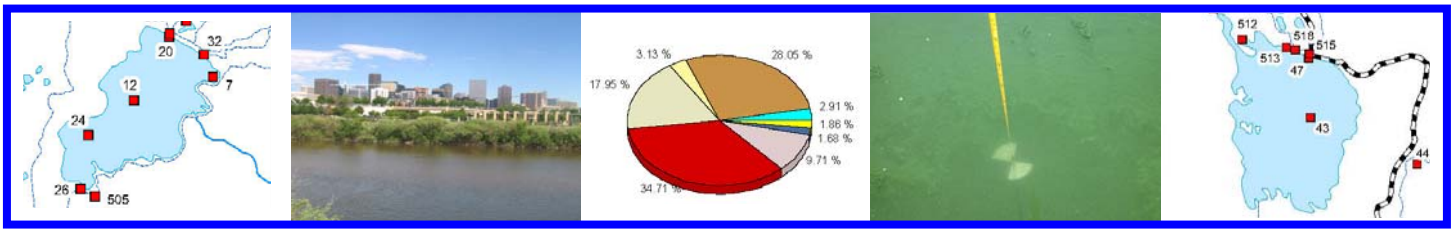
2008

Barr Lake and Milton Reservoir Watershed Management Plan

Executive Summary

Barr Lake & Milton Reservoir Watershed Association



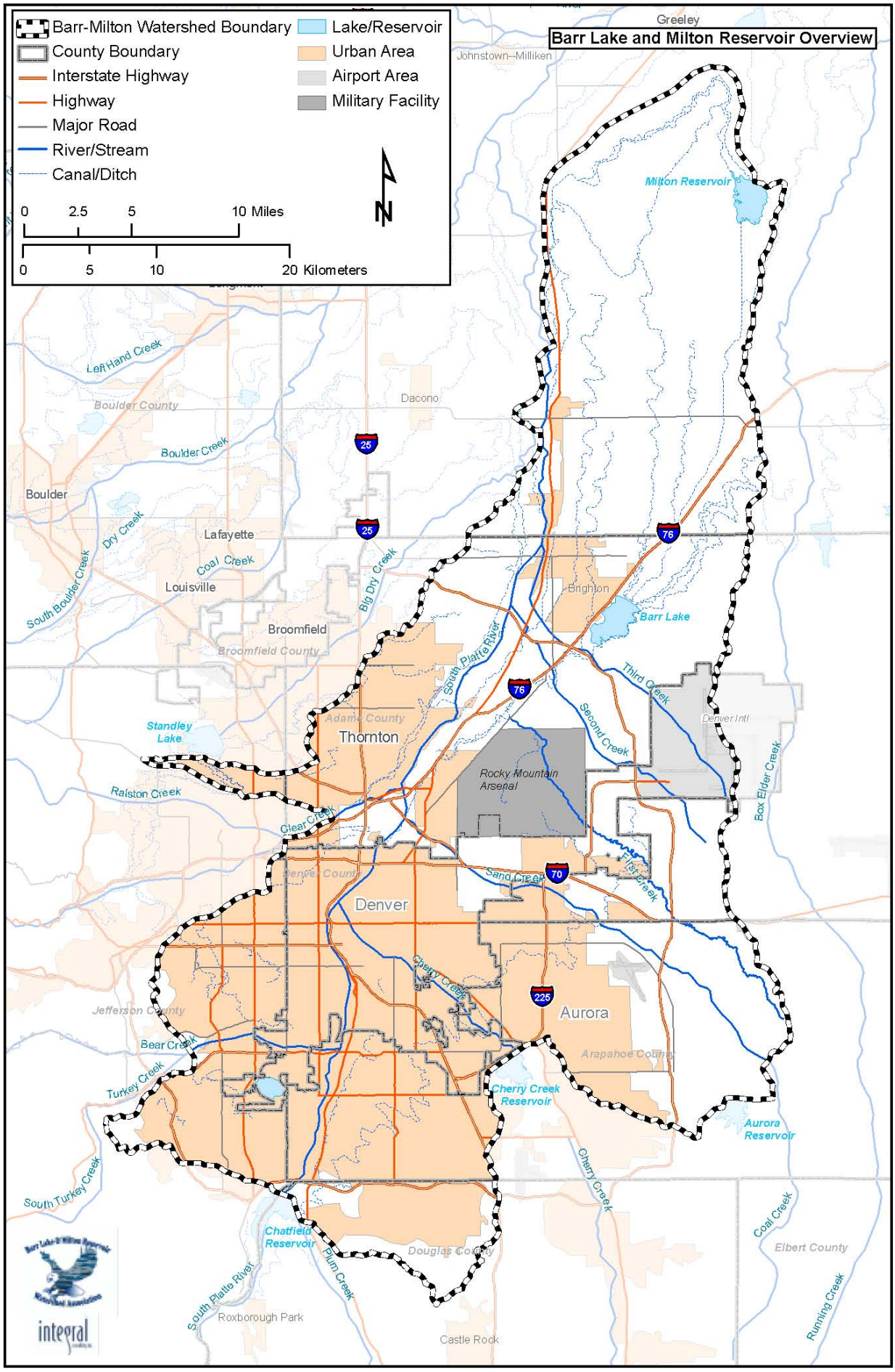


Figure ES-1. Location of the Barr/Milton watershed

Executive Summary

The Barr Lake and Milton Reservoir Watershed (BMW) Association developed the *2008 Barr Lake and Milton Reservoir Watershed Plan* (Plan) to provide water quality management information to all organizations, governments, agencies, and individuals with an interest in the water quality of Barr Lake and Milton Reservoir. This Executive Summary presents a brief overview of topics covered in greater detail in the Plan. The full Plan contains additional figures, tables, and text which provide a more detailed description of the watershed, stakeholders, water quality concerns, and management strategies. The Plan is available at www.barr-milton.org.

The *2008 Barr Lake and Milton Reservoir Watershed Plan* covers the following topics:

- Goals and objectives that support the water quality mission and vision for Barr Lake, Milton Reservoir, and the surrounding watershed;
- Reservoir and watershed history and current uses;
- Current and potential water quality concerns;
- Key regulatory guidelines pertinent to watershed management and water quality, particularly pH and nutrients;
- Sources of water quality/quantity data and ongoing monitoring programs;
- Reservoir data analyses and characterizations;
- Existing water quality management programs within the watershed;
- Proposed nutrient reduction strategies under consideration;
- Strategies and timeline to quantify sources of water quality contaminants and identify best management measures available to mitigate water quality impacts through a pH total maximum daily load (TMDL);
- Association partners, as well as financial and technical resources, needed to develop a pH TMDL and implement management measures; and,
- Education program plans and information to broaden stakeholder involvement and encourage public awareness of watershed issues.

This Plan is intended to be a living, dynamic document that will serve as a reference and guide to all watershed stakeholders for several years to come. Portions of the Plan are created according to the current understanding for watershed issues, while others will be developed as technical analyses proceed and programmatic modifications occur. Periodic updates for the Plan will incorporate new information as it is developed.

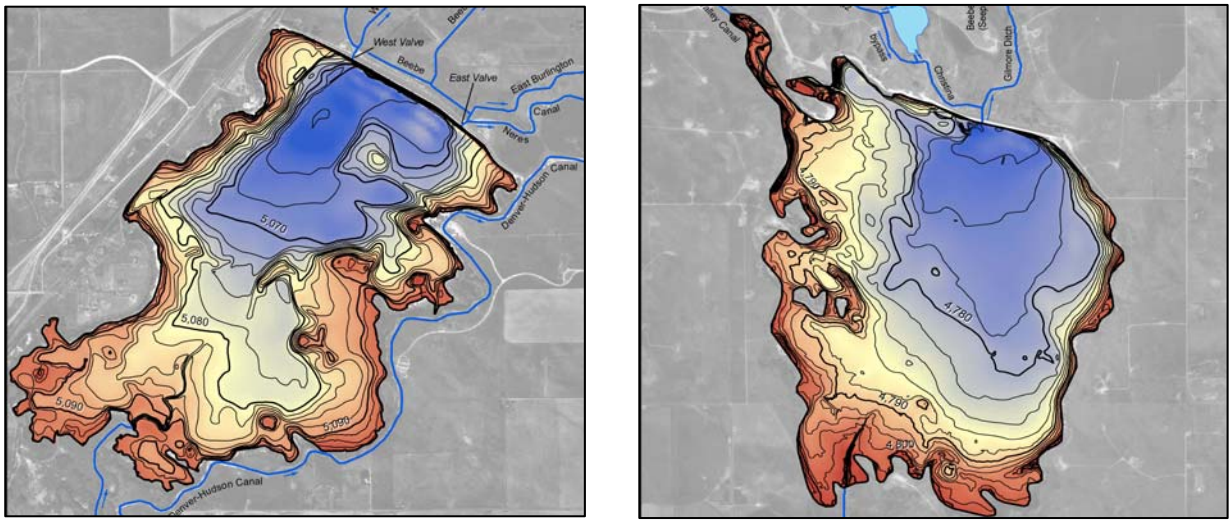


Figure ES-2. Barr Lake (left) and Milton Reservoir (right) bathymetric contours

The Barr Lake and Milton Reservoir Watershed

The Barr/Milton watershed covers over 850 square miles (550,000 acres) on the central Colorado plains and encompasses portions of six counties: Adams, Weld, Arapahoe, Denver, Jefferson, and Douglas (Figure ES-1). The watershed generally flows south to north, paralleling the foothills of the Front Range of the Rocky Mountains. Over 500 miles of streams and rivers flow through the watershed, supplemented by over 550 miles of man-made canals, ditches, and pipelines. Five major drainages flow into the Barr/Milton watershed, all of which are monitored by established watershed associations, and some of which are governed by water quality control regulations. These organizations include the Cherry Creek Basin Authority, Chatfield Watershed Authority, Bear Creek Watershed Association, Upper Clear Creek Watershed Association, and Big Dry Creek Watershed Association.

Barr Lake and Milton Reservoir

Barr Lake (Barr) and Milton Reservoir (Milton) are warmwater plains reservoirs located northeast of Denver. Barr and Milton are principally filled through surface water diversions from the South Platte River at the Burlington-O'Brian Canal and Platte Valley headgates, respectively, each with a maximum storage capacity of approximately 30,000 acre-feet (Figure ES-2). In the early 1900s, the Farmers Reservoir and Irrigation Company (FRICO) purchased the two reservoirs to regulate and store water for agricultural use, and has maintained ownership and management since that time. Both reservoirs have four designated use classifications: agriculture, water supply, warm-water aquatic life habitat, and recreation.

Land Uses

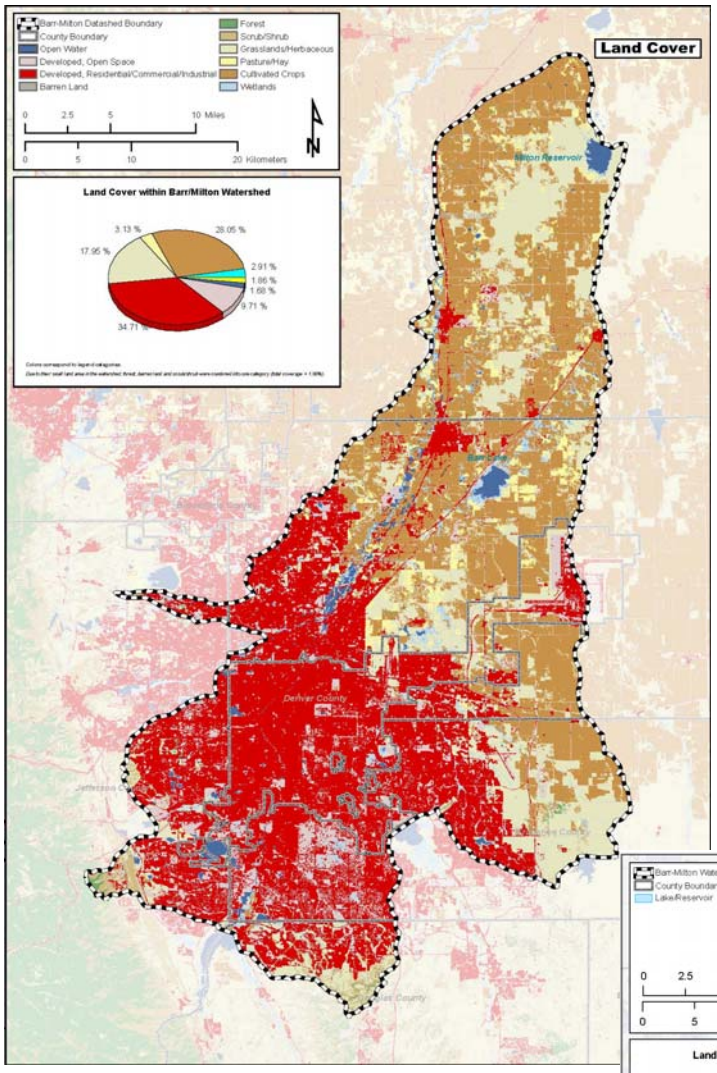
Over 89% privately owned, the Barr/Milton watershed supports a variety of land uses and land cover types (Figure ES-3). Nearly 55% of the watershed supports agriculture including grasslands, pasture, small grains, and row crops (Figure ES-4). The primary livestock in the watershed are cattle and calves. Residential and commercial/industrial areas, including most of the Denver metropolitan area, cover 38% of the total watershed area and are located primarily in the southwestern extent along the South Platte River.

Recreation

The Barr/Milton regions and South Platte River corridor offer diverse recreational opportunities to local and Front Range residents. Additionally, the Barr Lake State Park provides a range of activities from wildlife watching and educational programs to hunting and fishing. Recreational use of Milton Reservoir is currently leased to the Beebe Draw Metropolitan District, which allows members to boat, fish, and bird-watch in and around the reservoir. Biking and walking trails as well as river-front parks exist along the entire mainstem of the river from the upstream end to downstream areas in Adams County.

Threatened and Endangered Species

A total of nine state and/or federally listed threatened or endangered species potentially occur within the watershed. Notable species include the Preble's meadow jumping mouse, for which critical habitat has been designated, the Ute ladies' tresses orchid, and the bald eagle. Bald eagle presence in the South Platte River drainage has been well documented, with active nests near Barr, Milton, and along the South Platte River.



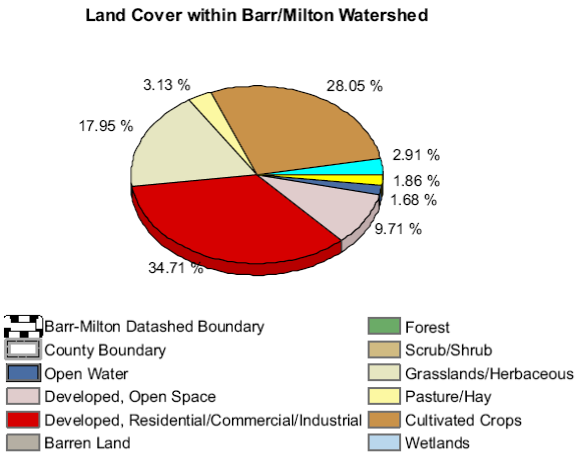
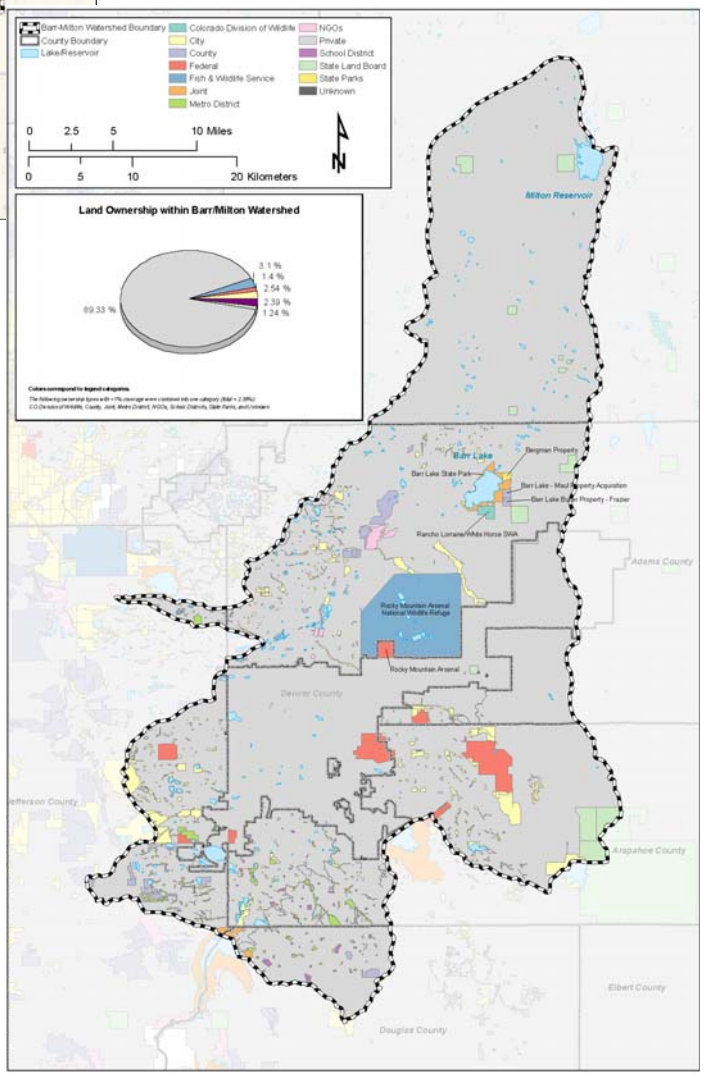


Figure ES-3. Land cover in the Barr/Milton watershed



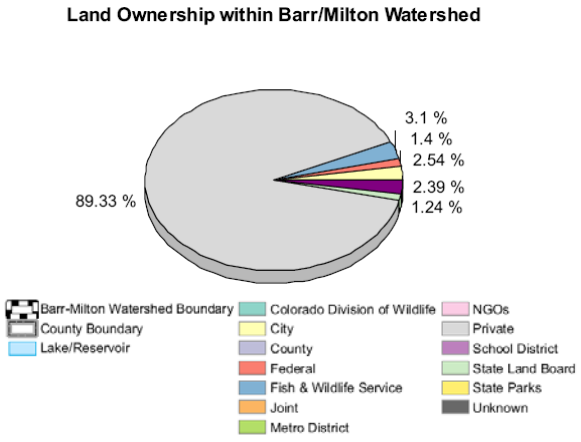


Figure ES-4. Land ownership in the Barr/Milton watershed

The Barr Lake and Milton Reservoir Watershed Association

The Barr Lake and Milton Reservoir Watershed (BMW) Association incorporated as a 501(c)6 nonprofit stakeholder watershed group in May 2005. The 2007-2008 membership includes 22 active entities and individuals representing industry, recreation, municipalities, drinking water agencies, public wastewater treatment facilities, homeowner associations, water quality agencies, and citizen groups (Table ES-1). Many other individuals and organizations participate in BMW Association meetings and committee activities. More information about the BMW Association can be found online at www.barr-milton.org.

Table ES-1. BMW Association sustaining and supporting members, 2007 – 2008

Barr Lake State Park	Henrylyn Irrigation District
Beebe Draw Metropolitan District	Littleton/Englewood Wastewater Treatment Plant
Burlington Land and Reservoir Company	Metro Wastewater Reclamation District
City and County of Denver – Wastewater Management	North Front Range Water Quality Planning Association
City and County of Denver - Denver Int. Airport	Pelican Lake Ranch
City of Aurora	South Adams County Water and Sanitation District
City of Thornton	South Platte Coalition for Urban River Environment
Denver Water	Town of Lochbuie
East Cherry Creek Valley Water and Sanitation	Tri-County Health Department
Farmers Reservoir and Irrigation Company	United Water and Sanitation District
Gibralter Equity Investments	

In order to provide guidance and structure for the BMW Association, stakeholders developed the group's mission, vision, and goals:

*The **Mission** of the BMW Association is to encourage cooperation, involvement, and awareness by interested parties in collaborative efforts to improve the water quality of Barr Lake and Milton Reservoir.*

*The **Vision** of the BMW Association is to maintain appropriate water quality in Barr Lake and Milton Reservoir through the continuous implementation of a collaboratively-developed watershed management plan. Clear communication to all watershed stakeholders will be a major attribute.*

Organizational Goals:

- *Form a stakeholder-driven, consensus-based watershed organization.*
- *Procure funding sources to sustain the watershed organization and its activities.*
- *Develop and update a watershed management plan.*
- *Develop and implement an information/education program.*
- *Continually expand the active membership of the organization.*
- *Coordinate watershed work with the efforts of other watershed groups, regulatory agencies, and related organizations.*
- *Fulfill the requirements of 319 and other grants received.*

Water Quality Goals:

- *Maintain water quality so that Barr and Milton are not on the 303(d) list*
- *Develop water quality model(s) which will*
  - *Identify the biometrics driving excessive algal growth and high pH*
  - *Qualify and quantify water quality parameters driving algal growth and high pH*
  - *Identify appropriate reservoir management to maximize water quality*
  - *Identify proper pollutant load allocations to achieve water quality targets*
- *Ensure that all plans and actions will maintain or improve water quality & habitat*
  - *Develop and manage a Water Quality Monitoring Plan, a Reservoir Management Plan, and a Best Management Practice Plan*
- *Define site-specific, numeric and narrative water quality targets*
- *Recommend to the State an appropriate wasteload and load allocation plan for a TMDL*

Problem Identification

Nutrients and pH

The nutrients nitrogen and phosphorus are vital elements to all living organisms, but can become problematic when overabundant in the aquatic ecosystem. In both Barr and Milton, high concentrations of the nutrients **nitrogen** (N) and **phosphorus** (P) lead to **elevated pH** and **algal overgrowth.** Excessive nutrients results in several water quality concerns:

- high pH values,
- excessive algae growth (as measured by chlorophyll (chl-a), a plant pigment),
- low dissolved oxygen,
- low water clarity,
- high ammonia concentrations (in Barr), and
- hypereutrophic lake conditions.

In 2002, the State of Colorado included both reservoirs on the 303(d) list of impaired water bodies for exceedance of the upper pH limit of 9.0. This listing established the need for development of a pH TMDL for the watershed. A **TMDL, or total maximum daily load,** is the maximum amount of a particular pollutant that a water body can receive and still meet water quality standards. The measurement also includes an allocation of that amount to the pollutant's sources. In mathematical terms

$$TMDL = LA + WLA + MOS$$

Where LA is the nonpoint source load allocation, WLA is the point source waste load allocation, and MOS is a margin of safety.

Nutrient Sources

Nutrient loads to the reservoirs come from a wide range of regional and local point and nonpoint sources. Specific N and P sources that have been identified in the watershed include industrial and wastewater point sources, permitted and unpermitted urban stormwater, and agricultural sources. Flows from streams and reservoirs entering the watershed and in-lake sediments are also examples of nutrient sources.

Permitted Point Sources and Stormwater

Tables ES-2 and ES-3 list dischargers within or adjacent to the Barr/Milton watershed boundary that hold National Pollutant Discharge Elimination System (NPDES) permits, including industrial, wastewater and drinking water treatment, agriculture, and other facilities. Permitted point source discharges from wastewater treatment plants constitute a significant portion of the flow in the mainstem of the South Platte River during much of the year. Table ES-4 presents municipal separate storm sewer (MS4) permits within the Barr/Milton watershed. These permits are operated by public agencies, and regulate ditches, curbs, gutters, storm sewers, and similar means of collecting or conveying sotrmwater runoff that do not connect with a wastewater collection system or treatment plant.

Nonpoint Sources

Nonpoint sources (NPS), unlike discharges from industrial and sewage treatment plants, come from many diffuse sources, and can be difficult to locate and quantify. These can include non-permitted stormwater runoff, agricultural sources, or onsite wastewater treatment systems. In the Barr/Milton watershed, nutrients from localized agricultural sources and increased stormwater runoff related to the ongoing growth of the metropolitan Denver area are of particular concern.

Table ES-2. NPDES permittees in the South Platte River watershed area that discharge to the Barr/Milton watershed

Management Agency and/or Permittee	Permit No.	Facility Size	Hydraulic Design Capacity (mgd)
Upper South Platte River*			
Chatfield Watershed Authority	N/A	N/A	N/A
Cherry Creek*			
Cherry Creek Basin Watershed Authority	N/A	N/A	N/A
Bear Creek*			
Bear Creek Watershed Authority	N/A	N/A	N/A
Clear Creek			
Beaver Brook	Proposed	Major	
Black Hawk/Central City	CO-0023949	Major	1.125
Black Hawk/Central City - New	Proposed	Major	2
CDOT - Eisenhower	CO-0026096	Minor	0.072
Central Clear Creek	CO-0030121	Major	0.1
Clear Creek Convenience	COG-584027	Minor	0.002
Clear Creek Skiing Corp	CO-0040835	Minor	0.03
Cyprus Amax Minerals	CO-0041467	Major	
Empire, Town of	CO-0020575	Major	0.06
Georgetown, Town of	CO-0027961	Major	0.58
Idaho Springs, Town of	CO-0041068	Major	0.6
Mt. Vernon Country Club	COG-630061	Minor	0.007
Reverends Ridge Campground	COG-630066	Minor	0.0155
Schwayder Camp WWTF	COG-584009	Minor	0.001831
St. Mary's Glacier	CO-0023094	Minor	0.125/.60
Big Dry Creek			
Broomfield, City of	CO-0026409	Major	5.4
Denver North Campground	CO-0035793	Minor	0.0105
Northglenn, City of	CO-0036757	Major	13.1
Rocky Flats	CO-0001333	Major	0.5
Westminster, City of	CO-0024171	Major	7.5
Urban South Platte River			
Arvada Reuse	Proposed		
Barr Lake R.V. Park	COG-030019	Minor	0.015
Clear Creek Valley	CO-0020206	Major	2.8
Coors/Golden	CO-0001163	Major	7
Foxridge Farms Mobile	CO-0028908	Major	0.13
Hi Land Acres Water and Sanitation	CO-0022594	Major	0.069
OEA, Inc.	CO-0042196	Minor	0.0833
Racing Association of Colorado	COG-582026	Minor	0.03
Rangeview Metro District	COG-582042	Major	0.13
Rocky Mountain Arsenal	CO-0021202	Major	0.07
Tomahawk Truck Stop	CO-0042421	Minor	0.012
Upper Sand Creek	Proposed	Major	8

Notes:

* Wastewater flows in these sub-watersheds are intercepted by major reservoirs. Quality of effluent discharges are implemented through control regulations. Entities responsible for management of the control regulation are listed in lieu of individual permit holders.

Data Source:

Denver Regional Council of Governments. Clean Water Plan. January 2009.

Table ES-3. Key Active Permitted Dischargers in or Near the Barr/Milton Watershed.

Receiving Water	County	Permit ID	Facility Name	SIC Description[a]	NPDES Identifies as Major Discharger
na	Weld	COU000306	Bella Holsteins	Beef Cattle Feedlots	Minor
na	Weld	COU000142	Horton Industries, Incorporated	Beef Cattle Feedlots	Minor
Platte Valley Canal	Weld	COA931054	Morning Fresh Farms	Chicken Eggs	Minor
na	Weld	COU000134	Morwai Dairy	Dairy Farms	Minor
na	Weld	COU000275	Webber Cattle Company	Beef Cattle Feedlots	Minor
South Platte River	Denver	CO0001091	Public Service of Colorado Arapahoe Station	Electric Services	Major
South Platte River	Denver	CO0001104	Public Service of Colorado Cherokee Station	Electric Services	Major
South Platte River	Denver	CO0001139	Public Service Company Zuni Plant	Electric Services	Major
Little Dry Creek	Weld	COG600753	Spindle Hill Energy Center	Electric Services	Minor

Notes: SIC = Standard Industrial Classification
na = data not available
[a]Only SIC types related to agriculture and electric utility services are included in this table.

Data Source:
EPA Envirofacts PCS Database, Water Discharge Permits Query Form
http://www.epa.gov/enviro/html/pcs/pcs_query_java.html

Table ES-4. Stormwater MS4 permittees in the Barr/Milton watershed

Permittee Name	Permit Number	Permitting Phase
Aurora, City of	COS000003	Phase I
Colorado Dept of Transportation	COS000005	Phase I
Denver, City & County of	COS000001	Phase I
Lakewood, City of	COS000002	Phase I
Adams County	COR090041	Phase II
Arapahoe County	COR080010	Phase II
Arvada, City of	COR090013	Phase II
Brighton, City of	COR090089	Phase II
Broomfield, City & County of	COR090054	Phase II
Cherry Hills Village, City of	COR090066	Phase II
Commerce City, City of	COR090032	Phase II
Douglas County	COR080003	Phase II
Edgewater, City of	COR090068	Phase II
Englewood, City of	COR090056	Phase II
Federal Heights, City of	COR090038	Phase II
Glendale, City of	COR090003	Phase II
Greenwood Village, City of	COR080004	Phase II
Jefferson County	COR090024	Phase II
Littleton, City of	COR090055	Phase II
Lone Tree, City of	COR080016	Phase II
Northglenn, City of	COR090010	Phase II
Sheridan, City of	COR090082	Phase II
Centennial, City of (Southwest Metro Stormwater Authority)	COR080021	Phase II
Thornton, City of	COR090034	Phase II
Weld County	COR090037	Phase II
Westminster, City of	COR090051	Phase II
Wheat Ridge, City of	COR090015	Phase II

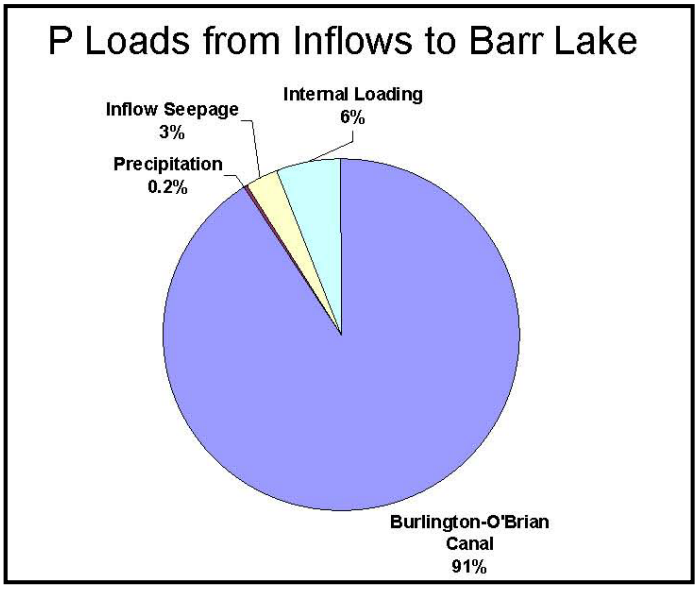
Notes:
MS4 - Municipal separate storm sewer system
This table includes all Phase I and Phase II city or county permittees located wholly or partially within the Barr/Milton watershed.

Data Source:
Colorado Department of Public Health and Environment
http://www.cdphe.state.co.us/wq/PermitsUnit/stormwater/SWActivecertsdatabases/MS4Permittees.pdf
Data current as of March 10, 2008.

Current Water Quality Conditions

Reservoir Water-Quality Assessments for both Barr and Milton were completed in 2008[1]. The purpose of the assessments was to document the current state of water quality and serve as a quantitative starting point for TMDL development. The Assessments provide a general analysis of in-lake water chemistry that is useful in understanding the larger picture of lake nutrient dynamics.

Barr Lake



The Barr Lake Reservoir Assessment concluded that Barr is a highly-enriched, hypereutrophic reservoir with high nutrient concentrations, low clarity, and low dissolved oxygen at the bottom of the reservoir. The lake also contains high levels of chl-a, and high pH resulting from photosynthetically active algae. The upper standard for pH (9.0) was exceeded every year from 2002 to 2005, with exceedences occurring from July through the fall and early winter. The extremely high concentrations of P result in an N-limited condition for most of the growing season. During September, when inorganic N concentrations are very low, the growth of nitrogen-fixing blue-green algae (*Microcystis, Aphanizomenon and Aphanocapsa*) increases in the lake. The type of algae growing in Barr also changes with changing N to P ratio (N:P).

The Barr Lake Assessment included a nutrient balance analysis for irrigation years 2003 to 2005 (Table ES-3). This analysis found that P and N enter the reservoir via the Burlington-O'Brian Canal, atmospheric deposition, internal loading from sediment, groundwater inflow, and runoff from the local watershed. N can also be introduced to the reservoir via fixation by cyanobacteria (blue-green algae) and lost via denitrification. Nutrients leave the reservoir in surface water via the two outlets, the east and west outfalls, and through reservoir seepage to groundwater.

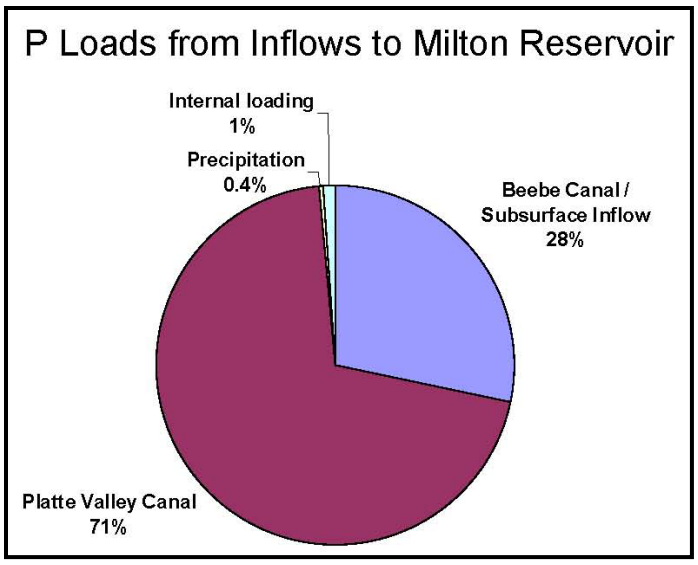
Table ES-3. Nutrient balance analysis results for Barr Lake and Milton Reservoir

	Barr Lake	Milton Reservoir
Total Annual Phosphorus Loading (lbs/yr)	157,000	89,300
Annual Mass of Phosphorus Leaving (lbs/yr)	61,900	39,800
Percent Retained	*52%*	*44%*
Total Annual Nitrogen Loading (lbs/yr)	1,180,000	532,000
Annual Mass of Nitrogen Leaving (lbs/yr)	423,700	188,800
Percent Retained	*59%*	*53%*

[1] The *Barr Lake: Reservoir Water-Quality Assessment* and *Milton Reservoir: Reservoir Water-Quality Assessment* were prepared for the Barr-Milton Watershed Association by AMEC Earth & Environmental, Boulder, CO. (Note: AMEC was formerly known as Hydrosphere Resource Consultants.)

Milton Reservoir

The Milton Reservoir Assessment concluded that Milton has similar water quality conditions to Barr. The reservoir is highly-enriched, eutrophic to hypereutrophic, with low clarity and low dissolved oxygen at the bottom of the reservoir. Milton also contains high levels of chl-a, and high pH resulting from photosynthetically active algae. Values for pH peak in summer around July of each year. The upper standard for pH (9.0) was exceeded every year from 2002 to 2005. As in Barr, blue-green algae dominate in Milton and influence reservoir pH. N-limiting conditions occur for much of the growing season.

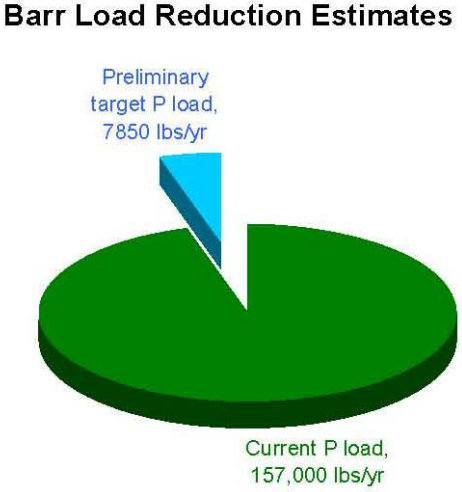


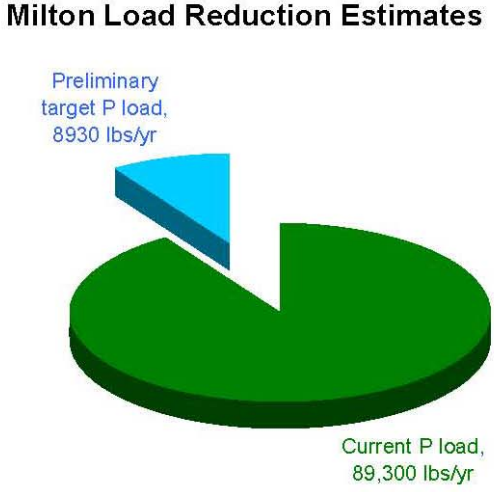
The Milton Reservoir Assessment also included a nutrient balance analysis for irrigation years 2003 to 2004 (Table ES-3). This analysis found that P and N enter the reservoir via the Platte Valley Canal, the Beebe Canal, subsurface seepage, precipitation, internal loading from lake sediments, and direct runoff from the local watershed. N can also be introduced to the reservoir via fixation by cyanobacteria (blue-green algae). Nutrients leave the reservoir via outlet releases, through the Gilmore Canal, and through groundwater seepage. N can also be lost due to denitrification.

Allowable Nutrient Load Estimates

Mathematical models are commonly used as an analysis tool to numerically reproduce and predict water quality processes occurring within a body of water. Reservoir and watershed water quality models were developed for the Barr/Milton watershed to determine: 1) eutrophication dynamics; 2) the relationship of eutrophication parameters to pH; 3) the spatial and temporal trends associated with nutrient loads; 4) the sources of nutrient loads during critical times of the year, and 5) allowable nutrient loads that meet water quality standards for pH. The water quality models will be used to calculate a site-specific allowable load of nutrients for both Barr and Milton. The allowable load is the maximum amount of nutrients that can enter each reservoir over a specified period of time without exceeding the upper limit for pH of 9.0.

Model outputs are currently being refined in order to develop these predictions. Initial model calculations suggest that the allowable P load required to ensure pH compliance in Barr Lake is on the order of 5% of the current load entering Barr, and the allowable P load in Milton Reservoir is on the order of 10% of the current load entering Milton. These preliminary allowable P load estimates indicated that major P loading reductions are needed to significantly lower pH in the reservoirs.





Watershed Approach to Load Reduction

The watershed approach to water quality management involves a coordinated environmental management effort that incorporates both public and private stakeholders to address the highest priority problems within a watershed (USEPA 1996). By following a watershed approach, a management group may consider the complete watershed, just critical areas, or a combination of these approaches. In the case of the Barr/Milton watershed, the appropriate level for applying management strategies will be identified following water quality model analysis and evaluation of applicable management measures.
The Barr/Milton watershed is mainly dominated by urban use in the southern (upstream) section and agricultural use in the northern (downstream) section, with suburban and mixed-use areas marking the transition between these areas. Management strategies will need to address these diverse, and often opposing, land use regimes. Large population dynamics in the watershed also influence management strategies. Watershed management may need to be conducted at a sub-watershed scale due to the size, population, and complexity of the watershed's uses, and may involve local, state, and federal regulatory agencies.

In order to achieve pH reductions in the reservoirs, nutrient source reduction on a watershed scale may be managed using a variety of measures, including:

- Comprehensive growth and development strategies;
- Regulatory strategies that address a variety of sources;
- Point source reduction through regulatory controls;
- Nonpoint source reduction through regulatory controls and voluntary processes; and
- Regional wastewater treatment strategies.

Management alternatives that have technical merit will be further examined in terms of costs/benefits and implementation feasibility. Output from the analyses will be prioritized and formulated into a plan for implementation.

Water Quality Planning - Accomplishments to Date

Since forming in 2005, the BMW Association has been laying the groundwork for successful water quality planning. Accomplishments to date include:

- ★ Forming a nonprofit stakeholder organization dedicated to supporting water quality improvements.
- ★ Conducting regular meetings of watershed stakeholders.
- ★ Identifying water quality and organizational goals.
- ★ Facilitating the design of and updates to a water quality database.
- ★ Developing recommendations for water quality modeling.
- ★ Identifying appropriate predictive modeling strategies and developing watershed-level and reservoir-level models.
- ★ Conducting assessments of basic environmental information related to Barr Lake and Milton Reservoir.
- ★ Compiling a basic environmental characterization of the watershed, including preliminary GIS work.
- ★ Developing an active and expanding information/education program.
- ★ Compiling a dynamic watershed plan to function as a roadmap for successive years of water quality planning.

Water Quality Planning – Next Steps

The *Barr Lake and Milton Reservoir Watershed Plan* was completed as part of Phase 2 of the BMW Association's four-phase project to develop a pH TMDL for Barr Lake and Milton Reservoir (Figure ES-5). The CDPHE has identified eight key elements that should be addressed through a TMDL planning process. The eight elements basically provide a guiding strategy for future steps of the water quality planning process leading to the ultimate step of implementation. The eight elements are listed below along with descriptions of specific objectives or action items.

1) **Identify Objectives** — Develop a pH TMDL and support the development of appropriate nutrient standards.
2) **Develop Initial Numeric Targets** — Determine appropriate nutrient limits to protect all of the reservoir water uses and achieve pH levels below 9.0 using calibrated reservoir water quality models.
3) **Assess Watershed Sources** — Identify and quantify nutrient sources in the watershed by type, magnitude, and location.
4) **Link Watershed Sources to Lake Inputs** — Develop a watershed/river water quality model tool to link the watershed sources to the inflows (loadings) into the reservoirs.
5) **Investigate Feasibility/Determine Final Numeric Target** — Link the watershed/river model with the reservoir models. This linked system will be used to run "what if" scenarios to determine specific effective and feasible point and non-point nutrient source controls and alternative water management strategies. This step will be used to refine numeric targets set initially and to determine the total nutrient loading capacity of the system.
6) **Perform Allocation between Sources** — Allocate the total loading capacity and the margin of safety between current and future sources to determine how much nutrient load each source is allowed to contribute.
7) **Develop Evaluation Plan** — Develop a monitoring plan specifically designed to determine if the numeric targets are being attained and to support any revisions that may be needed in the future.
8) **Develop Implementation Plan** — Develop a plan and schedule for implementing nutrient source controls and alternative water management strategies to achieve the agreed-upon allocations.

All outcomes of the water quality planning process will be documented in future updates of the *Barr Lake and Milton Reservoir Watershed Plan.* The BMW Association will be responsible for facilitating modifications, updates, and watershed plan implementation while individual stakeholders will be responsible for on-the-ground program implementation. A fair and balanced management approach will be critical to the success of the program, which requires public understanding that structural strategies, regulatory changes, and broad-scale behavior adjustments all require time and financial support to complete.

Funding

Primary funding for the Association is currently generated through grants and membership dues. The BMW Association plans to draw funding for implementing TMDL management strategies from both internal and external sources. Internal funding from general membership dues will continue to be used to support organizational and management costs. External funding will come from grant opportunities, including the current Section 319 Nonpoint Source grant from the Colorado Department of Public Health and Environment, Water Quality Control Division (WQCD). This Plan was developed in part with funds provided through the current 319 Nonpoint Source grant. Additional internal and external funding sources are currently being explored in more detail with development of a long-range financial sustainability plan.

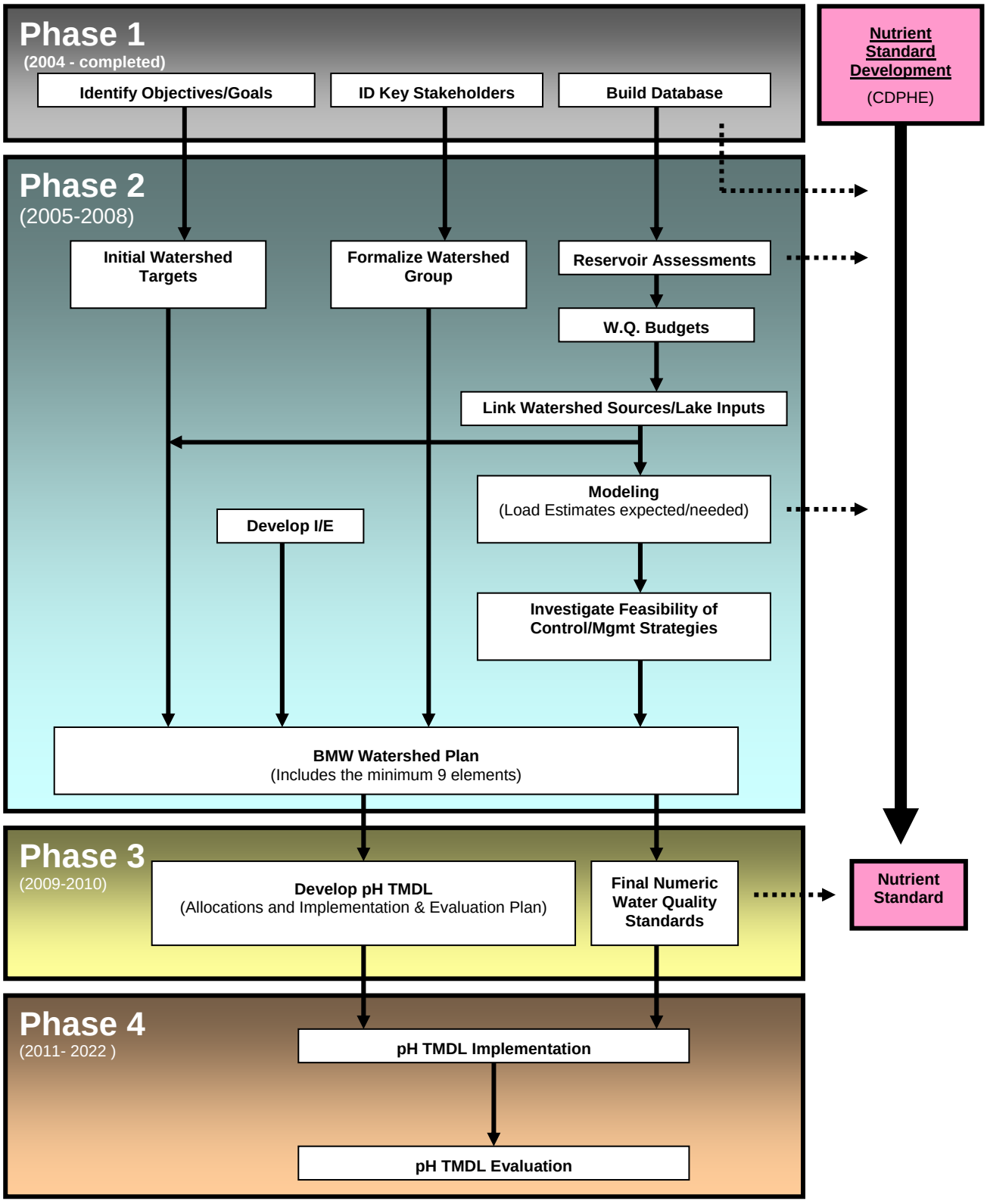


Figure ES-5. Barr/Milton pH TMDL project timeline