



COMMONWEALTH of VIRGINIA
Lake Barcroft Watershed Improvement District

Operations Director's Report
(August 2012 – October 2012)

Engineering/Projects

Concrete Restoration for the Dam (update)

- To date Contracting Specialist Inc. (CSI) has completed approximately 90 % of the original contract, LBWID is pleased with the results thus far.
 - The east abutment has been completely restored.
 - All concrete work on the west abutment has been completed, the only tasks that remain is caulking the concrete joints and applying grass seed and straw to the earthen slope.
 - The repair to the spalled concrete area below the Gate House is on schedule to be completed within the next 10 days.
 - This is a relatively minor repair task.
 - The repair of the small and large voids on the cyclopean face below the bascule gate may be postponed until spring of 2013 because weather conditions currently have made it more difficult to obtain results of proper quality.
 - CSI had originally planned to complete this task during the summer months but did not do so.
 - The cost of the small and large void repair is approximately \$15,000.00.
- On August 8, 2012, LBWID approved CSI's change order proposal for restoring the dam's fixed elevation spillway as per the revised design specifications that were approved by the Virginia Division of Dam Safety.
 - The original design for restoring the fixed elevation spillway was going to cost \$307,000.00 (CSI's bid price). This task/design was ultimately not included in the original contract with CSI and WR&A revised the design and submitted to the Virginia Division of Dam Safety for approval.
 - The cost of the CSI change order for the revised design was \$111,456.04.
 - The cost of engineering for the revised design was approximately \$20,000.00.
 - The revised design yielded a savings of approximately \$175,000.00.

- In addition the original contract and change order #1 (fixed elevation spillway) LBWID has requested and approved five other change orders for small miscellaneous repairs
 - #2 – Small leak repair on west training wall = \$4,959.82
 - #3 – Additional pier repairs on fixed elevation spillway = \$5,904.06
 - #4 – Concrete knee wall repairs on east abutment = \$5,641.74
 - #5 - Gate house sidewalk repair = \$5,796.79
 - #6 – Painting steel substructure of walk bridge on east abutment = \$5,975.20
- WR&A has continued to be an integral part of the construction phase of the project by periodically performing quality control inspections, responding to technical questions submitted by the contractor, and evaluating change orders.
 - To date the LBWID has used approximately \$25,000 of the \$84,000.00 time and materials based contract that it has with WR&A for construction phase services.

Dam Hydraulic Accumulator Replacement (update)

- During the week of September 24th Advanced Fluid Systems, Inc. replaced the 3 accumulators in dam's hydraulic system.
 - The accumulators help maintain hydraulic pressure when the hydraulic system is sitting idle.
 - They also perform like a shock absorber when the hydraulic system turns on and off.
- The accumulators that were replaced were 40 years old and are were very difficult to service (to install new bladders) because they have to be removed completely to access the bottom side.
 - The bladders had not been replaced in more than 12 years.
- The new accumulators can be serviced in place. The bladders are accessible from the top of the accumulators.
 - The accumulator isolation valves were also upgraded to high pressure ball valves (3 valves total).
- Advanced Fluid Systems, Inc. did a great job.
- The cost of this project was \$9,881.00

Dam Hydraulic Cylinder Isolation Valve Replacement (update)

- During the week of September 24th Advanced Fluid Systems, Inc. replaced the dam's hydraulic cylinder isolation valves.
 - The valves that were replaced were gate style valves and were not best suited for providing 100% isolation.
 - The new valves that were installed are high pressure ball valves that will provide 100% isolation.

- 100% isolation is needed when individually testing the dam's hydraulic cylinders.
- This was a very tricky project that required very precise pipefitting in a very confined area and as always Advanced Fluid Systems Inc. did a fantastic job.
- The cost of this project was \$8,983.00

Revision of Dam O&M Manual *(update)*

- WR&A and LBWID staff met on August 14th for a full review of the current O&M manual to determine exactly what information needs to be updated or modified from numerous dam upgrades that have been completed over the past 4 years,.
- It is projected to take approximately 4 months to complete the update.
- This a time and a material based contract that currently has a not to exceed limit of \$10,000.00.
 - Applied Controls Engineering (ACE) will also need to update the manual and design drawing for the electronic controls system. The Cost from ACE is between \$2,500 and \$5,000

Biennial Dam Inspection *(new)*

- On October 4th engineers from WR&A started the biennial inspection of the dam.
 - They inspected the dam's hydraulic system and computer control system
 - The structural part of the inspection will happen later in November once the concrete restoration project has been completed.
- Overall the inspection has gone well so far.
- WR&A will work on completing the inspection report during the winter months and will submit it to the Virginia Division of Dam Safety in March of 2013.
 - One may ask why the actual inspection is done months in advance of when the inspection report has to be submitted to the State.
 - This is because the winter weather makes it harder and more dangerous to inspect the downstream face of the dam, hydraulic cylinders, and bascule gate. This is best done during the late summer when temperatures are warmer and the Lake is not frozen over.

Dam cathodic protection system inspection *(new)*

- On October 24th Tom Fowler from Russell Corrosion Consultants Inc. performed the annual inspection of the dam's cathodic protection system.
 - This system helps prevent the steel components of the dam, which are exposed to the lake, from rusting.
- Over all the inspection went well and no adjustments to the system were needed.

Painting of bascule gate and hydraulic cylinders (new)

- LBWID has postponed the painting of the bascule until the summer of calendar year 2014.
 - This project was originally planned to happen in the summer of calendar year 2013.
- Prior to the painting project the LBWID will have a catwalk installed along the face of the dam just below the bottom elevation of the bascule gate.
 - Having the catwalk for the painting project will help manage the cost of the painting project because access is one of the most challenging aspects of painting the bascule gate and hydraulic cylinders
- LBWID had budgeted \$88,000.00 in FY-2013 for the painting project.

Catwalk for the face of the dam (new)

- LBWID has moved up the schedule for installing a catwalk along the face of the dam to the summer of calendar year 2013
 - This project was originally scheduled for the summer of calendar year 2014.
- Having the catwalk will help manage the cost and difficulty of future projects, such as:
 - Painting the bascule gate and hydraulic cylinders
 - Replacing the hydraulic cylinders
 - Replacing the bolts and nuts that anchor the bascule gate
 - Hydraulic line maintenance
 - Dam inspections
- Having the catwalk will also reduce the safety risks to personnel when accessing the various areas on the downstream face of the dam
- LBWID had budget \$40,000 in FY-2014 for the new catwalk.
- LBWID has asked WR&A to start as soon as possible with the design of the catwalk.
 - LBWID would like to acknowledge that Luis Fernandez (Lake Barcroft resident and structural engineer) volunteered his services and did a great job of preparing preliminary design drawings for the cat walk. The work that Luis did will help to keep WR&A's design cost to a minimum.

Operations

Fall In-House Dredging Season (update)

- LBWID started the fall dredging season on Oct. 9th (Holmes Run side of the lake).
- To date LBWID has removed approximately 500 cubic yards of sediment, mostly from the upstream side of Swift Island.
- This year LBWID anticipates only removing approximately 700 cubic yards of sediment from the Holmes Run side of the lake.
 - This is less than the normal goal of 1250 cubic yards because the annual sediment loading was very light due the drought during the spring and summer season.
- In March of this next year LBWID will start the spring dredge season on Tripps Run side of the lake.
 - We are anticipating that less sediment than normal will have to be dredged on the Tripps Run side of the lake as well.

Community Garden Restoration (new)

- LBWID and LBA has teamed up to completely restore the Community Garden
 - LBWID and LBA contracted with Wewerka Construction Management to work with a committee of community volunteers to develop a restoration plan/concept.
 - LBWID would like to acknowledge Stephanie Perez (community member and LBWID Associate) for the work she has done with figuring out the best plan to correct the drainage issues at the garden. She has literally stood in rainstorms evaluating the drainage at the garden and devised a straightforward approach to correct it.
- In general the following task will be done:
 - Professionally restore the pond and waterfall feature.
 - Re-grade certain areas to have proper drainage across the property.
 - Build a better pathway that will have proper drainage.
 - Build two new floating docks (remove existing fixed dock.)
 - Stabilize shoreline erosion.
 - Build a gazebo.
 - Plant new native trees and plants.
- The current plan is to start certain phases of the project this fall/winter with completion of the project in the fall of 2013.
- The total cost of the project is projected to be \$104,025.00 and will be paid for in the following way:
 - LBA cash contribution of \$37,613.00
 - LBWID cash contribution of \$37,613.00
 - LBWID direct labor and equipment contribution of \$28,800.00
- LBWID will manage all construction phases of the project.

LBWID-LBA Tree Replacement Program (new)

- The LBWID –LBA annual tree replacement program was very successful again this year
- 35 - 1 ½ gallon size over story trees were planted around the community on both community and private property.
 - 6 additional trees were planted at the LBWID compound to replace trees that were lost during the Duratio storm.
- The LBWID's share of the tree replacement was \$2,381.00.
 - LBWID and LBA evenly share the cost of the program

NVS&WCD Board and Staff tour of the lake and Dam (new)

- On October 16th the LBWID hosted the NVS&WCD board members and staff for a tour of the Lake and dam and in particular the concrete restoration project.
- It was also a nice opportunity to celebrate Diane Hoffman's (NVS&WCD District Administrator) long service to the districts and show our appreciation for all that she has

done for the LBWID and the Lake Barcroft Community. She has served the NVS&WCD for over 30 years and will be retiring at the end of 2012.

Dredging Spoil Disposal (new)

- In September LBWID contracted with G.D.C. Trucking to truck away the dredge spoils that were removed from the lake during the fall 2011 dredge season and the spring 2012 dredge season.
 - Roughly 2,380 cubic yards of dried dredge spoils were trucked to Lorton Construction Landfill.
- The cost of the trucking was \$28,280.00

Hurricane Sandy (new)

- LBWID is pleased that Hurricane Sandy caused very minimal impacts on the lake.
 - Very little debris was washed into the lake.
 - 6 trees fell into the lake as a result of the strong wind.
- The dam performed very well during the storm.
 - A little over 8 inches of rain was recorded during the storm.
 - The maximum opening of the bascule gate during the storm was 21%, this equates to an approximate discharge of 800 cubic feet per second.
- There was a power outage during the storm that lasted roughly 45 minutes, the LBWID's automatic back-up generator system performed as designed.

Upgrade to the dam's data sharing system (new)

- LBWID is upgrading the dam's data sharing system that supplies live gate position data, lake level data and rainfall data to Fairfax County division of storm water management.
 - Fairfax has upgraded their system that collects and organizes data from all of the stream gauges and rain gauges that are installed around the county.
 - The County's new system will allow LBWID to have remote access.
 - The County uses this live data during large storms to predict the likelihood of flooding and to assist the County Emergency Management Officials with making decisions during storm events.
- Applied Controls Engineering (ACE) will be performing the upgrades to the LBWID's system.
- The cost of the upgrade to the LBWID system will be approximately \$5,000.00.
 - The County will be reimbursing the LBWID 50% of the cost.

Respectfully,
Davis Grant
LBWID Operations Director