, and watersheds*

Responsible Agencies

DFO, RBG, EC, OMOE, OMNR, Conservation Halton, Hamilton Conservation Authority, City of Hamilton, City of Burlington, Regional Municipality of Halton

Short Term Target

FW – 4.1 **(2005)** Develop habitat targets (riparian and stream morphology) for lower tributaries of Spencer Creek, Chedoke Creek, Red Hill, and Indian Creek.

Long Term Targets

FW – 4.2 **(2015)** Recover 40 ha of wetland habitat in Grindstone Creek.

FW – 4.3 **(2015)** Implement recovery for Spencer Creek, Chedoke Creek, Red Hill, and Indian Creek to meet defined habitat targets.

Nuisance Species Management

Recommendation No. FW – 5

(2001Rec. M)

That coordinated interagency management strategies be developed and implemented to reduce the negative effects of over populations of some nuisance species on fish and wildlife habitat, and on the diversity and balance of fish and wildlife communities in Hamilton Harbour and Cootes Paradise. The management strategy should include species such as: ring-billed gulls, Canada geese, double-crested cormorants, mute swans, round goby, carp, purple loosestrife and manna grass. There is a need for integrated committees to develop comprehensive strategies.

Responsible Agencies

EC - CWS, DFO, OMNR, RBG, Hamilton Port Authority, City of Hamilton, City of Burlington, McMaster University

Short Term Targets

- FW – 5.1 **(2005)** Develop a management strategy with species targets for Canada geese, mute swans, round gobies and other species as they arrive.
- FW – 5.2 **(2005)** Maintain carp in Cootes Paradise at less than 40kg/ha .

Long Term Targets

- FW – 5.3 **(2015)** Reduce ring-billed gulls numbers to 5000 pairs.
- FW – 5.4 **(2015)** Reduce double-crested cormorants numbers to 200 pairs.

Biological Effects due to Exposure of Contaminants

Recommendation No. FW – 6

(1992 Rec. 18)

The levels of toxic substances in the water, sediment, and food chain be reduced as much as possible to allow for the presence and natural reproduction of the most sensitive native species of aquatic and terrestrial life.

That a battery of indicators be developed for fish and wildlife populations inhabiting the harbour to identify the level of biological effects attributable to exposure to environmental contaminants identified in Hamilton Harbour.

Responsible Agencies

DFO, OMOE, EC – CWS, OMNR, Universities

Long Term Targets

- FW – 6.1 **(2015)** Incidence rates of fish tumours or other deformities should not exceed rates at unimpacted control sites that are locally relevant.
- FW – 6.2 **(2015)** Collect survey data to confirm the absence of neoplastic or preneoplastic liver tumours in bullheads or suckers.
- FW – 6.3 **(2015)** Incidence rates of deformities or reproductive problems in sentinel wildlife species should not exceed background levels in control populations.

Indicator of Wildlife Health

Recommendation No. FW – 7

(1992 Rec. 19)

That indicators of wildlife health and efficacy of remediation efforts to control contaminants be determined by developing contaminant concentration objectives for indicator wildlife species (including food web impacts).

Responsible Agencies

OMOE, OMNR, EC – CWS, McMaster University

Short Term Target

- FW – 7.1 **(2003)** Conduct a literature review and propose contaminant concentration objectives/levels for indicator wildlife species at various trophic levels where none exist.

Long Term Target

- FW – 7.2 **(2015)** Apply objectives from literature review.

Habitat Protection for Overuse by Public

Recommendation No. FW – 8

(2001 Rec. N)

That a management plan be developed for restored fish and wildlife habitats to protect them from overuse by the public interested in fishing, ecotourism, wildlife viewing, hiking and education.

Responsible Agencies

RBG, DFO, OMNR, EC - CWS, Hamilton Port Authority, City of Burlington, City of Hamilton, BARC

Short Term Target

FW – 8.1 **(2005)** Develop a management plan for restored fish and wildlife habitats to protect them from overuse by the public interested in fishing, ecotourism, wildlife viewing, hiking and education.

Restoration of Aquatic Vegetation in Cootes Paradise

Recommendation No. FW – 9

(1992 Rec. 9)

That efforts be undertaken to restore abundance and diversity of submerged and emergent vegetation in Cootes Paradise by:

- *controlling carp populations*
- *introducing top predators to restructure the fish community and increase top-down control of lower trophic levels*
- *enhancing water quality to remove stresses from sewage treatment plants, CSOs, and tributaries*
- *promoting appropriate management of Lake Ontario water levels*

Responsible Agencies

DFO, RBG, EC, OMOE, OMNR, Hamilton Conservation Authority, City of Hamilton, McMaster University

Short Term Targets

- FW – 9.1 **(2005)** Maintain less than 40 kg/ha of carp biomass in Cootes Paradise.
- FW – 9.2 **(2005)** Develop a long term target for phosphorus in Cootes Paradise, which is scientifically defensible and would achieve the long term light penetration and chlorophyll targets.

Long Term Targets

- FW – 9.3 **(2015)** Achieve 240 ha of submerged and emergent vegetation in Cootes Paradise.
- FW – 9.4 **(2015)** Achieve a plant diversity based on historical diversity of 18 species of submergent and 25 species of emergent vegetation in Cootes Paradise.
- FW – 9.5 **(2015)** Achieve a target of 25 mg/l suspended sediments in Cootes Paradise. Compliance with environmental conditions with respect to suspended sediments should be measured once weekly throughout June – August.

Carp Control in Cootes Paradise

Recommendation No. FW – 10

(1992 Rec. 11)

That in order to eliminate the destructive effects of the existing large numbers of large carp on wildlife and fish habitat, carp control in Cootes Paradise continue to be implemented. Research is needed to determine whether the carp are interfering with the movement of other fish species in the Desjardins Canal.

Responsible Agencies

DFO, RBG, OMNR

Short Term Target

FW – 10.1 **(2005)** Undertake research to determine whether the carp are interfering with the movement of other fish species in the Desjardins Canal.

Restructuring of Fish Community

Recommendation No. FW – 11

(1992 Rec. 14)

Implement a program to restructure the fish community by:

- *Increasing the total biomass of top predator fish and increasing top down control of lower trophic levels*
- *Evaluating the success of habitat restoration projects designed specifically for top predator species.*
- *Evaluating the success of purposeful introductions of top predators such as walleye, bass and pike.*
- *Enforcing fishing regulations to protect recovering top predator species from overexploitation.*
- *Creating a “no fishing zone” within the Desjardins Canal.*
- *Supporting the voluntary fish sanctuaries developed by the RBG.*

Responsible Agencies

OMNR, DFO, RBG

Long Term Targets

FW – 11.1 **(2015)** Shift from a fish community indicative of eutrophic environments, such as white perch, alewife, bullheads, and carp to a self sustaining community more representative of a mesotrophic environment, containing pike, bass, yellow perch, and sunfish.

FW – 11.2 **(2015)** Attain a littoral fish biomass of 200 - 250 kg/ha.

FW – 11.3 **(2015)** Increase the species richness from 4 species to 6-7 species per transect.

FW – 11.4 **(2015)** Increase the native species biomass from 37% to 80-90% of the total biomass.

FW – 11.5 **(2015)** Reduce the spatial variability in fish biomass within the Harbour.

FW – 11.6 **(2015)** Attain the proposed nearshore fish community of Hamilton Harbour:

<u>Category</u>	<u>Littoral Biomass</u>
Piscivores (pike)	40 – 60 kg/ha
Specialists (insectivores)	70 – 100 kg/ha
Generalists (omnivores)	30 – 90 kg/ha

FW – 11.7 **(2015)** Attain an Index of Biotic Integrity (IBI) of 55-60 for Hamilton Harbour.

“No Net Loss” of Fish Habitats

Recommendation No. FW – 12

(1992 Rec. 16)

That regulatory agencies apply the Fisheries Act to ensure the policy of “no net loss” of all fish habitats in Hamilton Harbour, Cootes Paradise and watershed tributaries.

Responsible Agencies

DFO, OMNR, Conservation Halton, Hamilton Conservation Authority

Ongoing Target

FW – 12.1 To enforce the policy of "no net loss" of fish habitat in the Harbour and Cootes Paradise.

Nesting Habitat Creation for Colonial Waterbirds

Recommendation No. FW – 13

(1992 Rec. 23)

That habitat be maintained or created as necessary in the Harbour, or in Lake Ontario immediately adjacent to the Harbour, to support nesting populations of colonial waterbirds at selected areas, and that habitat projects be reviewed by the Fish and Wildlife committee to ensure they support the objectives of the FWHRP.

Responsible Agencies

EC - CWS, OMNR, McMaster University

PUBLIC ACCESS AND AESTHETICS

Physical Access to Harbour

Recommendation No. PAA – 1

(1992 Rec. 3)

Municipalities and other authorities continue to acquire and develop lands for public use, to develop existing lands under their control and to identify new sites that provide more physical access to the shores of the Hamilton Harbour, its tributaries and significant related ecosystems. Such acquisitions should be consistent with Shoreline Management Strategies where these exist. The development of shoreline management strategies by the responsible authorities is encouraged.

Responsible Agencies

City of Hamilton, City of Burlington, Regional Municipality of Halton, Conservation Halton, Hamilton Conservation Authority, Hamilton Port Authority, RBG

Long Term Targets

- PAA – 1.1 **(2015)** Thirty-five percent (35 %) or more of the Hamilton Harbour shoreline be physically accessible to the public.
- PAA – 1.2 **(2015)** Municipalities, in conjunction with the Conservation Authorities, the Hamilton Port Authority, and the RBG prepare Master Plan(s) to improve trail linkages within and around the Hamilton Harbour and its Watershed.

Ongoing Target

- PAA – 1.3 In future, greater emphasis should be placed on initiatives to improve the amount and quality of access to the eastern end of the Harbour and related lands and to riparian areas adjacent to watercourses.

Promotion of Natural Ecosystems Appreciation

Recommendation No. PAA – 2

(1992 Rec. 24)

Promote appreciation throughout the entire watershed area of wetlands and other natural ecosystems through activities such as:

- *developing partnerships with community non-profit organizations to assist in the implementation of the objectives;*
- *constructing boardwalks, trails and viewing platforms with appropriate signage.*

Responsible Agencies

Conservation Halton, Hamilton Conservation Authority, City of Hamilton, City of Burlington, Regional Municipality of Halton, BARC, RBG, OMNR, major private landowners

Short Term Targets

- PAA – 2.1 **(2005)** The conservation authorities be the lead agencies in the development of outreach programs and to pursue partnerships with non-profit community organizations.
- PAA – 2.2 **(2005)** Municipalities and other agencies identify, through the budgeting process, the priority for boardwalk and viewing platform construction.

Protection of Views and Vistas of the Harbour

Recommendation No. PAA – 3

(2000 Rec. G)

Identify, protect, promote and enhance important views, vistas and cultural landscapes of the Hamilton Harbour.

Responsible Agencies

City of Hamilton, City of Burlington, Regional Municipality of Halton, Conservation Halton, Hamilton Conservation Authority, BARC, Parks Canada, other appropriate agencies

Short Term Target

- PAA – 3.1 **(2003)** A viewshed study of Hamilton Harbour be undertaken as a joint effort between municipalities, the conservation authorities and other appropriate agencies (e.g., Niagara Escarpment Commission, RBG, McMaster University) to identify sites whose views are worth preserving and possibly enhanced. The study should also include methods for preserving the important viewpoints.

EDUCATION AND PUBLIC INFORMATION

Personal Impact Education Programs

Recommendation No. EPI – 1

(1992 Rec. 38)

Develop, maintain and evaluate public education programs with the direction of agencies to educate individual citizens within the Harbour watershed to take particular care to avoid polluting the Harbour and Lake, recognizing that everything we put down the drain, dump on our streets, use on our lawns or throw in a creek at home, at work and at play eventually reaches the Harbour.

Responsible Agencies

BARC, City of Hamilton, Conservation Halton, Hamilton Conservation Authority, Citizens

Short Term Targets

- EPI – 1.1 **(2003)** Reactivate programs such as the Yellow Fish Storm Drain Marking Program.
- EPI – 1.2 **(2003)** Continue programs such as the W.A.T.E.R. Stream Stewards.

Long Term Targets

- EPI – 1.3 **(2015)** Mark and maintain markings of all urban watershed catchbasins.
- EPI – 1.4 **(2015)** Develop and implement an education program about alternatives to hazardous waste products.

Distribution of Information on Harbour and Watershed Conditions

Recommendation No. EPI – 2

(1992 Rec. 33)

To inform the public and students of the past and present condition in the Harbour and its watershed and to encourage them to support the efforts being made to clean-up the Harbour and the watershed.

Responsible Agencies

BARC, RBG, Conservation Halton, Hamilton Conservation Authority, McMaster University, Parks Canada, City of Hamilton

Short Term Targets

- EPI – 2.1 **(2005)** To develop and implement a communications plan Harbour for the community at-large, elected officials and the media to promote the vision of a vibrant, healthy, accessible, multi-use harbour.
- EPI – 2.2 **(2005)** Develop and implement an information program to inform the public on the water cycle throughout the Hamilton Harbour watershed including inputs, outfalls, wastewater treatment plants, landfills and the impact on water quality in the Harbour.

Ongoing Target

- EPI – 2.3 To continue to offer various programs to the public and students.

Centres for Dissemination of Information

Recommendation No. EPI – 3

(1992 Rec. 34)

That centres such as: the BARC office, the RBG, the Conservation Authorities, municipal civic centres, the planned Canada Marine Discovery Centre, and other appropriate publicly accessible locations be used as points from which to disseminate information on Hamilton Harbour, its watershed, the RAP, and generally to encourage a more informed ecosystem perspective in peoples day to day lives.

Responsible Agencies

BARC, RBG, Conservation Halton, Hamilton Conservation Authority, City of Hamilton, City of Burlington, Regional Municipality of Halton, Parks Canada, Universities, Colleges, School Boards, Library Boards

Short Term Targets

EPI – 3.1 **(2002)** Incorporate appropriate level of information for students at all levels stressing the ecosystem approach.

EPI – 3.2 **(2002)** That copies of the following be made available to the public, on the Internet, and in hard copy form, at the Hamilton and Halton Public Libraries subject to Privacy and Freedom of Information legislation:

- WWTP and Landfill Certificates of Approval,
- Overstrength Agreements,
- Compliance Agreements,
- Sewer Use Bylaws,
- Relevant contracts and how they were arrived at (i.e., minutes of relevant City Council/Committee meetings),
- Wastewater Treatment Plant Annual Reports,
- Landfill Performance Reports,
- Project File Reports for Environmental Assessments that impact the Harbour
- Environmental Study Reports for Environmental Assessments that impact the Harbour

EPI – 3.3 **(2002)** A collection of documents on environmental investigations, citizen's guides, etc, be established at the Hamilton and Halton Public Libraries.

EPI – 3.4 **(2002)** Develop an education/outreach program focused on providing display material and Health Canada's one page "Guide to the Guide Summary" on eating Ontario sportfish sheets in various languages to schools/school boards in the RAP area and at RAP community events.

Ongoing Targets

EPI – 3.5 Continue to offer publicly accessible locations for the dissemination of information materials on Hamilton Harbour, its watershed, and the RAP.

EPI – 3.6 Promote the Harbour and the RAP through the use of displays at appropriate events.

Public Education on Reduction of Pesticides

Recommendation No. EPI – 4

(2001 Rec. E)

Develop, maintain and evaluate public education programs to reduce the use of pesticides and/or fertilizers aimed at individuals, businesses, recreational facilities, and institutions to:

- *Encourage expansion of naturalized areas,*
- *Encourage the exploration and use of non-toxic alternatives to pesticides and/or alternatives to fertilizers,*
- *Encourage reduction in the use of pesticides and/or fertilizers,*
- *Encourage the proper use of pesticides and/or fertilizers if used, and identify the implications of their misuse.*

Responsible Agencies

BARC, OMOE, EC, City of Hamilton, City of Burlington, Regional Municipality of Halton, Conservation Halton, Hamilton Conservation Authority, RBG, and other appropriate agencies

Short Term Targets

- EPI – 4.1 **(2005)** Private individuals, businesses, and institutions be contacted to encourage using only the minimum necessary amount of pesticides and fertilizers.
- EPI – 4.2 **(2005)** Evaluate the program of contact initiated above.

Long Term Targets

- EPI – 4.3 **(2015)** Sustain the program of contact initiated above.
- EPI – 4.4 **(2015)** Generic education programs be developed province-wide by OMOE to encourage limiting landowners use of pesticides and fertilizers, and reducing areas of mowed grass by converting them to naturalized areas.

Adoption Program for Stream Sections

Recommendation No. EPI – 5

(2001 Rec. Q)

Investigate the feasibility of establishing an “adoption program” to allow individuals, groups or organizations to assist public authorities in the upkeep, enhancement, and ongoing monitoring of specific sections of urban, publicly owned streams, waterfronts and watersheds.

Responsible Agencies

BARC, OMNR, Burlington, Hamilton

Short Term Target

- EPI – 5.1 **(2003)** Start a pilot watershed adoption project in urban, publicly owned stream sections.

Hamilton-Halton Watershed Stewardship Program

Recommendation No. EPI – 6

(2001 Rec. R)

The Hamilton-Halton Watershed Stewardship Program should continue on an ongoing basis to encourage and assist private landowners in the protection, enhancement and restoration of the significant natural features, creeks and streams within the watersheds of the Hamilton Harbour Area of Concern.

Responsible Agencies

Conservation Halton, Hamilton Conservation Authority, BARC, OMNR

Short Term Targets

- EPI – 6.1 **(2005)** All landowners adjacent to designated wetlands, creeks, streams, and other significant natural ecosystems (as identified by the conservation authorities and municipality), be covered by a Stewardship program.
- EPI – 6.2 **(2005)** All private landowners that have part of their land holdings as “natural areas” or are adjacent to “natural areas” will be contacted to make them aware of the importance of the natural environment.

RESEARCH AND MONITORING

Monitoring of Fish and Wildlife Improvements

Recommendation No. RM – 1

(1992 Rec. 15)

That the status of the Harbour and Cootes Paradise fish and wildlife community and habitat improvements continue to be monitored.

Responsible Agencies

OMNR, DFO, RBG, EC - CWS, Hamilton Conservation Authority, Hamilton Naturalists' Club, McMaster and other Universities

Short Term Target

RM – 1.1 (2005) Develop wildlife targets in addition to colonial nesting birds.

Ongoing Target

RM – 1.2 Refer to Chapter VIII of the RAP Stage 2 Update Report and to the monitoring program chart from the Fish and Wildlife Habitat Restoration Project Yearly Report.

Fish and Wildlife Indicator Species

Recommendation No. RM – 2

(1992 Rec. 17)

That indicator species for both fish and wildlife populations, which are indicative of conditions within the Harbour, be identified to monitor temporal (& spatial) trends in contaminant levels, indicate the efficacy of remedial activities and provide data related to the development of fish consumption guidelines.

Responsible Agencies

EC - CWS, OMNR, DFO, OMOE, RBG, McMaster University, other universities

Short Term Target

RM – 2.1 (2005) Implement a trend monitoring program for indicator species for birds, amphibians, reptiles, fish, and invertebrates.

Long Term Targets

RM – 2.2 (2015) Continue trend monitoring program.

RM – 2.3 (2015) There should be no restrictions on consumption of fish and wildlife from the Harbour attributable to local sources.

RM – 2.4 (2015) Survey results should confirm no tainting of fish and wildlife flavour.



Bacteria Monitoring at Beaches

Recommendation No. RM – 3

(1992 Rec. 27)

That the status of bacteria quality be monitored by conducting regular sampling for bacteria in candidate swimming areas of the Harbour.

Responsible Agencies

City of Hamilton

Short Term Targets

- RM – 3.1 **(2005)** Research should be continued to understand why the current beaches (Bayfront Park and Pier 4 Park) are closed during periods of the swimming season.
- RM – 3.2 **(2005)** Identify the causes for beach closures

Long Term Target

- RM – 3.3 **(2015)** Reduce beach closures in Bayfront Park and Pier 4 Park by remediation

Creek Water Quality Monitoring

Recommendation No. RM – 4

(2001 Rec. T)

Enhance the collection of water quality monitoring information for creeks within the watershed using surveillance monitoring, performance monitoring, and special studies.

Responsible Agencies

OMOE, Conservation Halton, Hamilton Conservation Authority, City of Hamilton, City of Burlington, Regional Municipality of Halton

Short Term Targets

- RM – 4.1 **(2003) Surveillance Monitoring:** Maintain a minimum of six sampling sites on the Grindstone, Spencer and Red Hill Creeks (to total a minimum of two per creek) as part of the Provincial Water Quality Monitoring Network to improve the ability to determine long term water quality trends.
- RM – 4.2 **(2003) Performance Monitoring:** Undertake specific performance monitoring when needed to evaluate the effectiveness of stewardship programs, pollution source identification, etc.
- RM – 4.3 **(2003) Performance Monitoring:** Periodically undertake special studies:
- To estimate concentrations and loadings for phosphorous and suspended solids when deemed necessary
 - CSO improvements
 - Storm Event Monitoring
 - Bioassay of Watershed
 - Source identification in urban creeks
 - Source identification in rural creeks

Cumulative Effects of Municipal Discharges into Lake Ontario

Recommendation No. RM – 5

(1992 Rec. 41)

It is recommended that studies to help predict the cumulative effects of the discharges from the City of Hamilton and Regional Municipality of Halton WWTPs to Western Lake Ontario, be conducted collaboratively by the City of Hamilton, Regional Municipality of Halton, the Ontario Ministry of the Environment, and Environment Canada, and their initial results reported to the RAP including direct WWTP discharges, the Harbour discharge itself, to evaluate future infrastructure effects.

Responsible Agencies

City of Hamilton, Regional Municipality of Halton, OMOE, EC

Short Term Target

RM – 5.1 **(2005)** To study and predict cumulative effects of the discharges from the municipalities into Western Lake Ontario and report the initial results to the RAP.

BAIT and BARC Reports

Recommendation No. RM – 6

(1992 Rec. 45)

That the Bay Area Implementation Team (BAIT), responsible for carrying out and auditing the Remedial Action Plan, report on the schedule of implementation for the RAP recommendations and their associated targets.

That the Bay Area Restoration Council (BARC), responsible to promote, monitor and assess the Remedial Action Plan, report to the public on the progress of the RAP in Hamilton Harbour with input from Harbour Stakeholders.

Responsible Agencies

BAIT, BARC

Ongoing Targets

RM – 6.1 That BAIT maintain the “Implementation Actions” report at least every five years.

RM – 6.2 That BARC continue to produce the “Toward Safe Harbours” report

Surveillance and Monitoring

Recommendation No. RM – 7

(1992 Rec. 46)

That all agencies, municipalities and industries continue their commitment and enhance where necessary the collection of the surveillance and monitoring data and analyses required for local decision making and ultimately presentation to the public and the International Joint Commission.

Responsible Agencies

All agencies identified in the monitoring plan (Stage 2 Update, Chapter VIII)

Ongoing Targets

- RM – 7.1 All agencies and governments identified in the monitoring plan (Stage 2 Update, Chapter VIII) carry out their portion of the surveillance and monitoring.
- RM – 7.2 Hold a workshop with proceedings on an annual basis, which summarizes the monitoring and research work going on in the Hamilton Harbour Watershed.

Research Support Addressing Harbour Problems

Recommendation No. RM – 8

(1992 Rec. 47)

That the management agencies (e.g., Federal and Provincial Governments, Municipalities, Conservation Authorities, RBG) responsible for research and development provide research support addressing the specific problems of the Harbour and its watershed.

Responsible Agencies

All agencies

Ongoing Target

- RM – 8.1 To periodically review research and study requirements that will impact most immediately on the major financial decisions to be made in implementing the plan (or implementing changes to the plan).

Funding for Technological Development

Recommendation No. RM – 9

(1992 Rec. 48)

In order to reduce implementation costs and ensure effectiveness in achieving a reduction in loadings of toxic substances to the Harbour, that sediment, sewage sludge, and wastewater treatment technology development be funded at an adequate level to improve remedial measures.

Responsible Agencies

City of Hamilton, Regional Municipality of Halton, EC, OMOE

Short Term Target

RM – 9.1 **(2000-2005)** Continue to access the Great Lakes Sustainability Fund (GLSF) to achieve reductions in loadings.

Long Term Target

RM – 9.2 **(2006-2015)** Sustain funding for technological development from appropriate sources.

Multi-lateral Partnerships

Recommendation No. RM –10

(1992 Rec. 49)

Recognizing the substantial funds needed to effect major remedial actions and the necessity for shared responsibility for implementation; the principle of multi-lateral partnership agreements is one means of achieving realistic solutions.

Responsible Agencies

All Agencies

Ongoing Target

RM – 10.1 Actively pursue the principle of multi-lateral partnership agreements as one means of achieving realistic solutions.

