EAST CANYON RESERVOIR AND EAST CANYON CREEK
TOTAL MAXIMUM DAILY LOAD (TMDL)

May 2010

Prepared for
Utah Division of Water Quality
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Salt Lake City, Utah 84111
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May 2010
**East Canyon Reservoir TMDL**

**EPA Approval Date:**

<table>
<thead>
<tr>
<th>Waterbody ID</th>
<th>16020102</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location</strong></td>
<td>Summit and Morgan counties, northern Utah</td>
</tr>
<tr>
<td><strong>Pollutants of Concern</strong></td>
<td>Low dissolved oxygen (DO) Excess total phosphorus (TP)</td>
</tr>
<tr>
<td><strong>Designated Beneficial Uses</strong></td>
<td>Domestic water use (1C) Primary contact recreation (2A) Secondary contact recreation (2B) Cold water game fish (3A) Agricultural water supply (4)</td>
</tr>
<tr>
<td><strong>Impaired Beneficial Uses</strong></td>
<td>Class 3A: Protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in their food chain.</td>
</tr>
<tr>
<td><strong>Current Load</strong></td>
<td>3,350 kgTP/year (9.2 kgTP/day) 2,619 kgTP/year (7.2 kgTP/day) 262 kgTP/year (0.7 kgTP/day)</td>
</tr>
<tr>
<td><strong>Defined Targets/Endpoints</strong></td>
<td>Trophic Status and Algae - In-reservoir mean seasonal chlorophyll a of 8 µg/L - Nuisance algal threshold of 30 µg/L not to be exceeded &gt;10% of the season - Algal dominance other than blue-green species Dissolved Oxygen (DO) - Mixed reservoir periods: 4.0 mg/L DO throughout at least 50% of the water column - Stratified reservoir periods: 2-m layer throughout the reservoir in which DO is maintained above 4 mg/L and temperature below 20°C Phosphorus - Mean total phosphorus concentration of 0.031 mg/L - Mean dissolved phosphorus concentration of 0.021 mg/L</td>
</tr>
<tr>
<td><strong>Wasteload Allocation</strong></td>
<td>895 kgTP/year 1,462 kgTP/year</td>
</tr>
<tr>
<td><strong>Regulated Point Sources</strong></td>
<td>East Canyon Water Reclamation Facility</td>
</tr>
<tr>
<td><strong>Watershed Nonpoint Sources</strong></td>
<td>Spring melt runoff from ski resorts and urban areas Stormwater runoff from construction sites and Park City Streambank erosion Agricultural land uses Natural background sources including phosphatic shales</td>
</tr>
</tbody>
</table>
**Utah Department of Environmental Quality**  
**Division of Water Quality TMDL Section**

**East Canyon Creek TMDL**

**EPA Approval Date:**

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<td>Location</td>
<td>Summit and Morgan counties, northern Utah</td>
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<tr>
<td>Pollutants of Concern</td>
<td>Low dissolved oxygen (DO) associated with physical stream characteristics causing light and temperature pollution</td>
</tr>
</tbody>
</table>
| Designated Beneficial Uses | Domestic water use (1C)  
Primary contact recreation (2A)  
Secondary contact recreation (2B)  
Cold water game fish (3A)  
Agricultural water supply (4) |
| Impaired Beneficial Uses | Class 3A: Protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in their food chain. |
| TMDL | Impairment in East Canyon Creek determined to be related to light and temperature pollution and low flow, associated with physical stream characteristics. |
| Defined Targets/Endpoints | Macrophyte biomass of 6.3 mg/cm² (Ash-free biomass)  
Minimum DO no less than 4.0 mg/L |
| Factors Contributing to Impairment | Lack of shade and riparian vegetation along stream  
Channel widening resulting in shallow reaches  
Low stream velocity and flow during summer months |
# Table of Contents

Table of Contents....................................................................................................................... iii  
List of Tables .............................................................................................................................. xi  
List of Figures ........................................................................................................................... xv  
Foreword.................................................................................................................................... xviii  
Acknowledgments ................................................................................................................... xix  
Preparers ................................................................................................................................... xix  
1. Introduction ............................................................................................................................. 1  
   1.1 The Total Maximum Daily Load Process ........................................................................... 1  
      1.1.1 Point Sources.............................................................................................................. 2  
      1.1.2 Nonpoint Sources ..................................................................................................... 2  
      1.1.3 Load Allocations (LA) .............................................................................................. 2  
      1.1.4 TMDL Scope............................................................................................................. 2  
   1.2 Why Should TMDLs Be Written? ...................................................................................... 2  
   1.3 Who Is Responsible for Writing TMDLs? ......................................................................... 3  
   1.4 Elements of a TMDL .................................................................................................... 3  
      1.4.1 Waterbody and Watershed Assessment ................................................................. 3  
      1.4.2 Loading Analysis .................................................................................................... 3  
      1.4.3 Implementation Plan(s) ....................................................................................... 4  
2. Characterization of Watershed .............................................................................................. 5  
   2.1 Physical and Biological Characteristics .......................................................................... 7  
      2.1.1 Climate .................................................................................................................... 7  
      2.1.2 Hydrology ............................................................................................................... 15  
         2.1.2.1 Surface Water Hydrology ............................................................................. 15  
         2.1.2.2 Groundwater Hydrology ............................................................................. 17  
      2.1.3 Geology and Soils .................................................................................................. 18  
         2.1.3.1 Geology ......................................................................................................... 18  
         2.1.3.2 Soils ................................................................................................................ 18  
         2.1.3.3 Stream Geomorphology ............................................................................. 24  
      2.1.4 Plants, Animals, and Fisheries .............................................................................. 25  
         2.1.4.1 Riparian Plant Community ........................................................................... 25  
         2.1.4.2 Dominant Upland Plant Community ............................................................. 25  
         2.1.4.3 Wildlife .......................................................................................................... 27  
         2.1.4.4 Fisheries ....................................................................................................... 27  
         2.1.4.5 Special Designations .................................................................................... 28  
   2.2 Cultural Characteristics ............................................................................................... 29  
      2.2.1 Land Use and Ownership ...................................................................................... 29  
      2.2.2 Population ............................................................................................................ 33
2.2.3 History and Economics ................................................................. 33

2.2.4 Recreational Uses of East Canyon Reservoir ........................................... 34
   2.2.4.1 Boating and Related Activities ....................................................... 35
   2.2.4.2 Hunting and Wildlife Observation .................................................. 35
   2.2.4.3 Camping ....................................................................................... 35

2.2.5 Public Involvement ........................................................................... 36

3. Water Quality Concerns and Status ......................................................... 37

3.1 Beneficial Uses and Impaired Waters ..................................................... 37

3.2 Water Quality Standards Applicable to East Canyon Reservoir ................. 38
   3.2.1 Pollutants of Concern ........................................................................ 41
      3.2.1.1 Nutrients .................................................................................. 41
      3.2.1.2 Sediment ................................................................................ 42
      3.2.1.3 Organic Matter ....................................................................... 43
      3.2.1.4 Dissolved Solids ..................................................................... 43
      3.2.1.5 Bacteria .................................................................................. 43
   3.2.2 Indicators of Beneficial Use Impairment .............................................. 43
      3.2.2.1 Nuisance Algal Growth .............................................................. 43
      3.2.2.2 Cyanobacteria (Blue-green Algae) ............................................. 44
      3.2.2.3 Dissolved Oxygen (DO) .............................................................. 45
      3.2.2.4 Dissolved Oxygen Saturation ................................................... 46
      3.2.2.5 Turbidity and Secchi Depth ....................................................... 47
      3.2.2.6 pH .......................................................................................... 47
      3.2.2.7 Temperature .......................................................................... 48
      3.2.2.8 Trophic State Index (TSI) ......................................................... 48

3.3 Analysis of Existing Water Quality and Hydrologic Data .......................... 50
   3.3.1 Analytical Methods .......................................................................... 50
      3.3.1.1 Water Quality .......................................................................... 50
      3.3.1.2 Hydrology ................................................................................ 51
      3.3.1.3 Sediment Chemistry ................................................................. 52
      3.3.1.4 Treatment of Nondetects ........................................................... 55
      3.3.1.5 Treatment of Errors ................................................................ 56
      3.3.1.6 Treatment of Outliers ............................................................... 56
      3.3.1.7 Treatment of Duplicate Measures ............................................. 58
   3.3.2 Data Coverage ................................................................................ 58
      3.3.2.1 Temporal Coverage ................................................................. 59
      3.3.2.2 Hydrological Coverage ............................................................. 61
      3.3.2.3 Spatial Coverage ..................................................................... 65
      3.3.2.4 Identified Data Gaps ................................................................. 66
      3.3.2.5 Summary ................................................................................ 67

3.4 Beneficial Use Support Assessment for East Canyon Reservoir ................ 67
   3.4.1 Direct Exceedance of Numeric Criteria, Thresholds, and/or Reference Conditions ... 67
3.4.1.1 Ammonia (3A) ................................................................. 67
3.4.1.2 Bacteria ........................................................................... 67
3.4.1.3 Nuisance Algal Growth .................................................. 68
3.4.1.4 Dissolved Oxygen (DO) (3A) ........................................ 69
3.4.1.5 Total Dissolved Gas Saturation (3A) .............................. 72
3.4.1.6 Nitrate (3A) ................................................................. 72
3.4.1.7 pH (3A) ........................................................................ 72
3.4.1.8 Temperature (3A) .......................................................... 73
3.4.1.9 Total Dissolved Solids (TDS) (4) ................................. 73
3.4.1.10 Total Phosphorus (2A, 2B, and 3A) .............................. 74
3.4.1.11 Metals (1C, 3A, and 4) .................................................. 74

3.4.2 Additional Lines of Evidence for Beneficial Use Assessment ........................................... 75
3.4.2.1 Secchi Depth .................................................................. 75
3.4.2.2 Trophic State Index (TSI) ................................................ 75
3.4.2.3 Nitrogen-to-phosphorus Ratio ....................................... 76
3.4.2.4 Algal Communities ......................................................... 77
3.4.2.5 Potential for Toxicity from Cyanobacteria (blue-green algae) ................. 80
3.4.2.6 Fishery Assessment ......................................................... 80
3.4.2.7 Recreation Use Summary ............................................... 81

3.4.3 Assessment of Domestic Water Use Beneficial Use (1C) ................................................ 82
3.4.3.1 Key Linkages between Water Quality and Domestic Water Uses ..................... 82
3.4.3.2 Support Status Summary .................................................. 83

3.4.4 Assessment of Contact Recreation Beneficial Uses (2A, 2B) ........................................ 83
3.4.4.1 Key Linkages between Water Quality and Recreation Uses ................................. 83
3.4.4.2 Support Status Summary .................................................. 84

3.4.5 Assessment of Cold Water Fishery Beneficial Use (3A) .................................................. 85
3.4.5.1 Key Linkages between Water Quality and Fishery (3A) ....................................... 85
3.4.5.2 Support Status Summary .................................................. 86

3.4.6 Assessment of Agricultural Water Supply Beneficial Use (4) ...................................... 87
3.4.6.1 Key Linkages between Water Quality and Agricultural Uses ............................ 87
3.4.6.2 Support Status Summary .................................................. 88

3.5 Water Quality Improvement Since Previous TMDL ................................................................. 88
3.5.1 East Canyon Water Reclamation Facility ........................................................................... 89
3.5.2 Summary of Nonpoint Source Pollution Control Efforts .............................................. 89
3.5.2.1 Agricultural Land Management ........................................................................... 89
3.5.2.2 Park City Stormwater Management ..................................................................... 89
3.5.2.3 Implementation of Construction Best Management Practices (BMP) ............... 90
3.5.2.4 Conservation Easements and Open Space Preservation ..................................... 90
3.5.2.5 Riparian Restoration and Enhancement ................................................................. 90
3.5.2.6 Recreation and Trail Management Changes .......................................................... 91
3.5.2.7 Water Conservation .............................................................. 91
3.5.2.8 Education and Media Programs ............................................................................. 91

3.5.3 Water Quality Comparison ......................................................................................... 92
5.3.3.4 Algal Speciation, Succession, and Vertical Mobility ............................................. 128
5.3.3.5 Phosphorus Availability .................................................................................... 131
5.3.3.6 Sediment Oxygen Demand ............................................................................... 132
5.3.3.7 Drivers of Low Dissolved Oxygen (DO) in Hypolimnion ................................ 132

6. Model Calibration and Validation ............................................................................. 133
  6.1 Major Sources of Nutrient Loading to East Canyon Reservoir ......................... 152
    6.1.1 Point Sources ................................................................................................. 152
    6.1.2 Nonpoint Sources ........................................................................................ 154
      6.1.2.1 Urban/Suburban Nonpoint Sources ...................................................... 154
      6.1.2.2 Agricultural Nonpoint Sources ............................................................. 155
      6.1.2.3 Recreation Area Nonpoint Sources ...................................................... 156
      6.1.2.4 Natural Background Nonpoint Sources ............................................... 157
    6.1.3 Other Sources ............................................................................................... 157
      6.1.3.1 Streambank Erosion .......................................................................... 157
      6.1.3.2 Atmospheric Sources .......................................................................... 158
      6.1.3.3 Internal Reservoir Sources .................................................................. 158

6.2 Total Current Load Estimates to East Canyon Reservoir ................................... 158
  6.2.1 Temporal Extent of Analysis ............................................................................. 158
  6.2.2 Methodology ................................................................................................... 159
    6.2.2.1 Calculation of Total Phosphorus Load by Hydroperiod ........................ 159
    6.2.2.2 Characterization of Specific Nonpoint Source Loads by Land Use and Tributary .................................................. 160
  6.2.3 Load Summary by Hydrologic Period .............................................................. 167
  6.2.4 Summary of Watershed Sources .................................................................... 170
    6.2.4.1 Point Source ......................................................................................... 170
    6.2.4.2 Nonpoint Sources ................................................................................. 171
  6.2.5 Internal Load Summary .................................................................................... 171
6.2.6 Total Load Summary ........................................................................................................ 173

7. Total Maximum Daily Load Summary ...................................................................................... 174

7.1 Phased TMDL Approach and Rationale ................................................................................ 174

7.2 Water Quality Targets and Linkage Analysis ........................................................................ 175

7.2.1 Dissolved Oxygen Endpoints .......................................................................................... 176
  7.2.1.1 East Canyon Reservoir ............................................................................................ 176
  7.2.1.2 East Canyon Creek .................................................................................................. 176

7.2.2 Macrophyte-related and Algae-related Endpoints ............................................................. 177
  7.2.2.1 East Canyon Reservoir ............................................................................................ 177
  7.2.2.2 East Canyon Creek .................................................................................................. 179

7.2.3 Linkage Analyses ............................................................................................................. 179
  7.2.3.1 Nutrient Targets and Water Quality Endpoints in East Canyon Reservoir ............. 179
  7.2.3.2 Stream Characteristics and Water Quality Endpoints in East Canyon Creek ........ 180

7.3 Future Growth ...................................................................................................................... 182

7.4 TMDL Analysis .................................................................................................................... 186

7.4.1 Current Load Summary and TMDL ................................................................................. 186

7.4.2 Margin of Safety (MOS) .................................................................................................. 186

7.4.3 Load Allocation and Rationale ......................................................................................... 187

7.5 Seasonality .......................................................................................................................... 191

7.6 Summary .............................................................................................................................. 191

  7.6.1 East Canyon Reservoir .................................................................................................. 192
  7.6.2 East Canyon Creek ........................................................................................................ 193

8. East Canyon Creek Implementation Plan ............................................................................. 194

8.1 Introduction .......................................................................................................................... 194

8.2 Statement of Need ................................................................................................................ 194

  8.2.1 Summary of Endpoints ................................................................................................. 195

  8.2.2 Description of Ecological Drivers ................................................................................ 195

8.3 Project Description .............................................................................................................. 196

  8.3.1 Project Goals and Objectives ....................................................................................... 196

  8.3.2 Description of Implementation Measures ..................................................................... 196

     8.3.2.1 Shading ................................................................................................................. 196
  8.3.2.2 Establishing a Protected Base Flow ......................................................................... 197
  8.3.2.3 Channel Narrowing/Bank Stabilization .................................................................... 197
  8.3.2.4 Constraints on Implementation .............................................................................. 198

     8.3.2.5 Summary of Implementation Approaches ............................................................ 199

  8.3.3 Prioritization of Stream Reaches ................................................................................... 199

     8.3.3.1 Prioritization for Shading and for Establishing a Protected Base Flow ............... 199

     8.3.3.2 Prioritization for Bank Stabilization .................................................................... 204

  8.3.4 Recommended Implementation Strategy ...................................................................... 206

     8.3.4.1 Establishing a Protected Base Flow .................................................................... 206
8.3.4.2 Implementation of Shading ................................................................. 208
8.3.4.3 Implementation of Bank Stabilization ............................................. 209
8.3.5 Time Frame for Implementation ........................................................... 210
8.3.6 Reasonable Assurance .......................................................................... 211
  8.3.6.1 Linkage between Recommended Implementation Measures and Dissolved Oxygen Impairment ......................................................... 211
  8.3.6.2 Feasibility of Riparian Plantings and Bank Stabilization .................. 212
  8.3.6.3 Feasibility of Establishing a Protected Base Flow ......................... 213

8.4 Coordination Plan ....................................................................................... 213
  8.4.1 Lead Project Sponsors ........................................................................... 213
  8.4.2 Cooperating Groups ............................................................................. 214

8.5 Monitoring .................................................................................................. 214
  8.5.1 Sampling Design and Parameters ......................................................... 214
    8.5.1.1 Monitoring Endpoints ....................................................................... 214
    8.5.1.2 Monitoring Riparian Shading ............................................................ 215
    8.5.1.3 Monitoring the Protected Base Flow ............................................... 216
    8.5.1.4 Monitoring Bank Stabilization ......................................................... 216
  8.5.2 Progress Reporting .................................................................................. 216

8.6 Budget ......................................................................................................... 217
  8.6.1 Projected Costs for Implementation ....................................................... 217
    8.6.1.1 Costs for Establishing a Protected Base Flow ................................... 217
    8.6.1.2 Costs for Shading and Bank Stabilization ......................................... 217
  8.6.2 Financial and Legal Means for Implementation ..................................... 221
    8.6.2.1 Means for Establishing a Protected Base Flow ................................ 221
    8.6.2.2 Means for Shading and Bank Stabilization ....................................... 221

9. East Canyon Reservoir Watershed-based Implementation Plan .................. 223
  9.1 Introduction ............................................................................................... 223
  9.2 Key Components of the Implementation Plan ........................................... 224
    9.2.1 Identification of Sources and Current Load Summary ......................... 224
      9.2.1.1 East Canyon Water Reclamation Facility (ECWRF) Discharge .... 224
      9.2.1.2 Internal Reservoir Sources ............................................................. 225
      9.2.1.3 Nonpoint Sources ........................................................................... 225
    9.2.2 Load Reduction Estimates ................................................................. 229
      9.2.2.1 East Canyon Water Reclamation Facility ....................................... 229
      9.2.2.2 Internal Reservoir Sources ............................................................. 229
      9.2.2.3 Nonpoint Sources ........................................................................... 229
    9.2.3 Recommended Management and Implementation Measures ............ 232
      9.2.3.1 East Canyon Water Reclamation Facility ....................................... 232
      9.2.3.2 In-reservoir Treatments ................................................................. 232
      9.2.3.3 Nonpoint Source Management Measures ..................................... 233
      9.2.3.4 Critical Areas for Management Measures ..................................... 237
9.2.3.5 Land Uses and Recommended BMPs ........................................................................................................ 239
9.2.4 Technical and Financial Needs ..................................................................................................................... 255
  9.2.4.1 Plan Sponsors and Resources .................................................................................................................. 255
  9.2.4.2 Projected Costs for Implementation ....................................................................................................... 256
  9.2.4.3 Financial and Legal Vehicles for Implementation .................................................................................. 260
9.2.5 Information and Education .......................................................................................................................... 260
  9.2.5.1 Define the Driving Forces, Goals and Objectives ................................................................................. 261
  9.2.5.2 Identify and Analyze the Target Audiences ......................................................................................... 262
  9.2.5.3 Create the Message ............................................................................................................................... 262
  9.2.5.4 Package and Distribute the Message ..................................................................................................... 262
9.2.6 Implementation Schedule ............................................................................................................................ 262
  9.2.6.1 East Canyon Water Reclamation Facility Expansion ........................................................................ 262
  9.2.6.2 In-reservoir Treatment ......................................................................................................................... 263
  9.2.6.3 Nonpoint Source Management Measures .......................................................................................... 263
9.2.7 Interim Implementation Milestones ............................................................................................................. 263
  9.2.7.1 Sampling Design and Parameters ......................................................................................................... 264
9.2.8 Loading Reduction Targets .......................................................................................................................... 264
9.2.9 Monitoring .................................................................................................................................................... 265
  9.2.9.1 Implementation Monitoring ................................................................................................................ 265
  9.2.9.2 Progress Reporting in a Centralized Database .................................................................................... 267
9.3 Conclusions ...................................................................................................................................................... 268
List of Abbreviations and Symbols ......................................................................................................................... 269
References Cited ..................................................................................................................................................... 273
References Consulted but Not Directly Cited .......................................................................................................... 283
Appendix A. Annual hydrographs for East Canyon Creek.
Appendix B. East Canyon Reservoir CE-QUAL-W2 Model. JM Water Quality LLC.
List of Tables

Table 2.1. Mountain Dell Dam: Average Monthly Air Temperature Data Summary (1948–2007) ............. 9
Table 2.2. Mountain Dell Dam: Average Monthly Precipitation Data Summary (1948–2007) ................. 9
Table 2.3. Wanship Dam: Average Monthly Air Temperature Data Summary (1957–2007) ................... 11
Table 2.4. Wanship Dam: Average Monthly Precipitation Data Summary (1957–2007) ....................... 11
Table 2.5. Park City Fire Station 31: Average Monthly Air Temperature Data Summary (1992–2007) ................................................................. 13
Table 2.6. Park City Fire Station 31: Average Monthly Precipitation Data Summary (1992–2007) ............ 13
Table 2.7. Climate Summaries for the East Canyon Reservoir Watershed ................................................. 15
Table 2.8. East Canyon Watershed Average Flow and Drainage Area ....................................................... 16
Table 2.9. East Canyon Reservoir Inflow and Retention Times from 2001 to 2007 ................................... 17
Table 2.10. Soil Types and Characteristics in the East Canyon Reservoir Watershed ............................... 21
Table 2.11. Soil Texture in the East Canyon Reservoir Watershed ............................................................ 22
Table 2.12. Utah Sensitive Species in Morgan and Summit Counties ........................................................ 28
Table 2.13. Land Use in the East Canyon Creek Watershed ................................................................. 30
Table 2.14. Land Ownership in the East Canyon Creek Watershed ........................................................... 30
Table 2.15. Population in East Canyon Reservoir Watershed ................................................................. 33
Table 2.16. East Canyon Reservoir State Park Visitation ........................................................................... 34
Table 3.1. Summary of Use Designations for Waters of the State of Utah (Rule Code R317-2) ............... 37
Table 3.2. Selected Water Quality Criteria for Designated Uses in East Canyon Reservoir .................. 38
Table 3.3. Dissolved Oxygen Concentrations at which Fish Died within 24 Hours ............................... 46
Table 3.4. TSI Values and Status Indicators ............................................................................................. 49
Table 3.5. Relationships between TSI Values ............................................................................................. 49
Table 3.6. Metadata Summary of Sediment Cores Collected in East Canyon Reservoir in October 2007 ........................................................................................................ 53
Table 3.7. Detection Limits of Methods Found in the EPA STORET Database ........................................ 55
Table 3.8. Standard Deviations Used in Outlier Analysis for East Canyon Reservoir Water Quality Data ............................................................................................................................. 57
Table 3.9. Standard Deviations Used in Outlier Analysis for East Canyon Creek Water Quality Data .................................................. 58
Table 3.10. Sampling Time Periods for Monitoring Sites Located in East Canyon Reservoir ................... 60
Table 3.11. Discharge Gages in the East Canyon Watershed and Their Periods of Record .................... 61
Table 3.12. Annual Average Flow Rates and Quantitative Comparisons Relative to the 30-year Average for East Canyon Creek at USGS Gage #10134500 ....................................................... 64
Table 3.13. Monitoring Stations and Data Sources Identified as Critical to the East Canyon Reservoir TMDL Process .................................................................................................................. 65
Table 3.14. Summary of Chlorophyll a Data in East Canyon Reservoir (water years 2002–2007) during the May–October Algal Growth Season (μg/L) ................................................................. 68
Table 3.15. Summary of Percent Water Column Exhibiting DO Levels Supportive of Cold Water Fishery (>4 mg/L) and Associated Support Status Based on Profiles Collected in 2001, 2003, and 2007

Table 3.16. Current (water years 2002–2007) Average Concentrations (µg/L) of Metals in East Canyon Reservoir

Table 3.17. Summary Statistics for Current Secchi Depth (m) Data (water years 2002–2006) in East Canyon Reservoir Data Collected during the Algal Growing Season (June–October)

Table 3.18. Current (water years 2002–2007) Average TSI Values for East Canyon Reservoir

Table 3.19. Current Nitrogen-to-phosphorus Ratios in East Canyon Reservoir (water years 2002–2007)

Table 3.20. Current (2002–2007) Phytoplankton Abundance above the East Canyon Reservoir Dam (Station ID 4925160) and Corresponding 2007 Rushforth Sampling Sites

Table 3.21. Recent (water years 1996–2001) and Current (water years 2002–2007) Total and Dissolved Phosphorus Concentrations in East Canyon Reservoir (mg/L)

Table 3.22. Summary of Recent (water years 1996–2001) and Current (water years 2002–2007) Chlorophyll a Data in the Reservoir during the May–October Algal Growth Season (µg/L)

Table 3.23. Comparison of the Percent of the Water Column Exhibiting DO Levels Supportive of Cold Water Fisheries (>4.0 mg/L) for Recent (1996–2001) and Current (2002–2007) Water Years (Above the Dam–Station ID 4925160)

Table 3.24. Comparison of Trophic State Indices (TSI) Before (water years 1996–2001) and After (water years 2002–2006) Implementation of East Canyon Reservoir TMDL

Table 3.25. Comparison in Algal Species Composition between Pre-TMDL (1996–2001) and Post-TMDL (2002–2007) Periods for East Canyon Reservoir

Table 3.26. Recent (water years 1996–2001) and Current (water years 2002–2007) N:P Ratios above the East Canyon Reservoir Dam (Station ID 4925160)

Table 4.1. SVAP Conditions and Scores Used to Evaluate Stream Condition

Table 4.2. East Canyon Creek SVAP Results

Table 4.3. Study Site Locations Used in USU Research on East Canyon Creek

Table 4.4. Projected Average and Minimum DO Concentrations from DIURNAL Model (SBWRD 2008)

Table 4.5 Summary of Reach Level Stream Characteristics and Research Findings

Table 5.1. Median Water Quality in East Canyon Creek by Hydroperiod Used to Create Daily Tributary Input Files for W2 Model

Table 5.2. Future Nutrient Reduction Scenarios for East Canyon Reservoir

Table 5.3. Predicted Average Phosphorus Concentrations in East Canyon Reservoir Epilimnion

Table 5.4. Predicted Average and Maximum Summer Chlorophyll a Concentrations (µg/l) in the Epilimnion in East Canyon Reservoir

Table 5.5. Summary of Model Results Related to Percent Exceedance of a Chlorophyll a Value of 30 µg/l in East Canyon Reservoir

Table 5.6. Number of Days During Stratified Period in which DO is Not Maintained above 4 Mg/L in a 2-m Zone where Temperature is also Less than 20°C
Table 6.1. BIO-WEST Load Coefficients (Olsen and Stamp 2000; BIO-WEST 2008) Used for East Canyon Watershed Subbasins ................................................................. 160
Table 6.2. East Canyon Watershed Land-use Areas and Annual Phosphorus Loads ..................... 161
Table 6.3. East Canyon Watershed Subbasin Phosphorus Loads .................................................. 165
Table 6.4. Acre-Feet of Runoff from Each Hydroperiod during the Post-TMDL Period .................. 167
Table 6.5. Summary of Total Phosphorus Load (kgTP/year) by Hydroperiod for the Post-TMDL Period ........................................................................................................ 168
Table 6.6. Summary of Dissolved Phosphorus Load (kgDP/year) by Hydroperiod for the Post-TMDL Period ................................................................................................. 169
Table 6.7. Summary of Total Phosphorus Load to East Canyon Reservoir from Point and Nonpoint Sources (kg/year) .................................................................................. 170
Table 6.8. Summary of Dissolved Phosphorus Load into East Canyon Reservoir from Point and Nonpoint Sources (kg/year) ............................................................................. 170
Table 6.9. Estimated Internal Load during the Post-TMDL Period .................................................. 172
Table 6.10. Summary of Total Phosphorus Load to East Canyon Reservoir from Point, Nonpoint, and Internal Sources (kg/year) .............................................................. 173
Table 7.1. Summary of Support of Swimming Designated Use at Varying Frequencies of High¹ Algal Levels ..................................................................................................................... 178
Table 7.2. Summary Statistics for Chlorophyll \( a \) (\( \mu g/L \)) Data from Lakes and Reservoirs in the Western Forested Mountains Ecoregion ........................................................................................................... 179
Table 7.3. Projected Minimum Dissolved Oxygen (mg/L) in August for the Blackhawk and Bear Hollow Reaches of East Canyon Creek under Baseline Conditions and Management Scenarios ................................................................................................................................. 181
Table 7.4 Summary of Maximum Total Phosphorus Seasonal and Daily Loads for Attainment of Water Quality Standards in East Canyon Reservoir .............................................................................. 186
Table 7.5. Summary of Current Total Phosphorus Load (kg/year) and Load Allocations Identified for the Revised East Canyon Reservoir TMDL ........................................................................... 188
Table 8.1. Trade-offs in Time Frame, Uncertainty, and Feasibility for East Canyon Creek Implementation Measures ......................................................................................................................... 199
Table 8.2. Summary of Reach-specific SVAP, DIURNAL Model Output, and Baker et al. (2008) Study Results and Priority Rank: Shade ........................................................................................................ 201
Table 8.3. Summary of Reach-specific SVAP, DIURNAL Model Output, and Baker et al. (2008) Study Results and Priority Rank: Bank Stabilization ................................................................. 201
Table 8.4. Summary of Shading and Base Flow Protection Prioritization ........................................ 204
Table 8.5. Summary of Bank Stabilization Prioritization ...................................................................... 204
Table 8.6. Additional Flow Needed to Maintain a 7.7-cfs Discharge Upstream of the ECWRF during the Critical Summer Period (July 1–September 15) ......................................................... 208
Table 8.7. Shading Implementation ..................................................................................................... 209
Table 8.8. SECI Results with Priority Rankings and Length of Stabilization Recommended by Reach ................................................................................................................................. 210
Table 8.9 Sampling Design and Monitoring Activities for Riparian Shading ...................................... 215
Table 8.10 Sampling Design and Monitoring Activities for Bank Stabilization .................................. 216
Table 8.11. Potential Cost to Secure 500 Acre-feet for Establishing a Protected Base Flow ................ 217
Table 8.12. Cost Ranges by Priority Reaches for Stream Shading Enhancement BMPs ......................... 219
Table 8.13. Total Costs Associated with Priority Reaches for Streambank Protection ......................... 220
Table 8.14. Costs for Associated Best Management Practices .............................................................. 221
Table 9.1. Summary of Load Reductions Resulting from BMPs Implemented by Loading Source ........... 230
Table 9.2. Summary of Land Uses and Associated Phosphorus Nonpoint Loads .............................. 234
Table 9.3 Summary of Implementation Planning in the East Canyon Reservoir Watershed ................ 236
Table 9.4. Priority Subbasins and Recommended BMPs for Active Construction Areas in the East Canyon Reservoir Watershed .................................................................................................. 240
Table 9.5. Priority Subbasins and Recommended BMPs for Residential Land Uses in the East Canyon Reservoir Watershed .................................................................................................. 242
Table 9.6. Priority Subbasins and Recommended BMPs for Commercial and Urban Land Uses in the East Canyon Reservoir Watershed .................................................................................... 244
Table 9.7. Priority Subbasins and Recommended BMPs for Golf Courses in the East Canyon Reservoir Watershed ................................................................................................................. 245
Table 9.8. Priority Subbasins and Recommended BMPs for Ski Areas in the East Canyon Reservoir Watershed ..................................................................................................................... 248
Table 9.9. Priority Subbasins and Recommended BMPs for High Use Recreation in the East Canyon Reservoir Watershed ........................................................................................................ 249
Table 9.10. Priority Subbasins and Recommended BMPs for Agricultural and Grazing Land Uses in the East Canyon Reservoir Watershed ................................................................................ 251
Table 9.11. Priority Subbasins and Recommended BMPs for Forested and Meadow Land Uses in the East Canyon Reservoir Watershed ................................................................................ 254
Table 9.12. Summary of Costs Associated with Project Implementation Plan ........................................ 257
Table 9.13. Example of Implementation Tracking Matrix ........................................................................ 266
List of Figures

Figure 2.1. East Canyon Reservoir watershed boundary and hydrologic features map. ........................................ 6
Figure 2.2. East Canyon Reservoir watershed slope map. ..................................................................................... 8
Figure 2.3. Average monthly air temperature conditions at the Mountain Dell Dam meteorological site, Utah (Source: WRCC 2008). ........................................................................................................... 10
Figure 2.4. Average monthly total precipitation at the Mountain Dell Dam meteorological site, Utah (Source: WRCC 2008). ........................................................................................................................... 10
Figure 2.5. Average monthly air temperature conditions at the Wanship Dam meteorological site, Utah (Source: WRCC 2008). ........................................................................................................................................ 12
Figure 2.6. Average monthly total precipitation at the Wanship Dam meteorological site, Utah (Source: WRCC 2008). ........................................................................................................................................ 12
Figure 2.7. Average monthly air temperature conditions at the Park City Fire Station 31 meteorological site, Utah (Source: WRCC 2008). ............................................................................................................. 14
Figure 2.8. Average monthly total precipitation at the Park City Fire Station 31 meteorological site, Utah (Source: WRCC 2008). ........................................................................................................................................ 14
Figure 2.9. East Canyon Reservoir watershed geology map. ................................................................................. 19
Figure 2.10. East Canyon Reservoir watershed soil classifications. ................................................................. 20
Figure 2.11. East Canyon Reservoir watershed soil textures. ................................................................................. 23
Figure 2.12. East Canyon Reservoir watershed vegetation and land cover. ......................................................... 26
Figure 2.13. East Canyon Reservoir watershed land ownership. .......................................................................... 31
Figure 2.14. East Canyon Reservoir watershed land use. ....................................................................................... 32
Figure 3.1. Sediment core sampling locations (Chesapeake Biogeochemical Associates 2008). .......................... 54
Figure 3.2. 30-year record of mean annual discharges for regional streams used to differentiate wet and dry years. ............................................................................................................................. 62
Figure 3.3. Example dry, wet, and average hydrographs for East Canyon Creek near Jeremy Ranch (USGS Station # 10133800). ......................................................................................................................... 63
Figure 3.4. Observed DO and temperature profiles at East Canyon Dam in 2001 and 2003. .............................. 70
Figure 3.5 DO and temperature profiles at multiple sites in East Canyon Reservoir collected on 8/15/2007. .................................................................................................................................... 70
Figure 3.6. DO and temperature profiles at multiple sites in East Canyon Reservoir across the 2007 summer algal growth season. ........................................................................................................... 71
Figure 3.7. Current pH values (water years 2002–2007) at the Above the Dam Site (Station ID 4925160) in East Canyon Reservoir (red lines show upper and lower limits of pH water quality criteria for all beneficial uses). .................................................................................. 72
Figure 3.8. Current temperatures (water years 2002–2007) at the Above the Dam Site in East Canyon Reservoir (red line shows upper limits of temperature criteria for cold water fisheries). .................................................................................. 73
Figure 3.9. Current TP (water years 2002–2007) at the Above the Dam Site in East Canyon Reservoir (red line shows upper limits for TP criteria for recreation and cold water fisheries [2A, 2B, 3A])......................................................... 74
Figure 3.10. Dominance of algal groups measured in percent biovolume and percent density, sampled throughout East Canyon Reservoir from 2002–2007. Data sources: EPA STORET and Rushforth (2007). ......................................................................................................................... 78

Figure 3.11. Links between water quality and domestic water use........................................................................ 82

Figure 3.12. Links between water quality and recreation...................................................................................... 84

Figure 3.13. Links between nutrients and fisheries.................................................................................................. 86

Figure 3.14. Links between nutrients and agricultural use........................................................................................ 88

Figure 3.15. Phosphorus profile comparisons for August and September 1996, 1999, and 2007 (Station #4925160) (the red line indicates the 0.025 mg/L water quality indicator value for phosphorus). ........................................................................................................................ 95

Figure 3.16. IKONOS Multispectral Imagery of East Canyon Reservoir........................................................................ 97

Figure 3.17. Change in TSI values for Chlorophyll a, Phosphorus as P, and Secchi disk depth from 1994 to 2007 in East Canyon Reservoir–Above the Dam (Station ID 4925160). ....................... 99

Figure 3.18. Comparison of recent (water years 1996–2001) and current (water years 2002–2007) average TSI values for chlorophyll a, total phosphorus, and Secchi disk depth for East Canyon Reservoir–Above the Dam (Station ID 4925160). .................................................... 100


Figure 4.1. Map of SVAP stream reaches and USU/HydroQual research sites and reaches. .............................. 112

Figure 4.2. Linkages between physical stream characteristics and DO. .............................................................. 117

Figure 5.1. Segments of East Canyon Reservoir used in the W2 model. ............................................................ 123

Figure 5.2. East Canyon comparison of the live storage area capacity table (provided by Nick Williams, BOR, 2008) and volumes generated using the W2 model bathymetry file. ............................ 124

Figure 5.3. Dam configuration and phosphorus distribution during stratification. .............................................. 127

Figure 5.4. Diagram of the algal succession code conceptually developed by Jerry Miller with extensive discussion with Shwet Prakash at ERM. ................................................................................. 130

Figure 5.5. Observed (circles) and modeled (line) total phosphorus released from the East Canyon Dam (data is from 2 km downstream) from 2003 to 2006. ................................................................. 136

Figure 5.6. Modeled (line) and observed (dot) temperatures at the dam and mid-reservoir stations. ................. 137

Figure 5.7. Calibration curves of modeled (line) and observed (circles) DO near the dam. ............................... 138

Figure 5.8. Annual cycle of DO in East Canyon Reservoir before and after implementation of the 2000 East Canyon Reservoir TMDL. ................................................................................................. 139

Figure 5.9. Total phosphorus discharge from the dam under baseline (brown line) and reduction scenario (3d) conditions. ....................................................................................................................... 143

Figure 5.10. Display of total phosphorus in the water column, including the sediment-water interface, upper level of the hypolimnion, and epilimnion in East Canyon Reservoir under baseline and Scenario 3d conditions. ........................................................................................................................... 144

Figure 5.11. Relationship between mean annual summer chlorophyll concentrations and mean summer epilimnion total phosphorus concentration for the baseline East Canyon Reservoir W2 simulation. .................................................................................................................. 146
Figure 5.12. Relationship between mean annual summer chlorophyll concentrations and mean summer epilimnion total phosphorus concentration for the Scenario 3d East Canyon Reservoir W2 simulation. ................................. 147

Figure 5.13. Predicted summer algal speciation in East Canyon Reservoir under baseline and future nutrient reduction scenarios. ......................................................... 148

Figure 5.14. Relationship between Secchi disk depth and chlorophyll $a$ in East Canyon Reservoir. ........ 149

Figure 5.15. Predicted DO profile at the Mid-reservoir Site in mid August at the end of the model simulation period. .................................................................................... 150

Figure 6.1 Total phosphorus concentrations in ECWRF effluent during water years 2002–2007. .......... 153

Figure 6.2. Total Annual Nonpoint source phosphorus loads (kg/year) by land use. ...................... 162

Figure 6.3. Normalized nonpoint source phosphorus loads (kg/ha) by land use. ............................. 162

Figure 6.4. Map of land-use coverage and subbasins used in estimating nonpoint source loads to East Canyon Reservoir. ............................................................ 166

Figure 6.5. Percentage of total basin discharge (volume) from each hydroperiod. ......................... 167

Figure 6.6. Percentages of total phosphorus load to East Canyon Reservoir summarized by hydroperiod. .................................................................................. 168

Figure 6.7. Percentages of dissolved phosphorus load to East Canyon Reservoir summarized by hydroperiod. ........................................................................ 169

Figure 6.8. Monthly phosphorus mass balance for East Canyon Reservoir for water years 2003–2007 ........................................................................................................ 172

Figure 6.9. Average annual total phosphorus load by hydroperiod and source.................................... 173

Figure 7.1. Snyderville Basin zoning map (Summit County 2008). ..................................................... 184

Figure 7.2. Snyderville Basin Water Reclamation District (SBWRD) service area.............................. 185

Figure 7.3. Change in total phosphorus load and allocations for the East Canyon Reservoir TMDL. ........................................................................................................ 189

Figure 8.1 Map of priority reaches for shading and base flow protection. ........................................ 203

Figure 8.2 Map of priority reaches for bank stabilization. ............................................................... 205

Figure 8.3 Modeled and study-period hydrology. ............................................................................ 207

Figure 9.1 Map of critical priority areas for additional implementation for phosphorus reduction in the East Canyon Reservoir watershed. .............................................. 238
Foreword

This document represents the revised TMDL analysis for East Canyon Reservoir and East Canyon Creek in north-central Utah. The overall goal of the TMDL process is to restore and maintain water quality in East Canyon Reservoir to a level that protects and supports the designated beneficial uses (domestic water use, primary contact recreation, secondary contact recreation, cold water game fish, and agricultural water supply).

This study includes the following components: watershed characterization, beneficial use assessment, and the total maximum daily load analysis. The Watershed Characterization (Chapters 1 and 2) summarizes the physical, biological, and cultural characteristics of the East Canyon Reservoir watershed. The beneficial use assessment identifies in-reservoir water quality concerns, applicable water quality criteria and standards, available data and data sources, potential sources of pollutant loading, indicators of impairment, and an impairment assessment specific to the reservoir's designated uses (Chapter 3). Research related to the impairment in East Canyon Creek in addition to scenario modeling results are described in Chapter 4. The reservoir modeling component of the TMDL process describes the development and use of a reservoir model to describe reservoir dynamics and predict reservoir response under varying climatic and reservoir management conditions (Chapters 5). The source identification and Total Maximum Daily Load (TMDL) analysis quantifies current and projected load to the reservoir, identifies water quality objectives for the reservoir, and negotiated load allocations and reductions required to meet water quality standards (Chapters 6 and 7). Implementation and monitoring plans for East Canyon Creek (Chapter 8) and East Canyon Reservoir watershed (Chapter 9) describe recommended measures and priorities to attain the TMDL. It is important to note that even if water quality in East Canyon Reservoir is found to be impaired and steps are taken to improve it, correction of water quality problems will require successful implementation of a final water quality management plan that will require a coordinated effort of planning and implementation of best management practices between concerned government agencies and landowners in the watershed.

This TMDL was developed by SWCA Environmental Consultants under the direction of the Utah Department of Environmental Quality, Division of Water Quality, and is consistent with Utah Code Title 19, Chapter 5, Water Quality Act, 19-5-104 (powers and duties of board), which identifies the requirement for the development and implementation of TMDLs and/or equivalent processes.
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