

1. INTRODUCTION

The purpose of this document is to describe the process by which the Upper Flint Council selected management practices for its regional water plan. The process of developing the plan took over two years (2009-2011). It required the Council to gather information from a variety of sources to provide a foundation for sound decision making. In the process, the Council interacted with state and federal agencies, local governments, and stakeholders from throughout the region, and it also coordinated with neighboring regional water councils, especially the Middle Chattahoochee and the Lower Flint-Ochlockonee Council, through multiple joint meetings with those councils. The Council used a consensus-oriented approach in this process. Through the management practices it selected, the Council sought to provide for a sustainable future for the Upper Flint Region.

This document describes the following components of the management practice selection process:

- Selection process design principles (Section 2)
- Council operations (Section 3)
- Council-defined vision and goals (Section 4)
- Information sources (Section 5)
- Selection process (Section 6)
- Selection process outcomes (Section 7)

2. SELECTION PROCESS DESIGN PRINCIPLES

The Georgia State Water Plan provided the following as guidance and objectives for the management practices in the regional water plans:

- Help meet the water quality management objectives of the regional water plan (RWP).
- Help meet water quantity management objectives of the RWP.
- Provide for sustainable use of available water or practices that supplement water availability.
- Ensure sustainable use of assimilative capacity on a watershed basis.
- Restore impaired waters.
- Protect waters that currently meet water quality standards.
- Address gaps identified in resource availability and assimilative capacity as identified through EPD resource assessment modeling efforts.

Additionally, the planning contractor team helped to guide the process through the concepts of sustainable planning embodied in the “Triple Bottom Line” (TBL) approach. The planning contractor used this approach in assisting the council in developing selection criteria and designing a selection survey for the council members. As shown in Figure 1, the TBL approach considers traditional economic factors, but that also incorporates social and environmental impacts. This approach provides for a more complete

evaluation in environmental decision-making and ensures that sustainability is considered in planning. The planning contractor felt it was necessary to add a fourth category to incorporate technical criteria into the selection process. These four categories (social, economic, environmental, and technical) are shown in Figure 2. The planning contractors suggested these as the primary criteria to orient the selection process. More discussion of the selection criteria follows in Section 6 below.

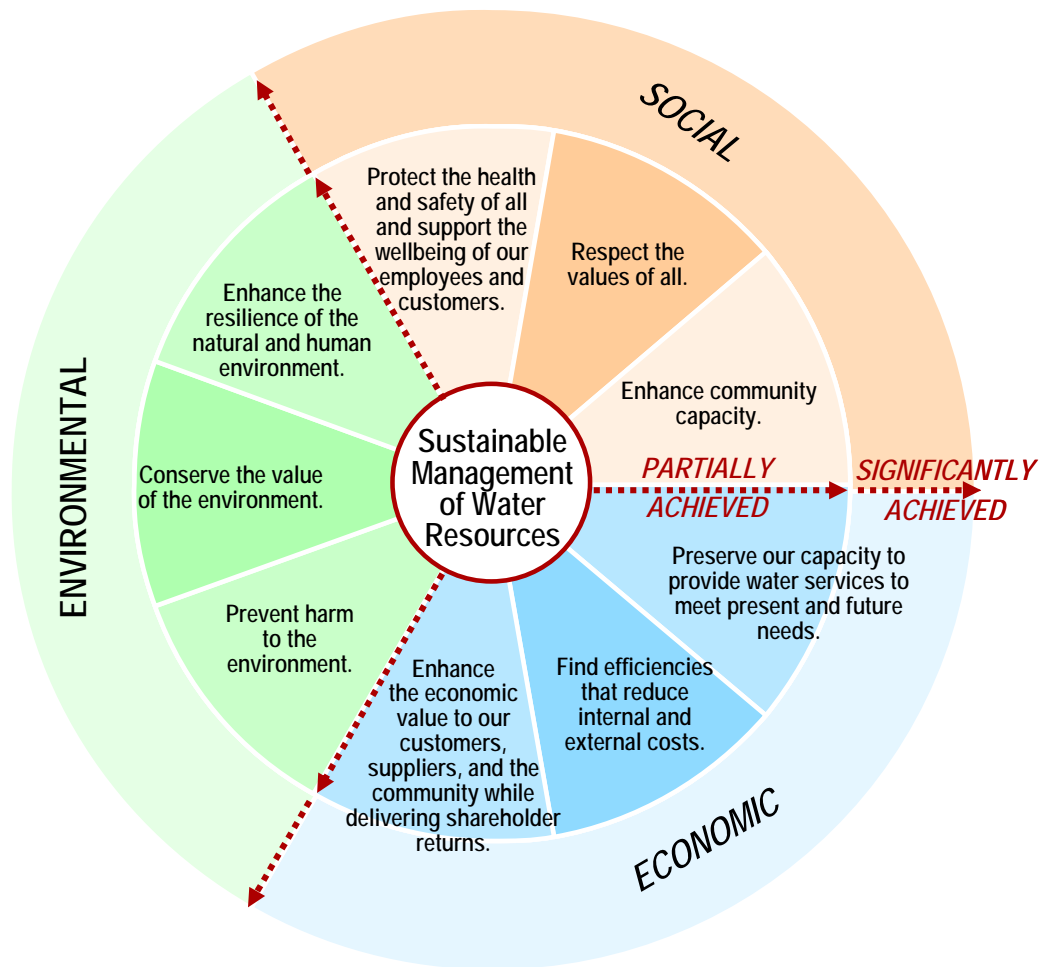


Figure 1. Triple Bottom Line of Sustainable Planning

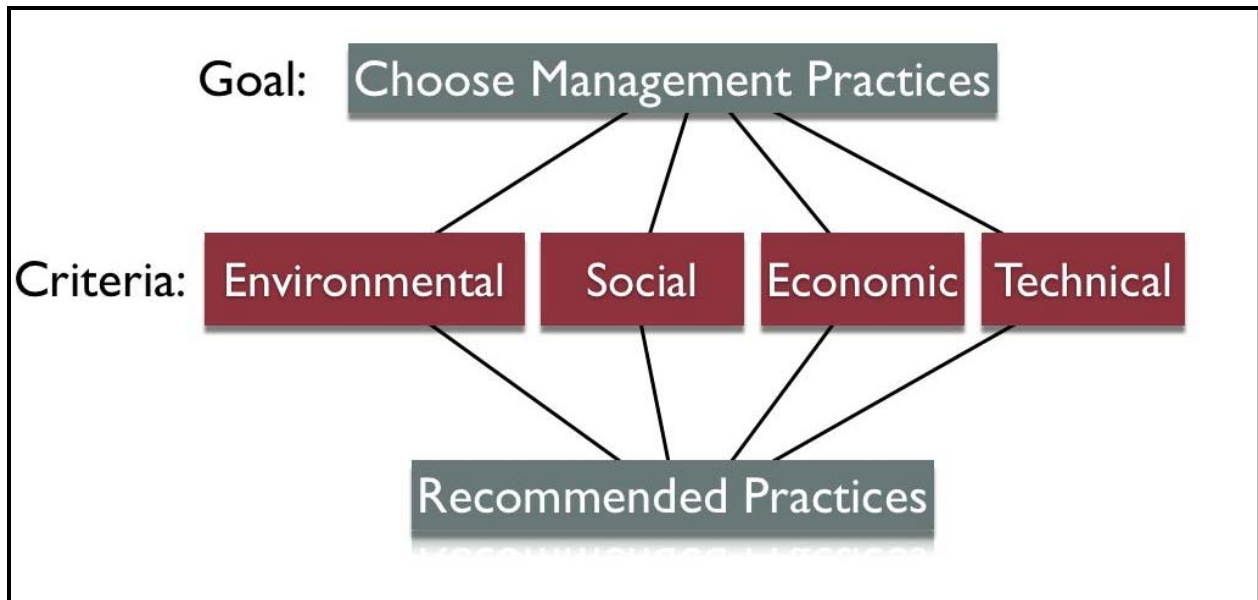


Figure 2. Main Category Hierarchy

3. COUNCIL OPERATIONS

Beginning at its first meeting, the Council worked to develop three documents to govern council operations: Memorandum of Agreement, Operating Procedures, and Rules for Meetings. Signatories to these documents included the Council, the Georgia Environmental Protection Division (EPD), and the Georgia Department of Community Affairs (DCA). These three documents are included with the supplemental materials to the regional water plan on the Upper Flint Council's website: (http://www.upperflint.org/pages/our_plan/index.php).

The Council developed these documents in an iterative process with EPD and DCA. The process began with draft documents provided by EPD and DCA. The Council reviewed the documents and made numerous proposals for modifications. Over the course of three council meetings, the Council finalized all three documents in a manner acceptable to all signatories. The three documents were adopted by the Council at its third meeting on September 18, 2009.

These documents provided for a consensus approach, where possible, in council decision-making. The Council committed to trying to attain consensus in decision-making. In the event that consensus could not be reached in a reasonable amount of time, the Council decided to make decisions by a simple majority vote, following two attempts at the same meeting to achieve a decision by a two-thirds majority vote. The Council referred to Robert's Rules of Order to guide the process in situations not specifically addressed in the Operating Procedures or Rules for Meetings. In its meetings, the Council was almost always able to attain consensus in its decision-making.

4. COUNCIL-DEFINED VISION AND GOALS

Perhaps the most significant guides for the Council in the planning process were the vision statement and goals that the Council developed. The Council began work to develop its vision and goals at its first meeting. In that meeting, the Council discussed the trends, forces, and factors affecting water resources in the region. The following is the list of trends, forces, and factors that the Council developed in this discussion:

Conservation: Needed, Increasing, but Uncertain

- Water conservation increasing
- Consumptive water use will get worse
- Hard to tell if conservation is long-term
- More closed-loop processing in industry
- Less per capita water use
- Increasing awareness of water use

Uncertainty about future water demand

- Loss of traditional industry and increase of lower water use industry
- Increasing demand
- Military base getting bigger
- Population increase will increase demand for power and water

Agriculture: More efficient irrigation but uncertainty about future water demand for agriculture

- Phasing out smaller farms (non-irrigated) in lieu of irrigated
- More vegetable crops, requiring higher water use
- Irrigation becoming more technically advanced
- Increasing efficiency for irrigation water use
- Increased demand for irrigation
- Using less water to grow more plants

Water utilities: Regionalizing?

- Too many utilities that are too small
- Trend toward regionalization

Forest land use changing:

- Reduction in forest - what will be that land be used for?
- Large tree farms decreasing, number of smaller tree farms increasing

Interbasin Transfers May Increase

- Increased demand north of Upper Flint will increase pressure for interbasin transfer
- Underutilizing the resources in our region

Near-term Climate Uncertainty

- Drought conditions?
- More rainfall?

Increasing use of land application and on-site treatment/concern about wastewater returns

- Trend toward land application reduces downstream flow
- Increased onsite treatment

Political Constraints

- Legislature restricting local government actions
- Tri-State Water War Issues

Concern about the Future

- Concern for future generations
- Counties north of us have had loss of quality of life

Budget Uncertain

- State budget projections decreasing
- Money availability for "green energy" results in development pressure

The main theme of this discussion was that uncertainty over a number of factors (e.g., political, economic, climate) looms over the Council's efforts to develop a water plan for this region. The Council recognized that it would need more information to address these uncertainties to the extent possible and develop its plan with these uncertainties in mind to accommodate potential changes in the future.

The Council used the results of the discussion of trends, forces, and factors to begin to draft a vision statement. It also referred to the vision from the State Water Plan as a starting point: *Georgia manages water resources in a sustainable manner to support the state's economy, protect public health and natural systems, and enhance the quality of life for all citizens.*

Next, Council members worked individually to answer the following questions:

1. What do you want your rivers, lakes and groundwater to do for you and the citizens in your planning region?
2. What do you want to protect?
3. What do you want to achieve with your water resources?

The Council members discussed their individual responses to these questions and developed a "strawman" vision statement. In its discussions of the strawman, the Council noted the following important points:

- Consider all users and all needs, not just economic needs.
- Do not just sustain water resources, but enhance them.
- Ensure water supply security (against terrorism).
- Maintain water for human health.
- Protect water supplies against terrorism threats.

Management Practice Selection Technical Memorandum

- Provide for safe and adequate drinking water for citizens.
- Provide for protection of natural habitats (recreation/tourism).
- Provide for agriculture.
- Provide for healthy municipal, industrial, and commercial growth.
- Provide adequate access to water supply without unduly harming current users.
- Except where those users abuse their rights.
- Metro plan requirements are not affordable to small communities – need economic balance.
- Provide for flexibility in the plan so we can address and adapt to uncertainty.
- Consider costs and benefits.
- Temper “dream” with fiscal responsibility
- We can mandate things that we cannot afford.
- Do not want water resources diverted to another region.
- Priority use should be for in basin before other needs (external to basin).
- Protect water in our area so that we have enough to sustain economy and uses and preserve the quality of life.
- Use the word “stewardship” instead of “protect”, which might lead to unwanted interpretations.
- Protect the water in our area and be able to grow.

Following that discussion, a subcommittee worked to finalize the vision, which was adopted at the Council’s fourth meeting (November 20, 2009):

The Upper Flint Council’s purpose is to provide guidance, leadership and education on water resource utilization within the region. Through cooperation among stakeholders, this plan will assist the Council’s efforts to manage the region’s water resources in a sustainable manner, be supportive of public health and natural ecosystems, support the State’s economy and enhance the quality of life for its citizens.

Next, the same subcommittee drafted goals for the Council’s consideration based on the Council’s discussions of the vision statement and review of neighboring councils’ goals. The following goals were adopted by the Council at its fifth Council meeting on March 23, 2010:

1. Lead the development and implementation of water resource policy in this region and work together with the state and federal government and with the other regional councils to ensure that the welfare and needs of our region are met.
2. Enhance public understanding of water resources and provide stakeholders with an opportunity for input into regional water policy.
3. Maintain and strive to improve the quality and quantity of our water resources in order to protect natural ecosystems and public health.

Management Practice Selection Technical Memorandum

4. Manage water resources sustainably through the three “C’s” – conserving, capturing and controlling water – in order to provide for the needs of all water users in the region (agriculture, utilities, residential, industry, and recreation).
5. Sustain the region’s aquifers and surface waters in a way that will continue to support the economic activities of the Upper Flint Region and the economy of the State of Georgia.
6. Ensure that actions taken by this Council do not impede the agriculture and forestry based economy of this region.

In later Council meetings, the Council modified goal #4 to add forestry and commercial to the list of water users:

4. Manage water resources sustainably through the three “C’s” – conserving, capturing and controlling water – in order to provide for the needs of all water users in the region (agriculture, utilities, residential, commercial, industry, forestry, and recreation).

5. INFORMATION SOURCES

The Upper Flint Council considered the following major sources of information to guide the selection of management practices for the Upper Flint Regional Water Plan:

- 1) ***Existing plans and practices***: The Council conducted a comprehensive review of existing local and regional water management plans and relevant related documents to frame the selection of management practices. When possible, successful management practices already planned for and/or in use in the Region formed the basis for the water management practices selected by the Council.
- 2) ***Comparison of resource demands (current and forecast) and resource capacities (as modeled in the resource assessments)***: See Sections 3 & 5 of the Upper Flint Regional Water Plan and additional technical memoranda summarizing the forecasts and assessment results available with the supplemental materials to the regional water plan on the Council’s website: http://www.upperflint.org/pages/our_plan/index.php
- 3) ***Upper Flint Council’s Vision and Goals***: See Section 1 of the Upper Flint Regional Water Plan and Section 4 of this document.
- 4) ***Results of a survey of Council members on management practices and criteria for evaluation***: The survey asked council members to rate an extensive list of management practices and to rank criteria to guide management practice selection (see Section 6 of this document).

Management Practice Selection Technical Memorandum

- 5) **Public input:** The Council implemented a Public Involvement Plan to inform stakeholders and local government officials about the planning process and to engage them in providing input to the Council as it developed its plan. A copy of the Public Involvement Plan and a discussion of the public involvement activity is included in the Public Participation Technical Memorandum, available with the supplemental materials to the regional water plan on the Council's website: http://www.upperflint.org/pages/our_plan/index.php

The selection of management practices required the development of a comprehensive listing of management practices from which to make selections. This list was developed based on a broadly scoped review of existing plans, reports, and other documents that discussed water resource management in the region and the state as a whole. These reports and plans included (but were not limited to) the following:¹

- Georgia's Water Conservation and Implementation Plan (EPD, March 2010, See: <http://www.conservewatergeorgia.net/documents/wcip.html>)
- Best Management Practices for Georgia Agriculture (GSWCC, 2007, See: http://www.gaswcc.org/docs/ag_bmp_Manual.pdf)
- Georgia's Best Management Practices for Forestry (GFC, 2009) (See: <http://www.gfc.state.ga.us/forestmanagement/bmp.cfm>)
- Georgia Stormwater Management Manual (Blue Book, See: <http://www.georgiastormwater.com/>)
- Mining Association Best Management Practices
- Water Quality/Quantity Best management Practices for Florida Container Nurseries (April 2007, See: http://www.floridaagwaterpolicy.com/PDF/Bmps/Bmp_FloridaContainerNurseries2007.pdf)
- Metropolitan North Georgia Water Planning District: Water Supply and Water Conservation, Wastewater, and Watershed Management Plans (Metropolitan North Georgia Water Planning District, May 2009, See: <http://www.northgeorgiawater.org/html/19.htm>)
- State Energy Strategy for Georgia (GEFA, December 14, 2006, See: <http://www.gefa.org/Index.aspx?page=93#a4>)
- Groundwater Management Plan for Georgia, Georgia's Comprehensive State Groundwater Protection Plan (Georgia EPD, 1998)
- Georgia Water Stewardship Act (Georgia General Assembly, June 2010)
- Flint River Basin Regional Water Development and Conservation Plan (Georgia EPD, March 20, 2006, See: <http://www1.gadnr.org/frbp/index.html>)
- Watershed Assessments and Watershed Protection Plans (as required by NPDES permits)

¹ For more detail on plans reviewed in the development of the Upper Flint Regional Water Plan, see the Existing Regulatory and Local Plan Summary included in the supplemental materials on the Upper Flint Council's website: http://www.upperflint.org/pages/our_plan/index.php

- Water Quality in Georgia 2006- 2007 (305(b)/303(d) Report, See: <http://www.gaepd.org/Documents/305b.html>)
- TMDL Implementations Plans (See: http://www.gaepd.org/Files_PDF/techguide/wpb/TMDL/TMDL_Implementation_Plans/TMDL_TMDLPlan_List_2007.pdf)
- Nonpoint Source Implementation Plans
- Water and sewer master plans
- Stormwater master plans
- Local comprehensive plans from the Upper Flint Region
- USGS reports on Georgia water resources (See: <http://ga.water.usgs.gov/>)
- US Army Corps of Engineers documents on the ACF (See: <http://www.sam.usace.army.mil/acf.htm>)
- Water resource research reports from the Albany State University - Georgia Water Planning and Policy Center (See: <http://www.h2opolicycenter.org/research.shtml>)
- Georgia Better Back Roads Field Manual (See: <http://www.tworiversrcd.org/GABBR.htm>)

6. SELECTION PROCESS

The above sections describe the foundation laid by the Council to select management practices:

- Development of vision and goals
- Review of water and wastewater demand forecasts
- Review of resource assessment results on resource capacity
- Review of existing plans, practices, and pending regulations
- Development of a comprehensive list of management practices

Next, the Council worked from the comprehensive list of management practices to select the management practices for its regional water plan using the following steps:

- 1) Survey of council members on management practices and selection criteria
- 2) Creation of Water Quality and Water Quantity Committees to develop recommendations to the full council on management practices
- 3) Iterative development, review, and revision of Water Quality and Water Quantity “strawman” documents of management practice recommendations by the committee
- 4) Presentation of recommendations to the full council for consideration
- 5) Incorporation of Council comments
- 6) Adoption of management practices into the plan

Management Practice Selection Technical Memorandum

First, the Planning Contractors developed a survey to gather information from the Council members on their priorities for selection criteria and for categories of management practices. The survey asked Council members to rate potential selection criteria, which the planning contractors developed for the survey based on the Triple Bottom Line approach described in Section II and based on input to date from Council discussions. The following is a list of criteria included in the survey, by category from Figure 2:

Economic

Capital Cost
Operation and Maintenance Cost
Life Cycle Cost

Environmental

Regulatory Compliance
Water Quality
Restoration of Impaired Waters

Social

Public Perception
Impact on Public

Technical

Efficiency
Reliability

The Council members were also asked to suggest other criteria that should be considered. The survey also asked the Council members to rate the importance, absolutely and relatively, of various types of management practices by category, including the following:

Water Quantity Management Practices

Water Demand Management Practices

- Measurement and Water Use Assessment Practices
- Practices to Reduce Water Waste and Loss
- Drought Planning and Response
- Practices to Increase Efficiency in Water Use and/or Reduce Water Use
- Water Reuse (non-potable, indirect potable, direct potable)
- Conservation Oriented Rate Structures and Other Incentives
- Education and Outreach Programs
- Energy Water Efficiency and System Management
- Agricultural Water Efficiency and System Management
- Golf Course Water Conservation Management Practices and Strategies
- Voluntary Certification Program for Landscape Professionals

Water Return Management Practices

- Increase water returns by decreasing use of septic systems
- Increase water returns by decreasing use of land application systems

- Nonpotable Reuse
- Indirect Potable Reuse
- Direct Potable Reuse

Water Supply Management Practices

- New Surface Water Storage Reservoirs
- Increase Existing Surface Water Storage Reservoirs
- New Groundwater Sources
- Interbasin Transfers
- Aquifer Storage and Recovery
- Desalination
- Interconnection of Supply Systems

Water Quality Management Practices

Enhanced Water Quality Standards and Monitoring Practices

- Constructed Treated Wetlands
- Actions to protect/manage source water quality and quantity
- New Development Stormwater Management Standards
- Watershed Improvement Projects
- Stormwater Public Education and Outreach
- Source Water Supply Protection
- Groundwater Recharge Protection
- Regional/Local Monitoring Programs
- Water Supply Security

Enhanced Pollution Management Practices

- Reduce Impervious Surfaces
- Establish a Stormwater utility
- Protect Sensitive Land
- Pollution Prevention Programs
- Coordinated Environmental Planning
- Maintenance for Septic Systems
- Water Quality Trading
- Post Development Stormwater Management

The results of the survey are provided in Table 1 below.

Table 1: Results of Upper Flint Council Member Survey on Management Practices			
Management Practices Most Highly Rated by Council Members			
WATER QUANTITY MANAGEMENT PRACTICES		WATER QUALITY MANAGEMENT PRACTICES	
Demand Management Practices	Supply Management Practices	Enhanced Water Quality Standards and Monitoring Practices	Enhanced Pollution Management Practices
<ul style="list-style-type: none"> Practices to Increase Efficiency in Water Use and/or Reduce Water Use Energy Water Efficiency and System Management 	<ul style="list-style-type: none"> New Surface Water Storage Reservoirs Increase Existing Surface Water Storage Reservoirs 	<ul style="list-style-type: none"> Actions to protect/manage source water quality and quantity Source Water Supply Protection Watershed Improvement Projects 	<ul style="list-style-type: none"> Pollution Prevention Programs Protect Sensitive Land Establish a stormwater utility
Evaluation Criteria Ranking			
<ol style="list-style-type: none"> Economic/Financial (Capital Cost, Operation and Maintenance Cost, Life Cycle Costs) Technical (Efficiency, Reliability) Environmental (Water Quality, Restoration of Impaired Waters) Social (Public Perception, Impact on Public) 			

The Council chose to organize its work in selecting management practices through two committees: Water Quality and Water Quantity. The committees were created and initial appointments were made at the Council’s fifth meeting on March 23, 2010. The charge to these committees was to develop recommendations for the Council of management practices for the Council to adopt into the regional water plan. The results of the survey discussed above provided the committees with a starting point: an understanding of how the Council members rated the importance of various selection criteria and categories of management practices.

The planning contractors worked with the committees to develop “strawman” documents that outlined management practices for each committee to consider. The documents included supporting information on the effectiveness and costs of the practices to the extent that such information was available.² The

² More information specifically related to the selection of conservation management practices is provided in the Water Conservation Technical Memorandum available in the supplemental materials on the Upper Flint Council’s website:

Management Practice Selection Technical Memorandum

committees met with the Planning Contractors and EPD on multiple occasions to draft the management practices for the Council to consider. Committees met between Council meetings from April 2010 to April 2011. At each Council meeting, committee reports formed the basis of Council discussion of management practices. The committees also made other recommendations to the Council on the content of the regional water plan, including items for inclusion in the Council's Recommendations to the State (Section 7.4) and other sections of the plan.

In their deliberations, the committees considered the following:

- Council vision and goals
- Water demands (current and forecast)
- Water resource assessment results
- Gaps identified by comparing water demands and assessment model results
- Selection criteria ratings
- Cost information
- Effectiveness and efficiency information
- Timing for implementation

The selection criteria were important in orienting discussion to a broad range of factors that included not only environmental and economic factors, but also social and technical factors. On many occasions, the Council did not immediately accept a recommendation of the committee, and the committee worked further to refine the management practice recommendation. The committees worked with the planning contractors to detail implementation steps and schedules, benchmarks for plan implementation evaluation, and cost estimates for the management practices included in the plan. The committees provided the mechanism by which the Council was able to process substantial amounts of information into informed decisions to support the development of the regional water plan.

http://www.upperflint.org/pages/our_plan/index.php Some information on the cost of management practices was derived from the Supplemental Guidance for Planning Contractors: Water Management Practice Cost Comparison (March 2010).

7. Selection Process Outcomes

After a year of iterative work by the committees with the full council, the Council adopted a final plan to submit to EPD on April 14, 2011. The plan includes the selected management practices and several recommendations to the state regarding water resource management in the region. The selected management practices are listed in Section 6 of the plan. Three management practices are highlighted as high priority management practices based on the results of a council survey at Council Meeting 9. Details on implementation steps and schedules and cost estimates are included in Section 7 of the plan. Recommendations to the state from the Council on water resources management are also included in Section 7. Benchmarks to evaluate plan implementation are included in Section 8.