



**US Army Corps
of Engineers**

Philadelphia District

**-FINAL-
ENVIRONMENTAL ASSESSMENT**

**2008 TEMPORARY OPERATIONS PLAN
FRANCIS E. WALTER DAM AND RESERVOIR
CARBON AND LUZERNE COUNTIES, PENNSYLVANIA**

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1.0 PURPOSE AND NEED OF THE PROPOSED ACTION

1.1 Property Location

The Francis E. Walter Reservoir, originally known as Bear Creek Reservoir, is located near the convergence of Bear Creek and the Lehigh River in Luzerne and Carbon Counties in northeastern Pennsylvania (Figure 1). It is a man-made impoundment created by the U.S. Army Corps of Engineers in 1961 by damming the Lehigh River at the confluence with Bear Creek. The 3,000-foot long, 234-foot high earth-fill dam creates an 80-acre pool at the conservation pool 1,300-foot National Geodetic Vertical Datum (N.G.V.D.) elevation and controls a drainage area of 288 square miles. The reservoir is approximately 86 miles north of Philadelphia, 20 miles southeast of Wilkes-Barre, 39 miles south of Scranton and 45 miles north of Allentown. The project area is part of the Pocono Mountain complex.

1.2 Need for Action

F.E. Walter, in addition to aiding in flood control along the Lehigh River, is operated for recreation and historically used to store water for drought emergencies at the request of the Delaware River Basin Commission. The project was originally authorized as a single purpose flood control project with recreation being added later. The F.E. Walter Reservoir was authorized in House Document No. 587, 79th Congress, 2nd Session for Lehigh River flood control protection. The reservoir project was later authorized for recreation as part of Public Law 100-676, Section 6, dated November 17, 1988.

F.E. Walter Reservoir plays a vital role in providing flood control and recreation in the Lehigh River watershed. In the recent past, public interest has grown in regard to modifying operations at F.E. Walter Reservoir to benefit in-lake and downstream recreation meanwhile maintaining flood control capabilities, and protection of the environment. Operation of the reservoir during flood storage events inundates a project access road that crosses the upstream side of the dam. This access road is used by dam personnel for operation and maintenance of the dam and related project features. Historically, pool level operations at F.E. Walter Reservoir have been tailored, in part, to re-open this access road as soon as feasibly possible following a flood storage event. The construction of a new access road across the top of the dam has provided for more flexibility in pool level operations. As a result, opportunities to further evaluate and study the public recreational alternatives associated with the reservoir emerged in 2005.

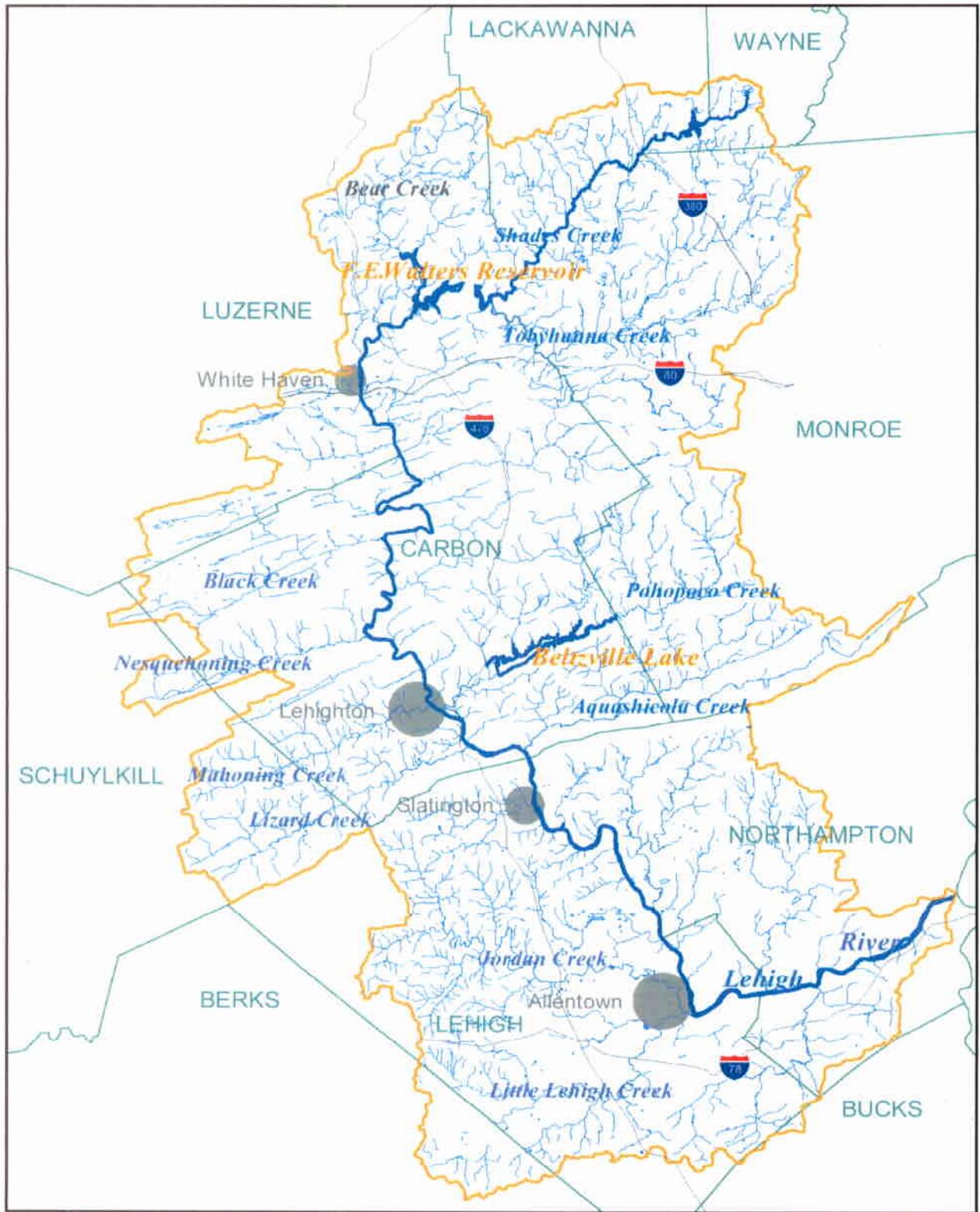


FIGURE 1. F.E. Walter Reservoir and Lehigh River watershed.

Fish and wildlife conservation is not a designated project purpose. However, the Fish and Wildlife Coordination Act of 1958 (PL 85-624), which amended the Act of March 10, 1934, provides that fish and wildlife conservation shall receive equal consideration with other project purposes and be coordinated with other features of water resource development programs. As such, the study plan has been developed to not only benefit recreation and maintain flood control capabilities, but to also protect and potentially enhance fish and wildlife resources within the reservoir and downstream in the Lehigh River. Flood control operations will continue to take precedence over fish and wildlife resources in regard to overall project operations.

An F.E. Walter Reservoir Flow Management Working Group was created with the intent to develop a temporary operations plan that increases the recreational and environmental potential of the reservoir and Lehigh River without negatively impacting the projects designated purposes. Members of the working group include the U.S. Army Corps of Engineers, Pennsylvania Fish and Boat Commission, Delaware River Basin Commission, Pennsylvania Department of Conservation and Natural Resources and other stakeholders. Following the coordination and evaluation of the 2005, 2006, and 2007 temporary operations plans results with the focus on the operational, environmental, and recreational data collected and evaluated during each of the operational study changes, a 2008 modified operational plan has been developed. This environmental assessment evaluates the 2008 plan for the temporary raising of the conservation pool and its potential affect on the environment and recreation.

1.3 National Environmental Policy Act Documentation

This temporary pool plan can be considered an action that normally requires an environmental assessment (EA). This guidance is found under 7(d) Construction and Operations and Maintenance in the U.S. Army Corps of Engineers Regulations (Engineering Regulation 200-2-2 dated 4 March 1988). This section states that an EA may be needed if changes in environmental impacts occur which were not considered in the project EIS or EA. An example would be change in pool level elevations. This EA has been developed to satisfy Engineering Regulation 200-2-2. NEPA documentation previously prepared for F.E. Walter Reservoir include a 1975 Environmental Assessment for Operation and Maintenance of Francis E. Walter Dam and Reservoir in White Haven, Pennsylvania, a November 1981 Environmental Assessment for the Proposed Modification of the Francis E. Walter Dam, an August 1985 Environmental Impact Statement for the Modification of the Francis E. Walter Dam and Reservoir, a 2002 F.E. Walter Emergency Drought Storage EA, a 2005 Temporary Operations Plan EA, and a 2006 Temporary Operations Plan EA.

This Environmental Assessment was prepared in accordance with National Environmental Policy Act (NEPA) regulations. This EA assesses conditions at the project site and evaluates the potential impacts of the 2008 temporary operational plan on existing resources in the immediate and surrounding areas to include: physical, chemical, and biological characteristics of the aquatic and terrestrial ecosystem; endangered and threatened species; hazardous and toxic materials; aesthetics and recreation; cultural resources; and the general needs and welfare of the public. The U.S. Army Corps of Engineers and its partners will continue to pursue additional studies and data collection efforts to evaluate the 2008 plan and to refine potential future plan modifications. Funding for the development of a water quality model for

the Lehigh River system which includes F.E. Walter and Beltzville Reservoirs has been secured through the Water Resources Development Act Section 22 Planning Assistance to the States program. A temperature and flow model is currently being developed.

2.0 DESCRIPTION OF THE PROPOSED ACTION

2.1 Project Background

As outlined in the October 1994 F.E. Walter Reservoir, Lehigh River, Pennsylvania Water Control Manual (Revised), the F.E. Walter Reservoir Project is an integral part of the Lehigh River Flood Control Program. The project is regulated by the Philadelphia District in conjunction with the Beltzville Lake project in Carbon County for optimum flood control benefits on the Lehigh River. The primary purpose of the project is flood control. A secondary purpose is recreation. F.E. Walter, in addition to aiding in flood control along the Lehigh River, is operated for recreation and drought emergency water storage for salinity repulsion in the Delaware River Estuary.

The Philadelphia District, U.S. Army Corps of Engineers operates and maintains the project and associated storage and discharge of water from the F.E. Walter Reservoir project. Under normal regulation, the flood control system is operated in such a manner that the flow passed through the dam equals inflow into the reservoir while maintaining a pool elevation of 1,300' N.G.V.D. A conservation release of 50 cubic feet per second (cfs) makes up the current minimum release criterion on the Lehigh River below the project. During flood periods, the flood control system is operated with the gates closed to the minimum required flood control outflow (100 cfs) only long enough to obtain the maximum reduction of damaging flood stages downstream. Flood control storage at F.E. Walter Reservoir is 107,815 acre-feet. Releases from the F.E. Walter project are governed by actual and/or predicted flood stages at critical downstream control points, by predicted inflow volume into the lake and by regulation of the Beltzville Lake flood control project.

In addition to flood control operations, downstream recreation in the form of whitewater releases that are sanctioned under Public Law 100-676, Section 6, dated November 1988 has existed historically at the F.E. Walter Reservoir Project. Historically, the District, in coordination with the Pennsylvania Department of Environmental Protection, U.S. Fish and Wildlife Service, Pennsylvania Fish and Boat Commission, Delaware River Basin Commission, organized canoeing clubs and commercial whitewater organizations, schedule five events annually for whitewater releases. For those events, water was stored up to elevation 1,309' N.G.V.D. (minimum elevation of access road located on the upstream embankment of the project). The 2005 operational plan resulted in an increase in temporary storage to elevation 1,335' N.G.V.D. with a subsequent increase in recreational whitewater releases and the establishment of a minimum downstream flow target (2005 F.E. Walter Temporary Operations Plan EA and project website at www.nap.usace.army.mil/Projects/FEWalter/index.htm). The 2006 and 2007 operational plans resulted in an increase in temporary storage to elevation 1,365' N.G.V.D. with a modification in the number and frequency of recreational whitewater releases and the established minimum downstream flow targets (2006 F.E. Walter Temporary Operations Plan EA at www.nap.usace.army.mil/Projects/FEWalter/index.htm).

2.2 Project Components and Expected Outcomes

Following the coordination and evaluation of the 2005, 2006, and 2007 temporary operations plans results with the Pennsylvania Fish and Boat Commission, Delaware River Basin Commission, Pennsylvania Department of Conservation and Natural Resources and other stakeholders, a temporary operational plan has been developed for the 2008 recreational season (May through October).

The plan for 2008 will be substantially different from that of 2007. While the 2007 plan was able to satisfy many of the water needs, modifications are being made to improve likelihood of recreational releases in the May-June timeframe while holding the 5 foot pool fluctuation limit. Water is being allocated to insure July and August white water recreational releases while relying on seasonal precipitation and additional water accumulations to allow scheduling of the planned September events. Water is also being reserved to insure the ability to make the augmentation releases for fisheries throughout the entire recreation season. Other small modifications as well as changes to October operations are also planned. Planned white water release dates are listed below:

May: 10th, 24th, 25th (no release on Mothers Day, 11 May)

June: 7th, 8th, 21st, 22nd

July: 5th, 6th, 19th, 20th

August: 2nd, 3rd, 16th, 17th, 30th, 31st

September: 13th, 14th, 27th, 28th

(The September dates are planned but will only be scheduled if precipitation and additional water accumulation occurs during the recreation season.)

October: 10th, 11th, 12th

(The October dates will only occur if sufficient water remains. Release dates of 11 and 12 October take precedence over 10 October.)

Total: 24 white water release dates planned, 7 of which are dependent upon additional water storage.

Except for the dates listed above, daily augmentation releases of up to 50 cfs for fisheries enhancement will be made throughout the recreation season.

For the 2008 season, the maximum storage level will be increased to elevation 1370, five feet higher than in 2007. On or before 1 April 2008 storage will be initiated at F. E. Walter Dam. The exact date that storage is initiated will be determined by the Corps of Engineers based on basin hydrologic conditions at the time. Storage could start earlier if precipitation raises the pool above elevation 1300. During this period outflows will be limited to 250 cfs on weekdays and

during weekends the outflow will normally be set equal to inflow up to a maximum release rate of 1000 cfs. The weekend limit could be lowered to 750 cfs and the weekday limit lowered to 225 cfs if hydrologic conditions were such that reaching the target level of 1370 by 10 May 2008 was determined to be in jeopardy. Special operations will prevail for the first two weekends of trout season (April 12-13 and April 19-20). Releases will be restricted to 400 cfs for these two weekends. This restriction is consistent with DCNR restrictions placed on commercial boaters in the upper reaches of the Lehigh River from White Haven to Rockport. The storage of excess inflows will continue until the pool reaches the elevation of 1370. Once pool level reaches 1370, outflow will match inflow until the start of the recreation season (10 May). The pool elevation of 1370 is expected to be reached no later than Friday 9 May 2008, in time for the first planned white water release to begin on Saturday 10 May 2008.

Pool elevations above elevation 1370 at any time are generally considered undesirable encroachments into flood control storage and will normally be evacuated as quickly as possible in accordance with the Corps' F.E. Walter Reservoir Water Control Manual. If weather forecasts are favorable, the encroachment into flood control storage may be retained for brief periods to support planned recreational opportunities. The Corps of Engineers will be solely responsible for making this determination. As in previous years, flood control objectives take priority and if necessary any of the storage above elevation 1300 could be released if deemed necessary by the U.S Army Corps of Engineers.

May-June

White water weekend events are planned for every other weekend starting on May 10th. No white water release is planned for Mother's Day, May 11th. As in previous years, the planned releases will be made for 12 hour periods from 1AM until 1 PM on Saturday then from 1 AM until 1 PM on Sunday provided sufficient water is available.

The pool elevation will be maintained between elevations 1365 and 1370 from 10 May through 30 June. This is raised 5 feet over last year's level in an attempt to help improve likelihood of making all planned releases in May and June. Raising the pool by 5 feet adds a total of 1403 DSF of storage and increases the storage volume within the 5 foot pool limitation by 60 DSF. The 5 foot pool limit is intended to help conserve cooler water for later in the season, and to help in-lake fish spawning. As noted before, a pool level above elevation 1370 is an undesirable encroachment into flood control storage which will normally be evacuated as quickly as possible. After pool elevation of 1370 is reached, weekday augmentation releases for fisheries enhancement during May will be 200 cfs and will be in the 200-250 cfs range in June. Weekend white water recreation releases during this period will be made as long as sufficient storage exists above elevation 1365 with a release target of 800 cfs in May and 750 cfs in June. Tables 1 and 2 provide priorities for determining the length and magnitude of white water recreation releases to be made in May and June if storage is not sufficient to make full releases for the 12 hour periods planned. Releases for fisheries enhancement on weekends when white water releases are not planned will be set to match inflow up to a maximum of 400 cfs during this period. If storage is not available above elevation 1365, releases will be set equal to inflow to maintain the 1365 elevation until 1 July. If necessary, cancellations or modifications of white

water release plans will be announced (posted on Corps webpage) on the afternoon of the Wednesday before the white water recreation weekend.

The raising of the pool by 5 feet to 1370, elimination of the white water recreation release for May 11th, reduction in weekend recreation release rates, and reduction of weekday release rates are all aimed at preserving storage levels to allow accomplishment of all purposes of the plan while limiting the pool to elevations between 1370 and 1365 during this time period.

Table 1. May Release Rate Priority (Maximum release 800cfs in May)

| Saturday | | Sunday | | Volume Required (DSF) |
|---------------|-------------------|---------------|-------------------|--------------------------|
| Rate (CFS) | Duration (DSF) | Rate (CFS) | Duration (HRS) | |
| 600 | 12 | | | 300 |
| 650 | 12 | | | 325 |
| 700 | 12 | | | 350 |
| 700 | 12 | 500 | 6 | 425 |
| 750 | 12 | 550 | 6 | 512.5 |
| 800 | 12 | 600 | 6 | 550 |
| 800 | 12 | 700 | 6 | 575 |
| 800 | 12 | 600 | 12 | 700 |
| 800 | 12 | 700 | 12 | 750 |
| 800 | 12 | 800 | 12 | 800 |

Table 2. June Release Rate Priority (Maximum release 750 cfs in June)

| Saturday | | Sunday | | Volume Required (DSF) |
|---------------|-------------------|---------------|-------------------|--------------------------|
| Rate (CFS) | Duration (DSF) | Rate (CFS) | Duration (HRS) | |
| 600 | 12 | | | 300 |
| 650 | 12 | | | 325 |
| 700 | 12 | | | 350 |
| 700 | 12 | 500 | 6 | 425 |
| 750 | 12 | 550 | 6 | 512.5 |
| 750 | 12 | 600 | 6 | 525 |
| 750 | 12 | 700 | 6 | 550 |
| 750 | 12 | 750 | 6 | 562.5 |
| 750 | 12 | 750 | 12 | 750 |

July- August

Starting in July, there will no longer be any specific flow targets or limits on pool levels. For this time period, sufficient storage will be reserved to insure weekday and non-recreational weekend fisheries enhancement releases of 50 cfs above inflow, up to a total of 250 cfs. On white water recreation weekends, for the 12 hour periods from 1AM until 1 PM on both Saturday and Sunday, releases will be set at inflow plus 750 cfs up to a maximum of 1000 cfs and held on each of the planned weekends as long as storage permits. For the other 12 hour periods of the weekend, the release will revert to the fisheries enhancement augmentation release of 50 cfs above inflow up to 250 cfs. Storage capacity at elevation 1365 at the end of June is sufficient to make the planned white water weekend releases through August 30-31 as well as the releases for fisheries enhancement.

September

As in the July-August timeframe, in September storage sufficient to provide for a fisheries enhancement release of 50 cfs above inflow (up to 250 cfs) will be reserved to insure that the augmentation can be made during the entire month. On the other hand, white water recreation releases planned for September require additional precipitation and water accumulation during the recreation season to allow those to occur. This is a significant change from the 2007 plan. The plan for 2008 recognizes that white water recreation weekend releases in the July-August timeframe are more important than the September releases and the fact that additional precipitation is likely to allow at least some of the September events to be added while still preserving storage to accomplish the weekday fisheries enhancement augmentation of 50 cfs regardless of hydrologic circumstances through September. If at any time precipitation occurs to allow sufficient additional water to accumulate; planned white water recreation releases will be scheduled. Accumulated water will be allocated and utilized for the next upcoming planned white water weekend release. Release priorities for these September events are listed in Table 3. Final release amounts and durations will be determined and posted on the Corps webpage the Wednesday prior to the weekend. If sufficient water is available, each scheduled white water event will be held for both Saturday and Sunday at the full amount of 750 cfs plus inflow (maximum release of 1000 cfs) before subsequent planned white water events will be scheduled. If storage is not sufficient to allow at least a one day (12 hour) release of 600 cfs, the white water release for the weekend will be cancelled. As additional planned events become possible due to accumulation of water, releases will be scheduled and announced no later than the Wednesday before the planned white water release date. **Following this procedure may mean that events are cancelled, scheduled or modified with little advance notice.**

Table 3. September Release Rate Priority (Maximum release rate will be set at inflow plus 750 cfs up to 1000 cfs)

| Saturday | | Sunday | | Volume Required (DSF) |
|---------------|-------------------|---------------|-------------------|--------------------------|
| Rate (CFS) | Duration (DSF) | Rate (CFS) | Duration (HRS) | |
| 600 | 12 | | | 300 |
| 650 | 12 | | | 325 |
| 700 | 12 | | | 350 |
| 700 | 12 | 500 | 6 | 425 |
| 750 | 12 | 550 | 6 | 512.5 |
| 800 | 12 | 600 | 6 | 550 |
| 800 | 12 | 700 | 6 | 575 |
| 800 | 12 | 600 | 12 | 700 |
| 800 | 12 | 700 | 12 | 750 |
| 800 | 12 | 800 | 12 | 800 |
| 900 | 12 | 900 | 12 | 900 |
| 1000 | 12 | 1000 | 12 | 1000 |

October

At the end of the recreation season, if sufficient water still remains above elevation 1300, the planned white water releases for 11-12 October will be scheduled. Releases for that weekend will be for the usual 12 hour period and range between 750 and 1200 cfs. Weekday releases in October leading up to the final event will not be less than 144 cfs. Target releases for the remaining weekends in October (4, 5, 18, 19, 25 and 26 October) will range between 350-400 cfs

If more than sufficient water remains for what is needed to accomplish the above, a final weekday release will be scheduled for Friday, 10 October 2008. This release is the last increment of the 2008 recreation plan and is primarily intended to return the pool to its normal elevation of 1300. The scheduling of this release will allow those interested in larger white water recreation releases to plan accordingly. The release rate will be based on the amount of water available. Release will be set at a maximum of 4000 cfs. Final scheduling and amount of this release will be determined and posted on Wednesday, 8 October 2008.

Due to operational difficulties experienced in 2007 with the existing bypass system, it will not be available for use this year. All releases will be made from the flood control gates. It is expected that the bypass valves will be replaced after the conclusion of this year's recreation season and will be available for use in 2009.

The 2008 plan was presented to the public at a public workshop held at the Mountain Laurel Resort in White Haven Pennsylvania on 31st January 2008. The public was afforded the opportunity to discuss the plan with project partners and provide comment. In addition, the public is afforded the opportunity to comment specifically on the 2008 proposed plan and future plans through the project website at www.nap.usace.army.mil/Projects/FEWalter/index.htm.

Comments will continuously be accepted by the project partners in the future in an effort to modify the plan to meet in-lake and downstream objectives. Implementation of the plan is directly dependent on meteorological conditions experienced in the region in 2008 and the Corps ability to meet flood control objectives at the project. The plan reflects target objectives and there is no guarantee that these objectives can be met. The Corps will make every effort to meet the 1,370' N.G.V.D. pool level target. However, in the event that meteorological predictions, such as consecutive rainstorms or high precipitation events, show that an elevated pool may jeopardize the Corps flood control capability in the Lehigh River, the Corps will make a decision to either maintain the 1,370' N.G.V.D. pool or evacuate the stored water to allow for maximum flood control storage. Under these conditions, water release plans shall be implemented as per the October 1994 F.E. Walter Reservoir, Lehigh River, Pennsylvania Water Control Manual (Revised).

3.0 ALTERNATIVES CONSIDERED

The no-action alternative would not achieve the purpose of having additional water available at F.E. Walter Reservoir to enhance recreational activities and improve environmental conditions in-lake and downstream on the Lehigh River.

A range of pool level and minimum low flow alternatives were evaluated based on potential negative and positive impacts on flood control, recreation and the environment in general. The alternatives are essentially modifications of the 2005, 2006, and 2007 plans taking into account the results and lessons learned from those efforts. Historic flow and operational records, in-lake and river water quality data, expected recreational use, public input, and known environmental resources in the project area were evaluated against the alternatives. An operational plan, described previously, was selected as the most likely to meet recreational, downstream water quality and flow, and flood control objectives. This plan is expected to benefit in-lake and downstream recreation meanwhile protecting and potentially enhancing the natural environment. Coordination between project partners and the public will continue through and after the plan period. Data collected during the plan will be used by the Corps and its partners to evaluate the degree of success in meeting the objectives of the plan and for identification of any environmental impacts not previously expected.

4.0 EXISTING ENVIRONMENT

A description of the existing environment was provided in the 2002 F.E. Walter Reservoir Emergency Drought Storage Environmental Assessment. These descriptions are not expected to have changed appreciably. Detailed descriptions were provided on topics to include: Project Description; Climate; Air Quality; Topography; Geology and Soils; Land Use and Recreation; Hazardous, Toxic, and Radioactive Substances; Aquatic Resources; Surface Waters (Lehigh River Water Quality and Reservoir Water Quality); Groundwater; Wetlands; Wild and Scenic Rivers; Vegetation; Wildlife Resources; Finfish and Invertebrate Species; Threatened and Endangered Species; Prime and Unique Farmlands; Cultural Resources; Infrastructure; Socioeconomic Conditions; and Environmental Justice. The 2005 F.E. Walter Temporary Operations Plan EA, 2006 F.E. Walter Temporary Operations Plan EA, and other environmental

study information for the project are available for review on the project web page at www.nap.usace.army.mil/Projects/FEWalter/index.htm.

5.0 ENVIRONMENTAL EFFECTS

5.1 Project Area Descriptions

Changes in reservoir operation as a result of the 1,370' N.G.V.D. plan elevation are expected to increase the base pool elevation behind F.E. Walter Reservoir by 70 feet and therefore temporarily submerge adjacent land areas not normally submerged at pool elevation 1,300' N.G.V.D. However, these areas are routinely inundated annually during drought, recreational whitewater, and flood storage events and are located within federally owned project operational boundaries. Based on historic data, pool levels at F.E. Walter Reservoir equaled or exceeded 1,370' N.G.V.D. for 945 days from January 1974 through December 2005, representing approximately 9% of this operational record time period. The number of consecutive days the pool level exceeded this elevation ranged from 1 to 449 days depending on operations. For example, during drought storage operations in 2002, the pool level exceeded 1,370' N.G.V.D. from March 2002 through November 2002 for a total of 249 consecutive days. As a result, any negative impact to the project area is expected to be temporary and minor.

5.2 Climate

Due to the nature of this project, which includes no construction requirements, this project is not expected to adversely impact the climate within or around the project area.

5.3 Air Quality

The project will result in no significant change in air quality within or around the project area. Since there is no construction required, there will be no air emissions generated from construction equipment.

5.4 Topography

At pool elevation 1,370' N.G.V.D., approximately 507 acres of land will be submerged within the reservoir boundaries. These areas have been submerged historically during drought storage and flood control operations. This impact will be temporary and minor as the pool level will only be increased from April through October of 2008. These submerged areas have the potential to provide approximately 127 acres of 0-10 foot depth and 63 acres of 0-5 foot depth fishery spawning habitat. No impact to the Lehigh River topography downstream is expected as a result of this project.

5.5 Geology and Soils

The possibility of soil erosion within the F.E. Walter Reservoir is considered slight to moderate as a result of the rocky condition of the reservoir shoreline. A minor increase in bank erosion along the edges of F.E. Walter Reservoir is possible during storm events as a result of wave action. Some minor areas of bank erosion associated with the 2005-2007 operational plans were identified. Historically, bank erosion has occurred immediately downstream of the F.E. Walter outfall. Erosion in this area is most evident during high release events typically associated with flood control operations. Minor bank erosion in this area is therefore expected as

a result of the 2008 plan, but at a rate no different than seen during normal historic operations. No increase in erosion along the Lehigh River banks downstream of F.E. Walter Reservoir is expected due to operational discharge controls. Due to the nature of this project, no significant adverse impact to the geology or soils within or around the project area is expected.

5.6 Land Use and Recreation

Land use in the area surrounding the reservoir boundaries is predominantly forested. Areas within the reservoir's operational pool limits are sparsely vegetated and have no trees. A short-term and minimal negative impact to some of those areas inundated by the 2008 operations pool is expected as a result of the public not being able to access the reservoir shoreline in areas typically utilized. However, no planned restriction on access to the reservoir is expected. No impact to downstream land use is expected as a result of the increased minimum release and operational controls.

In-lake recreation for boating and fishing is impeded when the pool exceeds elevation 1,306' N.G.V.D. and above. Most recreational benefits occur during the summer months. Recreational structures such as the boat launch area and access road are located in the flood control storage area of the project. Access will still be permitted for in-lake recreation such as fishing and boating. However, the public may find it more difficult and time consuming to reach and utilize the resource. In an effort to improve boating access under the higher pool levels, the Corps constructed a boat trailer turnaround area in 2007 on the Route 940 (Carbon County) side of the reservoir. As a result, there will be a short-term and minor negative impact on in-lake recreation during the storage period. As plans are modified in the future and a more stable schedule and plan is finalized, the location and construction of a new boat launch facility will be pursued.

The 2008 plan is expected to also protect the recreational value associated with inlake and downstream resources. The increased storage and target minimum release plan at F.E. Walter Reservoir will provide the ability to augment flows in the Lehigh River to benefit recreational angling and boating, conserve cooler bottom waters for release downstream, and increase inlake habitat availability potentially benefiting the inlake fishery. The Pennsylvania Fish and Boat Commission conducted a 2007 fish creel survey in areas of the Lehigh River downstream of F.E. Walter Reservoir. This effort is designed to evaluate the use and user groups utilizing the resource. The creel survey results are not available at this time.

5.7 Hazardous, Toxic, and Radioactive Substances

Based on historic sediment sampling and analysis at F.E. Walter Reservoir through the Corps annual water quality sampling program and considering the nature of the watershed upstream of F.E. Walter Reservoir no hazardous, toxic and radioactive substance impacts are expected as a result of this project.

5.8 Aquatic Resources and Wetlands

5.8.1 Surface Water

The F. E. Walter project has limited selective withdrawal capability. The three flood control gates release water near the reservoir bottom. Selective withdrawal capability at multiple pool elevations is not possible at this time. A bypass system does exist at approximately elevation 1297'. This system was placed into operation for the 2005, 2006, and 2007 plans. Due to operational difficulties experienced in 2007, the bypass system will not be used in 2008. At this time, all releases will be made from the bottom flood control gates.

The water quality in the lake is greatly influenced by inflow to the lake. This would include volume, sediment load, and water quality in general. The drainage basin above the dam is predominantly forested with little development. However, development is occurring and has increased the potential for environmental degradation. The hydraulic retention time is an important factor affecting lake water quality. The retention time from May through October under conservation pool conditions of 1,300 feet N.G.V.D. would be approximately 3 days. Historically, at conservation pool elevation during the summer, the water column of F.E. Walter Reservoir is typically weakly stratified with respect to temperature. This allows for mixing of surface and bottom waters throughout the summer. A complete reservoir volume exchange in approximately 3 days is expected to occur under these conditions. At a pool elevation of 1,392 feet N.G.V.D., and if an average August through September inflow of 300 cfs is assumed, the retention time would be around two months. It is possible, that during the summer, the entire pool may not be exchanged due to summer stratification. Warmer surface waters would not be expected to mix with the deeper colder water. All releases occurring from the flood control gates near the bottom would draw water from the hypolimnion only. Surface waters would not be released downstream until mixing occurs during fall turnover. Therefore, the entire volume of the reservoir would not be exchanged until the complete mixing of the reservoir pool occurs. Historic water quality sampling has shown negative water quality effects within the lake at pool levels exceeding approximately elevation 1370 feet over an extended period of time (throughout the summer) and dependent on meteorological conditions and reservoir release operations. Water chemistry data collected during drought operations in 2002 showed anoxic conditions throughout most of the reservoir during July and August at a 1392 foot pool elevation. As a result of these conditions, iron was released from the reservoir sediments and eventually deposited downstream on Lehigh River sediments causing impacts to downstream biological communities in the Lehigh River.

The retention time from April through October under pool operating conditions of 1,370' N.G.V.D. would be approximately 37 days. Due to the short term nature of the 2008 storage and flow operation plan, the potential negative impacts to water quality both within the reservoir and downstream in the Lehigh River will be minimized and at most temporary. A pool elevation of 1370' was selected, in part, because historic water quality data and monitoring data collected during previous plans show a low probability of the formation of poor water quality conditions within the reservoir at this elevation. The Philadelphia District will continue its annual water quality sampling at F.E. Walter from April through October of 2008. As the operations plan is implemented and the pool elevation is maintained near elevation 1370' N.G.V.D., sampling will

provide a means of monitoring water quality changes in the tributaries, reservoir pool and outflow under these conditions. Water quality data collected during the 2006 and 2007 studies showed the formation of a moderately stratified water column with low dissolved oxygen in the bottom waters (Appendix A). The low dissolved oxygen levels in the deeper portions of the reservoir did not result in significant adverse water quality conditions within the lake or downstream.

Based on coordination with the resource agencies, operating guidelines such as target minimum releases, augmented outflows, and other storage and release guidelines were established to protect environmental resources associated with the Lehigh River and F.E. Walter Reservoir. This will be most evident during typically low flow periods during the summer. By maintaining a higher minimum flow rate during portions of the season, it is expected that point source pollution will be diluted in the river resulting in better than typically expected water quality. Of particular importance are the known impacts from abandoned mine discharges to the Lehigh River during low flow periods of the summer. In addition to these water quality benefits, it is expected that there will be an increased benefit to aquatic organisms through additional habitat availability and cooler summer water temperatures which are typically unavailable during low flow periods of the summer in the river.

The Lehigh River from F.E. Walter Dam downstream to Jim Thorpe is designated for protection as a High Quality-Cold Water Fishery in accordance with 25 Pennsylvania Code Chapter 93 Water Quality Standards. The temperature criteria for this reach shall not exceed 66° F for the period from July 1st to August 30th. Historic sampling show river temperatures routinely exceeding the temperature criteria established for this reach of the river during the summer months. Historic sampling of inflows to the reservoir also shows temperatures routinely exceeding the temperature criteria. Other than the limited bypass system (inoperable for 2008), selective withdrawals at F.E. Walter Reservoir are not possible at this time. In an effort to improve release temperature objectives downstream, 2008 release scenarios and establishment of a higher pool level are being used to conserve the maximum amount of cooler water deeper in the water column for use later in the summer season. As in previous years, the inflow, inlake, and downstream temperatures and water quality will be closely monitored during the 2008 plan to assess the effects, if any; the 1,370 foot pool elevation and release schedule has on downstream river temperatures and inlake and downstream water quality. All necessary precautionary measures such as water quality monitoring, will be implemented to ensure that the Lehigh is protected from harmful discharges that may adversely affect aquatic life, and/or their recreational use. No long term negative impacts are expected as a result of the 2008 plan.

5.8.2 Groundwater

Based on the analysis of expected groundwater changes associated with raising pool elevations described in the 2002 EA, only short term and minor temporary impacts to ground water are expected as a result of the 2008 plan.

5.8.3 Wetlands

Both vegetated wetlands and open water habitat exist within the boundaries of the reservoir pool. These acreages have not been quantified. Some of the vegetated wetland areas

are routinely submerged during flood control and drought operations at F.E. Walter Reservoir. As in the past, these areas will be temporarily submerged during 2008. It is expected that the vegetation found in these areas have evolved to withstand temporary inundation. The impact is expected to be short term and minor.

5.8.4 Stream and River Habitat

Stream and river habitat exists within the flood control storage area of the reservoir. These areas are typically exposed when the reservoir pool is at the normal pool elevation of 1300' N.G.V.D. When the pool is maintained at 1370' N.G.V.D., approximately 22,777 linear feet of stream and river will be inundated. These areas exist within the approved storage area of the reservoir and are routinely inundated as part of flood control and recreational operations at the reservoir. No negative impact to these resources is expected as a result of the 2008 plan. Water quality changes within the reservoir that have the potential to impact downstream habitat will be closely monitored (iron precipitate on substrates). As a result of the 2008 proposed release plans, no impact to downstream river and stream habitat is expected.

5.9 Wild and Scenic Rivers

A resource information review revealed that no nationally designated wild and scenic rivers or river segments are located within the project area. No impact to this resource is expected. The Lehigh River downstream of F.E. Walter Dam is designated a Pennsylvania scenic river. No negative impact to this resource is expected.

5.10 Vegetation

The project area has been significantly impacted by human activities in the past. The major impact on vegetation within the reservoir pool area occurred during reservoir operations in the mid 1960's and 1981. Although these events were isolated incidences, all terrestrial vegetation was killed up to approximately elevation 1,392' N.G.V.D. Today, the land surface within the reservoir from elevation 1,300' to 1,392' N.G.V.D. is predominantly rocky with limited vegetation. The vegetative habitat within the reservoir pool area has had little opportunity to recover because of historic operations of the reservoir and associated periodic inundation of surrounding lands. Some areas of the upper reservoir arms of Bear Creek and the Lehigh River have had the opportunity to recover, but on a limited basis. A potential impact associated with submerging this vegetation during the 2008 plan is the elimination of foraging and nesting habitat for various birds and small animals. It is believed that the vegetation colonizing these areas is adapted to the periodic inundation experienced in the reservoir pool area and will be reestablished following the completion of the 2008 plan. As a result, no significant long-term impact is anticipated as a result of temporarily raising the pool level. No impact to vegetation along the Lehigh River is expected.

5.11 Wildlife Resources

Birds, mammals, reptiles and amphibians are capable of moving, and would be expected to leave the submerged project area and relocate to areas in the immediate vicinity. Species that reside in these adjacent areas may be temporarily impacted by increases in species densities. A temporary reduction in the amount of nesting, feeding, resting and breeding cover in the area for some species, which utilize this habitat, may occur. Due to the amount of adjacent nearby

habitat, it is expected that no significantly adverse impacts to wildlife resources will occur as a result of this project. No impact to wildlife resources along the Lehigh River is expected.

5.12 Finfish and Invertebrate Species

Aquatic life in the form of invertebrates, reptiles and finfish inhabit the waters of the Lehigh River, reservoir and surrounding tributaries. In the absence of site-specific investigations regarding adequate minimum releases to enhance downstream aquatic resources at F.E. Walter Reservoir, the Pennsylvania Fish and Boat Commission has recommended various storage and release augmentation scenarios. As a result of the release and storage targets during the 2008 plan, the habitat and flows required by species located in the Lehigh River downstream of F.E. Walter are expected to be protected and potentially enhanced during low flow periods of the year. The potential for a temporary increase in aquatic habitat availability due to a higher and stable pool elevation during the May through June in-lake spawning period exists. These submerged areas have the potential to provide 127 acres of 0-10 foot fishery spawning habitat.

There are no negative appreciable changes in the water temperature regime expected as a result of the study. No physical intrusion to the aquatic environment to accomplish this study is required. Low dissolved oxygen levels in the lower water column of the reservoir have the potential to restrict aquatic species movements in addition to creating an anoxic environment. This occurrence would be a short term minor impact on the system as other more suitable habitat areas exist within the reservoir and aquatic species would be expected to utilize those areas. The water quality changes within the reservoir also have the potential to impact downstream habitat (iron precipitate on substrates) and will be closely monitored. It is expected that changes in water quality resulting from the plan will not result in significant adverse long term impacts to finfish and invertebrates. Positive impacts associated with augmented low flows downstream are expected.

5.13 Threatened and Endangered Species

Coordination with various Federal and State natural resource agencies as part of the 2002 F.E. Walter Emergency Drought Storage Environmental Assessment identified numerous threatened and endangered species that may be utilizing the project area. These species include the bald eagle which is Pennsylvania threatened; timber rattlesnake which is a Pennsylvania species of concern; and osprey and small-footed bat which are Pennsylvania threatened species. Known timber rattlesnake den sites are located at higher elevations than the proposed plan and will not be impacted. As in previous years, if nesting bald eagles are identified within the project area, their location will be documented and appropriate restrictions placed on activities near the nests. Due to the nature of the 2008 plan and the mobility of the majority of the species, no significant long-term negative impact to these species or their habitat is expected.

5.14 Prime and Unique Farmlands

Possible areas of concern have been identified by the Natural Resource Conservation Service (NRCS) in the 2002 EA. Due to historic operations of raising and lowering the pool elevation at the reservoir, land surface cover in the form of vegetation is lacking. Therefore, areas identified as being of concern will not be affected (increased erosion) by destruction or removal of land surface vegetation. A minor increase in erosion may be seen due to wind-

induced movement of surface waters and infiltration of water through the soils. The areas identified by NRCS are within the reservoir pool boundaries and have not been used for agricultural production since, at a minimum, the construction of F.E. Walter Reservoir. These areas are routinely inundated as part of operating the reservoir to meet its congressionally authorized purposes. No significant impact to these resources is expected.

5.15 Cultural Resources

In a letter dated February 22, 2002, the District notified the Pennsylvania Historical and Museum Commission (PHMC) about the proposal to raise the reservoir's base pool elevation from 1300 feet to a drought storage pool of 1370 feet (winter pool) or 1392 feet (summer pool). In a letter to the Philadelphia District dated April 25, 2002, the PHMC determined that the proposed drought storage increase would have no effect on archaeological sites or historic structures. It is therefore anticipated that since pool elevations will be lower than seen in 2002, no resources will be impacted.

5.16 Infrastructure

The newly modified access road crossing the top of the dam was opened to the public in 2005. No impacts to public transportation or other infrastructure are therefore expected.

5.17 Socioeconomic Conditions

The 2008 temporary operation plan at F.E. Walter Reservoir is not expected to adversely impact the economy or social structure near the reservoir or downstream on the Lehigh River. Future economic benefits may result by protecting aquatic resources of the Lehigh River and improving boating and other recreational activities in the watershed that directly depend on the resources of the Lehigh River and operation of F.E. Walter Reservoir. In 2005-2007, the number of whitewater recreational releases was increased and minimum low flows were in place to protect aquatic resources in the Lehigh River. Meteorological conditions (lack of precipitation) seen during 2005, resulted in plan modifications during the recreation season and the cancellation of previously scheduled whitewater releases that year. As seen in Table 4 and Figure 2, the successful increased availability and scheduling of user and environmental friendly flows in 2006 and 2007 resulted in an increase in public use and tourism in the region. It is anticipated that the 2008 plan will also provide these benefits.

| Lehigh Gorge State Park | | Whitewater Outfitter Usage Totals | | | | |
|---|--|-----------------------------------|--------------|--------------|-------------|--------------|
| RIVER SITES | | | | | | |
| YEAR | | JTRA | PW | WC | WRA | TOTAL |
| 1986 | | 6971 | 31374 | 35552 | 2136 | 76033 |
| 1987 | | 7059 | 30927 | 34441 | 1782 | 74209 |
| 1988 | | 8083 | 28456 | 30532 | 3366 | 70437 |
| 1989 | | 6620 | 24069 | 25901 | 2530 | 59120 |
| 1990 | | 7345 | 25894 | 28049 | 2694 | 63982 |
| 1991 | | 3955 | 17159 | 18357 | 2268 | 41739 |
| 1992 | | 6372 | 23555 | 22334 | 3503 | 55764 |
| 1993 | | 4433 | 18043 | 14959 | 2740 | 40175 |
| 1994 | | 7476 | 21403 | 22491 | 3436 | 54806 |
| 1995 | | 5525 | 15175 | 16023 | 2779 | 39502* |
| 1996 | | 7898 | 20708 | 25217 | 3892 | 57715* |
| 1997 | | 7169 | 14811 | 20034 | 3487 | 45501* |
| 1998 | | 7914 | 15867 | 18578 | 3594 | 45953* |
| 1999 | | 5271 | 11175 | 15053 | 2509 | 34008* |
| 2000 | | 8256 | 18682 | 21393 | 4533 | 52864* |
| 2001 | | 5496 | 14606 | 17763 | 3834 | 41699* |
| 2002 | | 5061 | 16282 | 17091 | 4105 | 42539* |
| 2003 | | 4719 | 13206 | 18696 | 3629 | 40250* |
| 2004 | | 3929 | 13199 | 15933 | 2926 | 35987* |
| 2005 | | 2684 | 12355 | 10548 | 3579 | 29166* |
| 2006 | | 3538 | 27869 | 22994 | 6077 | 60478* |
| 2007 | | 3781 | 27453 | 23887 | 5538 | 60659* |
| <i>Average for 19 yrs</i> | | <i>5776</i> | <i>18998</i> | <i>20292</i> | <i>3551</i> | <i>48617</i> |
| * Includes launch numbers from Glen Onoko | | | | | | |

TABLE 4. Whitewater Outfitter Usage Totals on the Lehigh River in Lehigh Gorge State Park from 1986 through 2007 (Source: PA Department of Conservation and Natural Resources).

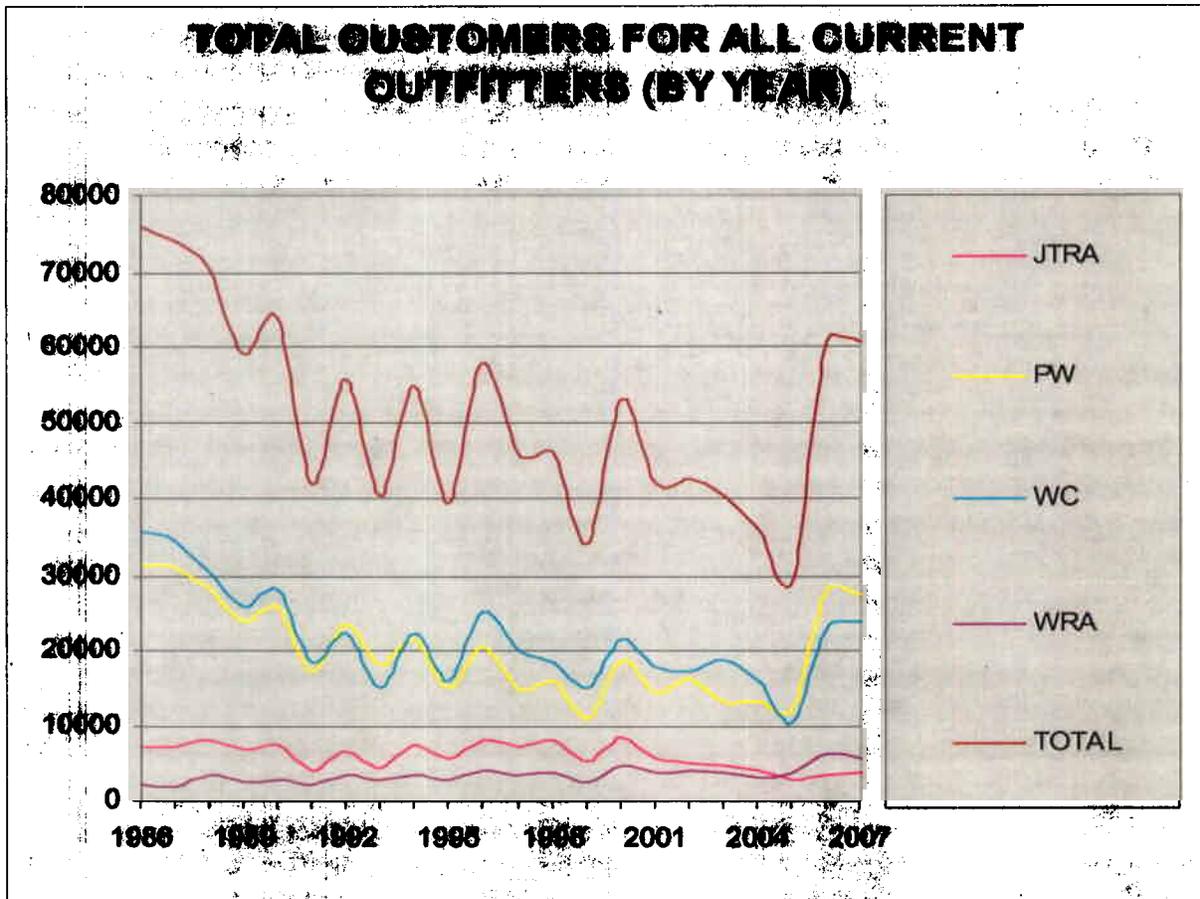


FIGURE 2. Whitewater Outfitter Usage Totals on the Lehigh River in Lehigh Gorge State Park from 1986 through 2007 (Source: PA Department of Conservation and Natural Resources).

5.18 Environmental Justice

This plan is not expected to adversely impact any minority or low-income communities in the project area, because none exist.

5.19 Cumulative Impacts

Cumulative impacts are impacts on the environment that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of who undertakes these actions. This cumulative impact assessment focuses on the 2008 temporary operation plan for F.E. Walter Reservoir and the impact it may or may not have on future operations at the reservoir and on the Lehigh River.

The Philadelphia District in cooperation with the Delaware River Basin Commission, Pennsylvania Fish and Boat Commission, Pennsylvania Department of Conservation and Natural Resources and other interests will pursue additional study to evaluate the positive and negative effects of the 2008 plan on recreation, the environment, the congressionally authorized operation of F.E. Walter Reservoir, and the Lehigh River in general. The 2008 plan was developed, in part,

as a result of observed conditions and recreational and environmental benefits and values observed from 2005 to 2007. The plan was evaluated using historic flow data, water quality data, and recreational use information provided by and to the resource agencies. As a result, the various aspects of the plan, as determined by the resource agencies involved, would provide protection of existing resources meanwhile potentially improving them. Future study and monitoring of the 2008 and future plans will likely result in the refinement of operational alternatives in the future as what was witnessed from 2005 into 2007.

It is expected that positive cumulative effects, as a result of the 2008 temporary operation plan at F.E. Walter, will occur with regard to increased spawning areas and habitat in-lake due to stable pool operations, increased whitewater recreation opportunities, downstream protection of aquatic resources in the Lehigh River, and overall improvement and protection of recreation and the environment in the watershed. All potential negative impacts associated with the 2008 plan are short-term and minor and have been considered in the selection and development of the plan. The potential negative impacts of the plan may include changes in water quality, in-lake recreation being impeded, and loss of upstream aquatic and terrestrial habitat. It is anticipated that future environmental and recreational benefits in both the Lehigh River and potentially the Delaware River Basin will be realized. It has been determined that there will be no long term negative cumulative impacts as a result of the 2008 operational plan.

6.0 COORDINATION

Coordination with resource agencies conducted for the 2002 F.E. Walter Emergency Drought Storage Environmental Assessment was utilized, in part, for this Environmental Assessment. That project was coordinated with the Delaware River Basin Commission, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency Region 3, Pennsylvania Department of Environmental Protection, Pennsylvania Historical and Museum Commission, Pennsylvania Fish and Boat Commission, Pennsylvania Game Commission, and Pennsylvania Department of Conservation and Natural Resources. The 2005-2008 F.E. Walter temporary operations plans were developed through coordination with the Pennsylvania Fish and Boat Commission, Pennsylvania Department of Conservation and Natural Resources, Delaware River Basin Commission and stakeholders. The 2008 plan was presented to the public at a public information workshop on 31 January 2008 at the Mountain Laurel Resort located in White Haven, Pennsylvania. In addition, the results of the 2007 plan were presented to interested stakeholders at a public meeting on 25 October 2007 at the Ramada Inn located in White Haven, Pennsylvania. These forums allow attendees to directly question project partners and comment on the proposed plan. In addition, the public is afforded the opportunity to comment on past, present, and future plans by submitting written comments directly to the Philadelphia District Corps Office or by providing their comments via the project website found at www.nap.usace.army.mil/Projects/FEWalter/index.htm. Public Notice CENAP-PL-E-08-02 for the F.E. Walter Temporary Operations Plan- 2008 Draft Environmental Assessment was circulated to the public and resource agencies on 31 January 2008 (Appendix B).

Hundreds of pages of public comments have been received by the Philadelphia District in regard to the 2005-2007 operational plans. These comments were provided by the public through the project website, at the public workshops and also through comment letter submittal. All

comments are reviewed by the Corps and provided to the respective project partners with expertise in a particular topic or resource, when applicable. For example, comments that involved aquatic resources such as fisheries would have been provided to the Pennsylvania Fish and Boat Commission for review. Based on comments received on the 2005-2007 plans, the project partners evaluated the previous operations and have modified it to better balance 2008 plan objectives and protect the resources of the reservoir and river. The public comments and agency response, where applicable, are available for review at www.nap.usace.army.mil/Projects/FEWalter/index.htm. Comments will continuously be accepted by the project partners in the future in an effort to modify the plan to meet in-lake and downstream objectives. Comment letters received in regard to the draft environmental assessment and announcement of the 2008 plan are provided in Appendix C.

7.0 CONCLUSIONS

This Environmental Assessment has evaluated potential environmental impacts associated with implementing the 2008 F.E. Walter temporary operations plan. The findings herein have been prepared in accordance with the National Environmental Policy Act of 1969, as amended. Potential impacts to environmental and cultural resources resulting from the proposed action have been described and evaluated in this document.

Due to the previously disturbed nature of the area bordering the reservoir and based on historic data, any negative effects to the environment are expected to be minor and temporary. A positive effect of increasing in-lake fishery habitat, protecting downstream water quality and aquatic habitat, and increasing whitewater recreational opportunities is expected. As part of the 2008 plan, no permanent environmental changes to the F.E. Walter Reservoir area and downstream habitat and water quality in the Lehigh River are expected due to the short-term nature of the operation. The plan will be closely monitored to evaluate the positive and negative aspects of the effort.

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APPENDIX A

2006 and 2007 Water Quality Profile Sampling Results at F.E. Walter Reservoir

2007 F.E. Walter Water Quality Profiles

| Station | Date | Time | Depth | Temp | DO | DO | SpCond | pH | Turbidity + | Chloro. |
|---|------------|----------|-------|-------|-------|-------|--------|------|-------------|---------|
| | M/D/Y | hh:mm:ss | ft | C | % | mg/L | mS/cm | | NTU | ug/L |
| WA-1 Outfall | 5/24/2007 | 14:45:49 | 0 | 13.99 | 104.7 | 10.79 | 0.073 | 6.31 | 6.2 | 1.6 |
| | 6/7/2007 | 9:06:08 | 0 | 15.61 | 99 | 9.85 | 0.073 | 6.71 | 4.1 | 1 |
| | 6/14/2007 | 9:00:10 | 0 | 16.03 | 97.7 | 9.64 | 0.075 | 6.26 | 5.8 | 1.3 |
| | 6/21/2007 | 12:10:07 | 0 | 17.72 | 105.1 | 10.01 | 0.078 | 6.2 | 8 | 1 |
| | 6/29/2007 | 10:45:49 | 0 | 18.61 | 98.3 | 9.19 | 0.083 | 6.28 | 5.9 | 42.8 |
| | 7/12/2007 | 12:51:19 | 0 | 20.01 | 95.2 | 8.65 | 0.087 | 6.13 | 5.5 | 380.4 |
| | 7/19/2007 | 12:31:27 | 0 | 20.08 | 94.6 | 8.58 | 0.082 | 6.1 | 0.1 | -1.1 |
| | 8/3/2007 | 10:27:42 | 0 | 21.49 | 108.9 | 9.62 | 0.084 | 6.53 | 0 | 0 |
| | 10/11/2007 | 13:06:17 | 0 | 18.89 | 88.3 | 8.21 | 0.088 | 6.5 | 16 | 3.7 |
| | 11/6/2007 | 11:40:55 | 0 | 7.6 | 98 | 11.71 | 0.059 | 6.27 | 7.1 | 2.8 |
| WA-2 Lake Tower | 5/4/2007 | 11:05:00 | 0 | 13.9 | 106.8 | 11.03 | 0.067 | 6.4 | -0.4 | 2.2 |
| | | 11:04:17 | 5 | 13.81 | 106.5 | 11.02 | 0.067 | 6.42 | -0.4 | 3.2 |
| | | 11:02:48 | 10 | 13.56 | 105.8 | 11 | 0.067 | 6.37 | -0.3 | 3.1 |
| | | 11:01:25 | 15 | 13.33 | 104.6 | 10.94 | 0.067 | 6.32 | -0.4 | 3.8 |
| | | 11:00:30 | 20 | 13.27 | 103 | 10.79 | 0.067 | 6.15 | -0.3 | 3 |
| | | 10:59:37 | 25 | 12.07 | 101 | 10.87 | 0.066 | 6.13 | -0.2 | 2.8 |
| | | 10:58:52 | 30 | 11.83 | 100.5 | 10.87 | 0.066 | 6.11 | -0.2 | 2.2 |
| | | 10:57:44 | 35 | 11.71 | 100.3 | 10.88 | 0.066 | 6.07 | -0.2 | 2.9 |
| | | 10:56:58 | 40 | 11.66 | 99.9 | 10.86 | 0.066 | 6.07 | -0.2 | 2.9 |
| | | 10:56:16 | 45 | 11.6 | 99.8 | 10.85 | 0.066 | 6.04 | -0.1 | 2 |
| | | 10:55:39 | 50 | 11.48 | 99.3 | 10.83 | 0.066 | 5.99 | -0.2 | 2.1 |
| | | 10:55:11 | 55 | 11.45 | 99.1 | 10.82 | 0.066 | 5.97 | -0.2 | 2.7 |
| | | 10:54:14 | 60 | 11.34 | 98.1 | 10.74 | 0.067 | 5.95 | -0.2 | 2.8 |
| | | 10:53:54 | 65 | 11.19 | 98 | 10.76 | 0.066 | 5.96 | -0.2 | 3 |
| | | 10:52:46 | 70 | 11.18 | 97.7 | 10.73 | 0.066 | 5.89 | -0.2 | 2.4 |
| | | 10:51:45 | 75 | 11.12 | 97 | 10.66 | 0.067 | 5.92 | -0.2 | 2.3 |
| | | 10:51:15 | 80 | 10.97 | 97.2 | 10.72 | 0.068 | 5.88 | -0.2 | 2.6 |
| | | 10:49:05 | 85 | 11 | 96.1 | 10.6 | 0.065 | 5.86 | -0.1 | 2.4 |
| | | 10:48:05 | 90 | 10.92 | 95.2 | 10.52 | 0.069 | 5.89 | -0.2 | 2.5 |
| | | 10:47:16 | 95 | 10.91 | 95 | 10.49 | 0.067 | 5.87 | -0.2 | 2.4 |
| 10:46:06 | 100 | 10.9 | 94.9 | 10.49 | 0.068 | 5.86 | -0.2 | 2.3 | | |
| 10:44:48 | 105 | 11.27 | 94.7 | 10.38 | 0.065 | 5.78 | -0.2 | 2.3 | | |
| 10:41:48 | 110 | 10.5 | 94.7 | 10.38 | 0.065 | 5.78 | -0.2 | 2.3 | | |
| 10:38:54 | 115 | 9.59 | 71.9 | 8.2 | 0.068 | 5.59 | 18 | 1 | | |
| WA-2 Lake Tower Secchi 3.95 M | 5/24/2007 | 12:50:06 | 0 | 18.8 | 99.2 | 9.24 | 0.072 | 6.49 | 0.4 | 1.4 |
| | | 12:48:58 | 5 | 18.1 | 97.9 | 9.25 | 0.072 | 6.43 | 0.3 | 1.4 |
| | | 12:48:09 | 10 | 17.61 | 96.5 | 9.21 | 0.072 | 6.38 | -0.1 | 2.3 |
| | | 12:47:12 | 15 | 17.35 | 94.7 | 9.08 | 0.072 | 6.3 | 0.2 | 1.3 |
| | | 12:46:09 | 20 | 16.23 | 90 | 8.84 | 0.07 | 6.25 | 0.7 | 1.5 |
| | | 12:45:18 | 25 | 16.04 | 88.6 | 8.74 | 0.071 | 6.24 | 0.3 | 1.3 |
| | | 12:44:22 | 30 | 15.63 | 87.4 | 8.69 | 0.072 | 6.22 | 0 | 1.5 |
| | | 12:43:21 | 35 | 15.19 | 87.4 | 8.77 | 0.074 | 6.19 | 0 | 2.1 |
| | | 12:42:27 | 40 | 15.07 | 87.7 | 8.83 | 0.073 | 6.18 | 0.4 | 1.3 |
| | | 12:41:16 | 45 | 14.65 | 86.8 | 8.81 | 0.074 | 6.15 | 0.2 | 1.5 |
| | | 12:39:36 | 50 | 14.37 | 87.1 | 8.9 | 0.07 | 6.13 | 0.4 | 1.2 |
| | | 12:38:40 | 55 | 14.26 | 87.2 | 8.93 | 0.075 | 6.12 | 0.5 | 1.8 |
| | | 12:37:54 | 60 | 14.09 | 87 | 8.95 | 0.074 | 6.08 | 0.3 | 1.7 |

2007 F.E. Walter Water Quality Profiles

| Station | Date | Time | Depth | Temp | DO | DO | SpCond | pH | Turbidity + | Chloro. |
|---------------------------|--------------------|----------|-------|-------|-------|------|--------------|------------|-------------|---------|
| | M/D/Y | hh:mm:ss | ft | C | % | mg/L | mS/cm | | NTU | ug/L |
| | 5/24/2007 Cont. | 12:37:08 | 65 | 13.83 | 86.5 | 8.95 | 0.074 | 6.06 | 0.5 | 1.8 |
| | | 12:36:10 | 70 | 13.72 | 85.2 | 8.83 | 0.074 | 6.05 | 0.6 | 1.6 |
| | | 12:34:26 | 75 | 13.53 | 85.7 | 8.92 | 0.07 | 6 | 0.9 | 2.2 |
| | | 12:33:20 | 80 | 13.46 | 85 | 8.87 | 0.071 | 6 | 0.8 | 1.3 |
| | | 12:31:59 | 85 | 13.42 | 85 | 8.87 | 0.072 | 5.98 | 1.2 | 1.7 |
| | | 12:29:57 | 90 | 13.38 | 83.8 | 8.76 | 0.073 | 5.84 | 1.7 | 1 |
| | | 12:28:18 | 95 | 13.14 | 81.6 | 8.58 | 0.072 | 5.76 | 1.5 | 1.7 |
| | | 12:26:44 | 100 | 12.85 | 73.5 | 7.77 | 0.073 | 5.68 | 3.6 | 1.5 |
| | | 12:24:53 | 105 | 12.69 | 70 | 7.43 | 0.073 | 5.62 | 6.1 | 1.6 |
| | | 12:23:20 | 110 | 12.53 | 58.9 | 6.27 | 0.073 | 5.59 | 23.3 | 1.9 |
| 12:22:18 | 115 | 12.44 | 55.4 | 5.91 | 0.073 | 5.64 | 51.7 | 1.8 | | |
| WA-2 Lake Tower | 6/7/2007 | 10:29:21 | 0 | 21.66 | 92.1 | 8.11 | 0.077 | 6.69 | 1.4 | 1.6 |
| | | 10:27:06 | 5 | 21.24 | 91.3 | 8.1 | 0.077 | 6.66 | 1.6 | 1.7 |
| | | 10:25:53 | 10 | 21.17 | 90.5 | 8.04 | 0.077 | 6.62 | 1.5 | 1.8 |
| | | 10:24:49 | 15 | 21.14 | 89.5 | 7.96 | 0.077 | 6.56 | 1.4 | 1.6 |
| | | 10:23:30 | 20 | 19.68 | 80.4 | 7.36 | 0.081 | 6.44 | 0.9 | -0.4 |
| | | 10:21:23 | 25 | 19.21 | 79.4 | 7.33 | 0.082 | 6.41 | 1.4 | 1.5 |
| | | 10:20:03 | 30 | 18.4 | 83.3 | 7.82 | 0.075 | 6.27 | 0.7 | 1.7 |
| | | 10:18:58 | 35 | 17.53 | 83.1 | 7.95 | 0.073 | 6.25 | 0.4 | 1.3 |
| | | 10:17:00 | 40 | 16.96 | 82.1 | 7.94 | 0.072 | 6.22 | 0.6 | 1.5 |
| | | 10:15:49 | 45 | 16.69 | 80.6 | 7.84 | 0.073 | 6.22 | 0.4 | 1.4 |
| | | 10:14:20 | 50 | 16.37 | 81.7 | 8 | 0.072 | 6.22 | 0.4 | 0.9 |
| | | 10:12:44 | 55 | 16.18 | 80 | 7.87 | 0.072 | 6.17 | 0.2 | 1 |
| | | 10:11:21 | 60 | 16 | 77.3 | 7.62 | 0.072 | 6.1 | 0.4 | 1.5 |
| | | 10:09:49 | 65 | 15.8 | 72.8 | 7.22 | 0.072 | 6.04 | 0.7 | 1.1 |
| | | 10:08:43 | 70 | 15.62 | 72 | 7.17 | 0.073 | 6.05 | 0.7 | 1.3 |
| | | 10:06:54 | 75 | 15.35 | 69.1 | 6.92 | 0.074 | 6 | 1.4 | 1 |
| | | 10:05:19 | 80 | 15.21 | 65.7 | 6.6 | 0.074 | 5.94 | 1.9 | 1.1 |
| 10:04:10 | 85 | 15.03 | 62.5 | 6.29 | 0.076 | 5.9 | 2.5 | 0.8 | | |
| 10:01:18 | 90 | 14.86 | 61.2 | 6.19 | 0.076 | 5.79 | 3.1 | 1.2 | | |
| 10:00:16 | 95 | 14.8 | 60.4 | 6.11 | 0.076 | 5.76 | 3.8 | 0.9 | | |
| 9:59:02 | 100 | 14.61 | 56.7 | 5.76 | 0.076 | 5.76 | 6.7 | 1.4 | | |
| 9:57:34 | 105 | 14.42 | 50.7 | 5.18 | 0.076 | 5.81 | 16.2 | 1.1 | | |
| 9:54:34 | 110 | 14.21 | 33.4 | 3.42 | 0.078 | 6.38 | 175.2 | 3.8 | | |
| WA-2 Lake Tower | 6/14/2007 | 10:11:22 | 0 | 22.96 | 97 | 8.33 | 0.078 | 6.87 | 1 | 1.9 |
| | | 10:10:14 | 5 | 22.98 | 97 | 8.32 | 0.078 | 6.83 | 1.3 | 2 |
| | | 10:09:30 | 10 | 22.98 | 96.5 | 8.28 | 0.078 | 6.78 | 1.3 | 2.2 |
| | | 10:08:19 | 15 | 22.72 | 90.9 | 7.84 | 0.078 | 6.62 | 1.6 | 1.3 |
| | | 10:06:37 | 20 | 20.92 | 81.1 | 7.24 | 0.078 | 6.45 | 1 | 1.8 |
| | | 10:05:28 | 25 | 20.1 | 77.7 | 7.05 | 0.08 | 6.39 | 1.2 | 1.2 |
| | | 10:04:15 | 30 | 19.6 | 76.2 | 6.98 | 0.08 | 6.35 | 1 | 1.8 |
| | | 10:03:06 | 35 | 18.96 | 77.2 | 7.17 | 0.078 | 6.33 | 0.8 | 1 |
| | | 10:01:33 | 40 | 18.51 | 78.1 | 7.32 | 0.078 | 6.31 | 0.4 | 1.6 |
| | | 9:59:59 | 45 | 17.95 | 78.7 | 7.46 | 0.077 | 6.24 | 0.6 | 1.3 |
| | | 9:59:11 | 50 | 17.6 | 76.9 | 7.34 | 0.075 | 6.21 | 0.5 | 0.9 |
| | | 9:58:10 | 55 | 17.22 | 78.2 | 7.52 | 0.074 | 6.2 | 0.2 | 1.5 |
| 9:56:59 | 60 | 17.03 | 78.4 | 7.57 | 0.073 | 6.16 | 0.2 | 1.4 | | |

2007 F.E. Walter Water Quality Profiles

| Station | Date | Time | Depth | Temp | DO | DO | SpCond | pH | Turbidity + | Chloro. |
|---|--------------------|----------|-------|-------|-------|------|--------|------|-------------|---------|
| | M/D/Y | hh:mm:ss | ft | C | % | mg/L | mS/cm | | NTU | ug/L |
| | 6/14/2007 Cont. | 9:55:28 | 65 | 16.8 | 74.8 | 7.25 | 0.073 | 6.08 | 0.4 | 1.3 |
| | | 9:54:16 | 70 | 16.59 | 74.6 | 7.27 | 0.073 | 6.08 | 0.7 | 1.2 |
| | | 9:52:38 | 75 | 16.47 | 73.1 | 7.14 | 0.073 | 6.06 | 0.9 | 1.4 |
| | | 9:51:33 | 80 | 16.39 | 73.6 | 7.2 | 0.073 | 6.08 | 0.7 | -0.2 |
| | | 9:50:04 | 85 | 16.27 | 69.4 | 6.81 | 0.073 | 6.04 | 1.6 | 1.8 |
| | | 9:48:45 | 90 | 16.17 | 68.4 | 6.73 | 0.074 | 6.01 | 1.6 | 0.8 |
| | | 9:47:04 | 95 | 16.05 | 62.3 | 6.14 | 0.076 | 5.83 | 2.1 | 0.8 |
| | | 9:44:29 | 100 | 15.76 | 54 | 5.36 | 0.077 | 5.71 | 6.6 | 0.7 |
| | | 9:43:16 | 105 | 15.68 | 51.1 | 5.07 | 0.077 | 5.73 | 6.2 | 1.1 |
| | | 9:41:44 | 110 | 15.44 | 41.9 | 4.18 | 0.077 | 5.78 | 27.4 | 1.4 |
| WA-2 Lake Tower Secchi 2.75 M | 6/21/2007 | 13:36:41 | 0 | 24.05 | 110.6 | 9.3 | 0.079 | 6.88 | 1.1 | 104.4 |
| | | 13:35:38 | 5 | 23.68 | 109 | 9.23 | 0.079 | 6.75 | 1.3 | 37.5 |
| | | 13:34:28 | 10 | 23.22 | 102.1 | 8.72 | 0.079 | 6.54 | 1.6 | -1 |
| | | 13:33:15 | 15 | 21.76 | 85.3 | 7.49 | 0.081 | 6.37 | 1.5 | 65 |
| | | 13:31:17 | 20 | 21.16 | 79.7 | 7.08 | 0.083 | 6.31 | 1 | 87.9 |
| | | 13:29:49 | 25 | 20.82 | 77.7 | 6.95 | 0.082 | 6.27 | 1 | 36.3 |
| | | 13:28:32 | 30 | 20.3 | 75.5 | 6.82 | 0.081 | 6.21 | 0.8 | 49.3 |
| | | 13:27:14 | 35 | 19.59 | 76.8 | 7.04 | 0.083 | 6.22 | 0.6 | 93.7 |
| | | 13:25:58 | 40 | 19.3 | 76 | 7 | 0.082 | 6.2 | 0.7 | 122.2 |
| | | 13:24:17 | 45 | 18.99 | 75 | 6.95 | 0.082 | 6.16 | 0.8 | 21.6 |
| | | 13:23:28 | 50 | 18.64 | 76 | 7.1 | 0.082 | 6.15 | 0.7 | 75.2 |
| | | 13:22:04 | 55 | 18.44 | 78.3 | 7.35 | 0.079 | 6.11 | 0.5 | 42.6 |
| | | 13:20:45 | 60 | 18.23 | 74.6 | 7.03 | 0.081 | 6.11 | 0.6 | 102.1 |
| | | 13:18:46 | 65 | 18.03 | 75.6 | 7.15 | 0.079 | 6.06 | 0.6 | 40.3 |
| | | 13:17:06 | 70 | 17.75 | 71.1 | 6.76 | 0.076 | 5.95 | 1 | 0.6 |
| | | 13:16:03 | 75 | 17.66 | 68.5 | 6.53 | 0.077 | 5.94 | 2.3 | 74.1 |
| | | 13:13:09 | 80 | 17.55 | 72.7 | 6.95 | 0.077 | 5.9 | 2.7 | 3.6 |
| | | 13:10:59 | 85 | 17.47 | 76.2 | 7.29 | 0.078 | 5.93 | 1.1 | 0.8 |
| | | 13:09:37 | 90 | 17.34 | 70.4 | 6.76 | 0.078 | 5.87 | 2.1 | -1.9 |
| | | 13:08:20 | 95 | 17.1 | 68.1 | 6.57 | 0.079 | 5.93 | 2.3 | 10.3 |
| 13:07:03 | 100 | 16.82 | 58.7 | 5.69 | 0.08 | 5.94 | 6.4 | 4.6 | | |
| 13:06:12 | 105 | 16.6 | 51.7 | 5.04 | 0.081 | 5.94 | 13.7 | 19.9 | | |
| 13:04:49 | 110 | 16.56 | 48.8 | 4.76 | 0.081 | 6.01 | 19.8 | 2.8 | | |
| WA-2 Lake Tower | 6/29/2007 | 9:51:54 | 0 | 24.7 | 108.9 | 9.04 | 0.082 | 7.04 | 0.9 | 1.1 |
| | | 9:50:29 | 5 | 24.71 | 108.1 | 8.98 | 0.082 | 6.98 | 1.3 | 0 |
| | | 9:49:08 | 10 | 24.49 | 104.3 | 8.7 | 0.081 | 6.81 | 1.8 | 0.7 |
| | | 9:48:12 | 15 | 22.49 | 94.1 | 8.15 | 0.08 | 6.54 | 1.1 | 0.2 |
| | | 9:46:50 | 20 | 21.77 | 79.9 | 7.02 | 0.08 | 6.28 | 0.9 | -0.1 |
| | | 9:45:42 | 25 | 21.03 | 69 | 6.15 | 0.082 | 6.19 | 0.6 | 0.3 |
| | | 9:44:31 | 30 | 20.59 | 67.8 | 6.09 | 0.083 | 6.21 | 0.4 | 0.3 |
| | | 9:43:06 | 35 | 20.42 | 67.9 | 6.12 | 0.084 | 6.21 | 0.8 | 0.4 |
| | | 9:42:26 | 40 | 20.04 | 66.9 | 6.07 | 0.083 | 6.23 | 0.4 | 0 |
| | | 9:41:07 | 45 | 19.77 | 65.9 | 6.01 | 0.084 | 6.16 | 0.3 | 2.3 |
| | | 9:39:12 | 50 | 19.54 | 66 | 6.06 | 0.083 | 6.12 | 0.8 | 1.3 |
| | | 9:38:05 | 55 | 19.33 | 65.9 | 6.07 | 0.083 | 6.09 | 0.4 | 0.3 |
| | | 9:37:04 | 60 | 19.06 | 65.3 | 6.05 | 0.083 | 6.12 | 0.2 | 1.9 |
| 9:35:34 | 65 | 18.84 | 63.8 | 5.94 | 0.084 | 6.11 | 0.7 | 1.3 | | |

2007 F.E. Walter Water Quality Profiles

| Station | Date | Time | Depth | Temp | DO | DO | SpCond | pH | Turbidity + | Chloro. |
|---|--------------------|----------|-------|-------|-------|------|--------|-------|-------------|---------|
| | M/D/Y | hh:mm:ss | ft | C | % | mg/L | mS/cm | | NTU | ug/L |
| WA-2 Lake Tower | 6/29/2007 Cont. | 9:33:17 | 70 | 18.67 | 61.1 | 5.71 | 0.083 | 6.06 | 0.9 | 0.9 |
| | | 9:31:47 | 75 | 18.47 | 57.3 | 5.37 | 0.082 | 6.02 | 1.6 | 1.1 |
| | | 9:29:37 | 80 | 18.41 | 59 | 5.54 | 0.083 | 6.06 | 1.6 | 0.5 |
| | | 9:28:19 | 85 | 18.37 | 56.9 | 5.34 | 0.083 | 6.03 | 2.5 | -0.4 |
| | | 9:26:55 | 90 | 18.35 | 56.4 | 5.3 | 0.084 | 6.02 | 2.3 | 0.6 |
| | | 9:25:37 | 95 | 18.32 | 56.4 | 5.3 | 0.084 | 6.02 | 2.9 | 1.8 |
| | | 9:24:19 | 100 | 18.17 | 56.2 | 5.3 | 0.084 | 6 | 3.8 | 2.2 |
| | | 9:22:34 | 105 | 17.93 | 45.6 | 4.32 | 0.084 | 5.77 | 8.5 | 2.8 |
| | | 9:21:24 | 110 | 17.7 | 33.7 | 3.21 | 0.086 | 5.75 | 25.3 | 1.2 |
| WA-2 Lake Tower | 7/12/2007 | | | | | | | | | |
| | | 12:07:37 | 0 | 25.14 | 101.6 | 8.37 | 0.084 | 7.17 | 1.1 | -1.4 |
| | | 12:06:04 | 5 | 24.84 | 100.6 | 8.34 | 0.084 | 7.09 | 1.4 | -2.9 |
| | | 12:04:31 | 10 | 24.7 | 98.5 | 8.18 | 0.084 | 6.91 | 1.1 | -2.5 |
| | | 12:03:25 | 15 | 23.13 | 89.1 | 7.62 | 0.082 | 6.49 | 1.4 | -2.5 |
| | | 12:00:28 | 20 | 21.98 | 73.1 | 6.39 | 0.082 | 6.22 | 0.9 | 6.7 |
| | | 11:59:19 | 25 | 21.44 | 56.8 | 5.02 | 0.083 | 6 | 0.5 | 2.6 |
| | | 11:58:25 | 30 | 21.17 | 53.5 | 4.75 | 0.083 | 5.99 | 1.3 | -0.5 |
| | | 11:57:06 | 35 | 20.95 | 52 | 4.64 | 0.084 | 5.96 | 0.5 | -1 |
| | | 11:55:35 | 40 | 20.74 | 51.3 | 4.6 | 0.083 | 5.92 | -0.2 | 2.2 |
| | | 11:53:43 | 45 | 20.56 | 50.9 | 4.57 | 0.084 | 5.92 | 0.5 | -1.4 |
| | | 11:52:14 | 50 | 20.36 | 49.6 | 4.48 | 0.084 | 5.84 | 0.2 | -3.3 |
| | | 11:51:19 | 55 | 20.16 | 48.4 | 4.38 | 0.084 | 5.81 | 0.8 | -1.3 |
| | | 11:49:41 | 60 | 20.04 | 46.5 | 4.23 | 0.083 | 5.78 | 0.5 | -3.1 |
| | | 11:48:14 | 65 | 19.93 | 45.4 | 4.14 | 0.082 | 5.75 | 1.3 | -3 |
| | | 11:47:01 | 70 | 19.86 | 42.4 | 3.86 | 0.084 | 5.75 | 1.6 | -2.9 |
| | | 11:45:31 | 75 | 19.73 | 42.5 | 3.88 | 0.084 | 5.69 | 1.8 | -3.1 |
| | | 11:43:35 | 80 | 19.57 | 44 | 4.03 | 0.085 | 5.61 | 2.1 | -2.3 |
| 11:42:30 | 85 | 19.4 | 41.8 | 3.84 | 0.087 | 5.61 | 4.8 | -2.7 | | |
| 11:41:19 | 90 | 19.33 | 39.8 | 3.67 | 0.087 | 5.31 | 3.5 | -2.4 | | |
| 11:40:21 | 95 | 19.26 | 38.5 | 3.55 | 0.088 | 5.32 | 4.4 | -2.7 | | |
| 11:39:29 | 100 | 19.21 | 34.3 | 3.17 | 0.088 | 5.41 | 6.3 | -3.2 | | |
| 11:38:23 | 105 | 18.95 | 24.3 | 2.26 | 0.089 | 5.64 | 16.1 | -3.1 | | |
| WA-2 Lake Tower Secchi 3.45 M | 7/19/2007 | | | | | | | | | |
| | | 10:49:25 | 0 | 24.79 | 97.6 | 8.1 | 0.08 | 6.96 | -6.2 | 0.1 |
| | | 10:48:22 | 5 | 24.77 | 96.3 | 7.99 | 0.08 | 6.89 | -7.7 | -1.9 |
| | | 10:47:26 | 10 | 24.76 | 94.8 | 7.87 | 0.08 | 6.75 | -8 | -0.3 |
| | | 10:46:28 | 15 | 23.57 | 86 | 7.3 | 0.079 | 6.43 | -4.4 | -1.6 |
| | | 10:45:35 | 20 | 22.33 | 66.8 | 5.81 | 0.078 | 6.17 | -5.9 | -0.5 |
| | | 10:44:35 | 25 | 21.8 | 61.3 | 5.38 | 0.078 | 6.12 | 384.7 | -47.8 |
| | | 10:43:13 | 30 | 21.63 | 55.9 | 4.93 | 0.078 | 6.07 | 72.1 | -83.7 |
| | | 10:42:05 | 35 | 21.4 | 51.2 | 4.53 | 0.079 | 6 | 606.2 | -99.9 |
| | | 10:40:49 | 40 | 21.1 | 48.2 | 4.29 | 0.08 | 5.94 | 115.8 | -99.9 |
| | | 10:39:54 | 45 | 20.85 | 47 | 4.2 | 0.08 | 5.91 | 1512.3 | -99.9 |
| | | 10:39:16 | 50 | 20.73 | 46.5 | 4.17 | 0.081 | 5.93 | 502 | -99.9 |
| | | 10:37:48 | 55 | 20.51 | 43.5 | 3.91 | 0.08 | 5.86 | -8.6 | -93.1 |
| | | 10:36:40 | 60 | 20.37 | 40.9 | 3.69 | 0.08 | 5.82 | -8.9 | -12.6 |
| | | 10:35:13 | 65 | 20.3 | 39.2 | 3.54 | 0.08 | 5.82 | -2 | -33.9 |
| 10:34:26 | 70 | 20.21 | 39.7 | 3.6 | 0.08 | 5.81 | -9.1 | -39.7 | | |
| 10:32:11 | 75 | 20.08 | 35.7 | 3.24 | 0.081 | 5.81 | -8.7 | -11.7 | | |

2007 F.E. Walter Water Quality Profiles

| Station | Date | Time | Depth | Temp | DO | DO | SpCond | pH | Turbidity + | Chloro. |
|---|--------------------|----------|-------|-------|-------|-------|--------|------|-------------|---------|
| | M/D/Y | hh:mm:ss | ft | C | % | mg/L | mS/cm | | NTU | ug/L |
| | 7/19/2007 Cont. | 10:31:06 | 80 | 19.96 | 35 | 3.19 | 0.081 | 5.83 | 8.8 | -2.6 |
| | | 10:29:44 | 85 | 19.82 | 25.5 | 2.33 | 0.083 | 5.78 | 350.6 | -17 |
| | | 10:28:37 | 90 | 19.78 | 25.1 | 2.29 | 0.083 | 5.75 | 25.8 | -9.7 |
| | | 10:26:53 | 95 | 19.75 | 22.2 | 2.03 | 0.084 | 5.67 | 23.3 | -6.7 |
| | | 10:25:34 | 100 | 19.62 | 19.2 | 1.76 | 0.084 | 5.63 | 29.9 | -5.9 |
| | | 10:23:26 | 105 | 19.26 | 7.2 | 0.66 | 0.09 | 5.88 | 41.3 | -66.4 |
| WA-2 Lake Tower | 8/3/2007 | 9:49:41 | 0 | 26.15 | 103.6 | 8.38 | 0.082 | 7.13 | x | x |
| | | 9:48:26 | 5 | 25.71 | 101.9 | 8.31 | 0.083 | 7.05 | x | x |
| | | 9:47:25 | 10 | 25.43 | 100.1 | 8.2 | 0.082 | 6.84 | x | x |
| | | 9:46:15 | 15 | 23.67 | 80.6 | 6.83 | 0.081 | 6.38 | x | x |
| | | 9:44:55 | 20 | 22.88 | 64.7 | 5.56 | 0.081 | 6.17 | x | x |
| | | 9:43:48 | 25 | 22.49 | 54.8 | 4.75 | 0.081 | 6.12 | x | x |
| | | 9:42:49 | 30 | 22.27 | 54.2 | 4.72 | 0.082 | 6.11 | x | x |
| | | 9:41:39 | 35 | 22.02 | 49.4 | 4.32 | 0.082 | 6.04 | x | x |
| | | 9:40:31 | 40 | 21.84 | 46.9 | 4.11 | 0.082 | 5.97 | x | x |
| | | 9:39:25 | 45 | 21.72 | 44.2 | 3.88 | 0.08 | 5.93 | x | x |
| | | 9:38:28 | 50 | 21.61 | 43.9 | 3.87 | 0.081 | 5.89 | x | x |
| | | 9:37:26 | 55 | 21.52 | 43.7 | 3.86 | 0.082 | 5.86 | x | x |
| | | 9:36:29 | 60 | 21.44 | 42.9 | 3.79 | 0.08 | 5.88 | x | x |
| | | 9:35:22 | 65 | 21.36 | 43.1 | 3.82 | 0.082 | 5.83 | x | x |
| | | 9:34:28 | 70 | 21.28 | 44.2 | 3.92 | 0.083 | 5.85 | x | x |
| | | 9:33:25 | 75 | 21.21 | 43.3 | 3.84 | 0.083 | 5.86 | x | x |
| | | 9:32:13 | 80 | 21.12 | 46.6 | 4.15 | 0.083 | 5.9 | x | x |
| | | 9:31:07 | 85 | 21.1 | 46.4 | 4.13 | 0.085 | 5.89 | x | x |
| | | 9:30:20 | 90 | 21.06 | 45.5 | 4.05 | 0.085 | 5.9 | x | x |
| 9:29:06 | 95 | 20.81 | 42.3 | 3.79 | 0.085 | 5.89 | x | x | | |
| 9:25:25 | 100 | 20.75 | 38.5 | 3.45 | 0.086 | 5.85 | x | x | | |
| 9:24:01 | 105 | 20.56 | 31.4 | 2.82 | 0.086 | 5.8 | x | x | | |
| WA-2 Lake Tower Secchi 2.70 M | 10/11/2007 | 11:23:51 | 0 | 20.32 | 94.6 | 8.55 | 0.084 | 6.84 | 5.4 | 10.3 |
| | | 11:23:06 | 5 | 20.32 | 93.9 | 8.49 | 0.084 | 6.83 | 5.5 | 9.3 |
| | | 11:21:40 | 10 | 20.31 | 93.1 | 8.41 | 0.084 | 6.74 | 5.5 | 9.9 |
| | | 11:20:24 | 15 | 20.24 | 87.3 | 7.9 | 0.085 | 6.61 | 5.8 | 10.1 |
| | | 11:19:17 | 20 | 19.46 | 68.4 | 6.28 | 0.087 | 6.45 | 8.1 | 3.2 |
| | | 11:18:02 | 25 | 19.11 | 70.2 | 6.49 | 0.089 | 6.44 | 9.9 | 2.6 |
| | | 11:16:43 | 30 | 19 | 66.4 | 6.16 | 0.088 | 6.43 | 10.6 | 2.5 |
| | | 11:15:29 | 35 | 18.77 | 61.3 | 5.71 | 0.088 | 6.41 | 13.5 | 2.5 |
| | | 11:14:17 | 40 | 18.73 | 59 | 5.5 | 0.088 | 6.42 | 16.6 | 2.9 |
| | | 11:13:01 | 45 | 18.66 | 55 | 5.14 | 0.088 | 6.44 | 21.6 | 2.6 |
| | | 11:11:14 | 50 | 18.65 | 51.6 | 4.82 | 0.088 | 6.5 | 25.2 | 2.7 |
| 11:09:49 | 52 | 18.61 | 49.8 | 4.66 | 0.088 | 6.65 | 40 | 3.9 | | |
| WA-2 Lake Tower | 11/6/2007 | 12:56:57 | 0 | 7.7 | 94.8 | 11.31 | 0.06 | 6.29 | 6.1 | 4 |
| | | 12:56:08 | 5 | 7.69 | 94.7 | 11.3 | 0.061 | 6.26 | 6.3 | 3.7 |
| | | 12:54:51 | 10 | 7.57 | 94.2 | 11.28 | 0.059 | 6.26 | 6.6 | 3.9 |
| | | 12:54:03 | 15 | 7.54 | 94.1 | 11.27 | 0.059 | 6.26 | 6.6 | 3.6 |
| | | 12:52:58 | 20 | 7.54 | 94.1 | 11.27 | 0.06 | 6.27 | 6.4 | 3.6 |
| | | 12:52:05 | 25 | 7.53 | 93.9 | 11.25 | 0.06 | 6.28 | 6.4 | 3.5 |

2007 F.E. Walter Water Quality Profiles

| Station | Date | Time | Depth | Temp | DO | DO | SpCond | pH | Turbidity + | Chloro. |
|--|--------------------|----------|-------|-------|-------|-------|--------|------|-------------|---------|
| | M/D/Y | hh:mm:ss | ft | C | % | mg/L | mS/cm | | NTU | ug/L |
| Secchi 2.30 M | 11/6/2007 Cont. | 12:50:59 | 30 | 7.5 | 93.7 | 11.23 | 0.06 | 6.21 | 6.6 | 3.8 |
| | | 12:50:00 | 35 | 7.17 | 93.1 | 11.26 | 0.061 | 6.22 | 24.5 | 3.8 |
| | | 12:49:07 | 40 | 7.11 | 93.2 | 11.28 | 0.061 | 6.21 | 8.7 | 3.8 |
| | | 12:48:24 | 45 | 7.1 | 93.2 | 11.28 | 0.061 | 6.18 | 8.5 | 3.7 |
| | | 12:47:44 | 50 | 7.07 | 93.3 | 11.3 | 0.062 | 6.13 | 100.7 | 7.8 |
| WA-3 Tobyhanna Creek Upstream | 5/24/2007 | 11:14:16 | 0 | 16.41 | 105.3 | 10.31 | 0.093 | 6.72 | 1 | 2 |
| | 6/21/2007 | 11:39:33 | 0 | 20.36 | 105.9 | 9.56 | 0.098 | 6.66 | 3.2 | 0.7 |
| | 7/19/2007 | 12:58:17 | 0 | 19.27 | 92.2 | 8.51 | 0.096 | 6.62 | 10.8 | -1.8 |
| | 10/11/2007 | 14:08:49 | 0 | 16.45 | 89.7 | 8.77 | 0.114 | 6.86 | 19.1 | 5.8 |
| | 11/6/2007 | 11:17:21 | 0 | 8.04 | 97 | 11.48 | 0.079 | 6.34 | 6.4 | 4.4 |
| | | | | | | | | | | |
| WA-4 Lehigh River Upstream | 5/24/2007 | 11:01:58 | 0 | 16.09 | 114.8 | 11.31 | 0.07 | 6.5 | 1.4 | 1.6 |
| | 6/21/2007 | 11:18:09 | 0 | 19.17 | 113.3 | 10.47 | 0.083 | 6.7 | 1.9 | -0.5 |
| | 7/19/2007 | 13:12:04 | 0 | 20.76 | 101.5 | 9.09 | 0.079 | 7.03 | 155.4 | -0.6 |
| | 10/11/2007 | 13:53:26 | 0 | 15.03 | 86.5 | 8.71 | 0.074 | 6.54 | 21.3 | 6.5 |
| | 11/6/2007 | 11:02:25 | 0 | 7.65 | 99.1 | 11.84 | 0.06 | 6.2 | 5.9 | 3.1 |
| | | | | | | | | | | |
| WA-5 Bear Creek Upstream | 5/24/2007 | 10:38:55 | 0 | 15.13 | 104.5 | 10.51 | 0.065 | 7.08 | 1.2 | 1.3 |
| | 6/21/2007 | 10:47:59 | 0 | 19.03 | 105 | 9.73 | 0.086 | 6.92 | 2 | -5.6 |
| | 7/19/2007 | 9:43:32 | 0 | 19.69 | 94.3 | 8.63 | 0.099 | 6.69 | -7.4 | -26 |
| | 10/11/2007 | 13:28:30 | 0 | 15.79 | 92.8 | 9.2 | 0.082 | 6.81 | 5.8 | 1.9 |
| | 11/6/2007 | 10:43:50 | 0 | 7.2 | 96.8 | 11.69 | 0.05 | 5.85 | 6.5 | 2 |
| | | | | | | | | | | |
| WA-6 Bear Creek Lake Arm | 5/24/2007 | 13:51:50 | 0 | 20.84 | 102.6 | 9.18 | 0.073 | 6.55 | 0.3 | 1.7 |
| | | 13:50:21 | 5 | 18.37 | 98.5 | 9.25 | 0.072 | 6.45 | 0.3 | 1.9 |
| | | 13:49:12 | 10 | 17.7 | 96.3 | 9.17 | 0.072 | 6.38 | 0.5 | 2 |
| | | 13:48:13 | 15 | 17.02 | 93.3 | 9.01 | 0.072 | 6.3 | -0.4 | 1.5 |
| | | 13:47:26 | 20 | 16.62 | 91.2 | 8.89 | 0.071 | 6.23 | 0.3 | 1.9 |
| | | 13:46:50 | 25 | 16.06 | 90.1 | 8.88 | 0.07 | 6.18 | 0.8 | 2 |
| | | 13:45:39 | 30 | 15.51 | 87.5 | 8.73 | 0.071 | 6.04 | 0.7 | 1.4 |
| | | 13:44:56 | 35 | 15.08 | 87 | 8.75 | 0.07 | 5.99 | 0.5 | 1.5 |
| | | 13:44:12 | 40 | 14.85 | 86.7 | 8.77 | 0.068 | 5.97 | 0.5 | 1 |
| | | 13:43:29 | 45 | 14.6 | 86.5 | 8.8 | 0.067 | 5.92 | 1.3 | 1.3 |
| | | 13:43:07 | 50 | 14.52 | 86.6 | 8.82 | 0.067 | 5.98 | 0.5 | 1.7 |
| | | 13:42:33 | 55 | 14.36 | 86.2 | 8.82 | 0.07 | 6.01 | 0.7 | 1.2 |
| | | 13:41:48 | 60 | 14.05 | 85.2 | 8.77 | 0.067 | 6.06 | 1.3 | 0.9 |
| | | 13:40:50 | 65 | 13.72 | 84.5 | 8.76 | 0.074 | 6.15 | 1.7 | 1.7 |
| | | 13:40:06 | 70 | 13.59 | 85 | 8.84 | 0.073 | 6.24 | 1.6 | 1.4 |
| | | 13:39:24 | 75 | 13.45 | 84.5 | 8.82 | 0.076 | 6.27 | 1.4 | 1.2 |
| 13:38:46 | 80 | 13.3 | 83.2 | 8.7 | 0.075 | 6.31 | 1.5 | 1.1 | | |
| 13:37:47 | 85 | 13.1 | 81.1 | 8.52 | 0.075 | 6.37 | 2.9 | 1.1 | | |

2007 F.E. Walter Water Quality Profiles

| Station | Date | Time | Depth | Temp | DO | DO | SpCond | pH | Turbidity + | Chloro. | | |
|--------------------------------|------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | M/D/Y | hh:mm:ss | ft | C | % | mg/L | mS/cm | | NTU | ug/L | | |
| WA-6 Bear Creek Lake Arm | 6/21/2007 | 14:39:29 | 0 | 25.38 | 112.3 | 9.22 | 0.08 | 6.89 | 1.2 | -8.1 | | |
| | | 14:38:34 | 5 | 23.76 | 108.3 | 9.16 | 0.079 | 6.74 | 1.4 | -7.6 | | |
| | | 14:37:54 | 10 | 23.35 | 104.3 | 8.88 | 0.079 | 6.62 | 1.8 | -7.4 | | |
| | | 14:36:14 | 15 | 22.29 | 90.6 | 7.88 | 0.078 | 6.23 | 0.9 | -8 | | |
| | | 14:35:14 | 20 | 21.21 | 76.9 | 6.82 | 0.08 | 6.15 | 1.2 | -7.3 | | |
| | | 14:34:31 | 25 | 20.58 | 74.5 | 6.69 | 0.079 | 6.13 | 1.7 | -7.2 | | |
| | | 14:33:52 | 30 | 20.22 | 73.9 | 6.69 | 0.08 | 6.09 | 1.1 | -7.2 | | |
| | | 14:31:54 | 35 | 19.84 | 75.2 | 6.85 | 0.084 | 6.1 | 0.8 | -7.3 | | |
| | | 14:31:10 | 40 | 19.34 | 73.2 | 6.74 | 0.079 | 6.02 | 1 | -7.2 | | |
| | | 14:30:29 | 45 | 19.02 | 74.1 | 6.87 | 0.085 | 6.05 | 1.3 | -6.9 | | |
| | | 14:29:26 | 50 | 18.7 | 74.7 | 6.97 | 0.085 | 6 | 1.3 | -6.7 | | |
| | | Missed |
| | | 14:28:33 | 60 | 18.36 | 75.4 | 7.09 | 0.081 | 6.01 | 1.1 | -6.2 | | |
| | | 14:27:49 | 65 | 18.11 | 76.8 | 7.26 | 0.079 | 6.07 | 0.5 | -6.6 | | |
| | | 14:26:28 | 70 | 17.84 | 77.5 | 7.36 | 0.078 | 6.1 | 0.8 | -4.2 | | |
| 14:25:14 | 75 | 17.64 | 72.5 | 6.92 | 0.078 | 6.15 | 1.4 | -7 | | | | |
| 14:24:06 | 80 | 17.41 | 69.7 | 6.68 | 0.079 | 6.23 | 2.9 | -7.1 | | | | |
| WA-6 Bear Creek Lake Arm | 7/19/2007 | 11:14:53 | 0 | 24.93 | 98.4 | 8.14 | 0.08 | 6.95 | -2.3 | -0.2 | | |
| | | 11:13:49 | 5 | 24.9 | 97 | 8.03 | 0.08 | 6.8 | -2.8 | 0 | | |
| | | 11:12:55 | 10 | 24.6 | 93.6 | 7.79 | 0.08 | 6.64 | 36.2 | -10.4 | | |
| | | 11:11:56 | 15 | 23.67 | 76.5 | 6.48 | 0.081 | 6.31 | -7 | -17.4 | | |
| | | 11:11:04 | 20 | 22.48 | 63.1 | 5.47 | 0.079 | 6.11 | -6.8 | -23.8 | | |
| | | 11:10:25 | 25 | 21.97 | 59.4 | 5.2 | 0.078 | 6.05 | -7 | -28.4 | | |
| | | 11:09:31 | 30 | 21.59 | 51.7 | 4.56 | 0.079 | 5.97 | -9.1 | -42.9 | | |
| | | 11:08:33 | 35 | 21.28 | 47.4 | 4.2 | 0.079 | 5.91 | 7.9 | -99.9 | | |
| | | 11:07:33 | 40 | 21.07 | 43 | 3.83 | 0.079 | 5.87 | -7.3 | -11.4 | | |
| | | 11:06:15 | 45 | 20.9 | 41.8 | 3.74 | 0.079 | 5.81 | 10.1 | -8.8 | | |
| | | 11:05:31 | 50 | 20.69 | 43.6 | 3.91 | 0.08 | 5.87 | -6.1 | -7.9 | | |
| | | 11:04:27 | 55 | 20.47 | 37.7 | 3.39 | 0.08 | 5.78 | 0.9 | -4.8 | | |
| | | 11:03:36 | 60 | 20.32 | 42.4 | 3.83 | 0.081 | 5.86 | -4.5 | -1.7 | | |
| | | 11:02:35 | 65 | 20.24 | 40.3 | 3.65 | 0.081 | 5.86 | -8 | -16.1 | | |
| | | 11:01:27 | 70 | 20.12 | 36.5 | 3.31 | 0.082 | 5.86 | -7.1 | -56.8 | | |
| 11:00:19 | 75 | 19.98 | 32.7 | 2.97 | 0.082 | 5.89 | -7.7 | -2.4 | | | | |
| WA-6 Bear Creek Lake Arm | 10/11/2007 | 12:03:07 | 0 | 20.17 | 89 | 8.07 | 0.086 | 6.7 | 6.2 | 7.7 | | |
| | | 12:02:17 | 5 | 20.21 | 87.7 | 7.94 | 0.086 | 6.68 | 6.2 | 8 | | |
| | | 12:00:56 | 10 | 19.92 | 79.4 | 7.23 | 0.088 | 6.58 | 6.5 | 3.3 | | |
| | | 11:59:11 | 15 | 19.58 | 73.7 | 6.76 | 0.085 | 6.53 | 7.1 | 2.9 | | |
| | | 11:57:37 | 20 | 19.32 | 80.3 | 7.4 | 0.089 | 6.63 | 14.1 | 3.3 | | |
| | | 11:56:34 | 22 | 19.21 | 78.4 | 7.24 | 0.089 | 6.61 | 51.5 | 3.6 | | |
| WA-6 Bear Creek Lake Arm | 11/6/2007 | 13:43:11 | 0 | 7.75 | 94.8 | 11.29 | 0.056 | 6.23 | 6.3 | 2.9 | | |
| | | 13:42:09 | 5 | 7.77 | 94.8 | 11.29 | 0.056 | 6.26 | 6.3 | 3.1 | | |
| | | 13:41:02 | 10 | 7.77 | 94.7 | 11.28 | 0.056 | 6.3 | 6.4 | 3.1 | | |
| | | 13:39:25 | 15 | 7.77 | 94.7 | 11.28 | 0.056 | 6.36 | 6.4 | 3.4 | | |
| | | 13:38:11 | 20 | 7.7 | 94.4 | 11.27 | 0.057 | 6.45 | 6.9 | 3.5 | | |
| | | 13:36:59 | 25 | 7.58 | 94.9 | 11.35 | 0.064 | 6.47 | 8 | 3.9 | | |

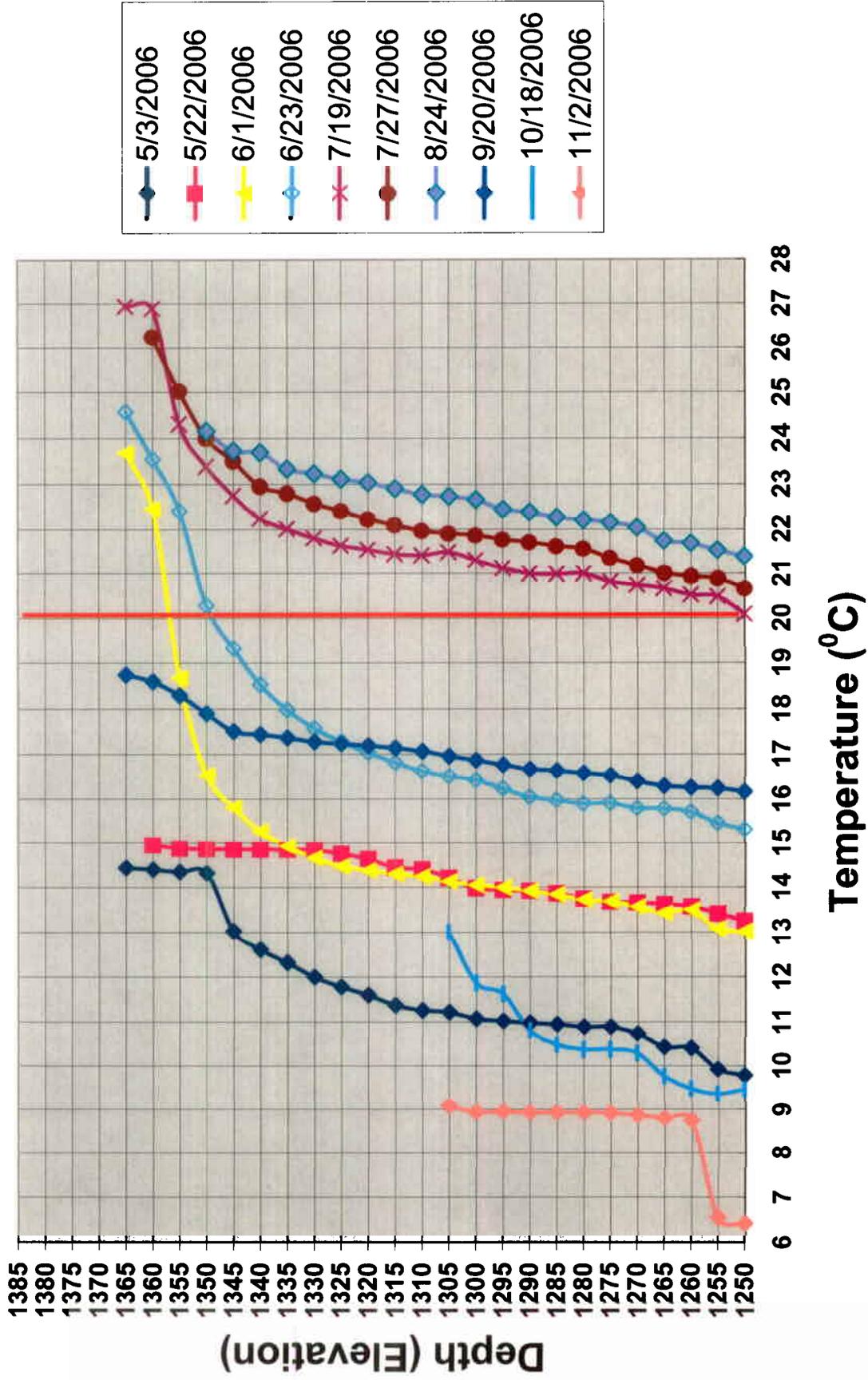
2007 F.E. Walter Water Quality Profiles

| Station | Date | Time | Depth | Temp | DO | DO | SpCond | pH | Turbidity + | Chloro. |
|----------------------------|-----------|----------|-------|-------|-------|------|--------|------|-------------|---------|
| | M/D/Y | hh:mm:ss | ft | C | % | mg/L | mS/cm | | NTU | ug/L |
| WA-7 Lehigh Lake Arm | 5/24/2007 | 13:27:46 | 0 | 19.93 | 100.9 | 9.18 | 0.073 | 6.48 | 0.2 | 1.8 |
| | | 13:26:57 | 5 | 18.38 | 99.1 | 9.31 | 0.074 | 6.45 | 0.6 | 1.8 |
| | | 13:26:14 | 10 | 17.63 | 96.1 | 9.16 | 0.073 | 6.41 | 0.4 | 2.1 |
| | | 13:25:37 | 15 | 17.16 | 94.2 | 9.07 | 0.072 | 6.39 | 0.2 | 1.7 |
| | | 13:24:26 | 20 | 16.58 | 91.2 | 8.89 | 0.071 | 6.31 | 0.6 | 2.4 |
| | | 13:23:51 | 25 | 16.17 | 89.2 | 8.77 | 0.071 | 6.3 | -0.2 | 2 |
| | | 13:22:48 | 30 | 15.38 | 87 | 8.7 | 0.075 | 6.28 | 0.3 | 1.8 |
| | | 13:22:06 | 35 | 14.98 | 86.4 | 8.71 | 0.075 | 6.3 | 0.7 | 1.4 |
| | | 13:20:18 | 40 | 14.78 | 87.4 | 8.85 | 0.075 | 6.25 | 0.6 | 1.3 |
| | | 13:19:30 | 45 | 14.66 | 88 | 8.94 | 0.077 | 6.26 | 0.6 | 1.7 |
| | | 13:18:56 | 50 | 14.5 | 87.7 | 8.94 | 0.076 | 6.29 | 0.5 | 1.8 |
| | | 13:18:07 | 55 | 14.28 | 88 | 9.01 | 0.077 | 6.32 | 0.4 | 1.6 |
| | | 13:17:27 | 60 | 14.08 | 87.9 | 9.05 | 0.077 | 6.38 | 0.8 | 2.4 |
| | | 13:16:44 | 65 | 13.92 | 87.6 | 9.04 | 0.076 | 6.41 | 0.8 | 2.2 |
| | | 13:16:05 | 70 | 13.69 | 87.2 | 9.04 | 0.078 | 6.45 | 1.4 | 2 |
| 13:15:29 | 75 | 13.55 | 85.3 | 8.88 | 0.079 | 6.47 | 3.9 | 1.5 | | |
| 13:14:42 | 80 | 13.45 | 81.8 | 8.54 | 0.079 | 6.5 | 19.8 | 2.2 | | |
| WA-7 Lehigh Lake Arm | 6/21/2007 | 14:06:33 | 0 | 24.31 | 110.5 | 9.25 | 0.079 | 6.89 | 1.4 | -7.9 |
| | | 14:05:33 | 5 | 24.18 | 109.1 | 9.15 | 0.079 | 6.77 | 1 | -7.8 |
| | | 14:04:45 | 10 | 23.5 | 103.6 | 8.81 | 0.08 | 6.62 | 2.3 | -7.3 |
| | | 14:02:23 | 15 | 21.84 | 85.4 | 7.49 | 0.083 | 6.37 | 2.1 | -4.3 |
| | | 14:01:43 | 20 | 21.18 | 79.3 | 7.04 | 0.082 | 6.33 | 1.6 | -6.3 |
| | | 14:00:46 | 25 | 20.61 | 77.3 | 6.94 | 0.083 | 6.34 | 1.3 | -6.3 |
| | | 13:59:18 | 30 | 20.25 | 76.7 | 6.94 | 0.085 | 6.3 | 1.1 | -6.7 |
| | | 13:58:26 | 35 | 19.93 | 76.2 | 6.93 | 0.085 | 6.26 | 1.3 | -6.7 |
| | | 13:57:40 | 40 | 19.54 | 76.1 | 6.98 | 0.086 | 6.23 | 1.8 | -4 |
| | | 13:56:51 | 45 | 19.1 | 75.4 | 6.98 | 0.087 | 6.18 | 2.1 | -6.3 |
| | | 13:56:05 | 50 | 18.89 | 73.1 | 6.8 | 0.087 | 6.17 | 2.9 | -4.3 |
| | | 13:54:32 | 55 | 18.58 | 72.6 | 6.79 | 0.087 | 6.11 | 4 | -6 |
| | | 13:53:34 | 60 | 18.15 | 71.5 | 6.75 | 0.087 | 6.1 | 3.7 | -3.1 |
| | | 13:52:31 | 65 | 17.99 | 70.6 | 6.69 | 0.087 | 6.13 | 3.7 | -5.2 |
| | | 13:51:22 | 70 | 17.67 | 70.6 | 6.73 | 0.085 | 6.17 | 2.7 | -3.7 |
| 13:49:34 | 75 | 17.39 | 67.7 | 6.49 | 0.083 | 6.21 | 3.9 | 16.6 | | |

2007 F.E. Walter Water Quality Profiles

| Station | Date | Time | Depth | Temp | DO | DO | SpCond | pH | Turbidity + | Chloro. |
|----------------------------|------------|----------|-------|-------|-------|-------|--------|-------|-------------|---------|
| | M/D/Y | hh:mm:ss | ft | C | % | mg/L | mS/cm | | NTU | ug/L |
| WA-7 Lehigh Lake Arm | 7/19/2007 | 11:44:54 | 0 | 24.98 | 98.2 | 8.12 | 0.082 | 6.9 | 403.3 | -76.3 |
| | | 11:44:03 | 5 | 24.89 | 96.8 | 8.02 | 0.082 | 6.82 | 332.4 | -29.4 |
| | | 11:43:05 | 10 | 24.41 | 94.3 | 7.88 | 0.08 | 6.66 | -0.4 | -5.2 |
| | | 11:42:08 | 15 | 23.7 | 89.1 | 7.54 | 0.079 | 6.5 | -3.9 | 0 |
| | | 11:40:36 | 20 | 22.64 | 62.5 | 5.4 | 0.08 | 6.16 | -5.1 | -1.8 |
| | | 11:39:23 | 25 | 21.93 | 61.4 | 5.37 | 0.079 | 6.12 | 208.2 | 0.1 |
| | | 11:37:54 | 30 | 21.61 | 48.4 | 4.26 | 0.081 | 6.03 | -2.2 | 0.2 |
| | | 11:36:52 | 35 | 21.3 | 45.7 | 4.05 | 0.083 | 6 | 20.3 | -2.5 |
| | | 11:35:50 | 40 | 21.06 | 47.2 | 4.2 | 0.081 | 5.93 | 33.2 | 0.5 |
| | | 11:34:44 | 45 | 20.87 | 39.6 | 3.54 | 0.085 | 5.95 | 1011.6 | -2 |
| | | 11:33:38 | 50 | 20.7 | 37.9 | 3.4 | 0.085 | 5.91 | 167.2 | -2.3 |
| | | 11:32:48 | 55 | 20.53 | 36.7 | 3.31 | 0.085 | 5.9 | -8.8 | -20.4 |
| | | 11:31:58 | 60 | 20.37 | 32.9 | 2.97 | 0.085 | 5.92 | -2.4 | -26.6 |
| | | 11:30:32 | 65 | 20.26 | 29.7 | 2.68 | 0.085 | 5.91 | 85 | -16.6 |
| 11:29:47 | 70 | 20.08 | 26.9 | 2.44 | 0.084 | 5.94 | 58.9 | -34.7 | | |
| 11:28:29 | 75 | 19.6 | 12.5 | 1.15 | 0.125 | 6.16 | 15.8 | -33.4 | | |
| WA-7 Lehigh Lake Arm | 10/11/2007 | 11:42:19 | 0 | 20.25 | 92.6 | 8.38 | 0.086 | 6.96 | 5.9 | 6.3 |
| | | 11:41:34 | 5 | 20.24 | 92.5 | 8.36 | 0.086 | 6.97 | 5.8 | 6.2 |
| | | 11:39:51 | 10 | 19.93 | 90 | 8.19 | 0.089 | 6.92 | 7 | 4.4 |
| | | 11:38:41 | 15 | 19.12 | 89.6 | 8.29 | 0.09 | 6.83 | 6.8 | 4.5 |
| | | 11:37:40 | 20 | 17.27 | 87.8 | 8.43 | 0.093 | 6.83 | 20.4 | 4.3 |
| | | 11:36:38 | 22 | 17.21 | 87.7 | 8.44 | 0.093 | 6.88 | 46.5 | 13.3 |
| WA-7 Lehigh Lake Arm | 11/6/2007 | 13:19:49 | 0 | 7.63 | 94.3 | 11.27 | 0.066 | 6.49 | 6.9 | 3.9 |
| | | 13:18:33 | 5 | 7.61 | 94.2 | 11.26 | 0.066 | 6.52 | 6.8 | 6.1 |
| | | 13:17:36 | 10 | 7.59 | 94.2 | 11.26 | 0.066 | 6.51 | 6.6 | 6.2 |
| | | 13:16:44 | 15 | 7.56 | 94 | 11.26 | 0.066 | 6.51 | 6.6 | 6.1 |
| | | 13:15:41 | 21 | 7.54 | 93.7 | 11.22 | 0.066 | 6.5 | 60.7 | 7.1 |

F.E. Walter Reservoir 2006 Seasonal Temperature Profile (WA-2 Tower)



2006 F.E. Walter Water Quality Profiles

| Station | Date | Time | Depth | Temp | DO | DO | SpCond | pH | Turbidity + | Chloro. |
|---------------------------|------------|----------|-------|-------|-------|-------|--------|------|-------------|---------|
| | M/D/Y | hh:mm:ss | ft | C | % | mg/L | mS/cm | | NTU | ug/L |
| WA-1 Outfall | 7/19/2006 | 10:56:38 | 0 | 21.11 | 96.5 | 8.58 | 0.055 | 6.29 | 10.6 | 3 |
| | 7/27/2006 | 9:57:25 | 0 | 21.57 | 95.1 | 8.39 | 0.054 | 6.18 | 9 | 2.2 |
| | 8/24/2006 | 15:21:25 | 0 | 22.13 | 92 | 8.02 | 0.065 | 6.69 | | 2.9 |
| | 9/20/2006 | 15:18:42 | 0 | 16.89 | 98.4 | 9.53 | 0.053 | 6.38 | 3.2 | 4.1 |
| | 10/18/2006 | 11:59:09 | 0 | 11.03 | 99.2 | 10.93 | 0.057 | 6.52 | 6.7 | 3.6 |
| | 11/2/2006 | 11:06:05 | 0 | 8.78 | 117.4 | 13.64 | 0.047 | 6.39 | 3.2 | 34.1 |
| WA-2 Lake Tower | | 10:38:42 | 0 | 14.44 | 125 | 12.76 | 0.076 | 6.77 | 3 | 4 |
| | | 10:38:07 | 5 | 14.4 | 124.9 | 12.75 | 0.076 | 6.75 | 3 | 6.2 |
| | | 10:37:06 | 10 | 14.35 | 123 | 12.58 | 0.076 | 6.69 | 3.1 | 7 |
| | | 10:36:34 | 15 | 14.32 | 119.6 | 12.24 | 0.076 | 6.63 | 3 | 6.2 |
| | | 10:35:55 | 20 | 13.03 | 113.2 | 11.92 | 0.076 | 6.42 | 2.9 | 3.4 |
| | | 10:35:32 | 25 | 12.6 | 111.5 | 11.85 | 0.075 | 6.34 | 2.8 | 2.9 |
| | | 10:35:06 | 30 | 12.32 | 110.3 | 11.8 | 0.077 | 6.31 | 2.9 | 2.3 |
| | | 10:34:41 | 35 | 12 | 109.9 | 11.85 | 0.076 | 6.27 | 2.8 | 2 |
| | | 10:33:12 | 40 | 11.78 | 108.5 | 11.75 | 0.076 | 6.26 | 2.9 | 2.4 |
| | | 10:32:42 | 45 | 11.6 | 107.8 | 11.73 | 0.076 | 6.25 | 2.9 | 2 |
| | 5/3/2006 | 10:32:13 | 50 | 11.37 | 107.8 | 11.79 | 0.076 | 6.22 | 2.9 | 2 |
| | | 10:31:34 | 55 | 11.26 | 107.9 | 11.83 | 0.074 | 6.19 | 3 | 2.5 |
| | | 10:30:58 | 60 | 11.22 | 107.9 | 11.84 | 0.075 | 6.2 | 3 | 2.1 |
| | | 10:30:15 | 65 | 11.07 | 108 | 11.89 | 0.075 | 6.18 | 3 | 2.1 |
| | | 10:29:40 | 70 | 11.02 | 107.8 | 11.88 | 0.073 | 6.12 | 2.9 | 1.8 |
| | | 10:28:32 | 75 | 10.98 | 107.9 | 11.9 | 0.076 | 6.15 | 2.9 | 2.7 |
| | | 10:28:05 | 80 | 10.95 | 107.5 | 11.87 | 0.075 | 6.05 | 3 | 2.6 |
| | | 10:27:27 | 85 | 10.89 | 107.2 | 11.85 | 0.075 | 6.04 | 3 | 2.4 |
| | | 10:26:57 | 90 | 10.89 | 107.3 | 11.86 | 0.075 | 5.99 | 3 | 2.5 |
| | | 10:26:25 | 95 | 10.73 | 107 | 11.88 | 0.073 | 5.96 | 2.9 | 2.2 |
| | | 10:25:42 | 100 | 10.42 | 104.8 | 11.71 | 0.071 | 5.94 | 2.9 | 2.3 |
| | 10:25:12 | 105 | 10.4 | 101.6 | 11.36 | 0.071 | 5.98 | 3.9 | 2.4 | |
| | 10:24:37 | 110 | 9.92 | 96.8 | 10.94 | 0.072 | 5.97 | 4.2 | 2.1 | |
| | 10:23:21 | 113 | 9.78 | 94.2 | 10.68 | 0.074 | 5.92 | 26.6 | 3.3 | |
| WA-2 Lake Tower | | 12:12:00 | 0 | 14.96 | 101.6 | 10.25 | 0.077 | 6.45 | 2.8 | 2.3 |
| | | 12:11:35 | 5 | 14.88 | 101.1 | 10.22 | 0.078 | 6.44 | 2.8 | 2.6 |
| | | 12:10:55 | 10 | 14.87 | 100.9 | 10.2 | 0.078 | 6.43 | 2.8 | 2.4 |
| | | 12:10:22 | 15 | 14.86 | 100.8 | 10.19 | 0.078 | 6.43 | 2.8 | 2.2 |
| | | 12:09:44 | 20 | 14.86 | 100.3 | 10.15 | 0.077 | 6.43 | 2.8 | 2.1 |
| | | 12:08:32 | 25 | 14.85 | 99.7 | 10.08 | 0.078 | 6.41 | 2.8 | 2.7 |
| | | 12:07:42 | 30 | 14.84 | 98.1 | 9.92 | 0.078 | 6.4 | 2.8 | 2.2 |
| | | 12:07:02 | 35 | 14.76 | 95.3 | 9.66 | 0.078 | 6.36 | 2.8 | 2 |
| | | 12:06:30 | 40 | 14.64 | 94.6 | 9.61 | 0.078 | 6.34 | 2.7 | 1.8 |
| | 5/22/2006 | 12:05:57 | 45 | 14.45 | 95.7 | 9.76 | 0.078 | 6.34 | 2.7 | 2.4 |
| | | 12:05:24 | 50 | 14.41 | 97.2 | 9.93 | 0.079 | 6.36 | 2.8 | 2.4 |
| | | 12:04:45 | 55 | 14.22 | 98 | 10.04 | 0.079 | 6.39 | 3.1 | 3 |
| | | 12:03:51 | 60 | 13.99 | 99.6 | 10.26 | 0.076 | 6.32 | 3.2 | 2 |
| | | 12:03:16 | 65 | 13.95 | 101 | 10.42 | 0.078 | 6.4 | 3.3 | 2.2 |
| | | 12:02:27 | 70 | 13.93 | 103.6 | 10.69 | 0.079 | 6.48 | 3.3 | 2.4 |
| | | 12:02:01 | 75 | 13.87 | 103.5 | 10.7 | 0.08 | 6.51 | 3.3 | 2.8 |
| | | 12:01:24 | 80 | 13.75 | 102.8 | 10.65 | 0.08 | 6.49 | 3.4 | 3 |
| | | 12:01:00 | 85 | 13.68 | 102.6 | 10.64 | 0.079 | 6.48 | 3.5 | 3 |
| | | 12:00:41 | 90 | 13.66 | 102.6 | 10.65 | 0.079 | 6.48 | 3.5 | 2.6 |
| | | 12:00:13 | 95 | 13.62 | 102.3 | 10.63 | 0.079 | 6.48 | 3.4 | 2.6 |
| | 11:59:44 | 100 | 13.57 | 102.5 | 10.67 | 0.079 | 6.48 | 3.5 | 3.5 | |
| | 11:58:38 | 105 | 13.41 | 102.9 | 10.74 | 0.08 | 6.49 | 3.6 | 2.5 | |
| | 11:57:49 | 110 | 13.24 | 104.1 | 10.91 | 0.08 | 6.52 | 3.8 | 2.8 | |

2006 F.E. Walter Water Quality Profiles

| Station | Date | Time | Depth | Temp | DO | DO | SpCond | pH | Turbidity + | Chloro. |
|---|-----------|----------|-------|-------|-------|-------|--------|-------|-------------|---------|
| | M/D/Y | hh:mm:ss | ft | C | % | mg/L | mS/cm | | NTU | ug/L |
| WA-2 Lake Tower Secchi 2.3 meters | | 11:21:52 | 0 | 23.69 | 112.1 | 9.49 | 0.078 | 6.73 | 1.8 | 2.3 |
| | | 11:21:05 | 5 | 22.47 | 108.9 | 9.44 | 0.078 | 6.65 | 1.8 | 2.5 |
| | | 11:19:42 | 10 | 18.68 | 108 | 10.08 | 0.077 | 6.53 | 1.9 | 3.2 |
| | | 11:18:54 | 15 | 16.54 | 98.7 | 9.63 | 0.076 | 6.4 | 1.9 | 3.2 |
| | | 11:18:06 | 20 | 15.82 | 94.8 | 9.4 | 0.076 | 6.33 | 1.8 | 2.5 |
| | | 11:17:07 | 25 | 15.28 | 93.3 | 9.35 | 0.076 | 6.33 | 1.8 | 2.8 |
| | | 11:15:08 | 30 | 14.93 | 92 | 9.29 | 0.077 | 6.32 | 1.7 | 2.1 |
| | | 11:14:28 | 35 | 14.67 | 91.5 | 9.3 | 0.077 | 6.31 | 1.8 | 1.8 |
| | 6/1/2006 | 11:13:39 | 40 | 14.48 | 91.9 | 9.37 | 0.077 | 6.34 | 1.7 | 2.2 |
| | | 11:12:36 | 45 | 14.39 | 91.4 | 9.33 | 0.077 | 6.31 | 1.8 | 2.2 |
| | | 11:11:12 | 50 | 14.31 | 90.9 | 9.3 | 0.076 | 6.28 | 1.7 | 1.9 |
| | | 11:10:03 | 55 | 14.25 | 89.9 | 9.21 | 0.076 | 6.27 | 1.8 | 1.9 |
| | | 11:09:20 | 60 | 14.14 | 89.1 | 9.16 | 0.075 | 6.24 | 1.9 | 1.8 |
| | | 11:08:31 | 65 | 14.06 | 89.3 | 9.18 | 0.076 | 6.27 | 1.8 | 1.5 |
| | | 11:07:53 | 70 | 14 | 88.9 | 9.16 | 0.075 | 6.25 | 1.9 | 1.7 |
| | | 11:07:11 | 75 | 13.93 | 87.9 | 9.08 | 0.075 | 6.25 | 2 | 1.6 |
| | | 11:06:40 | 80 | 13.85 | 90 | 9.3 | 0.075 | 6.28 | 1.9 | 1.9 |
| | | 11:05:59 | 85 | 13.73 | 89.2 | 9.25 | 0.075 | 6.27 | 2.1 | 1.7 |
| | | 11:04:42 | 90 | 13.69 | 87.1 | 9.04 | 0.075 | 6.24 | 2.1 | 1.7 |
| | | 11:03:55 | 95 | 13.57 | 87.8 | 9.14 | 0.076 | 6.3 | 2.1 | 1.9 |
| | 11:03:19 | 100 | 13.43 | 87.1 | 9.08 | 0.076 | 6.31 | 2.4 | 1.9 | |
| | 11:02:41 | 105 | 13.5 | 84 | 8.75 | 0.076 | 6.31 | 3.5 | 1.9 | |
| | 11:02:03 | 110 | 13.08 | 79.1 | 8.32 | 0.077 | 6.31 | 4.1 | 2.2 | |
| | 11:01:14 | 113 | 13.02 | 79 | 8.32 | 0.077 | 6.3 | 5.2 | 2.2 | |
| WA-2 Lake Tower | | 13:58:52 | 0 | 24.57 | 115.5 | 9.62 | 0.078 | 6.8 | 2 | 3.6 |
| | | 13:58:20 | 5 | 23.55 | 112.1 | 9.52 | 0.077 | 6.72 | 2 | 5.1 |
| | | 13:57:22 | 10 | 22.41 | 101.6 | 8.81 | 0.077 | 6.54 | 1.9 | 3.2 |
| | | 13:56:14 | 15 | 20.28 | 95.7 | 8.65 | 0.076 | 6.45 | 1.9 | 2.3 |
| | | 13:55:06 | 20 | 19.33 | 86.5 | 7.97 | 0.076 | 6.34 | 1.9 | 2.2 |
| | | 13:54:12 | 25 | 18.53 | 79.4 | 7.43 | 0.076 | 6.27 | 1.9 | 1.9 |
| | | 13:53:12 | 30 | 17.98 | 74.8 | 7.09 | 0.077 | 6.25 | 1.9 | 2.1 |
| | | 13:52:34 | 35 | 17.58 | 75.2 | 7.18 | 0.077 | 6.24 | 1.9 | 2.2 |
| | | 13:51:15 | 40 | 17.29 | 76.7 | 7.37 | 0.077 | 6.23 | 1.9 | 2.2 |
| | 6/23/2006 | 13:50:41 | 45 | 17.04 | 76.9 | 7.42 | 0.076 | 6.22 | 1.9 | 2.3 |
| | | 13:49:55 | 50 | 16.82 | 75.4 | 7.32 | 0.076 | 6.2 | 2 | 1.9 |
| | | 13:49:16 | 55 | 16.63 | 73.6 | 7.17 | 0.078 | 6.22 | 1.9 | 2.2 |
| | | 13:48:32 | 60 | 16.51 | 65.2 | 6.36 | 0.075 | 6.05 | 2.3 | 1.9 |
| | | 13:47:31 | 65 | 16.43 | 65.3 | 6.39 | 0.075 | 6.03 | 2.4 | 1.5 |
| | | 13:46:00 | 70 | 16.24 | 71 | 6.97 | 0.077 | 6.17 | 2.1 | 1.9 |
| | | 13:45:00 | 75 | 16.05 | 69.5 | 6.85 | 0.077 | 6.16 | 2.2 | 2.1 |
| | | 13:44:17 | 80 | 15.98 | 67 | 6.62 | 0.078 | 6.18 | 2.4 | 2.3 |
| | | 13:43:24 | 85 | 15.9 | 66.3 | 6.55 | 0.078 | 6.18 | 2.5 | 1.6 |
| | | 13:42:44 | 90 | 15.91 | 65.5 | 6.47 | 0.078 | 6.19 | 3.6 | 2.2 |
| | | 13:42:11 | 95 | 15.8 | 65 | 6.44 | 0.079 | 6.19 | 17 | 3.6 |
| | 13:40:40 | 100 | 15.79 | 62.5 | 6.2 | 0.079 | 6.21 | 10.6 | 2.3 | |
| | 13:40:01 | 105 | 15.71 | 58.4 | 5.8 | 0.079 | 6.23 | 71.1 | 4.8 | |
| | 13:39:04 | 110 | 15.46 | 49 | 4.89 | 0.08 | 6.26 | 8.6 | 3.4 | |
| | 13:38:26 | 112 | 15.31 | 46 | 4.61 | 0.081 | 6.27 | 803.7 | 10.6 | |

2006 F.E. Walter Water Quality Profiles

| Station | Date M/D/Y | Time hh:mm:ss | Depth ft | Temp C | DO % | DO mg/L | SpCond mS/cm | pH | Turbidity + NTU | Chloro. ug/L | |
|---------|------------------|------------------|-------------|-----------|---------|------------|-----------------|-------|--------------------|-----------------|-----|
| WA-2 | | 9:23:12 | 0 | 26.94 | 91.1 | 7.26 | 0.049 | 6.32 | 3.1 | 6.2 | |
| | | 9:22:02 | 5 | 26.89 | 85.9 | 6.86 | 0.049 | 6.26 | 3.2 | 4.9 | |
| | | 9:21:10 | 10 | 24.31 | 60.5 | 5.06 | 0.049 | 5.94 | 3.6 | 4.9 | |
| | | 9:20:02 | 15 | 23.39 | 52.7 | 4.49 | 0.049 | 5.9 | 2.6 | 3.9 | |
| | | 9:18:28 | 20 | 22.76 | 48.8 | 4.2 | 0.051 | 5.95 | 2.9 | 3.7 | |
| | | 9:16:49 | 25 | 22.24 | 47.8 | 4.16 | 0.05 | 5.85 | 3.3 | 3.3 | |
| | | 9:15:27 | 30 | 22.01 | 45.7 | 4 | 0.049 | 5.81 | 3.2 | 3.5 | |
| | | 9:14:06 | 35 | 21.8 | 45 | 3.95 | 0.048 | 5.8 | 2.8 | 3.7 | |
| | | 9:13:19 | 40 | 21.63 | 43.9 | 3.87 | 0.048 | 5.77 | 3.8 | 4.2 | |
| | | 9:12:26 | 45 | 21.54 | 43.7 | 3.86 | 0.049 | 5.78 | 3.6 | 3.8 | |
| | | 9:11:41 | 50 | 21.44 | 43.3 | 3.83 | 0.048 | 5.74 | 3.2 | 3.7 | |
| | Lake Tower | 7/19/2006 | 9:11:04 | 55 | 21.41 | 43.9 | 3.89 | 0.047 | 5.74 | 2.7 | 3.5 |
| | | | 9:10:29 | 60 | 21.48 | 43.9 | 3.88 | 0.048 | 5.76 | 3 | 3.5 |
| | | | 9:07:39 | 70 | 21.12 | 42.3 | 3.76 | 0.049 | 5.82 | 3.9 | 4 |
| | Secchi 1.05 M | | 9:06:30 | 75 | 21 | 43.5 | 3.87 | 0.052 | 5.92 | 5.3 | 2.9 |
| | | 9:03:56 | 80 | 20.99 | 43.7 | 3.9 | 0.051 | 5.92 | 5.2 | 3.5 | |
| | | 9:02:32 | 85 | 21 | 44.5 | 3.96 | 0.052 | 5.94 | 4.8 | 2.9 | |
| | | 9:01:17 | 90 | 20.82 | 45.7 | 4.09 | 0.054 | 6 | 6.6 | 3.1 | |
| | | 9:00:17 | 95 | 20.74 | 45 | 4.03 | 0.057 | 6.02 | 7.7 | 2.5 | |
| | | 8:58:58 | 100 | 20.66 | 45.5 | 4.08 | 0.058 | 6.03 | 8.5 | 2.3 | |
| | | 8:57:47 | 105 | 20.52 | 46.8 | 4.21 | 0.059 | 6.07 | 10.9 | 2.2 | |
| | | 8:56:36 | 110 | 20.48 | 50.3 | 4.53 | 0.06 | 6.09 | 11.5 | 3 | |
| | | 8:55:31 | 115 | 20.09 | 45.6 | 4.13 | 0.063 | 6.18 | 19.2 | 2.7 | |
| ----- | | | | | | | | | | | |
| WA-2 | | 11:21:43 | 0 | 26.25 | 87.2 | 7.04 | 0.051 | 6.39 | 2.7 | 3.8 | |
| | | 11:20:51 | 5 | 25.03 | 76 | 6.28 | 0.051 | 6.24 | 2.8 | 4.1 | |
| | | 11:20:03 | 10 | 24.01 | 52.4 | 4.41 | 0.05 | 5.98 | 2.9 | 4.7 | |
| | | 11:19:10 | 15 | 23.52 | 36 | 3.06 | 0.052 | 5.9 | 2.9 | 4.2 | |
| | | 11:18:28 | 20 | 22.96 | 39.1 | 3.36 | 0.056 | 6.02 | 2.7 | 4.4 | |
| | | 11:17:45 | 25 | 22.81 | 38.7 | 3.33 | 0.055 | 5.99 | 2.8 | 3.9 | |
| | | 11:17:07 | 30 | 22.58 | 38.1 | 3.29 | 0.054 | 5.98 | 2.7 | 3.4 | |
| | | 11:16:17 | 35 | 22.42 | 35.8 | 3.1 | 0.054 | 5.95 | 2.5 | 3.3 | |
| | | 11:15:42 | 40 | 22.23 | 33 | 2.87 | 0.052 | 5.84 | 3 | 3.1 | |
| | | 11:15:03 | 45 | 22.1 | 37.5 | 3.27 | 0.055 | 5.97 | 3.2 | 3 | |
| | Lake Tower | 7/27/2006 | 11:14:09 | 50 | 21.97 | 39.4 | 3.45 | 0.056 | 6.02 | 3.2 | 2.8 |
| | | | 11:13:33 | 55 | 21.91 | 37.3 | 3.27 | 0.054 | 5.96 | 3.3 | 2.8 |
| | | | 11:13:00 | 60 | 21.87 | 35.2 | 3.08 | 0.054 | 5.94 | 3.5 | 2.9 |
| | | | 11:12:26 | 65 | 21.77 | 33.9 | 2.98 | 0.052 | 5.84 | 4 | 2.1 |
| | | | 11:11:35 | 70 | 21.71 | 35.5 | 3.12 | 0.052 | 5.84 | 4.7 | 2.4 |
| | | 11:10:31 | 75 | 21.62 | 36.7 | 3.23 | 0.051 | 5.79 | 5.8 | 2.3 | |
| | | 11:09:48 | 80 | 21.56 | 39.1 | 3.45 | 0.051 | 5.82 | 6.7 | 2.4 | |
| | | 11:08:11 | 85 | 21.35 | 45.5 | 4.02 | 0.053 | 5.91 | 7.8 | 2.5 | |
| | | 11:07:29 | 90 | 21.18 | 50.2 | 4.46 | 0.055 | 6.07 | 8.5 | 2.3 | |
| | | 11:06:39 | 95 | 21.01 | 50.4 | 4.49 | 0.056 | 6.09 | 9 | 2.4 | |
| | | 11:06:00 | 100 | 20.94 | 51.1 | 4.56 | 0.056 | 6.08 | 9.9 | 2.8 | |
| | | 11:05:07 | 105 | 20.89 | 50.2 | 4.49 | 0.056 | 6.11 | 11.9 | 2 | |
| | | 11:04:08 | 107 | 20.66 | 43.5 | 3.91 | 0.059 | 6.14 | 25 | 4 | |

2006 F.E. Walter Water Quality Profiles

| Station | Date | Time | Depth | Temp | DO | DO | SpCond | pH | Turbidity + | Chloro. | |
|-----------------------|------------------|-----------|----------|-------|-------|------|--------|-------|-------------|---------|-----|
| | M/D/Y | hh:mm:ss | ft | C | % | mg/L | mS/cm | | NTU | ug/L | |
| WA-2 Lake Tower | | 13:27:44 | 0 | 24.16 | 83.4 | 7 | 0.055 | 6.43 | | 6.8 | |
| | | 13:25:55 | 5 | 23.73 | 76.1 | 6.44 | 0.055 | 6.33 | | 7.5 | |
| | | 13:24:56 | 10 | 23.7 | 74.8 | 6.33 | 0.055 | 6.29 | | 7.4 | |
| | | 13:23:32 | 15 | 23.34 | 55.7 | 4.75 | 0.055 | 6.16 | | 6.2 | |
| | | 13:22:14 | 20 | 23.24 | 40.9 | 3.49 | 0.055 | 6.09 | | 4.3 | |
| | | 13:20:15 | 25 | 23.12 | 32.2 | 2.76 | 0.055 | 6.02 | | 4.1 | |
| | | 13:18:59 | 30 | 23.04 | 23 | 1.98 | 0.055 | 6.02 | | 4.2 | |
| | | 13:17:34 | 35 | 22.91 | 14.8 | 1.27 | 0.056 | 5.99 | | 3.4 | |
| | | 8/24/2006 | 13:16:13 | 40 | 22.78 | 16.4 | 1.41 | 0.056 | 5.99 | | 3.3 |
| | | | 13:14:25 | 45 | 22.74 | 16.5 | 1.42 | 0.056 | 6.01 | | 3.4 |
| | | | 13:13:34 | 50 | 22.67 | 16.6 | 1.43 | 0.056 | 6.01 | | 3 |
| | Secchi 1.55 M | | 13:12:29 | 55 | 22.45 | 17.8 | 1.54 | 0.057 | 6.04 | | 3.1 |
| | | | 13:10:41 | 60 | 22.39 | 21 | 1.82 | 0.058 | 6.09 | | 2.7 |
| | | | 13:09:07 | 65 | 22.27 | 23.2 | 2.02 | 0.06 | 6.15 | | 2.4 |
| | | | 13:07:38 | 70 | 22.21 | 28.3 | 2.46 | 0.061 | 6.21 | | 3 |
| | | | 13:06:14 | 75 | 22.15 | 32.8 | 2.86 | 0.064 | 6.29 | | 2.8 |
| | | 13:04:32 | 80 | 22.04 | 38.6 | 3.38 | 0.067 | 6.35 | | 3.4 | |
| | | 13:03:16 | 85 | 21.74 | 38.9 | 3.42 | 0.069 | 6.39 | | 2.8 | |
| | | 13:02:25 | 90 | 21.68 | 41.4 | 3.64 | 0.07 | 6.42 | | 3 | |
| | | 13:01:14 | 95 | 21.52 | 41.7 | 3.68 | 0.071 | 6.45 | | 3.9 | |
| | | | 13:00:13 | 100 | 21.38 | 42.1 | 3.73 | 0.072 | 6.47 | | 4 |
| WA-2 Lake Tower | | 13:37:53 | 0 | 18.74 | 83.1 | 7.75 | 0.054 | 6.36 | 2.1 | 4 | |
| | | 13:36:22 | 5 | 18.59 | 77.8 | 7.28 | 0.054 | 6.32 | 2 | 4.3 | |
| | | 13:35:23 | 10 | 18.29 | 71.6 | 6.73 | 0.055 | 6.27 | 1.7 | 3.9 | |
| | | 13:34:23 | 15 | 17.9 | 67.9 | 6.44 | 0.056 | 6.24 | 1.6 | 3.6 | |
| | | 13:33:37 | 20 | 17.51 | 67.5 | 6.46 | 0.058 | 6.3 | 1.5 | 3.6 | |
| | | 13:32:27 | 25 | 17.44 | 68.4 | 6.55 | 0.058 | 6.31 | 1.5 | 3.9 | |
| | | 13:31:47 | 30 | 17.37 | 69.2 | 6.64 | 0.059 | 6.31 | 1.6 | 3.8 | |
| | | 13:30:53 | 35 | 17.28 | 71 | 6.82 | 0.058 | 6.31 | 1.7 | 3.7 | |
| | | 13:29:57 | 40 | 17.24 | 70.5 | 6.78 | 0.059 | 6.32 | 1.6 | 3.9 | |
| | | 9/20/2006 | 13:28:42 | 45 | 17.19 | 70.2 | 6.75 | 0.058 | 6.33 | 1.7 | 3.7 |
| | | | 13:27:23 | 50 | 17.14 | 76.3 | 7.35 | 0.056 | 6.35 | 2.1 | 3.9 |
| | | | 13:26:21 | 55 | 17.07 | 76.4 | 7.38 | 0.056 | 6.34 | 2.2 | 4.3 |
| | | | 13:24:31 | 60 | 16.96 | 80.5 | 7.79 | 0.055 | 6.37 | 2.3 | 4.5 |
| | Secchi 2.0 M | | 13:23:26 | 65 | 16.87 | 81.7 | 7.92 | 0.054 | 6.35 | 2.3 | 4.9 |
| | | | 13:22:30 | 70 | 16.77 | 80.7 | 7.84 | 0.054 | 6.34 | 2.4 | 4.5 |
| | | | 13:21:30 | 75 | 16.67 | 81 | 7.88 | 0.054 | 6.31 | 2.5 | 4.5 |
| | | 13:19:59 | 80 | 16.64 | 80.2 | 7.81 | 0.052 | 6.27 | 2.5 | 4.1 | |
| | | 13:19:14 | 85 | 16.58 | 80.1 | 7.81 | 0.05 | 6.27 | 2.7 | 3.6 | |
| | | 13:18:24 | 90 | 16.53 | 81.2 | 7.92 | 0.053 | 6.27 | 3 | 3.4 | |
| | | 13:16:06 | 95 | 16.4 | 78.7 | 7.7 | 0.051 | 6.24 | 4.3 | 3.7 | |
| | | 13:15:01 | 100 | 16.29 | 76.3 | 7.48 | 0.052 | 6.24 | 6.9 | 3.7 | |
| | | 13:13:48 | 105 | 16.26 | 74.6 | 7.32 | 0.052 | 6.24 | 8 | 4 | |
| | | 13:12:05 | 110 | 16.24 | 69.1 | 6.79 | 0.053 | 6.24 | 11.4 | 4 | |
| | | 13:10:24 | 116 | 16.16 | 54.5 | 5.36 | 0.056 | 6.26 | 28.9 | 4.6 | |

2006 F.E. Walter Water Quality Profiles

| Station | Date | Time | Depth | Temp | DO | DO | SpCond | pH | Turbidity + | Chloro. |
|---|------------|----------|-------|-------|-------|-------|--------|------|-------------|---------|
| | M/D/Y | hh:mm:ss | ft | C | % | mg/L | mS/cm | | NTU | ug/L |
| WA-2 Lake Tower Secchi 1.30 M | | 13:05:26 | 0 | 13 | 84.8 | 8.93 | 0.051 | 6.47 | 4.3 | 4.7 |
| | | 13:04:05 | 5 | 11.87 | 84.3 | 9.11 | 0.054 | 6.52 | 4.5 | 3.2 |
| | | 13:02:53 | 10 | 11.63 | 86.5 | 9.39 | 0.055 | 6.53 | 4.7 | 3.1 |
| | | 13:01:05 | 15 | 10.81 | 90.5 | 10.03 | 0.058 | 6.58 | 6 | 3.1 |
| | 10/18/2006 | 12:59:54 | 20 | 10.48 | 91.5 | 10.21 | 0.059 | 6.58 | 7.1 | 3.4 |
| | | 12:59:06 | 25 | 10.37 | 91.5 | 10.23 | 0.06 | 6.57 | 8.1 | 3.4 |
| | | 12:57:51 | 30 | 10.37 | 91.2 | 10.2 | 0.06 | 6.55 | 7.8 | 3.4 |
| | | 12:56:05 | 35 | 10.29 | 90.6 | 10.16 | 0.06 | 6.5 | 8.6 | 3.7 |
| | | 12:54:45 | 40 | 9.77 | 88.7 | 10.07 | 0.059 | 6.46 | 10.9 | 3.4 |
| | | 12:53:30 | 45 | 9.48 | 86.8 | 9.92 | 0.06 | 6.43 | 11.6 | 3.3 |
| | 12:52:21 | 50 | 9.36 | 81.7 | 9.36 | 0.062 | 6.42 | 25.4 | 3.2 | |
| | 12:50:43 | 54 | 9.46 | 80.1 | 9.16 | 0.062 | 6.45 | 38.2 | 4.3 | |
| WA-2 Lake Tower Secchi 2.1 M | | 12:04:57 | 0 | 9.09 | 112.9 | 13.03 | 0.045 | 6.43 | 2.1 | 3.1 |
| | | 12:04:13 | 5 | 8.94 | 113 | 13.08 | 0.046 | 6.48 | 2.1 | 3.4 |
| | | 12:03:30 | 10 | 8.95 | 112.9 | 13.07 | 0.048 | 6.48 | 2.1 | 4.2 |
| | | 12:02:00 | 15 | 8.93 | 112.9 | 13.07 | 0.049 | 6.48 | 2.1 | 3.6 |
| | 11/2/2006 | 12:01:08 | 20 | 8.93 | 113 | 13.08 | 0.049 | 6.48 | 2.2 | 3.7 |
| | | 12:00:30 | 25 | 8.93 | 113 | 13.08 | 0.049 | 6.46 | 2.3 | 3.9 |
| | | 11:59:54 | 30 | 8.92 | 112.9 | 13.08 | 0.049 | 6.45 | 2.3 | 3.9 |
| | | 11:59:14 | 35 | 8.87 | 112.8 | 13.08 | 0.049 | 6.42 | 2.5 | 3.9 |
| | | 11:58:27 | 40 | 8.8 | 112.4 | 13.06 | 0.048 | 6.39 | 2.1 | 3.8 |
| | | 11:57:30 | 45 | 8.75 | 111.4 | 12.96 | 0.047 | 6.32 | 2.5 | 3.4 |
| | 11:56:44 | 50 | 6.56 | 108.8 | 13.36 | 0.048 | 6.29 | 5 | 3.5 | |
| | 11:56:05 | 53 | 6.43 | 110 | 13.54 | 0.05 | 6.31 | 7.1 | 4.4 | |
| WA-3 Tobyhanna Creek Upstream | 7/19/2006 | 7:07:07 | 0 | 21.33 | 102.4 | 9.07 | 0.065 | 6.67 | 4.1 | 3.5 |
| | 8/24/2006 | 11:34:54 | 0 | 18.82 | 98.7 | 9.18 | 0.084 | 7.47 | 1.6 | 2.4 |
| | 9/20/2006 | 11:29:39 | 0 | 15.83 | 94.3 | 9.34 | 0.066 | 6.51 | 2.2 | 6.3 |
| | 10/18/2006 | 11:33:35 | 0 | 11.38 | 99.8 | 10.91 | 0.068 | 6.7 | 3.2 | 5.6 |
| | 11/2/2006 | 10:40:38 | 0 | 7.35 | 117.3 | 14.11 | 0.064 | 6.4 | 2.1 | 5.3 |
| WA-4 Lehigh River Upstream | 7/19/2006 | 7:25:14 | 0 | 21.24 | 86.2 | 7.65 | 0.065 | 6.7 | 3.2 | 3.7 |
| | 8/24/2006 | 11:21:39 | 0 | 18.69 | 115.8 | 10.8 | 0.077 | 7.63 | 1.7 | 1.3 |
| | 9/20/2006 | 11:12:52 | 0 | 14.64 | 98.4 | 10 | 0.05 | 6.52 | 1.6 | 3.1 |
| | 10/18/2006 | 11:18:13 | 0 | 10.89 | 101.1 | 11.18 | 0.055 | 6.9 | 2.7 | 4.3 |
| | 11/2/2006 | 10:25:01 | 0 | 7.96 | 118.5 | 14.04 | 0.047 | 6.18 | 3.2 | 3.5 |
| WA-5 Bear Creek Upstream | 7/19/2006 | 7:52:58 | 0 | 22.25 | 94.9 | 8.26 | 0.041 | 6.17 | 2.4 | 1.7 |
| | 8/24/2006 | 10:57:35 | 0 | 18.24 | 95.6 | 9 | 0.071 | 7.44 | 1.7 | 1.1 |
| | 9/20/2006 | 10:47:56 | 0 | 15.65 | 95.2 | 9.46 | 0.041 | 7.23 | 1.8 | 2.5 |
| | 10/18/2006 | 10:58:08 | 0 | 9.72 | 99.8 | 11.34 | 0.048 | 7.82 | 1.9 | 1.9 |
| | 11/2/2006 | 10:05:15 | 0 | 8.62 | 94.7 | 11.05 | 0.039 | 6.2 | 2.2 | 2.6 |

2006 F.E. Walter Water Quality Profiles

| Station | Date | Time | Depth | Temp | DO | DO | SpCond | pH | Turbidity + | Chloro. |
|--------------------------------|-----------|----------|-------|-------|------|-------|--------|-------|-------------|---------|
| | M/D/Y | hh:mm:ss | ft | C | % | mg/L | mS/cm | | NTU | ug/L |
| WA-6 Bear Creek Lake Arm | | 10:13:08 | 0 | 27.33 | 95.5 | 7.57 | 0.049 | 6.41 | 3.7 | 6.8 |
| | | 10:11:11 | 5 | 26.89 | 88 | 7.03 | 0.049 | 6.3 | 3.6 | 5.8 |
| | | 10:10:10 | 10 | 24.42 | 61.4 | 5.13 | 0.049 | 5.96 | 4.2 | 4.2 |
| | | 10:09:23 | 15 | 23.3 | 50.1 | 4.27 | 0.05 | 5.91 | 3 | 4 |
| | | 10:08:13 | 20 | 22.81 | 45.1 | 3.88 | 0.051 | 5.86 | 3.2 | 3 |
| | | 10:06:59 | 25 | 22.32 | 45.2 | 3.93 | 0.05 | 5.83 | 3.6 | 3.9 |
| | 7/19/2006 | 10:06:19 | 30 | 21.93 | 42.7 | 3.74 | 0.05 | 5.79 | 3.7 | 3.6 |
| | | 10:05:14 | 35 | 21.72 | 40.3 | 3.54 | 0.05 | 5.78 | 3.1 | 3.3 |
| | | 10:04:18 | 40 | 21.6 | 42.4 | 3.73 | 0.049 | 5.77 | 3 | 3.9 |
| | | 10:03:34 | 45 | 21.51 | 42 | 3.71 | 0.049 | 5.82 | 4.3 | 3.4 |
| | | 10:02:13 | 50 | 21.42 | 41.2 | 3.64 | 0.049 | 5.8 | 3.8 | 3.5 |
| | | 10:01:11 | 55 | 21.27 | 41.3 | 3.66 | 0.051 | 5.91 | 4.1 | 3.3 |
| | | 10:00:12 | 60 | 21.18 | 38.4 | 3.41 | 0.052 | 5.88 | 4.8 | 2.6 |
| | | 9:59:05 | 65 | 21.09 | 42.4 | 3.77 | 0.053 | 5.94 | 4.3 | 3 |
| | | 9:58:21 | 70 | 21.06 | 48.4 | 4.31 | 0.055 | 6.06 | 5.6 | 2.5 |
| | 9:56:38 | 75 | 20.97 | 41.5 | 3.7 | 0.055 | 6 | 6.5 | 2.8 | |
| | 9:55:45 | 80 | 20.85 | 40.2 | 3.59 | 0.055 | 6.02 | 8.8 | 2.5 | |
| | 9:54:51 | 85 | 20.69 | 35.9 | 3.22 | 0.056 | 6.02 | 22.1 | 3.6 | |
| ----- | | | | | | | | | | |
| WA-6 Bear Creek Lake Arm | | 14:36:12 | 0 | 25.71 | 89.7 | 7.32 | 0.055 | 6.46 | 3.7 | 7.1 |
| | | 14:34:55 | 5 | 23.76 | 77 | 6.51 | 0.055 | 6.35 | 3.3 | 8.8 |
| | | 14:33:50 | 10 | 23.7 | 75.4 | 6.38 | 0.055 | 6.28 | 3.2 | 7.4 |
| | | 14:31:37 | 15 | 23.39 | 55.8 | 4.75 | 0.055 | 6.12 | 2.9 | 6.1 |
| | | 14:29:53 | 20 | 23.17 | 34.4 | 2.94 | 0.055 | 6 | 3.1 | 4.1 |
| | | 14:28:25 | 25 | 23.12 | 29.5 | 2.53 | 0.055 | 5.99 | 3.2 | 3.6 |
| | 8/24/2006 | 14:27:09 | 30 | 23 | 24.5 | 2.1 | 0.055 | 5.98 | 3.6 | 3.1 |
| | | 14:25:49 | 35 | 22.93 | 21 | 1.8 | 0.055 | 6.01 | 3.7 | 4.1 |
| | | 14:24:52 | 40 | 22.81 | 23.6 | 2.03 | 0.059 | 6.06 | 3.1 | 3.1 |
| | | 14:23:29 | 45 | 22.75 | 26.5 | 2.29 | 0.06 | 6.08 | 3.4 | 3.1 |
| | | 14:21:53 | 50 | 22.59 | 20 | 1.73 | 0.058 | 6.01 | 2.8 | 2.7 |
| | | 14:20:14 | 55 | 22.5 | 20.6 | 1.79 | 0.058 | 5.99 | 4.1 | 3 |
| | | 14:18:48 | 60 | 22.42 | 23.4 | 2.03 | 0.058 | 6.01 | 5.2 | 3.4 |
| | | 14:17:14 | 65 | 22.35 | 23.1 | 2.01 | 0.057 | 6 | 5.8 | 2.9 |
| | | 14:15:46 | 70 | 22.14 | 20.5 | 1.79 | 0.058 | 6.04 | 11.9 | 3.9 |
| | 14:14:41 | 75 | 21.94 | 19.8 | 1.73 | 0.061 | 6.17 | 330.6 | -0.6 | |
| ----- | | | | | | | | | | |
| WA-6 Bear Creek Lake Arm | | 14:31:08 | 0 | 18.61 | 81.9 | 7.65 | 0.054 | 6.35 | 2 | 4.8 |
| | | 14:29:53 | 5 | 18.63 | 80.6 | 7.54 | 0.054 | 6.31 | 2.1 | 4.1 |
| | | 14:28:49 | 10 | 18.38 | 71.8 | 6.75 | 0.054 | 6.25 | 1.8 | 4.3 |
| | | 14:28:04 | 15 | 17.68 | 67.8 | 6.46 | 0.056 | 6.23 | 1.7 | 3.7 |
| | | 14:27:12 | 20 | 17.54 | 67.8 | 6.48 | 0.057 | 6.25 | 1.7 | 3.6 |
| | | 14:25:54 | 25 | 17.43 | 70.6 | 6.77 | 0.057 | 6.27 | 1.8 | 3.9 |
| | 9/20/2006 | 14:24:54 | 30 | 17.38 | 72.2 | 6.92 | 0.056 | 6.28 | 2 | 3.9 |
| | | 14:23:17 | 35 | 17.31 | 73.3 | 7.04 | 0.056 | 6.25 | 2 | 4.1 |
| | | 14:22:21 | 40 | 17.28 | 70.9 | 6.81 | 0.057 | 6.2 | 1.9 | 3.7 |
| | | 14:20:54 | 45 | 17.14 | 66.6 | 6.42 | 0.053 | 6.11 | 2 | 2.8 |
| | | 14:19:51 | 50 | 17.08 | 68.4 | 6.6 | 0.052 | 6.09 | 2.1 | 2.7 |
| | | 14:18:29 | 55 | 16.95 | 71.7 | 6.94 | 0.049 | 6.06 | 2.4 | 2.9 |
| | | 14:17:31 | 60 | 16.93 | 71.8 | 6.95 | 0.049 | 6.08 | 2.3 | 2.5 |
| | | 14:16:17 | 65 | 16.92 | 72.3 | 7 | 0.048 | 6.06 | 2.3 | 2.9 |
| | | 14:15:34 | 70 | 16.86 | 73 | 7.07 | 0.047 | 6.06 | 2.5 | 3 |
| | 14:14:09 | 75 | 16.78 | 74.1 | 7.19 | 0.046 | 6.09 | 2.8 | 2.5 | |
| | 14:13:17 | 80 | 16.66 | 74.5 | 7.25 | 0.046 | 6.14 | 3.4 | 2.6 | |
| | 14:11:31 | 87 | 16.56 | 77.5 | 7.56 | 0.047 | 6.3 | 4.3 | 3.2 | |

2006 F.E. Walter Water Quality Profiles

| Station | Date | Time | Depth | Temp | DO | DO | SpCond | pH | Turbidity + | Chloro. |
|--------------------------------|------------|----------|-------|-------|-------|-------|--------|------|-------------|---------|
| | M/D/Y | hh:mm:ss | ft | C | % | mg/L | mS/cm | | NTU | ug/L |
| WA-6 Bear Creek Lake Arm | | 13:46:57 | 0 | 13.01 | 84.7 | 8.93 | 0.051 | 6.28 | 4.9 | 4.8 |
| | | 13:45:29 | 5 | 12.08 | 84.5 | 9.09 | 0.05 | 6.25 | 5.9 | 3.6 |
| | | 13:44:19 | 10 | 11.39 | 87.2 | 9.52 | 0.051 | 6.24 | 6 | 3.1 |
| | 10/18/2006 | 13:43:07 | 15 | 10.81 | 88.1 | 9.75 | 0.048 | 6.2 | 8.8 | 2.6 |
| | | 13:42:02 | 20 | 10.59 | 89.3 | 9.94 | 0.047 | 6.19 | 8.5 | 2.5 |
| | | 13:40:43 | 25 | 10.43 | 90.8 | 10.14 | 0.047 | 6.23 | 9 | 2.7 |
| | | 13:39:45 | 30 | 10.17 | 90.5 | 10.17 | 0.046 | 6.26 | 19.7 | 2.7 |
| | | 13:38:50 | 35 | 10.14 | 88.7 | 9.98 | 0.046 | 6.32 | 43.4 | 3.1 |
| ----- | | | | | | | | | | |
| WA-6 Bear Creek Lake Arm | | 12:44:40 | 0 | 8.58 | 113 | 13.19 | 0.041 | 6.23 | 2.5 | 2.3 |
| | | 12:43:48 | 5 | 8.5 | 112.9 | 13.21 | 0.04 | 6.25 | 2.5 | 2.3 |
| | 11/2/2006 | 12:42:56 | 10 | 8.45 | 112.8 | 13.22 | 0.04 | 6.3 | 2.5 | 2.7 |
| | | 12:41:34 | 15 | 8.34 | 112.3 | 13.19 | 0.041 | 6.46 | 3.3 | 2.4 |
| | | 12:40:41 | 20 | 8.26 | 111.9 | 13.17 | 0.044 | 6.53 | 5 | 3.2 |
| | | 12:39:16 | 25 | 7.9 | 111.7 | 13.26 | 0.05 | 6.56 | 19.2 | 3.7 |
| ----- | | | | | | | | | | |
| WA-7 Lehigh Lake Arm | | 9:49:33 | 0 | 26.99 | 90.9 | 7.24 | 0.051 | 6.4 | 3.9 | 7.6 |
| | | 9:48:14 | 5 | 26.75 | 85.5 | 6.85 | 0.051 | 6.35 | 4.1 | 5.2 |
| | | 9:47:09 | 10 | 24.54 | 59.7 | 4.98 | 0.05 | 6.02 | 4.1 | 4.2 |
| | | 9:46:28 | 15 | 23.3 | 52.3 | 4.46 | 0.051 | 5.97 | 3.3 | 4.3 |
| | | 9:45:27 | 20 | 22.6 | 49.1 | 4.24 | 0.052 | 5.96 | 3.5 | 3.3 |
| | | 9:44:45 | 25 | 22.17 | 47.3 | 4.13 | 0.052 | 5.94 | 3.5 | 3.3 |
| | | 9:44:04 | 30 | 21.94 | 46.4 | 4.06 | 0.052 | 5.96 | 4 | 3.4 |
| | 7/19/2006 | 9:43:25 | 35 | 21.77 | 45.4 | 3.99 | 0.052 | 5.96 | 4.3 | 3.3 |
| | | 9:42:44 | 40 | 21.65 | 43 | 3.79 | 0.052 | 5.97 | 4.1 | 3.2 |
| | | 9:42:03 | 45 | 21.49 | 44.3 | 3.91 | 0.052 | 5.97 | 4.4 | 3.4 |
| | | 9:40:09 | 50 | 21.37 | 44.9 | 3.97 | 0.051 | 5.94 | 4.2 | 3.9 |
| | | 9:39:33 | 55 | 21.31 | 49.6 | 4.4 | 0.055 | 6.09 | 4.6 | 3 |
| | | 9:38:46 | 60 | 21.26 | 49.6 | 4.4 | 0.056 | 6.1 | 5.3 | 2.6 |
| | | 9:38:14 | 65 | 21.19 | 49.8 | 4.42 | 0.059 | 6.12 | 5.3 | 3.2 |
| | | 9:37:38 | 70 | 21.14 | 49.2 | 4.38 | 0.06 | 6.14 | 7.6 | 2.6 |
| | | 9:36:54 | 75 | 21.07 | 46.4 | 4.13 | 0.06 | 6.14 | 6.8 | 2.1 |
| | | 9:35:39 | 80 | 20.95 | 39.5 | 3.52 | 0.062 | 6.15 | 10.5 | 2.4 |
| | 9:34:32 | 85 | 20.54 | 21.3 | 1.91 | 0.065 | 6.17 | 14.1 | 3 | |
| | 9:33:45 | 90 | 20.19 | 17.1 | 1.55 | 0.069 | 6.31 | 1138 | 8.9 | |
| | 9:33:07 | 91 | 20.18 | 17.5 | 1.58 | 0.068 | 6.31 | 16.3 | 1.6 | |
| ----- | | | | | | | | | | |
| WA-7 Lehigh Lake Arm | | 14:06:46 | 0 | 24.73 | 85.4 | 7.09 | 0.055 | 6.46 | 3.8 | 8.5 |
| | | 14:05:18 | 5 | 23.89 | 76.2 | 6.43 | 0.055 | 6.36 | 3.8 | 8.1 |
| | | 14:03:57 | 10 | 23.7 | 70.6 | 5.98 | 0.055 | 6.28 | 3.6 | 7.8 |
| | | 14:01:58 | 15 | 23.43 | 51.7 | 4.4 | 0.055 | 6.15 | 2.8 | 5.5 |
| | | 14:00:42 | 20 | 23.28 | 33.9 | 2.9 | 0.055 | 6.08 | 2.5 | 4.3 |
| | | 13:59:46 | 25 | 23.13 | 31.3 | 2.68 | 0.06 | 6.12 | 3.1 | 3.8 |
| | 8/24/2006 | 13:59:01 | 30 | 23.06 | 31 | 2.66 | 0.06 | 6.11 | 3.7 | 3.2 |
| | | 13:57:19 | 35 | 22.93 | 22.9 | 1.97 | 0.059 | 6.06 | 3.1 | 2.9 |
| | | 13:56:21 | 40 | 22.86 | 19.4 | 1.67 | 0.058 | 6.03 | 2.7 | 3.4 |
| | | 13:55:18 | 45 | 22.74 | 18.7 | 1.61 | 0.058 | 6.05 | 2.5 | 3 |
| | | 13:53:21 | 50 | 22.6 | 19.8 | 1.71 | 0.059 | 6.1 | 2.7 | 2.7 |
| | | 13:51:56 | 55 | 22.52 | 24.5 | 2.12 | 0.061 | 6.16 | 3 | 2.5 |
| | | 13:50:17 | 60 | 22.44 | 33 | 2.86 | 0.063 | 6.25 | 4.4 | 2.8 |
| | | 13:49:05 | 65 | 22.32 | 41.4 | 3.6 | 0.066 | 6.29 | 5.4 | 3 |
| | | 13:47:56 | 70 | 22.08 | 44.9 | 3.92 | 0.068 | 6.31 | 11.3 | 3.4 |
| | 13:46:11 | 74 | 21.49 | 41.5 | 3.67 | 0.075 | 6.34 | 29.5 | 4.6 | |

2006 F.E. Walter Water Quality Profiles

| Station | Date | Time | Depth | Temp | DO | DO | SpCond | pH | Turbidity + | Chloro. |
|----------------------------|------------|----------|-------|-------|-------|-------|--------|------|-------------|---------|
| | M/D/Y | hh:mm:ss | ft | C | % | mg/L | mS/cm | | NTU | ug/L |
| WA-7 Lehigh Lake Arm | | 13:59:51 | 0 | 18.63 | 84.1 | 7.86 | 0.054 | 6.42 | 2.1 | 4.6 |
| | | 13:58:54 | 5 | 18.61 | 83.6 | 7.82 | 0.054 | 6.41 | 2.1 | 4.4 |
| | | 13:57:50 | 10 | 18.54 | 82.2 | 7.7 | 0.054 | 6.38 | 2 | 4.5 |
| | | 13:56:45 | 15 | 18.22 | 79.8 | 7.52 | 0.055 | 6.37 | 1.9 | 4.4 |
| | | 13:55:56 | 20 | 17.7 | 71.7 | 6.83 | 0.056 | 6.32 | 1.9 | 4.2 |
| | | 13:55:11 | 25 | 17.58 | 74.6 | 7.12 | 0.056 | 6.35 | 1.9 | 3.6 |
| | 9/20/2006 | 13:54:19 | 30 | 17.45 | 78.7 | 7.54 | 0.056 | 6.4 | 2 | 4.1 |
| | | 13:53:40 | 35 | 17.35 | 80.2 | 7.69 | 0.055 | 6.44 | 2.1 | 5.1 |
| | | 13:52:42 | 40 | 17.28 | 82 | 7.88 | 0.055 | 6.43 | 2.2 | 4.8 |
| | | 13:52:02 | 45 | 17.23 | 82.6 | 7.95 | 0.055 | 6.44 | 2.4 | 4.9 |
| | | 13:51:23 | 50 | 17.17 | 83 | 8 | 0.055 | 6.45 | 2.5 | 4.8 |
| | | 13:50:43 | 55 | 17.09 | 83.1 | 8.02 | 0.055 | 6.44 | 2.6 | 4.9 |
| | | 13:49:55 | 60 | 16.92 | 82.7 | 8.01 | 0.055 | 6.42 | 3.3 | 4.9 |
| | | 13:49:20 | 65 | 16.85 | 81.7 | 7.92 | 0.055 | 6.4 | 3.5 | 4.6 |
| | | 13:48:27 | 70 | 16.71 | 79.1 | 7.69 | 0.055 | 6.36 | 4.2 | 4.9 |
| | 13:46:03 | 80 | 16.61 | 78.9 | 7.69 | 0.055 | 6.38 | 4.1 | 4.8 | |
| | 13:44:45 | 87 | 16.46 | 75.7 | 7.4 | 0.056 | 6.42 | 10.4 | 5.1 | |
| ----- | | | | | | | | | | |
| WA-7 Lehigh Lake Arm | | 13:27:18 | 0 | 12.84 | 86 | 9.09 | 0.052 | 6.55 | 4.1 | 5.8 |
| | | 13:25:26 | 5 | 12.7 | 87 | 9.23 | 0.053 | 6.62 | 4.2 | 5.9 |
| | 10/18/2006 | 13:24:36 | 10 | 12.31 | 89.3 | 9.56 | 0.055 | 6.67 | 4.6 | 5 |
| | | 13:23:24 | 15 | 11.77 | 94.3 | 10.22 | 0.058 | 6.71 | 5.7 | 4.5 |
| | | 13:22:36 | 20 | 11.21 | 96.4 | 10.58 | 0.06 | 6.71 | 7.9 | 4.6 |
| | | 13:21:22 | 25 | 11.03 | 95.3 | 10.5 | 0.06 | 6.66 | 27.2 | 4.8 |
| | | 13:20:00 | 27 | 10.96 | 94.9 | 10.48 | 0.06 | 6.64 | 149.9 | 7.9 |
| ----- | | | | | | | | | | |
| WA-7 Lehigh Lake Arm | | 12:21:49 | 0 | 7.99 | 114.3 | 13.54 | 0.053 | 6.68 | 3.4 | 4.1 |
| | | 12:20:49 | 5 | 7.96 | 114.6 | 13.58 | 0.053 | 6.68 | 3.5 | 4.2 |
| | 11/2/2006 | 12:20:06 | 10 | 7.92 | 114.8 | 13.62 | 0.053 | 6.68 | 4 | 3.8 |
| | | 12:18:21 | 15 | 7.86 | 114.4 | 13.6 | 0.053 | 6.68 | 3.8 | 4.2 |
| | | 12:17:37 | 20 | 7.85 | 113.6 | 13.5 | 0.053 | 6.67 | 7.2 | 4.6 |
| | | 12:16:37 | 25 | 7.85 | 110 | 13.07 | 0.053 | 6.65 | 484.2 | 16.5 |
| | | 12:16:04 | 27 | 7.84 | 110.5 | 13.14 | 0.054 | 6.43 | 4.4 | 2.9 |

APPENDIX B

**F.E. Walter Reservoir 2008 Operation Plan
Public Notice CENAP-PL-E-08-02**



**US Army Corps
of Engineers**

Philadelphia District

Public Notice

Public Notice No.
CENAP-PL-E-08-02

Date
31 January 2008

Internet Homepage <http://www.nap.usace.army.mil>

In Reply Refer to: Environmental Resources Branch

NOTICE IS HEREBY GIVEN, that the Philadelphia District, U.S. Army Corps of Engineers in cooperation with the Pennsylvania Fish and Boat Commission, Pennsylvania Department of Conservation and Natural Resources and the Delaware River Basin Commission is conducting a temporary operations plan at F.E. Walter Reservoir in 2008. The Francis E. Walter Reservoir, originally known as Bear Creek Reservoir, is located near the convergence of Bear Creek and the Lehigh River in Luzerne and Carbon Counties in northeastern Pennsylvania (Figure 1). It is a man-made impoundment created by the U.S. Army Corps of Engineers in 1961 by damming the Lehigh River at the confluence with Bear Creek. The 3,000-foot long, 234-foot high earth-fill dam creates an 80-acre pool at the conservation pool 1,300-foot National Geodetic Vertical Datum (N.G.V.D.) elevation and controls a drainage area of 288 square miles. The reservoir is approximately 86 miles north of Philadelphia, 20 miles southeast of Wilkes-Barre, 39 miles south of Scranton and 45 miles north of Allentown. The project area is part of the Pocono Mountain complex.

F.E. Walter, in addition to aiding in flood control along the Lehigh River, is operated for recreation and historically used to store water for drought emergencies at the request of the Delaware River Basin Commission. The project was originally authorized as a single purpose flood control project with recreation being added later. The F.E. Walter Reservoir was authorized in House Document No. 587, 79th Congress, 2nd Session for Lehigh River flood control protection. The reservoir project was later authorized for recreation as part of Public Law 100-676, Section 6, dated November 17, 1988.

F.E. Walter Reservoir plays a vital role in providing flood control and recreation in the Lehigh River watershed. In the recent past, public interest has grown in regard to modifying operations at F.E. Walter Reservoir to benefit in-lake and downstream recreation meanwhile maintaining flood control capabilities, and protection of the environment. Operation of the reservoir during flood storage events inundates a project access road that crosses the upstream side of the dam. This access road is used by dam personnel for operation and maintenance of the dam and related project features. Historically, pool level operations at F.E. Walter Reservoir have been tailored, in part, to re-open this access road as soon as feasibly possible following a flood storage event. The construction of a new access road across the top of the dam has provided for more flexibility in pool level operations. As a result, opportunities to further evaluate and study the public recreational alternatives associated with the reservoir emerged in 2005.

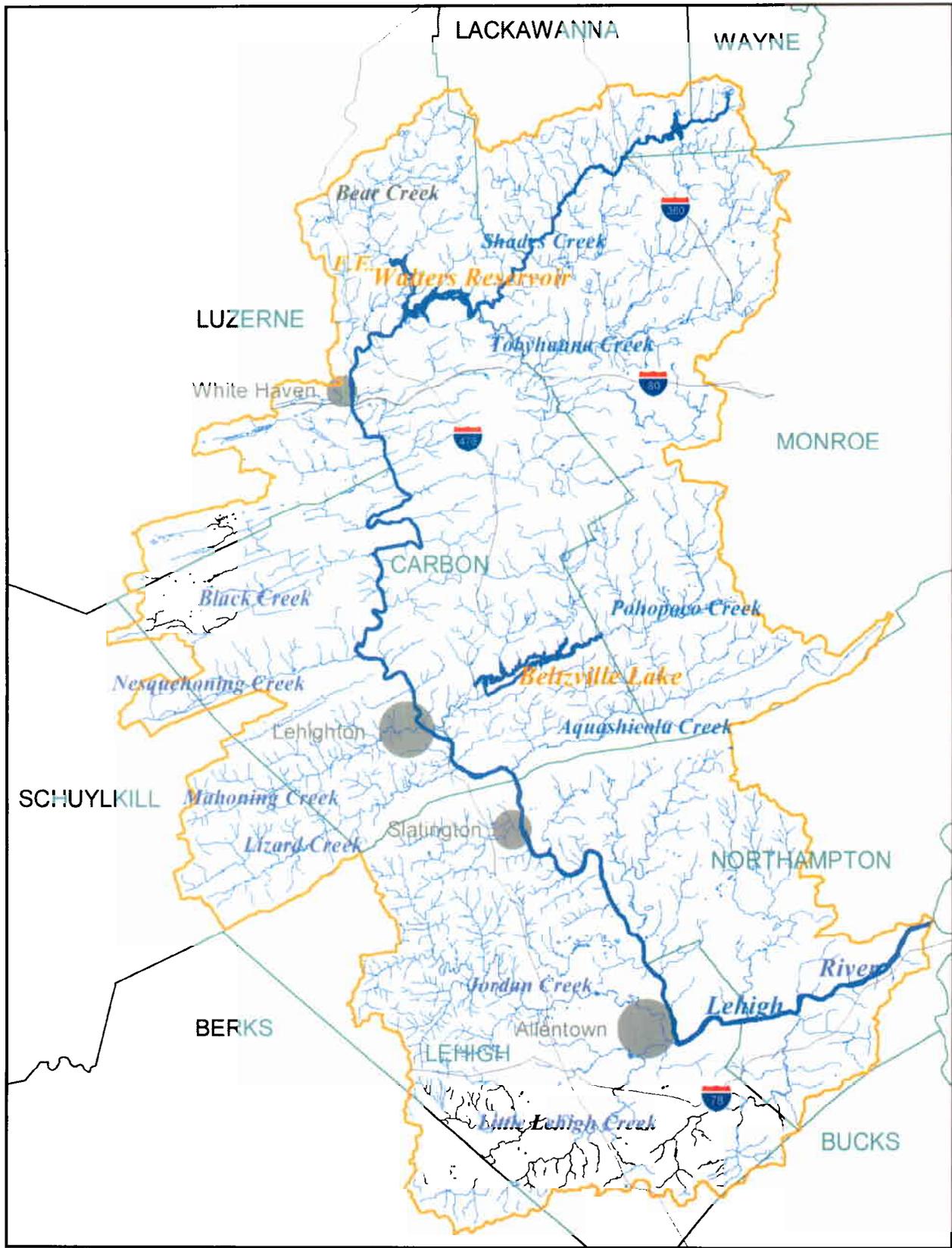


FIGURE 1. F.E. Walter Reservoir and Lehigh River watershed.

An F.E. Walter Reservoir Flow Management Working Group was created with the intent to develop a temporary operations plan that increases the recreational and environmental potential of the reservoir and Lehigh River without negatively impacting the projects designated purposes. Members of the working group include the U.S. Army Corps of Engineers, Pennsylvania Fish and Boat Commission, Delaware River Basin Commission, Pennsylvania Department of Conservation and Natural Resources and other stakeholders. Following the coordination and evaluation of the 2005, 2006, and 2007 temporary operation plans results with the focus on the operational, environmental, and recreational data collected and evaluated during each of the plans, a 2008 modified operational plan has been developed.

The plan for 2008 will be substantially different from that of 2007. While the 2007 plan was able to satisfy many of the water needs, modifications are being made to improve likelihood of recreational releases in the May-June timeframe while holding the 5 foot pool fluctuation limit. Water is being allocated to insure July and August white water recreational releases while relying on seasonal precipitation and additional water accumulations to allow scheduling of the planned September events. Water is also being reserved to insure the ability to make the augmentation releases for fisheries throughout the entire recreation season. Other small modifications as well as changes to October operations are also planned. Planned white water release dates are listed below:

May: 10th, 24th, 25th (no release on Mothers Day, 11 May)

June: 7th, 8th, 21st, 22nd

July: 5th, 6th, 19th, 20th

August: 2nd, 3rd, 16th, 17th, 30th, 31st

September: 13th, 14th, 27th, 28th

(The September dates are planned but will only be scheduled if precipitation and additional water accumulation occurs during the recreation season.)

October: 10th, 11th, 12th

(The October dates will only occur if sufficient water remains. Release dates of 11 and 12 October take precedence over 10 October.)

Total: 24 white water release dates planned, 7 of which are dependent upon additional water storage.

Except for the dates listed above, daily augmentation releases of up to 50 cfs for fisheries enhancement will be made throughout the recreation season.

For the 2008 season, the maximum storage level will be increased to elevation 1370, five feet higher than in 2007. On or before 1 April 2008 storage will be initiated at F. E. Walter Dam. The exact date that storage is initiated will be determined by the Corps of Engineers based on basin hydrologic conditions at the time. Storage could start earlier if precipitation raises the pool above

elevation 1300. During this period outflows will be limited to 250 cfs on weekdays and during weekends the outflow will normally be set equal to inflow up to a maximum release rate of 1000 cfs. The weekend limit could be lowered to 750 cfs and the weekday limit lowered to 225 cfs if hydrologic conditions were such that reaching the target level of 1370 by 10 May 2008 was determined to be in jeopardy. Special operations will prevail for the first two weekends of trout season (April 12-13 and April 19-20). Releases will be restricted to 400 cfs for these two weekends. This restriction is consistent with DCNR restrictions placed on commercial boaters in the upper reaches of the Lehigh River from White Haven to Rockport. The storage of excess inflows will continue until the pool reaches the elevation of 1370. Once pool level reaches 1370, outflow will match inflow until the start of the recreation season (10 May). The pool elevation of 1370 is expected to be reached no later than Friday 9 May 2008, in time for the first planned white water release to begin on Saturday 10 May 2008.

Pool elevations above elevation 1370 at any time are generally considered undesirable encroachments into flood control storage and will normally be evacuated as quickly as possible in accordance with the Corps' F.E. Walter Reservoir Water Control Manual. If weather forecasts are favorable, the encroachment into flood control storage may be retained for brief periods to support planned recreational opportunities. The Corps of Engineers will be solely responsible for making this determination. As in previous years, flood control objectives take priority and if necessary any of the storage above elevation 1300 could be released if deemed necessary by the U.S Army Corps of Engineers.

May-June

White water weekend events are planned for every other weekend starting on May 10th. No white water release is planned for Mother's Day, May 11th. As in previous years, the planned releases will be made for 12 hour periods from 1AM until 1 PM on Saturday then from 1 AM until 1 PM on Sunday provided sufficient water is available.

The pool elevation will be maintained between elevations 1365 and 1370 from 10 May through 30 June. This is raised 5 feet over last year's level in an attempt to help improve likelihood of making all planned releases in May and June. Raising the pool by 5 feet adds a total of 1403 DSF of storage and increases the storage volume within the 5 foot pool limitation by 60 DSF. The 5 foot pool limit is intended to help conserve cooler water for later in the season, and to help in-lake fish spawning. As noted before, a pool level above elevation 1370 is an undesirable encroachment into flood control storage which will normally be evacuated as quickly as possible. After pool elevation of 1370 is reached, weekday augmentation releases for fisheries enhancement during May will be 200 cfs and will be in the 200-250 cfs range in June. Weekend white water recreation releases during this period will be made as long as sufficient storage exists above elevation 1365 with a release target of 800 cfs in May and 750 cfs in June. Tables 1 and 2 provide priorities for determining the length and magnitude of white water recreation releases to be made in May and June if storage is not sufficient to make full releases for the 12 hour periods planned. Releases for fisheries enhancement on weekends when white water releases are not planned will be set to match inflow up to a maximum of 400 cfs during this period. If storage is not available above elevation 1365, releases will be set equal to inflow to maintain the 1365 elevation until 1 July. If necessary, cancellations or modifications of white water release plans will be announced (posted on Corps webpage) on the afternoon of the Wednesday before the white water recreation weekend.

The raising of the pool by 5 feet to 1370, elimination of the white water recreation release for May 11th, reduction in weekend recreation release rates, and reduction of weekday release rates are all aimed at preserving storage levels to allow accomplishment of all purposes of the plan while limiting the pool to elevations between 1370 and 1365 during this time period.

Table 1. May Release Rate Priority (Maximum release 800cfs in May)

| Saturday | | Sunday | | Volume Required (DSF) |
|------------|----------------|------------|----------------|-----------------------|
| Rate (CFS) | Duration (DSF) | Rate (CFS) | Duration (HRS) | |
| 600 | 12 | | | 300 |
| 650 | 12 | | | 325 |
| 700 | 12 | | | 350 |
| 700 | 12 | 500 | 6 | 425 |
| 750 | 12 | 550 | 6 | 512.5 |
| 800 | 12 | 600 | 6 | 550 |
| 800 | 12 | 700 | 6 | 575 |
| 800 | 12 | 600 | 12 | 700 |
| 800 | 12 | 700 | 12 | 750 |
| 800 | 12 | 800 | 12 | 800 |

Table 2. June Release Rate Priority (Maximum release 750 cfs in June)

| Saturday | | Sunday | | Volume Required (DSF) |
|------------|----------------|------------|----------------|-----------------------|
| Rate (CFS) | Duration (DSF) | Rate (CFS) | Duration (HRS) | |
| 600 | 12 | | | 300 |
| 650 | 12 | | | 325 |
| 700 | 12 | | | 350 |
| 700 | 12 | 500 | 6 | 425 |
| 750 | 12 | 550 | 6 | 512.5 |
| 750 | 12 | 600 | 6 | 525 |
| 750 | 12 | 700 | 6 | 550 |
| 750 | 12 | 750 | 6 | 562.5 |
| 750 | 12 | 750 | 12 | 750 |

July- August

Starting in July, there will no longer be any specific flow targets or limits on pool levels. For this time period, sufficient storage will be reserved to insure weekday and non-recreational weekend fisheries enhancement releases of 50 cfs above inflow, up to a total of 250 cfs. On white water recreation weekends, for the 12 hour periods from 1AM until 1 PM on both Saturday and Sunday, releases will be set at inflow plus 750 cfs up to a maximum of 1000 cfs and held on each of the planned weekends as long as storage permits. For the other 12 hour periods of the weekend, the release will revert to the fisheries enhancement augmentation release of 50 cfs above inflow up to 250 cfs. Storage capacity at elevation 1365 at the end of June is sufficient to make the planned white water weekend releases through August 30-31 as well as the releases for fisheries enhancement.

September

As in the July-August timeframe, in September storage sufficient to provide for a fisheries enhancement release of 50 cfs above inflow (up to 250 cfs) will be reserved to insure that the augmentation can be made during the entire month. On the other hand, white water recreation releases planned for September require additional precipitation and water accumulation during the recreation season to allow those to occur. This is a significant change from the 2007 plan. The plan for 2008 recognizes that white water recreation weekend releases in the July-August timeframe are more important than the September releases and the fact that additional precipitation is likely to allow at least some of the September events to be added while still preserving storage to accomplish the weekday fisheries enhancement augmentation of 50 cfs regardless of hydrologic circumstances through September. If at any time precipitation occurs to allow sufficient additional water to accumulate; planned white water recreation releases will be scheduled. Accumulated water will be allocated and utilized for the next upcoming planned white water weekend release. Release priorities for these September events are listed in Table 3. Final release amounts and durations will be determined and posted on the Corps webpage the Wednesday prior to the weekend. If sufficient water is available, each scheduled white water event will be held for both Saturday and Sunday at the full amount of 750 cfs plus inflow (maximum release of 1000 cfs) before subsequent planned white water events will be scheduled. If storage is not sufficient to allow at least a one day (12 hour) release of 600 cfs, the white water release for the weekend will be cancelled. As additional planned events become possible due to accumulation of water, releases will be scheduled and announced no later than the Wednesday before the planned white water release date. **Following this procedure may mean that events are cancelled, scheduled or modified with little advance notice.**

Table 3. September Release Rate Priority (Maximum release rate will be set at inflow plus 750 cfs up to 1000 cfs)

| Saturday | | Sunday | | Volume Required (DSF) |
|---------------|-------------------|---------------|-------------------|--------------------------|
| Rate (CFS) | Duration (DSF) | Rate (CFS) | Duration (HRS) | |
| 600 | 12 | | | 300 |
| 650 | 12 | | | 325 |
| 700 | 12 | | | 350 |
| 700 | 12 | 500 | 6 | 425 |
| 750 | 12 | 550 | 6 | 512.5 |
| 800 | 12 | 600 | 6 | 550 |
| 800 | 12 | 700 | 6 | 575 |
| 800 | 12 | 600 | 12 | 700 |
| 800 | 12 | 700 | 12 | 750 |
| 800 | 12 | 800 | 12 | 800 |
| 900 | 12 | 900 | 12 | 900 |
| 1000 | 12 | 1000 | 12 | 1000 |

October

At the end of the recreation season, if sufficient water still remains above elevation 1300, the planned white water releases for 11-12 October will be scheduled. Releases for that weekend will be for the usual 12 hour period and range between 750 and 1200 cfs. Weekday releases in October leading up to the final event will not be less than 144 cfs. Target releases for the remaining weekends in October (4, 5, 18, 19, 25 and 26 October) will range between 350-400 cfs.

If more than sufficient water remains for what is needed to accomplish the above, a final weekday release will be scheduled for Friday, 10 October 2008. This release is the last increment of the 2008 recreation plan and is primarily intended to return the pool to its normal elevation of 1300. The scheduling of this release will allow those interested in larger white water recreation releases to plan accordingly. The release rate will be based on the amount of water available. Release will be set at a maximum of 4000 cfs. Final scheduling and amount of this release will be determined and posted on Wednesday, 8 October 2008.

Due to operational difficulties experienced in 2007 with the existing bypass system, it will not be available for use this year. All releases will be made from the flood control gates. It is expected that the bypass valves will be replaced after the conclusion of this year's recreation season and will be available for use in 2009.

A Draft Environmental Assessment was prepared in accordance with National Environmental Policy Act (NEPA) regulations. This EA assesses conditions at the project site and evaluates the potential impacts of the 2008 temporary operational plan on existing resources in the immediate and surrounding areas to include: physical, chemical, and biological characteristics of the aquatic and terrestrial ecosystem; endangered and threatened species; hazardous and toxic materials; aesthetics and recreation; cultural resources; and the general needs and welfare of the

public. The U.S. Army Corps of Engineers and its partners will continue to pursue additional studies and data collection efforts to evaluate the 2008 plan and to refine potential future plan modifications. Funding for the development of a water quality model for the Lehigh River system which includes F.E. Walter and Beltzville Reservoirs has been secured through the Water Resources Development Act Section 22 Planning Assistance to the States program. A temperature and flow model is currently being developed.

A range of pool level and minimum low flow alternatives were evaluated based on potential negative and positive impacts on flood control, recreation and the environment in general. The alternatives are essentially modifications of the 2005, 2006, and 2007 plans taking into account the results and lessons learned from those efforts. Historic flow and operational records, in-lake and river water quality data, expected recreational use, public input, and known environmental resources in the project area were evaluated against the alternatives. An operational plan, described previously, was selected as the most likely to meet recreational, downstream water quality and flow, and flood control objectives. This plan is expected to benefit in-lake and downstream recreation meanwhile protecting and potentially enhancing the natural environment. Coordination between project partners and the public will continue through and after the plan period. Data collected during the plan will be used by the Corps and its partners to evaluate the degree of success in meeting the objectives of the plan and for identification of any environmental impacts not previously expected. All practicable means to avoid or minimize adverse environmental effects have been incorporated into the selected plan.

The 2008 plan was presented to the public at a public information workshop on 31 January 2008 at the Mountain Laurel Resort located in White Haven, Pennsylvania. In addition, the results of the 2007 plan were presented to interested stakeholders at a public meeting on 25 October 2007 at the Ramada Inn located in White Haven, Pennsylvania. These forums allow attendees to directly question project partners and comment on the proposed plan. In addition, the public is afforded the opportunity to comment on past, present, and future plans by submitting written comments directly to the Philadelphia District Corps Office or by providing comments via the project website at www.nap.usace.army.mil/Projects/FEWalter/index.htm.

The Draft Environmental Assessment has shown that the proposed activity is not likely to jeopardize the continued existence of any species or the critical habitat of any fish, wildlife or plant, which is designated as endangered or threatened pursuant to Section 7 of the Endangered Species Act, as amended.

Work in waters of the United States, including wetlands, must be in compliance with Section 404 of the Clean Water Act. No work will be performed within the waters of the United States. Therefore, a review of impacts associated with the potential discharge of fill material has not been performed as per Section 404 (b)(1) of the Clean Water Act. The requirements of Executive Order 11990, Protection of Wetlands, are therefore met.

The Commonwealth of Pennsylvania requires a 401 State water quality certification for any work, which may affect water or waterways in the state. This project entails an operational management change at F.E. Walter Reservoir and does not require any physical instream or riparian work. As a result, a water quality certificate from the Commonwealth is not required.

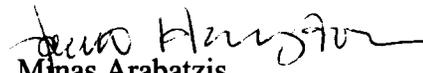
In accordance with guidelines established under Section 106 of the National Historic Preservation Act of 1966, as amended, the Pennsylvania Historical and Museum Commission determined that the proposed plan would have no effect on archaeological sites or historic structures.

The decision whether to accomplish the work proposed in this public notice is based on an evaluation of the probable impact of the proposed work on the public interest. The decision will reflect the national concern for the protection and utilization of important resources. The benefit, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonable foreseeable detriments. All factors, which may be relevant to the proposal, will be considered. Among those are conservation, aesthetics, fish and wildlife, general environmental concerns, economics, historic values, navigation, energy needs, recreation, safety, water quality, food production, and in general, the needs and welfare of the people.

The public and all agencies are invited to comment on this proposal. Copies of the Draft Environmental Assessment are available upon request by calling (215) 656-6561. The public notice, Draft 2008 Temporary Operations Plan Environmental Assessment, and Final 2005 and 2006 Temporary Operations Plan Environmental Assessments are available for review on the project web site at www.nap.usace.army.mil/Projects/FEWalter/index.htm.

Any person may request, in writing, to the District Engineer, within the comment period specified in this notice **(31 January through 03 March)** that a public hearing be held to consider this proposal. Requests for a public hearing shall state, in detail, the reasons for holding a public hearing.

All comments on the work described in this public notice and/or in the Draft Environmental Assessment should be directed to Mr. Minas Arabatzis, Chief, Planning Division, ATTN: Environmental Resources Branch, U.S. Army Corps of Engineers, Wanamaker Building, 100 Penn Square East, Philadelphia, Pennsylvania 19107-3390 by **03 March 2008**.

bow 
Minas Arabatzis
Chief, Planning Division
Philadelphia District
U.S. Army Corps of Engineer

**U.S. ARMY CORPS OF ENGINEERS
PHILADELPHIA DISTRICT
WANAMAKER BUILDING
100 PENN SQUARE EAST
PHILADELPHIA, PA 19107-3390**

**Pennsylvania Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane
Bellefonte, PA 16823-9620**

**Ms. Carol Collier, Executive Director
Delaware River Basin Commission
25 State Police Drive
P.O. Box 7360
West Trenton, New Jersey 08628-0360**

**Mr. James Leigey, Wildlife Impact Review Coordinator
Division of Environmental Planning
Pennsylvania Game Commission
2001 Elmerton Avenue
Harrisburg, Pennsylvania 17110-9797**

**Mr. Cal DuBrock, Director
Bureau of Wildlife Management
Pennsylvania Game Commission
2001 Elmerton Avenue
Harrisburg, Pennsylvania 17110-9797**

**NEPA Team Leader
U.S. EPA, Region III
1650 Arch Street (3EA30)
Philadelphia, PA 19103-2029**

**Mr. Larry Williamson, Deputy Secretary
Conservation and Engineering Services
Pennsylvania Department of Conservation and Natural Resources
Rachel State Office Building
P.O. Box 8767
Harrisburg, Pennsylvania 17105-8767**

**U.S. Fish and Wildlife Service
315 South Allen Street
Suite 322
State College, PA 16801**

**Pennsylvania Natural Diversity Inventory
PADCNR
Rachel Carson State Office Building
P.O. Box 8552
Harrisburg, PA 17105-8552**

**Mr. Michael D. Bedrin, Regional Director
Pennsylvania Department of Environmental Protection, NE Office
2 Public Square
Wilkes-Barre, Pennsylvania 18711-0790**

**Ms. Christine Martin, Deputy Secretary
Water Management
16th Floor, Rachel Carson State Office Building
P.O. Box 2063
Harrisburg, Pennsylvania 17105-2063**

**Division of Archaeology & Protection
Bureau of Historic Preservation
Pennsylvania Historic and Museum Commission
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, Pennsylvania 17120-0093**

**Soil Conservationist
Natural Resource Conservation Service
One Credit Union Place, Suite 340
Harrisburg, Pennsylvania 17110**

**ARPS SE Region
PA Fish and Boat Commission
PO Box 9
Elm, Pennsylvania 17521**

**Mr. Dean Druckenmiller
Lehigh River Coldwater Fishery Alliance
22 Hughes Street
New Ringgold, Pennsylvania 17960**

**Mr. Chris Kocher, President
Wildlands Conservancy
3701 Orchid Place
Emmaus, PA 18049**

**Mr. Christian Berg, Outdoor Writer
101 North Sixth Street
PO Box 1260
Allentown, PA 18105**

**Carbon County Conservation District
5664 Interchange Road
Lehighton, PA 18235**

**Luzerne County Conservation District
485 Smith Pond Road
Shavertown, PA 18708**

**Mr. David Madl, Park Manager
Lehigh Gorge State Park
RR1 Box 81
White Haven, PA 18661**

**Ms. Cathy Curran Myers, Deputy Secretary
PADEP, Water Management
P.O. Box 2063
400 Market Street, 2nd. Floor
Harrisburg, Pennsylvania 17105-2063**

APPENDIX C
PUBLIC COMMENTS



Bureau of Forestry

March 5, 2008

Mr. Minas Arabatzis, Chief, Planning Division
ATTN: Environmental Resources Branch
US Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

| |
|--|
| <i>Pennsylvania Natural Diversity Inventory Review, PNDI Number 019566</i> |
| F.E. Walter Reservoir |
| Luzerne & Carbon Counties |

Dear Mr. Arabatzis,

This responds to your request for information on species of special concern within the area under evaluation for this project. The Department of Conservation and Natural Resources' responsibility includes plants, natural communities, terrestrial invertebrates and geologic features only. PNDI records indicate that species and communities of special concern under DCNR's jurisdiction are known to occur in the vicinity of the above-mentioned project.

Please visit the PA Natural Heritage Program website for information on plants, terrestrial invertebrates, natural communities and geologic features of special concern within the Lehigh Watershed area.

Go To: <http://www.naturalheritage.state.pa.us/AllSpecies.aspx>. Choose the "Lehigh" watershed from the drop-down menu. This will give you a list of all species of concern within the watershed.

If any earth disturbance is planned or more detailed project information becomes available, please submit this project to our office for further review of potential impacts to the attached species list.

This response represents the most up-to-date summary of the PNDI data files and is good for one (1) year from the date of this letter. An absence of recorded information does not necessarily imply actual conditions on-site. A field survey of any site may reveal previously unreported populations. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered.

This finding applies to impacts to plants, natural communities, terrestrial invertebrates and geologic features only. To complete your review of state and federally-listed species of special concern, please be sure the U.S. Fish and Wildlife Service, the PA Game Commission and the Fish and Boat Commission has been contacted regarding this project either directly or by performing a search with the online PNDI ER Tool found at www.naturalheritage.state.pa.us.

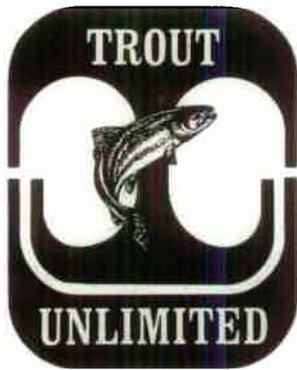
Rebecca H. Bowen, Environmental Review Specialist, PNHP

DCNR/BOF/PNDI, PO Box 8552, Harrisburg, PA 17105 ~ Ph: 717-772-0258 ~ F: 717-772-0271 ~ c-rbowen@state.pa.us

Stewardship

Partnership

Service



30 February 2008

WESTERN POCONO CHAPTER

638 Center Avenue
Jim Thorpe, PA 18229

Minas Arabatzis, Chief-Planning Division
U.S. Army Corps of Engineers,
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107

Dear Mr. Arabatzis,

The Western Pocono Chapter of Trout Unlimited is based in the community of Jim Thorpe, Pa. on the banks of the Lehigh River. The Lehigh is our home river. We regard it as a precious resource and are deeply committed to its protection. It is in this spirit that we offer for your consideration a few observations regarding the Army Corps of Engineers' 2008 flow management plan for the F.E. Walter Dam. Our River's well being and its capacity to provide a congenial environment for its Trout and diverse benthic community rely heavily on the release practices of the upstream Walter Dam.

Since 2005 the Walter Dam has been operated in a manner that has given rise to much optimism about the River's future as a remarkable cold water fishery. However, while more liberal than ever in terms of the Whitewater releases, several provisions of this year's plan appear regressive in the area of fisheries protection.

In the 2007 plan, the rule curve included storage conditions as a key factor in determining the volume of fisheries enhancement releases. This year's plan appears not to contain a rule curve for this purpose. The undesirable effect of this revision is the limitation of fishery releases to a fixed - and frequently inadequate - volume, irrespective of storage conditions. Particularly objectionable is capping fishery releases at 50 cfs over inflow during the high thermal stress months of July, August

and September against a lopsided 750cfs above inflow for recreational releases in July and August, and, depending on storage levels, September. It is our position that (1) storage conditions should continue to be factored into determining fisheries release volumes and (2) that the aquatic resource should not have to solely bear the brunt of adverse conditions. Austerity should be equally shared by all uses.

The plan indicates that during the storage build-up period from 1 April to 10 May weekday outflows will be limited to a reasonable 250 cfs while weekend releases will approximate inflow up to 1000 cfs. This scheme will impact on recreational opportunities by adding unplanned whitewater boating opportunities above and beyond the expansive 21 to 24 event schedule. The downside, from the fisherman's viewpoint, is that two weekend fishing opportunities will be limited by high water conditions during what many regard as the peak of the trout season. We appreciate that the first two weekends of trout season will see more reasonable flows. That the weekend releases will be limited to 750 cfs should achievement of the 1370' target be threatened is also noted and appreciated.

Also of concern is the proposed decrease in the volume of fisheries enhancement releases for the month of May from last year's 250 cfs to 200 cfs. We can only assume that the resultant savings will be invested in insuring planned recreational releases. We disagree with this strategy. Should we experience a warm, dry May, chiseling away 50cfs from the normal releases could harm the fishery. Based on discussions with fishery professionals and personal observation we regard a 300cfs release as optimum in terms of resource protection.

On the positive side, the restoration of the bypass system will be a welcome development. Assuming a discharge capacity of 300 cfs the system might save almost 200 million gallons of cold water in a whitewater weekend- a substantial benefit for the fishery.

We are also encouraged by the funding for the Recreational Enhancement Study trusting that the eventual outcome will be restructuring of the Dam's release works to permit a flexible release capacity that will better serve the needs of all recreational users while improving downstream water quality.

The fact that ecosystem considerations are on the table and open to discussion at all is, in itself, cause for hope about the well-being of the Lehigh River. We trust this dialogue will continue and will result in an ever improving cold water environment.

Thank you for the opportunity to make these comments. We hope they will be given some consideration in the planning

process for future operations.

Trout Unlimited-Western Pocono Chapter

A handwritten signature in black ink, appearing to read "Ray Youngblood". The signature is written in a cursive, flowing style with some loops and flourishes.

Raymond J. Youngblood
Environmental Committee



**PA Council of Trout Unlimited
PO Box 5148
Pleasant Gap, PA 16823**

www.patroul.org

Ken Undercoffer
1510 Village Road
Clearfield, PA 16830
kcoffer@atlanticbb.net

March 3, 2008

Mr. Minas Arabatzis
Chief, Planning Division
US Army Corps of Engineers
Wannamaker Building
100 Penn Square East
Phila., PA 19107-3390

Attn: Environmental Resources Branch

Dear Mr. Arabatzis

The Pennsylvania Council of Trout Unlimited (PATU) would like to express its support for the **Francis E. Walter Flow Management Plan Recommendations for 2008 (Attached)** proposed by the Lehigh Coldwater Fishery Alliance (LCFA).

Bottom releases from large dams like Francis E. Walter are a man-made simulation of immense cold water springs. Streams fed by large natural springs are ideal habitats for trout and other cold water species because of their stable flow and temperature regimes that change little throughout the seasons. Trout and other cold water aquatic species thrive because of this stability. Bottom release dams, if managed in order to simulate these natural regimes, often produce superb trout fisheries.

Highly variable and rapid changes in water flow and temperature are very harmful to the aquatic community of any waterway and especially difficult for trout. Low flows and elevated water temperature during the summer are especially problematic.

The recommendations of the LCFA are meant to ameliorate the negative effects of **excessively low and highly variable water releases on the trout**, while at the same time satisfying the demands of other groups interested in using the river downstream of the dam.

Tailwater Fisheries like the Francis E. Walter Dam are an economically valuable resource and require careful management in order to maintain a high quality fishery.

The recommendations by the Lehigh Coldwater Fishery Alliance, if instituted, would preserve, protect and enhance the tailwater trout fishery below the dam and, in addition, satisfy the diverse demands for water releases from the dam.

Sincerely,



Ken Undercoffer, President
PA Council of Trout Unlimited

Cc: Robert Bachman - bbachman@ptd.net
Mark Hartle - mhartle@state.pa.us
Dave Arnold - daarnold@state.pa.us
Austin Gerrard - Austin.L.Gerrard@nap02.usace.army.mil
Chris Kocher - ckocher@wildlandspa.org
Dave Madl - dmadl@state.pa.us
Kevin Fazzini - kfazzini@state.pa.us
Rep Keith McCall - kmccall@pahouse.net
Rep Robert Godshall - rgodshal@pahousegop.com
Khaalid Walls - khaalid.h.walls@usace.army.mil
Ed Voight - edward.c.voigt@usace.army.mil



LEHIGH COLDWATER
FISHERY ALLIANCE

www.thelehighriver.org

Army Corps of Engineers – Francis E Walter Flow Management Plan Recommendations for 2008

After three recreational seasons, each year has faced a variety of natural conditions that have affected how the water is managed in FEW and the performance of each Flow Management Plan. From the information that has been gathered over the last three seasons, the Lehigh Coldwater Fishery Alliance believes its time to re-evaluate the Plan and make adjustments accordingly that will strike a better balance between the aquatic resource of the Lehigh River in conjunction with whitewater and angling interests.

The following is a list of considerations and recommendations that are being submitted by the Lehigh Coldwater Fishery Alliance (LCFA) for discussion at the 2008 Flow Management Plan planning meeting with representatives from the Army Corps, DRBC, PA DCNR, PFBC and Lehigh River Stakeholders.

Fishery Improvement Recommendations-

The following recommendations are in addition to comments submitted in previous years by the LCFA. The LCFA requests that the agencies consider these changes to the 2008 Plan to enhance the trout fishery and Lehigh River's natural resources:

- 1) Further conservation of the hypolimnion (Coldwater Pool)
 - a. Elimination of first May weekend white water release.
 - b. Elimination of first June weekend whitewater release, unless pool is at 1,365' or the maximum pool elevation designation.
 - c. Reduce time duration of whitewater releases from 12hrs to 8 hrs
 - d. Consider increasing the in-lake summer pool to 1,370' or greater for the following:
 - i. To increase the available coldwater storage.
 - ii. To increase the minimum releases for improvement off the aquatic environment and natural resource.
 - e. Eliminate short duration or "High/Quick Dump" type releases. Rather have a lower release over an extended period of time, especially during non-whitewater release weekends.
 - f. Maintain strict adherence to the 5' pool fluctuation restriction during May/June to preserve the coldwater pool.
- 2) Repair and continue use of the by-pass gates to fullest extent.
- 3) Increase minimum target release to 300 cfs, after July 1st when "skimming" run-off into FEW for purposes of increasing pool storage.
- 4) Absolute minimum releases should be no less than 300 cfs from July 1st to September 15th. Releases should not drop below 300 cfs during this time period.



LEHIGH COLDWATER
FISHERY ALLIANCE

www.thehighriver.org

- 5) Any changes to "low flow" release policies should consider the effects and depletion of the coldwater pool.

Water Release Recommendations

- 1) Consider reduction of designated whitewater release weekends to 18 target weekend days with potential for "bonus" weekends in October if water storage is available.
- 2) Whitewater releases or releases of water that may be considered to be of significant volume (i.e. > 600 cfs) should not occur in consecutive weekends (i.e. – alternate weekends).
- 3) Release and non-release weekends should alternate so that fisherman may access the river as releases of water greater than 500 cfs do not constitute favorable conditions for wading the river.
- 4) Incorporate more angler friendly releases during Spring and Fall seasons.
 - a. Spring time (i.e. – April) is usually time of naturally high flows. Consider having designated weekends for releases of 500 cfs or less.
 - b. Fall time (i.e. - October) releases are typically less than 300 cfs. Consider releasing any remaining available storage at a rate of 350 cfs to 450 cfs over an extended period of time (i.e. – two weeks or greater) to lower the pool to 1,300'.
 - c. Eliminate the "mega" release of 4,000 cfs and use this water when available to provide increased fishing opportunities and a better angling experience during the fall season.

In closing, on behalf of the LCFA, I want to thank all the agencies for their cooperation and hard work in making this meeting possible and the overall willingness to work towards the preservation, protection, and enhancement of the water resources of the Lehigh River.

Sincerely,

Dean Druckenmiller, President
Lehigh Coldwater Fishery Alliance
www.thehighriver.com