

Wet Weather Flow Master Plan (WWFMP) Implementation Update Report

Date:	October 17, 2007
To:	Public Works and Infrastructure Committee
From:	Lou Di Gironimo, General Manager, Toronto Water
Wards:	All
Reference Number:	P:\2007\Cluster B\TW\pw07040 (AFS #5692)

SUMMARY

This report provides an overview of the status of the implementation of the City's Wet Weather Flow Master Plan, documented in more detail in an accompanying report titled "Wet Weather Flow Master Plan – Implementation Report 2006". A summary of the work undertaken in 2006 and underway in 2007, for each of the major components identified in the WWFMP is provided.

FINANCIAL IMPACT

There are no financial implications arising from this report.

DECISION HISTORY

City Council at its meeting of September 22, 23, 24 and 25, 2003 approved the Wet Weather Flow Master Plan and accompanying 25-Year Implementation Schedule. A copy of the Council Decision Document associated with the approval of the Plan can be found at:

<http://www.toronto.ca/legdocs/2003/agendas/council/cc030922/pof9rpt/c1042.pdf>

City Council at its meeting of September 28, 29 and 30, 2005 approved the establishment of a Wet Weather Flow Master Plan Implementation Advisory Committee whose role included providing input on the annual report on the implementation of the Wet Weather

Flow Master Plan. A copy of the Council Decision Document associated with the establishment of this Committee can be found at:

<http://www.toronto.ca/legdocs/2005/agendas/council/cc050928/wks8rpt/cl010.pdf>

This report provides an update on the progress made in the implementation of the Plan in 2006 and underway in 2007. A copy of the draft report was presented and reviewed by the Wet Weather Flow Master Plan Implementation Advisory Committee at its meeting of October 5, 2007.

ISSUE BACKGROUND

The City's Wet Weather Flow Master Plan and accompanying 25 year implementation schedule, approved by City Council in 2003, was developed with the recognition that wet weather flow will be managed on a watershed basis with the adoption of a hierarchy of management practices and controls, starting with "at source", followed by "conveyance" and finally "end-of-pipe" controls. A series of 13 objectives were identified and grouped into four major categories: water quality, water quantity, natural areas and wildlife, and sewer systems. The Plan's implementation schedule identifies projects and activities for various sites across the City, within each of the six watersheds and along the waterfront.

Implementation of the Plan is expected to address a number of the City's priorities including:

- Protecting health and safety (by eliminating basement flooding and providing swimmable water at waterfront beaches);
- Protecting infrastructure and private property (by preventing stream erosion);
- Renewing infrastructure (by upgrading systems and eliminating dry weather discharges from storm and combined sewer outfalls);
- Managing growth (by ensuring appropriate system capacities to accommodate population growth as forecasted in the City's Official Plan); and
- Meeting legislative requirements to eliminate combined sewer overflows (satisfies the Ministry of the Environment Procedure F-5-5).

In addition, the Plan addresses and advances the water quality improvement objectives of the City's Environmental Plan and the Toronto and Region Remedial Action Plan.

COMMENTS

This report represents the second status report on the implementation of the Plan, providing an update to the activities and projects contained in the first report titled "Wet Weather Flow Master Plan Implementation: 2004 – 2005" as well as introducing new initiatives. A copy of the "Wet Weather Flow Master Plan Implementation: 2004-2005" report can be found at:

<http://www.toronto.ca/legdocs/2006/agendas/committees/wks/wks060503/it023.pdf>

A report titled “Wet Weather Flow Master Plan Implementation Report - 2006”, detailing the progress made in the implementation of the Plan and the activities underway in 2007, has been prepared and provided separately to Committee members and the Clerk’s office.

A map showing locations of the various projects underway is presented in Attachment 1 and summarized in table format in Attachment 2.

A brief overview for each of the major components identified in the Plan is outlined as follows:

- **Public Education and Community Outreach:** The stormwater public education campaign undertaken in 2005 was continued in 2006 and 2007. The campaign is aimed at raising public awareness on how individual actions are linked directly to pollution in the lake. In 2006, the City of Toronto maintained its international Blue Flag accreditation for four waterfront beaches. In 2007, two additional beaches received the accreditation raising the City’s total to six Blue Flag beaches. The Blue Flag program contributes to raising public awareness of water quality impacts to City beaches and the Plan’s implementation. Lastly, the Community Program for Stormwater Management funded 13 projects led by community and non-profit groups to outreach to the local community in support of the WWFMP. A copy of the Council Decision Document associated with the approval of funding for these projects can be found at:
<http://www.toronto.ca/legdocs/2006/agendas/council/cc060627/wkscl012b.pdf>
- **Source Control:** The voluntary Downspout Disconnection Program continued with an estimated 2,300 disconnections. In September 2006, Council adopted, in principle, the introduction of a mandatory downspout disconnection program, where feasible, over a ten-year phase-in period. A copy of the Council Decision Document associated with this program can be found at:
<http://www.toronto.ca/legdocs/2006/agendas/council/cc060925/pof7rpt/cl056.pdf>

Staff will report back on the policy implications of the proposed financial assistance and on a detailed implementation plan along with any by-law amendments and costs for program administration. Council also approved the terms of reference and an application process for a Green Roof incentive pilot program for the retrofit of existing building stock using green roof technology.

- **Municipal Operations:** A Priority Outfall Monitoring Program was initiated, to identify outfalls receiving cross-connected sanitary sewer flows, during dry weather periods. The Program targeted outfalls in the Taylor-Massey Creek sub-watershed area in 2006. Toronto Water’s Environmental Monitoring and Protection Unit conducted a total of 268 storm sewer-related inspections across the City between September 2006 and February 2007. Through this work, 28 priority outfalls were identified, discharging to Taylor-Massey Creek. A copy of

the staff report submitted to Works Committee in September 2006 regarding progress made in the Program can be found at:

<http://www.toronto.ca/legdocs/2006/agendas/committees/wks/wks060911/it061.pdf>

- **Basement Flooding:** As a result of the extensive basement flooding which occurred, across the City, during two recent extreme storms: May 12, 2000 and August 19, 2005, where over 3,000 and 4,100 basement flooding complaints were received across the City, respectively, Council approved a work plan to address basement flooding in 31 priority study areas. A copy of the Council Decision Document associated with this work plan can be found at:

<http://www.toronto.ca/legdocs/2006/agendas/council/cc060425/wks2rpt/cl016.pdf>

Work is underway in accordance with the plan approved by Council, and the first in a series of environmental assessment studies were initiated to assess the causes and develop remedial options to mitigate the impact of extreme storm conditions in chronic basement flooding prone areas.

- **Waterfront – Shoreline Management:** Water quality sampling continued daily at the City's ten waterfront beaches in 2006 and 2007 from the first week of June to Labour Day. A Microbial Source Tracking study, undertaken through Environment Canada, to identify sources of pollution, continued at Sunnyside Beach, Bluffer's Park Beach and Rouge Beach. In April 2006, Council approved the development of an Integrated Beach Management Strategy for waterfront beaches with an initial focus on Sunnyside Beach. A copy of the Council Decision Document associated with this Strategy can be found at:

<http://www.toronto.ca/legdocs/2006/agendas/council/cc060925/pof7rpt/cl012.pdf>

The Strategy is aimed at identifying long term recreational uses at existing beaches and the waterfront, reviewing beach maintenance and management practices; and the citing of existing and potential new beaches.

- **End-of-Pipe Facility Implementation and Environmental Assessments:** As directed by City Council, the control of discharges from combined sewer overflow (CSO) and stormwater outfalls discharging to the City's waterfront was given top priority. As such, projects undertaken in 2006 and 2007 have focused on the control and/or treatment of waterfront discharges. These have included the following Class Environmental Assessment Projects: Scarborough Waterfront CSO and Stormwater Outfall Control, Eastern Beaches Storm Sewer Outfall Control, Etobicoke Waterfront Storm Sewer Outfall Control, and the Bonar Creek Stormwater Management Facility. Further, in September 2006, Council approved the initiation of a comprehensive Class Environmental Assessment project entitled the Don and Waterfront Trunk Sewers and CSO Control Strategy. A copy of the Council Decision Document report can be found at:

<http://www.toronto.ca/legdocs/2006/agendas/council/cc060925/wks6rpt/cl039.pdf>

The project is intended to provide a comprehensive systems integration approach

to incorporate the wet weather flow control projects for discharges to the Don River and the Inner Harbour; with infrastructure upgrades necessary to provide security and efficiency of operation; and upgrades which may be necessary to meet the longer term servicing needs within the Don Trunk and Waterfront Interceptor Sewers. Implementation of the Strategy is expected to lead to the delisting of the Inner Harbour as a polluted area of concern in the Great Lakes Basin.

- **Stream Restoration:** The extreme storm of August 19, 2005 caused major stream erosion and significant damage to infrastructure, particularly in Highland Creek, with the washout of a section of trunk sanitary sewer; and in Birkdale Ravine. As a result, a section of Highland Creek was rebuilt in November 2006 with additional work to continue in 2007; and in Birkdale Ravine, reconstruction of the embankment and stream bed was completed in June 2006.

The erosion damages from the August 19, 2005 storm have re-prioritized projects identified in the 25-Year Implementation Schedule to provide a focus for a series of state-of-good repair projects in the foreseeable future.

- **Research Studies:** An extensive study into the application of a cost-effective high rate treatment technology, to maximize the combined sewer overflow treatment capacity of the existing North Toronto Wastewater Treatment Plant storage facility concluded that high effluent quality could be attained, through the addition of polymer flocculant, meeting the Ontario Ministry of Environment's F-5-5 guidelines. As such, the design for the retrofit of the combined sewer overflow storage facility into a full-scale chemically enhanced treatment facility was initiated in 2007.
- **Monitoring:** A monitoring program was developed, to assess the effectiveness of the Plan implementation in achieving the projected water quality improvements within the six watersheds and along the waterfront. A field monitoring program was also designed to provide the necessary baseline, water quality information, supporting the development of the above-noted Don and Waterfront Trunk Sewers and CSO Control Strategy.

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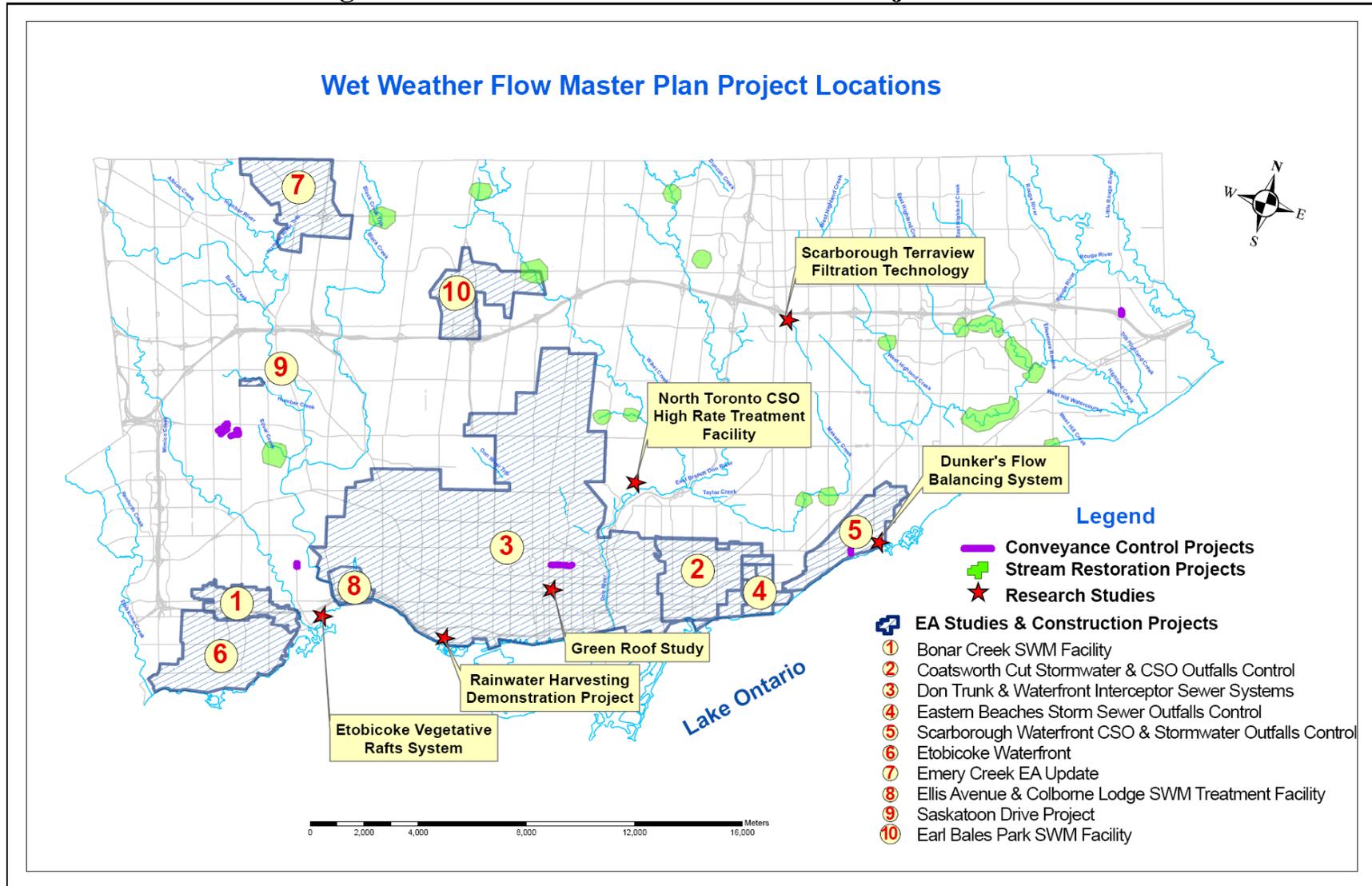
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ATTACHMENTS

- Attachment 1 – Figure 1: Wet Weather Flow Master Plan Work Project Locations
- Attachment 2 – Table 1: Wet Weather Flow Master Plan Work Undertaken in 2006 and
Work Plan for 2007
- Attachment 3 – Wet Weather Flow Master Plan – Implementation Report 2006

Attachment 1

Figure 1: Wet Weather Flow Master Plan Project Locations



Attachment 2

Table 1: Wet Weather Flow Master Plan Project Summary

WET WEATHER FLOW MASTER PLAN (WWFMP) PROJECTS			
COMPONENT OF PLAN	PROJECTS	STATUS AT THE END OF 2006	2007 ACTIVITIES
Public Education	Stormwater Advertising Campaign	An advertising campaign was developed.	Advertising campaign will be continued with some modifications.
	Blue Flag Program	The City received Blue Flag accreditation for 4 beaches.	Six beaches will be on track to receive Blue Flags in 2007 as Gibraltar Point and Centre Island Beach have also been awarded the Blue Flag accreditation.
	Community Program for SWM	13 projects were approved in 2006.	The program will continue.
	Tree Planting	11,308 trees were planted in 2006.	The program will continue.
Source Control	Downspout Disconnection Program	The voluntary program has averaged about 2,300 disconnections per year.	Voluntary program is ongoing.
	Green Roof	Analyzed and compared data from different sources: York University, Eastview Community Centre, Ryerson University green roof studies.	Continue with Ryerson University green roof monitoring. Interim report will be completed in 2007.
	Rainwater Harvesting	Feasibility analysis, internal and external coordination and cost estimates prepared for selected demonstration sites. Prepared and issued RFP for design.	Conduct detailed design.
Municipal Operations	Dry Weather Outfall Monitoring and Remediation	The outfall monitoring program was completed at Taylor Massey Creek where 11 outfalls were designated as priority and measures were taken to correct the problems.	Conduct monitoring on the Black Creek Tributary of the Humber River.
	Enhanced Street Sweeping	The stormwater simulation study continued in 2006 with the new regenerative air sweepers.	Finalize the study report for street sweeping test from 2004 to 2006.
	Catchbasin Cleaning	Carried out once per year on arterial roads and once every two years on local roads.	Ongoing.
	Beach monitoring program	Implemented beach monitoring annually.	Ongoing.

COMPONENT OF PLAN	PROJECTS	STATUS AT THE END OF 2006	2007 ACTIVITIES
Basement Flooding	City-wide basement flooding remediation works	Work Plan has established 31 priority areas that required the undertaking of an environmental assessment for the overland flow systems and the storm and sanitary sewer. It is expected to take to the end of 2009 to complete the environmental assessments for all the 31 sites.	Environmental assessment for 14 study areas have been scheduled for completion in 2007 and sewer construction to relieve basement flooding will commence for two study areas in 2007.
Conveyance Controls	Sewer Separation	For the sewer separation identified for the McRoberts Avenue in York, detail designs for the separated storm and sanitary sewer systems have been completed.	Construction is scheduled to be completed by end of 2007.
	Implementation of SWM options for road reconstruction projects.	Eight ditches and grass swales and one pervious catchbasin were implemented for SWM control in road improvement projects in 2006.	Another pervious catchbasin and three pervious pipe systems have been scheduled for construction for 2007. Continue to identify road reconstruction projects where implementation of conveyance control measures are feasible. An exfiltration system in Hoggs Hollow will be designed in 2007.
	Humber Creek Spill Containment Device	Reviewed design drawings and tender document.	Finalizing design drawings and tender document.
Waterfront - Shoreline Management	Waterfront water quality modeling study	Consultant selected and project initiated.	Calibrate the model.
	Microbial Source Tracking (MST)	The MST study continued in 2006 offers new insights into the origins of <i>E. coli</i> contamination in Toronto beaches. The Centre Island, Kew, Sunnyside, and Bluffer's Park Beaches all indicate that non human sources of <i>E. Coli</i> contamination were significant.	There will be a new Beach Management Strategy that involves increased cooperation and collaboration between city departments for the maintenance and upkeep of beaches to improve water quality in 2007.
	Beaches Protection Strategy	Technical 2-day workshop on Experiences around the Great Lakes in reducing beach postings was held in May 2006. Enhanced beach grooming and wildlife mitigation measures were partially implemented, in cooperation with Parks, Forestry and Recreation. Public consultation events were held concerning Center Island Beach Management Options	Implement grooming and maintenance program at all beaches. Conduct maintenance dredging at Center Island beach and redirect flow from wetland area at Bluffer's Park.
Stream Restoration	Erosion Control	Repaired various sites.	Continue repair work.
	Highland Creek Geomorphic Master Plan	Project is ongoing.	Project is ongoing in 2007.
	Highland Creek Valley Segment 4A Design	Project is ongoing.	Continue study to address specific habitat issues as required by DFO.
	Aug. 19 th , 2005 - Emergency Works	Repaired various storm damaged sites.	Continue repair work.

COMPONENT OF PLAN	PROJECTS	STATUS AT THE END OF 2006	2007 ACTIVITIES
Stream Restoration	East Highland Creek Stream Restoration	Additional Emergency repairs were completed in May 2006; first major section of creek was reconstructed.	Continue ongoing repair on infrastructure & stream channel protection works.
	Burke Brook and Markham Road Fish Passage	Initiated study in 2005. Identified preferred solution, finished EA, and developed design for fish passage structures at these two sites.	Obtain permits, complete design and supervise construction of fish passage structures at these two sites.
	Watermain and Sanitary Sewer Siting	Developed a preferred alignment for a watermain replacement in Taylor Creek park which optimizes its location with respect to the meander belt, rate of creek bed incision, Environmental Significant Areas, and recreational (parks) trails. Held extensive discussions with proponents for development, where a sanitary sewer replacement had to be placed below a creek bed, due to a valley wall failure which required changing previously defined alignment in Burke Brook ravine.	Implement solutions.
End-of-pipe Controls	SWM/ Combined Sewer Overflow (CSO) Treatment Technology		
	North Toronto CSO High-Rate Treatment (HRT)	Consultant selected.	Develop detailed design for the facility for full-scale implementation.
	Dunker's Flow Balancing System Performance Report and Wetland Regeneration	Reviewed the soil investigation report at Cell 5.	Design and initiate construction of submerged berm within Cell 5 (wetland).
	Terraview/Willowfield Filtration System	Monitored groundwater level and quality; performed data analysis.	Prepare monitoring report.
	Etobicoke Flow Balancing System	Performed water quality, sediment toxicity, chemistry and benthic community structure monitoring program.	Prepare monitoring report.
	Etobicoke Vegetative Raft System	Continued with vegetation sampling and prepared the final report.	Review the final report and carry on maintenance and monitoring program.
	Etobicoke High Rate Treatment	Finalized study report – project complete.	
	CSO Disinfection Project	Finalized data analysis and study report – project complete.	
	CSO Control Class EA Projects		
	Coatsworth Cut CSO/SW	Finished Phase 2 of Class EA	Continue study, complete ESR in fall of 2007.

COMPONENT OF PLAN	PROJECTS	STATUS AT THE END OF 2006	2007 ACTIVITIES
End-of-pipe Controls	Scarborough Waterfront CSO	RFP was issued and a consultant firm has been selected.	Initiate and conduct Class EA study.
	Don Trunk CSO Control and Coxwell Twinning study		Initiate study.
	SWM Class EA Projects		
	Eastern Beaches Storm Sewers	Class EA study initiated.	Continue study.
	Etobicoke Waterfront Project	Prepared project information; issued RFP for EA study.	Conduct Class EA study.
	Bonar Creek SWM Project	RFP was issued and a consulting firm has been selected.	Initiate and conduct Class EA study.
	Saskatoon Drive Project	Site information suggested that end-of-pipe facility such as infiltration, filtration or wet pond may not be feasible alternatives for implementation at the proposed facility location because of prevailing high groundwater level.	Flow monitoring study to be initiated.
	Earl Bales Park	EA study completed.	Develop design RFP, complete design, and tender facility construction targeted for 2007-2008.
	Ellis Avenue/ Colborne Lodge	Construction of most of project was completed in 2006.	Site restoration of portions of project to be completed in 2007.
	Emery Creek Stormwater Quality Control Ponds	Working on legal easement agreements with Hydro One and other affected petroleum transport companies and a church.	Final design & construction will be scheduled once all the easement agreements are completed.
Don Valley Parkway (DVP) Drainage Plan		Class EA project study to be initiated in 2007.	
Monitoring	Environmental Monitoring	A monitoring program for assessing the effects of implementing the WWFMP has been developed.	Synthesize monitoring from previous decade and determine needed alterations to existing monitoring network. Evaluate effectiveness of monitoring network for Salt Management Plan. Build field installations needed to provide baseline data for Don Trunk CSO Control and Coxwell twinning study.
WWF Policy	Develop WWF Management Guidelines	Second Draft of Management Guidelines was developed and reviewed by staff	Implement use of WWF Management Guidelines