

Client: 23247A Timberlake Water System

Comp # : 901 Well Pump/Motor #3 - Replace

Quantity: (1) 30 HP submersible 8"

Location : 150' SE of Well #1

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Reportedly replaced last in 2008

Evaluation : As already mentioned, this well has been online since 2008; typical service life assumed below for pump / motor.
Track actual expenses and timing of all significant components to help ensure accurate budget forecasting for your community.

Useful Life:
10 years

Remaining Life:
3 years



Best Case: \$20,000

Worst Case: \$24,000

Lower estimate to replace pump/motor

Higher estimate to replace pump/motor

Cost Source: ARI Cost Database: Similar Project Cost History

Comp # : 904 Well #1 Control - Replace

Quantity: (1) motor control

Location : Pump house adjacent to Watershed, 2880 East Timberlake Drive West

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History :

Evaluation : As already mentioned Well #1 has reduced capacity and is now considered an additional point of withdrawal. Regardless, long term planning dictates assumption for eventual intervals of controller replacement to ensure functionality and offset potential parts obsolescence.

Useful Life:
30 years

Remaining Life:
9 years



Best Case: \$10,000

Worst Case: \$15,000

Lower estimate to replace controller

Higher estimate to replace controller

Cost Source: Marcus @ Systems Interface, 1.425.481.1225

Client: 23247A Timberlake Water System

Comp # : 904 **Well #2 Control - Replace** Quantity: (1) motor control

Location : 700' SE of Well #1

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Reportedly replaced last in 2004

Evaluation : Well was installed in 1971, controller was replaced last in 2004 project. No reported problems.

Useful Life:
30 years

Remaining Life:
19 years



Best Case: \$10,000

Worst Case: \$15,000

Lower estimate to replace controller

Higher estimate to replace controller

Cost Source: Marcus @ Systems Interface, 1.425.481.1225

Comp # : 904 **Well #3 Control - Replace** Quantity: (1) motor control

Location : 150' SE of Well #1

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Reportedly replaced last in 2008

Evaluation : Installation in 2001; usage since 2008 reported. Cycles of replacement are factored below.

Useful Life:
30 years

Remaining Life:
23 years



Best Case: \$10,000

Worst Case: \$15,000

Lower estimate to replace controller

Higher estimate to replace controller

Cost Source: Marcus @ Systems Interface, 1.425.481.1225

Client: 23247A Timberlake Water System

Comp # : 905 **Source Flow Meters - Replace** Quantity: (3) source meters

Location : Wells

Funded? : No Individual cost projected to be too small

History :

Evaluation : No reported problems; ages and types vary. History of replacement includes maintenance staff replacing meter for Well #2 in 2011 (parts expense was \$1,200). Typical life is in the 5-10 year range. Expense of individual replacements when needed does not merit reserve designation.



Useful Life:

Remaining Life:

Best Case:

Worst Case:

Cost Source:

Comp # : 907 **Filter System - Maintain/Replace** Quantity: (6) tank system

Location : 2880 East Timberlake Drive West, Pump House

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Reportedly replaced last in 2005; segregated portion ~\$80,000

Evaluation : Raw water is directed from wells to this ATEC commercial system which utilizes pyrolusite media to remove iron, manganese and control odor; installed in 2005 as part of \$352,000 project (segregated portion ~\$80,000). No reported problems at present. Assuming proactive maintenance continues, anticipate 30-40 year replacement cycles of equipment factored below for planning purposes. Note; if significant needs or patterns of media replacement interval / expense develop in the future, incorporate in future reserve updates as conditions merit.



Useful Life:

35 years

Remaining Life:

25 years

Best Case: \$85,000

Worst Case: \$125,000

Lower estimate to replace tanks, controls, etc...

Higher estimate to replace tanks, controls, etc...

Cost Source: Client Cost History/Similar Project Cost History

Client: 23247A Timberlake Water System

Comp # : 908 **Backwash Infiltration Pond-Maintain** Quantity: Extensive square feet

Location : 2880 East Timberlake Drive West, adjacent to Pump Station

Funded? : No Useful life not predictable or extended

History :

Evaluation : No reported problems or previous repair history. After filtration, automatic individual tank back flushing occurs with discharge into this infiltration pond. No predictable expectation of significant expense meriting reserve designation.

Useful Life:

Remaining Life:



Best Case:

Worst Case:

Cost Source:

Client: 23247A Timberlake Water System

Comp # : 910 Storage Tank, Steel - Replace Quantity: (1) 200,000 gallon

Location : 2880 East Timberlake Drive West

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Installed in 1995 at an expense of ~\$300,000

Evaluation : Filtered water next enters this steel storage tank which was installed in 1995 at an expense of roughly \$300,000; interior was refurbished in 2012 at an expense of \$112,000. The tank was blasted and then coated on the interior with an industrial epoxy system by HCl Industrial and Marine Coatings; this was the first interior coating since original. Exterior finish is faded and also has some local damage and corrosion due to vandalism; no bids or definitive timeline for exterior recoating was expressed. Assuming proactive maintenance typical industry life expectancy for steel storage tanks is between 40 and 50 years. Installation of cathodic protection system is thought to provide some benefit for additional protection and maximum life. Cathodic protection affects the portion of tank that is submerged; not above the water line. Our research indicated that consideration was given but no plans for such addition. Minor repairs and replacement should be provided from operating funds. For long term planning purposes, we recommend anticipating eventual replacement of tank in distant years as expense is very significant. When remaining useful life is within ten years or so of zero, tank should be professionally inspected and evaluated. There are engineering testing methodologies to determine wall thickness, strength, etc...

Useful Life:
50 years

Remaining Life:
29 years



Best Case: \$400,000

Worst Case: \$500,000

Lower estimate to replace

Higher estimate to replace

Cost Source: Client Cost History/Similar Project Cost History

Client: 23247A Timberlake Water System

Comp # : 911 Storage Tank, Concrete - Replace Quantity: (1) 60,000 gallon

Location : 2880 East Timberlake Drive West

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Reportedly installed in the late 1960's/early 1970's

Evaluation : This two compartment, above-grade concrete tank contained within the Watershed was reportedly installed in the late 1960's / early 1970's. No significant spalling or obvious leaks were noted; just some minor local cracking and efflorescence. Interior of concrete tank is without any liner requiring renewal or replacement. Maintenance staff indicated regular inspections and cleaning with no problems known at this time. Our research suggests planning for typical service life of between 50-60 years for concrete tanks. Continue to monitor closely and perhaps have engineer evaluate when remaining useful life draws close to five years or if more cracking / spalling, leaks become prevalent. Note; some possibility of increased storage needs may exist for future years, as well as multitude of other design criteria - adjust in future reserve updates as conditions merit.

Useful Life:
60 years

Remaining Life:
17 years



Best Case: \$100,000

Worst Case: \$140,000

Lower allowance to replace with similar size

Higher allowance to replace with similar size

Cost Source: ARI Cost Database: Similar Project Cost History

Comp # : 912 Storage Tank, Interiors - Clean Quantity: (1) 200k gal (1) 60k gal

Location : 2880 East Timberlake Drive West

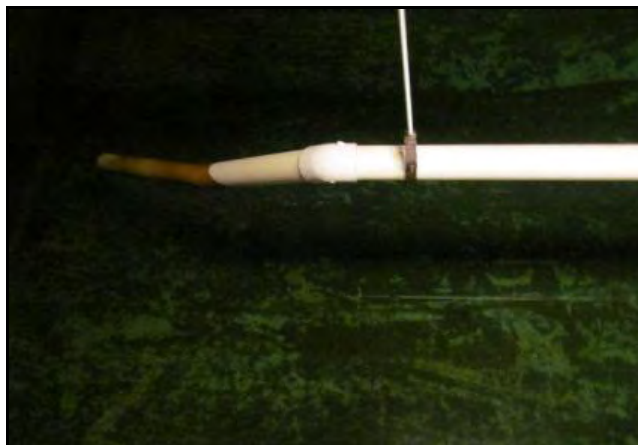
Funded? : No Annual cost best handled as operating expense

History :

Evaluation : Interior of steel tank was refurbished in 2012; previous to that inspection / cleaning utilizing a diver occurred in 2010 at an expense of only \$1,500. Next inspection may occur in FY 2015 / 2016; minor expense (\$2,000) is anticipated. Concrete tank interior compartments are cleaned by Maintenance Staff; last in 2013. Continue to treat inspections and cleaning as operating budget items.

Useful Life:

Remaining Life:



Best Case:

Worst Case:

Cost Source:

Client: 23247A Timberlake Water System

Comp # : 914 Storage Tank, Exterior - Recoat Quantity: (1) 200,000 gallon

Location : 2880 East Timberlake Drive West

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History :

Evaluation : Raining when we inspected but exterior finish is faded and also had some local damage and corrosion due to vandalism. Refinishing projects are recommended for not only aesthetics but for protection of structure from weathering elements. Previous research with contractor that successfully completed 2012 interior coating projects recommended cycles of exterior cleaning, local corrosion mitigation and coating-over of exterior finishes at roughly 10 year intervals. No bids or plans for such to occur in FY 2015/2016 (as was previously recommended in our FY 2012/2013 Reserve Study). We recommend such a project occur in the near future and have factored below.

Useful Life:
10 years

Remaining Life:
1 years



Best Case: \$33,000

Worst Case: \$43,000

Lower estimate to clean and recoat exterior

Higher estimate to clean and recoat exterior

Cost Source: ARI Cost Database: Similar Project Cost History

Client: 23247A Timberlake Water System

Comp # : 915 Storage Tank, Exterior-Blast/Recoat Quantity: (1) 200,000 gallon

Location : 2880 East Timberlake Drive West

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History :

Evaluation : This component factors the additional expense to provide for complete removal of exterior finish and installation of new coatings at every 20 year interval going forward (combine expense with Component # 914 Storage Tank, Exterior - Recoat for total project cost). Expenses for mobilization to comply with environmental regulations are more significant for this phase of exterior refinishing. If significantly deferring maintenance for coatings, this project may need to take place sooner instead of less costly clean and paint.

Useful Life:
10 years

Remaining Life:
11 years



Best Case: \$66,000

Additional lower estimate to remove old finish and install new coating (combine with #914 for total project)

Worst Case: \$76,000

Additional higher estimate to remove old finish and install new coating (combine with #914 for total project)

Cost Source: ARI Cost Database: Similar Project Cost History

Comp # : 916 Storage Tank, Interior-Blast/Recoat Quantity: (1) 200,000 gallon

Location : 2880 East Timberlake Drive West

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Interior was refurbished in 2012 at an expense of \$112,000

Evaluation : Image is representative; no image of interior available. Recent interior project is well documented. For purposes of long term planning anticipate refurbishing of interior coatings for steel reservoir at typical life expectancy of 15-20 years as projected below. Adjust in future reserve updates as conditions merit.

Useful Life:
20 years

Remaining Life:
17 years



Best Case: \$112,000

Lower estimate to blast / recoat

Worst Case: \$127,000

Higher estimate to blast / recoat

Cost Source: ARI Cost Database: Similar Project Cost History

Client: 23247A Timberlake Water System

Comp # : 918 Reservoir Control System - Replace Quantity: (1) control panel

Location : 2880 East Timberlake Drive West, Pump House

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Installed in 2005; no segregated cost history was provided

Evaluation : Installed in 2005; no segregated cost history was provided. Typical service life based on our research is in the 25 to 30 year range.

Useful Life:
30 years

Remaining Life:
20 years



Best Case: \$25,000

Worst Case: \$35,000

Lower estimate to replace

Higher estimate to replace

Cost Source: Marcus @ Systems Interface, 1.425.481.1225

Comp # : 919 Telemetry System - Replace Quantity: (1) system

Location : 2880 East Timberlake Drive West

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Installed in 2005

Evaluation : Basic telemetry in place was installed in 2005 and is for notification in the event of power failure, shut-down; some elements are part of reservoir control system panel (factored at previous Component #918). Additional expense for intervals of replacement of system dialer within this component assumes 10-15 year service life of system. When replacement is deemed appropriate, consider upgrade to SCADA system. Supervisory Control and Data Acquisition (SCADA) is a process control system that enables a site operator to monitor and control processes from remote location. A properly designed SCADA system saves time and money by eliminating the need for service personnel to visit each site for inspection, data collection/logging or make adjustments. Real-time monitoring, system modifications, troubleshooting, increased equipment life, automatic report generating . . . these are just a few of the benefits that come with today's SCADA system.

Useful Life:
15 years

Remaining Life:
5 years



Best Case: \$3,000

Worst Case: \$4,000

Lower estimate to replace dialer

Higher estimate to replace dialer

Cost Source: Marcus @ Systems Interface, 1.425.481.1225

Client: 23247A Timberlake Water System

Comp # : 920 Hypochlorite Generator - Replace Quantity: (1) US Filter

Location : 2880 East Timberlake Drive West

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Installed in 2005

Evaluation : No reported problems. System creates chlorine for disinfection and equipment was installed in 2005. Eventual replacement of system at typical service life based on our research is in the 25 to 30 year range (lined up with future cell replacement for long term planning purposes; cost of Component #922, cell replacement will need to be added to arrive at total project expense).

Useful Life:
30 years

Remaining Life:
17 years



Best Case: \$30,000

Worst Case: \$40,000

Lower estimate to replace, add cost of Component # 922, cell replacement to arrive at total expense

Higher estimate to replace, add cost of Component #922, cell replacement to arrive at total expense

Cost Source: Dean @ TMG, 1.800.562.2310

Comp # : 922 Hypochlorite Cells - Replace Quantity: (1) US Filter

Location : 2880 East Timberlake Drive West

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Equipment upgrade to facilitate improved design / type in 2012 / 2013 at project expense of \$12,000

Evaluation : Equipment upgrade to facilitate improved design / type in 2012 / 2013 at project expense of \$12,000. Research with contractor indicated that cell life (anode) is roughly seven- ten years with similar current replacement expense.

Useful Life:
10 years

Remaining Life:
7 years



Best Case: \$10,000

Worst Case: \$14,000

Lower estimate to replace cell

Higher estimate to replace cell

Cost Source: Dean @ TMG, 1.800.562.2310

Client: 23247A Timberlake Water System

Comp # : 926 Treatment/Monitoring - Replace Quantity: Pumps, sensors, monitors

Location : 2880 East Timberlake Drive West

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Equipment installed in 2005; no segregated expense provided.

Evaluation : Equipment installed in 2005; no segregated expense provided. Reportedly systems are in fair operating condition at this time. This component factors a funding allowance for replacement around the 20 year mark of life.

Useful Life:
20 years

Remaining Life:
10 years



Best Case: \$16,000

Worst Case: \$20,000

Lower allowance to replace

Higher allowance to replace

Cost Source: Dean @ TMG, 1.800.562.2310

Comp # : 929 Cla-Val Valves - Replace Quantity: (2) flow control

Location : Water system, before filter and between resevoirs

Funded? : No Annual cost best handled as operating expense

History :

Evaluation : One of two valves had solenoids replaced in 2012 (expense was \$1,200). Previous research with providing contractor (Gary @ GC Systems) indicated that expense to rebuild is well below current reserve funding threshold of \$3,000. Sustaining functionality from operating monies is assumed.

Useful Life:

Remaining Life:



Best Case:

Worst Case:

Cost Source:

Client: 23247A Timberlake Water System

Comp # : 929 System Components, Small - Replace Quantity: Assorted systems

Location : Water system, various

Funded? : No Annual cost best handled as operating expense

History :

Evaluation : There are numerous small connections, meters, gauges, valve assemblies, etc... These ancillary water system components will need rebuilding or replacement from time to time but are expected to also be below the reserve funding threshold cost and therefore should be expensed as general maintenance from within the operating budget per occurrence.

Useful Life:

Remaining Life:



Best Case:

Worst Case:

Cost Source:

Comp # : 930 Booster System, Primary - Replace Quantity: (1) Paco 9000

Location : 2880 East Timberlake Drive West, Pump Station

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Existing skid was installed in 2004 as part of project expense of ~\$113,000

Evaluation : Timely inspections and maintenance are indicated; no problems at this time. Existing skid was installed in 2004 as part of project expense of ~\$113,000. System primarily consists of (1) 25 HP lead pump plus (2) 40 HP, hydro pneumatic tank and control system. Assume typical useful life of roughly twenty years with continued proactive maintenance. Cost below assumes efficient integrated VFD (variable frequency drive) pumps since current pricing of conventional type is similar.

Useful Life:
20 years

Remaining Life:
9 years



Best Case: \$95,000

Worst Case: \$115,000

Lower estimate to replace booster skid

Higher estimate to replace booster skid

Cost Source: Corey Rasmussen @ Paco, 1.206.730.2343

Client: 23247A Timberlake Water System

Comp # : 932 Booster System, Primary - Maintain Quantity: (1) Paco 9000

Location : 2880 East Timberlake Drive West, Pump Station

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : 2014 project to replace (1) pump, rebuild (1) pump at \$10,000 expense, 2012 expense of \$4,000

Evaluation : In addition to total replacement assumptions, a general allowance for more significant maintenance events is factored below. Examples of such are recent 2014 project to replace (1) pump and rebuild (1) pump at \$10,000 expense. Also, 2012 project to rebuild check valves / diaphragm repairs (\$4,000 including parts). Track needs / expense patterns carefully and adjust in future reserve updates.

Useful Life:
4 years

Remaining Life:
3 years



Best Case: \$5,000

Lower allowance for maintenance to supplement operating budget

Worst Case: \$10,000

Higher allowance for maintenance to supplement operating budget

Cost Source: Client Cost History/Similar Project Cost History

Comp # : 934 Booster System, Back Up - Maintain Quantity: (1) system, quad pump

Location : 2880 East Timberlake Drive West, Water Shed

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Installed in 1967; replacements of pumps in 1991

Evaluation : No reported problems. Older system installed in 1967 is still operational but now considered a reserve system. Previous history includes replacements of pumps in 1991 (7.5 HP and 15 HP, two each) - ongoing daily inspections, regular exercising and maintenance are indicated. Although it is our understanding that this system would not be entirely replaced if it failed, the community will likely continue maintaining viability until that time. Notwithstanding current status as a emergency back up, a general allowance for more significant maintenance events is prudent. Track needs / expense patterns carefully and adjust in future reserve updates.

Useful Life:
4 years

Remaining Life:
1 years



Best Case: \$4,000

Lower allowance for maintenance to supplement operating budget

Worst Case: \$6,000

Higher allowance for maintenance to supplement operating budget

Cost Source: ARI Cost Database: Similar Project Cost History

Client: 23247A Timberlake Water System

Comp # : 940 Water Main Line Project, B-Replace Quantity: Approx 2,600 LF

Location : Agate Drive (from West Lakeshore Drive to Pickering Drive)

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History :

Evaluation : Main and distribution piping length totals approximately 13.5 miles (71,150 LF). A significant portion of this older water main / distribution piping had been recommended to be replaced in a phased manner as a result of previous analysis by CHS Engineers, LLC, Bellevue, Washington, provider of your last state required Water System Plan. Replacements were indicated primarily to improve flow and fire protection areas but also to replace leaking sections. See 2009 / 2010 WSP for supporting detail. 2015 / 2016 WSP plan is in progress as this report was written but will not be completed for months into the future. Note that much of the original PVC main line was 2"-6" with minor amount of 8" Asbestos Cement and 10" Ductile Iron. One of five phases of replacement has already been completed in 2009 at an expense of ~\$247,000 (2,600 LF along Eastlake Drive from E Timberlake Drive W to Timberlake Drive E). Included in projects are related connections, hydrants, asphalt repair, etc... Replacement mains for these targeted areas will likely consist of 8" Ductile Iron. Previous 2012 research indicated next phase of project would likely be completed in 2014; West Lakeshore Drive to Pickering Drive (2,600 LF). No such project has occurred; 2015 discussion with WSP representative indicated deferral until at least FY 2016 / 2017 is now anticipated (subject to completion of analysis for 2015 / 2016 WSP). Prudent planning suggests anticipating replacement projects at roughly the 40-60 year time frame as projected below. Note; photo is only representative and not indicative of phasing.

Useful Life:
60 years

Remaining Life:
1 years



Best Case: \$312,000

Worst Case: \$338,000

\$120/LF, lower estimate to replace mains

\$130/LF, higher estimate to replace mains

Cost Source: Research with Eli Zehner, CHS Engineers

Client: 23247A Timberlake Water System

Comp # : 940 **Water Main Line Project, C-Replace** Quantity: Approx 2,000 LF

Location : McClane Drive and Totten Place

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History :

Evaluation : This third phase of project is assumed for completion in 2017 / 2018; McClane Drive and Totten Place (2,000 LF).
Note; photo is only representative and not indicative of phasing.

Useful Life:
60 years

Remaining Life:
2 years



Best Case: \$240,000

Worst Case: \$260,000

\$120/LF, lower estimate to replace mains

\$130/LF, higher estimate to replace mains

Cost Source: Research with Eli Zehner, CHS Engineers

Comp # : 940 **Water Main Line Project, D-Replace** Quantity: Approx 2,400 LF

Location : Lakeshore Drive West and Timber Parkway

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History :

Evaluation : This fourth phase of project is assumed for completion in 2020 / 2021; Lakeshore Drive West and Timber Parkway (2,400 LF). Note; photo is only representative and not indicative of phasing.

Useful Life:
20 years

Remaining Life:
5 years



Best Case: \$288,000

Worst Case: \$312,000

\$120/LF, lower estimate to replace mains

\$130/LF, higher estimate to replace mains

Cost Source: Research with Eli Zehner, CHS Engineers

Client: 23247A Timberlake Water System

Comp # : 940 Water Main Line Project, E-Replace Quantity: Approx 2,800 LF

Location : Pickering Drive, Park Drive and Lakeshore Drive West

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History :

Evaluation : This fifth phase of project is assumed for completion in 2023 /2024; Pickering Drive, Park Drive and Lakeshore Drive West (2,800 LF). Note; photo is only representative and not indicative of phasing.

Useful Life:
60 years

Remaining Life:
8 years



Best Case: \$336,000

Worst Case: \$364,000

\$120/LF, lower estimate to replace mains

\$130/LF, higher estimate to replace mains

Cost Source: Research with Eli Zehner, CHS Engineers

Comp # : 941 Water Main Line Project, A-Replace Quantity: Approx 2,600 LF

Location : Eastlake Drive from E Timberlake Drive W to Timberlake Drive E

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : First phase of project was completed in 2009

Evaluation : This component represents future intervals of the first phase of project which was already completed in 2009; (2,600 LF along Eastlake Drive from E Timberlake Drive W to Timberlake Drive E). Note; photo is only representative and not indicative of phasing.

Useful Life:
60 years

Remaining Life:
54 years



Best Case: \$312,000

Worst Case: \$338,000

\$120/LF, lower estimate to replace mains

\$130/LF, higher estimate to replace mains

Cost Source: Research with Eli Zehner, CHS Engineers

Client: 23247A Timberlake Water System

Comp # : 945 Remaining Main Lines, F- Replace Quantity: ~(1/4) of 59,000 LF

Location : Throughout community

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History :

Evaluation : As already mentioned, limited replacements of main lines are planned in the next 10 years or so; mostly to improve fire flow / protection. 2009 / 2010 comprehensive Water System Plan was silent regarding specific assumptions for remaining useful life of other PVC distribution / main lines, much of which is already over 40 years old. Typical useful life of piping is 40-60 years in most circumstances, with PVC often nearer the shorter end of range. Prudent planning requires assumption of eventual significant replacement needs for these locations as well. We recommend detailed analysis (whether inside or outside of any WSP) be undertaken to help project timing, specifications and cost projects for such a project. Project will likely be phased over a number of years and we have expressed a simple division of remaining lines over a four year period only for purposes of long term planning. Consider projections below only "budget place holder" pending further evaluation and adjust in future reserve updates as conditions merit. Note; photo is only representative and not indicative of phasing.

Useful Life:
60 years

Remaining Life:
11 years



Best Case: \$1,455,000

\$120/LF (x9,500), lower estimate to replace mains,
\$60/LF (x5,250), lower estimate to replace 2"
distribution

Worst Case: \$1,602,500

\$130/LF (x9,500), higher estimate to replace mains,
\$70/LF (x5,250), higher estimate to replace 2"
distribution

Cost Source: ARI Cost Database: Similar Project Cost History

Client: 23247A Timberlake Water System

Comp # : 945 Remaining Main Lines, G - Replace Quantity: ~(1/4) of 59,000 LF

Location : Throughout community

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History :

Evaluation : Second phase for remaining quantity of main/distribution lines. Consider projections below only "budget place holder" pending further evaluation and adjust in future reserve updates as conditions merit. Note; photo is only representative and not indicative of phasing.

Useful Life:
60 years

Remaining Life:
12 years



Best Case: \$1,455,000

\$120/LF (x9,500), lower estimate to replace mains,
\$60/LF (x5,250), lower estimate to replace 2"
distribution

Worst Case: \$1,602,500

\$130/LF (x9,500), higher estimate to replace mains,
\$70/LF (x5,250), higher estimate to replace 2"
distribution

Cost Source: ARI Cost Database: Similar Project Cost History

Comp # : 945 Remaining Main Lines, H - Replace Quantity: ~(1/4) of 59,000 LF

Location : Throughout community

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History :

Evaluation : Third phase for remaining quantity of main / distribution lines. Consider projections below only "budget place holder" pending further evaluation and adjust in future reserve updates as conditions merit. Note; photo is only representative and not indicative of phasing.

Useful Life:
60 years

Remaining Life:
13 years



Best Case: \$1,455,000

\$120/LF (x9,500), lower estimate to replace mains,
\$60/LF (x5,250), lower estimate to replace 2"
distribution

Worst Case: \$1,602,500

\$130/LF (x9,500), higher estimate to replace mains,
\$70/LF (x5,250), higher estimate to replace 2"
distribution

Cost Source: ARI Cost Database: Similar Project Cost History

Client: 23247A Timberlake Water System

Comp # : 945 **Remaining Main Lines, I - Replace** Quantity: ~(1/4) of 59,000 LF

Location : Throughout community

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History :

Evaluation : Fourth phase for remaining quantity of main / distribution lines. Consider projections below only "budget place holder" pending further evaluation and adjust in future reserve updates as conditions merit. Note; photo is only representative and not indicative of phasing.

Useful Life:
60 years

Remaining Life:
14 years



Best Case: \$1,455,000

\$120/LF (x9,500), lower estimate to replace mains,
\$60/LF (x5,250), lower estimate to replace 2"
distribution

Worst Case: \$1,602,500

\$130/LF (x9,500), higher estimate to replace mains,
\$70/LF (x5,250), higher estimate to replace 2"
distribution

Cost Source: ARI Cost Database: Similar Project Cost History

Comp # : 946 **Service Lines - Replace** Quantity: Extensive linear feet

Location : Service connections throughout community

Funded? : No Annual cost best handled as operating expense

History :

Evaluation : Service lines off of the main water distribution lines are reportedly black plastic pipe of varying ages. These small 1' connecting lines are repaired / replaced as maintenance item. No basis for cyclical reserve funding at this time. Continue proactive leak detection, repair/replacement as needed using operating funds.

Useful Life:

Remaining Life:



Best Case:

Worst Case:

Cost Source:

Client: 23247A Timberlake Water System

Comp # : 947 Service Connections - Replace Quantity: ~(700) steel fittings

Location : Service connections throughout community

Funded? : No Annual cost best handled as operating expense

History :

Evaluation : No image available. Roughly (600) of the previous plastic service line connections were replaced utilizing steel fittings in recent years. Going forward, replacements of any older units either along with other main line replacement projects or from operating funds. Continue proactive leak detection, document / track replacements and update in future reserve updates as conditions merit.

Useful Life:

Remaining Life:

Photo Not Available

Best Case:

Worst Case:

Cost Source:

Client: 23247A Timberlake Water System

Comp # : 950 Hydrants - Add/Replace Quantity: (18) hydrants, existing

Location : Water distribution throughout community

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History :

Evaluation : Other than issues regarding spacing and coverage, no reported problems. Age of existing (18) fire hydrants vary; (6) were reportedly added in 2009 phased water main project. Going forward, 2010 WSP assumed phased addition / expense of hydrants in conjunction with other phased water main replacement work (Components # 940, 941, 942 and 943) but also recommends additional (18) hydrants to increase fire protection along the other 6" mains that make up the major loops within the systems. 2010 WSP had recommended installation of two locations per year in each year, 2009-2017. None have been added so far and time frame below is only a budget placeholder until completion of 2015/2016 WSP. Since useful life of hydrants are typically long lived, maintenance to sustain is inexpensive and ages of installations will vary considerably we have only expressed replacements of these recommended (18) locations as a one-time project. Track needs and expense patterns closely in future reserve updates to form any basis if cyclical funding is appropriate.

Useful Life:

Remaining Life:
5 years



Best Case: \$126,000

\$7,000/each (x18), lower estimate to add hydrants (wet tap independent of main line replacement)

Worst Case: \$144,000

\$8,000/each (x18), higher estimate to add hydrants (wet tap independent of main line replacement)

Cost Source: ARI Cost Database: Similar Project Cost History

Client: 23247A Timberlake Water System

Comp # : 954 Blow-Out/Isolation Valves - Replace Quantity: (65) total, assorted

Location : Water service points of community

Funded? : No Annual cost best handled as operating expense

History :

Evaluation : Roughly (40) isolation valves and (25) blow-out valves of varying ages and sizes are installed throughout community at present. Annual inspections, maintenance and individual replacements from operating budget were indicated. With this understanding, no reserve funding factored at this time.

Useful Life:

Remaining Life:



Best Case:

Worst Case:

Cost Source:

Comp # : 955 Pressure Reducing Valves - Replace Quantity: ~(570) Cash Acme EB86U

Location : Water service points of community

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History :

Evaluation : Roughly (500) PRV's were installed in previous years near service connections by maintenance staff. Those locations were primarily in the lower elevations with another ~(50-70) or so replacements available for remainder of service locations (parts already on shelf). For general planning purposes assume estimated useful life of PRV'S is between 20-25 years with future replacement expressed below as all-at-once project for ease of reporting. Document / track history of replacement and adjust in future reserve study updates as conditions merit.

Useful Life:
25 years

Remaining Life:
17 years



Best Case: \$31,350

Worst Case: \$42,750

\$55/each, lower estimate to replace

\$75/each, higher estimate to replace

Cost Source: ARI Cost Database: Similar Project Cost History

Client: 23247A Timberlake Water System

Comp # : 956 Water Meters, A - Replace Quantity: (417) meters

Location : Water service points of community

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Reportedly installed between 1997-1999

Evaluation : Individual water meters were reportedly installed between 1997-1999 by maintenance staff and temporary labor. Estimated useful life of meters is between 10-15 years with replacement recommend to help ensure minimal leakage, function and accuracy. No widespread replacement reported since our previous 2012 site inspection. Earlier installations are already beyond the typical service life. We continue to recommend evaluation of performance and formulation of near term replacement timeline. First of three phases representing assumed quantity replaced last in 1997. Note; image is representative not indicative of phasing.

Useful Life:
15 years

Remaining Life:
1 years



Best Case: \$37,530

Worst Case: \$45,870

\$90/each, lower estimate to replace meters

\$110/each, higher estimate to replace meters

Cost Source: Estimate Provided by Client

Comp # : 956 Water Meters, B - Replace Quantity: (373) meters

Location : Water service points of community

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Reportedly installed between 1997-1999

Evaluation : Second of three phases representing assumed quantity replaced last in 1998. Going forward assume more costly lead-free meters as factored below. Note; image is representative not indicative of phasing.

Useful Life:
15 years

Remaining Life:
2 years



Best Case: \$33,570

Worst Case: \$41,030

\$90/each, lower estimate to replace meters

\$110/each, higher estimate to replace meters

Cost Source: Estimate Provided by Client

Client: 23247A Timberlake Water System

Comp # : 956 Water Meters, C - Replace Quantity: (230) meters

Location : Water service points of community

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Reportedly installed between 1997-1999

Evaluation : Last of three phases representing assumed quantity replaced last in 1999. Note; image is representative not indicative of phasing.

Useful Life:
15 years

Remaining Life:
3 years



Best Case: \$20,700

Worst Case: \$25,300

\$90/each, lower estimate to replace meters

\$110/each, higher estimate to replace meters

Cost Source: Estimate Provided by Client

Comp # : 957 Water Meter Setters, A - Replace Quantity: (417) boxes/setters

Location : Water service points of community

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Reportedly installed between 1997-1999

Evaluation : Previous 1997-1999 project also included new boxes and meter setters. No reported problems. Estimated useful life of between 20-30 years for those components with replacement recommended to coincide with every other meter replacement project. First of three phases representing assumed quantity replaced last in 1997. Note; image is representative not indicative of phasing.

Useful Life:
30 years

Remaining Life:
16 years



Best Case: \$70,890

Worst Case: \$79,230

\$170/each, lower estimate to replace boxes and setters

\$190/each, higher estimate to replace boxes and setters

Cost Source: Estimate Provided by Client

Client: 23247A Timberlake Water System

Comp # : 957 Water Meter Setters, B - Replace Quantity: (373) boxes/setters

Location : Water service points of community

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Reportedly installed between 1997-1999

Evaluation : Second of three phases representing assumed quantity replaced last in 1998. Going forward assume more costly lead-free setters as factored below. Note; image is representative not indicative of phasing.

Useful Life:
30 years

Remaining Life:
17 years



Best Case: \$63,410

\$170/each, lower estimate to replace boxes and setters

Worst Case: \$70,870

\$190/each, higher estimate to replace boxes and setters

Cost Source: Estimate Provided by Client

Comp # : 957 Water Meter Setters, C - Replace Quantity: (230) boxes/setters

Location : Water service points of community

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Reportedly installed between 1997-1999

Evaluation : Last of three phases representing assumed quantity replaced last in 1999. Note; image is representative not indicative of phasing.

Useful Life:
30 years

Remaining Life:
18 years



Best Case: \$39,100

\$170/each, lower estimate to replace boxes and setters

Worst Case: \$43,700

\$190/each, higher estimate to replace boxes and setters

Cost Source: Estimate Provided by Client

Client: 23247A Timberlake Water System

Comp # : 960 Building Exterior - Maintain/Repair

Quantity: Approx 3,200 GSF

Location : In the vicinity of 2880 East Timberlake Drive West

Funded? : No Annual cost best handled as operating expense

History :

Evaluation : Ages vary with no significant deterioration or instability of the older structures evident; no reported problems. Appearance of some would benefit from routine exterior cleaning / painting. Water system buildings are utility structures, constructed largely with CMU (concrete masonry unit) or vertically installed plywood. Inventory includes; Shop (~35'x55' overall, built in late 1960's) which houses shop/office, old booster system and 60,000 gallon concrete reservoir; Pump Station (~30'x30', built in 2004) which houses newer booster/filter systems; (3) small Well Houses (#1 and #2 built in the late 1960's/early 1970's and #3 built in 2004) and finally the Water Shed (~15'x25') small storage building. No anticipation of total replacements of any of these structures for the foreseeable future. Our research indicated previous projects for painting and repair utilizing maintenance staff and operating monies for materials will likely continue. Under this pattern of care, no impact upon reserves is factored. Monitor, track expenses closely and adjust as needed within future reserve study updates.

Useful Life:

Remaining Life:



Best Case:

Worst Case:

Cost Source:

Comp # : 962 Building Interior - Maintain/Repair

Quantity: Extensive GSF

Location : In the vicinity of 2880 East Timberlake Drive West

Funded? : No Annual cost best handled as operating expense

History :

Evaluation : As with exteriors, similar assumptions regarding interior maintenance of these utility structures will apply for projects such as repainting, replacement of lighting, heaters, etc... (maintenance by staff and operating funds).

Useful Life:

Remaining Life:



Best Case:

Worst Case:

Cost Source:

Client: 23247A Timberlake Water System

Comp # : 964 Building Roof - Replace Quantity: Approx 3,800 GSF

Location : In the vicinity of 2880 East Timberlake Drive West

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History :

Evaluation : No apparent or reported problems; we assume proper installation. Majority are standing seam metal roofing either newer construction or replaced in recent years by current maintenance staff. Metal roofing is a long lived product but eventual replacement near the 40 year mark of life due to typical material deterioration (including underlying membrane) is predictable. Also, replace any gutter / downspout along with this project. Although current staff is capable of such project, long term budgeting dictates assumption for professional installations for this type of project.

Useful Life:
40 years

Remaining Life:
32 years



Best Case: \$26,600
Lower estimate to replace

Worst Case: \$34,200
Higher estimate to replace

Cost Source: ARI Cost Database: Similar Project Cost History

Comp # : 966 Electrical/Plumbing-Repair/Replace Quantity: Extensive systems

Location : Throughout buildings

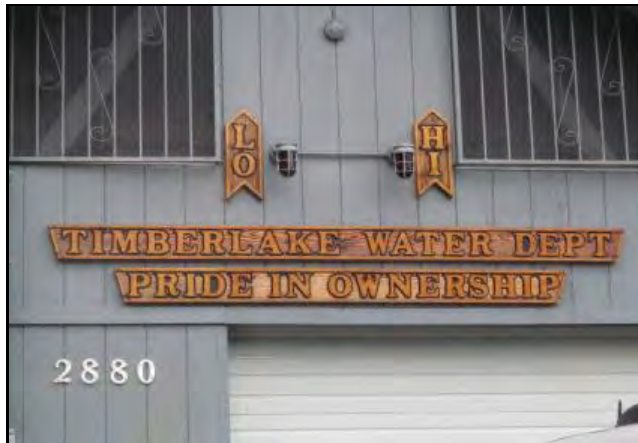
Funded? : No Useful life not predictable or extended

History :

Evaluation : Assessing both electrical and plumbing systems is beyond the scope of a reserve study. Some recent electrical upgrades were indicated with help from expert community volunteer. No reported problems at this time. Continue to treat electrical or plumbing repairs as ongoing maintenance expense. If significant needs emerge, funding may be incorporated into future reserve study updates. No reserve funding suggested at this time.

Useful Life:

Remaining Life:



Best Case:

Worst Case:

Cost Source:

Client: 23247A Timberlake Water System

Comp # : 970 Chain Link Fence - Replace Quantity: Approx 500 linear feet

Location : Adjacent to Shop and Wells

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History :

Evaluation : Stable condition noted. Inspect, clean and treat for corrosion; repair promptly as needed from operating funds. Eventual replacement of chain link fencing factored below.

Useful Life:
30 years

Remaining Life:
14 years



Best Case: \$9,600

Worst Case: \$11,000

\$18/LF, lower estimate to replace

\$22/LF, lower estimate to replace

Cost Source: ARI Cost Database: Similar Project Cost History

Comp # : 980 Generator, 200 KW - Upgrade Quantity: (1) 200 KW, new

Location : 2880 East Timberlake Drive West

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Installed in 1996 at an expense of \$36,000

Evaluation : No image available. Existing 100 KW generator is insufficient to meet all contingencies with BOD decision to upgrade to more powerful and dedicated emergency generator for Water System in FY 2015/2016. Engineering, bid and cost analysis process is yet to be completed; preliminary allowance is factored below. Update future reserve study updates as conditions merit.

Useful Life:
40 years

Remaining Life:
0 years

Photo Not Available

Best Case: \$150,000

Worst Case: \$200,000

Lower estimate to install new, upgraded generator and control system

Higher estimate to install new, upgraded generator and control system

Cost Source: ARI Cost Database: Similar Project Cost History

Client: 23247A Timberlake Water System

Comp # : 986 Generator, 100 KW - Replace Quantity: (1) Onan 100KW

Location : 2880 East Timberlake Drive West

Funded? : No Research indicates now considered an HOA asset (not Water System)

History :

Evaluation : As already mentioned, existing 100 KW generator is insufficient to meet all contingencies with BOD decision to upgrade to more powerful and dedicated emergency generator for Water System in FY 2015 / 2016. Research indicates now considered an HOA asset, primarily serving the MPC, so no reserve funding for this future replacement will be needed for Water System.

Useful Life:

Remaining Life:



Best Case:

Worst Case:

Cost Source:

Comp # : 988 Generator Control - Replace Quantity: (1) GE MX150

Location : 2880 East Timberlake Drive West

Funded? : No Research indicates now considered an HOA asset (not Water System)

History : Installed in 2004

Evaluation : Same assumptions regarding utility for HOA purposes going forward.

Useful Life:

Remaining Life:



Best Case:

Worst Case:

Cost Source:

Client: 23247A Timberlake Water System

Comp # : 990 Office Equipment/Furniture-Replace Quantity: Minor equipment

Location : 2880 East Timberlake Drive West, Water Shed

Funded? : No Annual cost best handled as operating expense

History :

Evaluation : Small quantity of office equipment and furniture of varying ages with no anticipation of large scale replacement; varying useful life cycles and modest individual replacement expenses should be funded from general operating monies.

Useful Life:

Remaining Life:



Best Case:

Worst Case:

Cost Source:

Comp # : 991 Small Equipment/Tools - Replace Quantity: Minor equipment

Location : 2880 East Timberlake Drive West, Water Shed

Funded? : No Annual cost best handled as operating expense

History :

Evaluation : Assorted small tools/equipment and utility benches, cabinets observed; nothing meriting reserve designation. Evaluate such minor replacement needs as ongoing maintenance and provide from annual operating funds.

Useful Life:

Remaining Life:



Best Case:

Worst Case:

Cost Source:

Client: 23247A Timberlake Water System

Comp # : 994 Compact Tractor/Loader - Replace

Quantity: (1) Kubota B20

Location : 2880 East Timberlake Drive West

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Purchased new in 1996 at an expense of \$26,000

Evaluation : Compact B20 tractor with TL420A front loader and BT750 backhoe is showing age but still functional. Primary usage is for water system maintenance and repairs. Purchased new in 1996 at an expense of \$26,000; meter showed 790 hours on 4.4.2012 (note that meter is only three digit but we confirmed the relatively low hours). Maintenance and repair from the operating budget is assumed (history included \$5,000 rear axle repair a few years ago). Typical service life is between 15-25 years; anticipate eventual replacement at roughly the time frame below.

Useful Life:
25 years

Remaining Life:
6 years



Best Case: \$30,000

Worst Case: \$35,000

Lower allowance to replace with similar

Higher allowance to replace with similar

Cost Source: ARI Cost Database: Similar Project Cost History

Comp # : 996 Truck - Replace

Quantity: (1) 1992 GMC 3500HD

Location : 2880 East Timberlake Drive West

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Purchased in 2012 at a total expense of only \$6,500

Evaluation : purchased used in 2012 at a total expense of only \$6,500 (cost split = 2/3 HOA and 1/3 Water System). Older 20,000 GVW dump truck is already 23 years old and appeared to have 152,722 miles on 2.5.2015. Prudent planning suggests intervals of replacement will be needed. Used but more contemporary truck purchase is assumed going forward. Adjust in future reserve updates as conditions / standards warrant.

Useful Life:
12 years

Remaining Life:
9 years



Best Case: \$5,000

Worst Case: \$7,000

Lower allowance to replace with used, Water System portion (1/3)

Higher allowance to replace with used, Water System portion (1/3)

Cost Source: ARI Cost Database: Similar Project Cost History

Association Reserves Washington, LLC

Component Details

Client: 23247A Timberlake Water System

Comp # : 996 Truck - Replace

Quantity: (1) 1992 GMC K2500

Location : 2880 East Timberlake Drive West

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Donated to community in 2010. Plans for FY 2015/2016 purchase in the \$15,000-\$20,000 range

Evaluation : Donated to community in 2010; older truck is already 23 years old with 123,480 miles. Plans for FY 2015/2016 replacement with purchase in the \$15,000-\$20,000 range likely. Prudent planning suggests intervals of replacement will be needed; contemporary truck purchase (not donation) is assumed going forward. Adjust in future reserve updates as conditions/standards warrant.

Useful Life:
12 years

Remaining Life:
0 years



Best Case: \$15,000

Worst Case: \$20,000

Lower allowance to replace with used

Higher allowance to replace with used

Cost Source: Estimate Provided by Client

Comp # : 998 Leak Detector - Replace

Quantity: (1) system

Location : MPC office

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Replaced last in 2005 at an expense of \$3,000

Evaluation : Older equipment but no reported problems at present. Replaced last in 2005 at an expense of \$3,000. Intervals of similar equipment replacement every 10-12 years are factored below.

Useful Life:
12 years

Remaining Life:
2 years



Best Case: \$3,500

Worst Case: \$4,000

Lower estimate to replace

Higher estimate to replace

Cost Source: Client Cost History/Similar Project Cost History

Association Reserves Washington, LLC

Component Details

Client: 23247A Timberlake Water System

Comp # : 999 **Meter Reader System - Replace** Quantity: (2) meters, software

Location : MPC office

Funded? : Yes Meets National Reserve Study Standards criteria for Reserve Funding

History : Replaced last in 2010 at an expense of ~\$2,800

Evaluation : These Palm brand meter readers were replaced last in 2010 at an expense of ~\$2,800. Often exposed to moisture / weathering; plan for replacements at roughly the five year interval. No preliminary bids or specifications for next replacement were available; allowance for similar type and software factored below.

Useful Life:
5 years

Remaining Life:
0 years



Best Case: \$3,000

Worst Case: \$4,000

Lower estimate to replace

Higher estimate to replace

Cost Source: Client Cost History/Similar Project Cost History



Paid 8/29/17

✓ 8597

\$ 2280⁰⁰ (FWD)

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
SOUTHWEST DRINKING WATER REGIONAL OPERATIONS
PO Box 47823, Olympia, Washington 98504-7823
TDD Relay 1-800-833-6388

August 14, 2017

Marcus Vind
Timberlake Community Club
2880 East Timberlake West Drive
Shelton, Washington 98584

Subject: Timberlake Community Club, Inc., ID #88370Y, Mason County; Water System Plan, ODW
Project #17-0402

Dear Marcus Vind:

Thank you for submitting the Water System Plan (WSP) for Timberlake Community Club's water system, received by the Office of Drinking Water (ODW) on April 14, 2017. We have reviewed the WSP in accordance with the pre-plan checklist, developed during the pre-plan meeting on March 18, 2014. The following comments have been provided for your review.

GENERAL NOTES

1. 10-Year WSP Approval. The State Board of Health approved revisions to WAC 246-290 on November 9, 2016. This revision allows for a WSP approval period of up to ten-years, provided the WSP contains data covering a ten-year period. **If you are interested in obtaining a ten-year WSP approval, please call Fern Schultz at (360) 236-3031.**

CHAPTER 1

2. Figure 1.2. WAC 246.290.100(4.IV) effective January 14, 2014, no longer requires the existing service area designation on a service area map, only the service area and retail service area designations. The required service area map would also be easier to find if it was labeled Service Area Map, instead of Existing Property Layout. **Consider revising the title.**

CHAPTER 2

3. Section 2.1.1. Text at the bottom of this paragraph says that data from 2013 and 2014 was used to estimate the Equivalent Residential Unit (ERU) as Average Day Demand (ADD), but Paragraph 2.2.5 states that the ADD was derived using data from 2011 to 2015. **Please clarify.**
4. Section 2.1.5. The version of the Water System Design Manual (WSDM) that was available at the time the last WSP was approved is now out of date. **Please use the current WSDM's methodology for deriving the water system's ERUs for both ADD and the Maximum Day Demand (MDD).**
5. Section 2.1.5. This section describes how the ERU based on the ADD was derived, but the ERU based on MDD is not addressed. If the ERU-MDD is based on applying a peaking factor, then a peaking factor analysis should be included in this section to support the peaking factor that is selected. **Please**

follow the method included in the 2009 WSDM to derive the peaking factor and ERU-MDD. If monthly source readings are used as a basis for determining the MDD for the system, please apply a 1.7 correction factor. If daily source meter readings are used, then the 1.7 correction factor does not need to be applied for the determination.

6. Section 2.1.5. The methodology used to determine the ADD for the water system is lower than normal for a full time single-family residence. An acceptable approach would be to use water use data from the customers that have used water for twelve (12) months rather than for eight (8) months. **Please justify how the approach used is sufficient or revise the method for determining the ERU for the system.**
7. Section 2.1.5. Utilizing two years of data for estimating system demands is acceptable, but we recommend using three to five years of data so the ERU values and demand estimates are more accurate. Since additional years of data are available, **please explain why only two years have been used for the analysis.**
8. Table 2.2 & 2.3. In Table 2.2 and various other locations, you use the terminology Non-Revenue Water, in Table 2.3 you use the terminology Non-Billed Water, and in Section 3.4.5 you use the term Distribution System Loss. **We recommend that you use consistent terminology throughout the plan. We prefer the term Distribution System Leakage (DSL).**
9. Table 2.3. Your Water Facilities Inventory (WFI) claims 0 non-residential connections such as RV sites, while Table 2.3 accounts for RV. **Please reconcile your connection analysis with your WFI.**
10. Table 2.3. **Please provide us a few more, preferably three or more, years of historical source and service meter data with your water demand projections, or provide an explanation as to why that is not provided.**

Chapter 3

11. General Comment. **For each water system attribute in this chapter, evaluate how many ERUs it can supply.** For example, the number of ERUs that can be supplied based on the source, storage, booster station, treatment, and distribution capacities. **At the end of the chapter summarize the number of ERUs for each attribute in a table and indicate the limiting factor for the water system.** The limiting factor will be used to assign the approved capacity for the water system.
12. Paragraph 3.1.5. This paragraph states that the MDD and ADD are discussed in 2.1.5 and 2.2.5, but I was unable to locate them. **Please reconcile this so I am better able to locate them.**
13. Paragraph 3.1.5. The peaking factor should be applied to the ADD for determining MDD, rather than directly to the peak hourly demand (PHD). **Please see Chapters 5 and 6 in the WSDM and revise the calculations for this section.**
14. Section 3.3.1, Source Capacity Analysis. **Please include an analysis for deriving the water system peaking factor, as mentioned above, that follows the procedure in the 2009 edition of the WSDM.**
15. Section 3.3.3, Storage Capacity Analysis. ODW regulations allow nesting of fire flow storage with standby storage, so you could consider the 60,000 gallons of standby storage to also be for fire flow. If this is something you would like to do, **contact your local fire authority so see if they approve of nesting fire flow storage.**
16. Section 3.3.5, Hydraulic Capacity Analysis. **Please indicate what year the previous hydraulic analysis was conducted and what changes, if any, have been made to the distribution system that could affect the results of the analysis.** For example, have there been any changes to the booster station, storage, or distribution lines that would significantly change the results?

17. Section 3.4.5, General Distribution. In addition to providing the percent of distribution loss, **please provide a summary of the distribution system loss in terms of ERUs.**

Section 3.4.5, Water Loss Control Action Plan. States that “the community recently purchased a large lot of residential meters and is scheduling to replace the majority of the existing meters within the next two years.” After visiting the water system on July 18, 2017, for the Sanitary Survey, the operator (Markus) mentioned that new meters have been installed. **Update this section (and all sections affected, such as the Water Loss Control Action Plan) to accurately represent where you are at with this project. Additionally, please provide DSL volume in ERUs.**

Chapter 4

18. Section 4.1.2. In order to demonstrate completion with the requirements set forth in WAC 246-290-840(4), **please submit notice of public forum from your goal setting meeting as well as minutes from that meeting.**

Chapter 6

19. Table 6.1. **Please include Disinfection Byproduct monitoring in the table.**

Chapter 7

20. General Note. Although WAC 246-290 allows a submittal exception for storage and booster station projects, in practice these types of projects are too unique to be included in the general construction standards. **Our approval of the construction standards in this WSP update will only include distribution main replacements.**
21. Section 7.5. To comply with the submittal requirements of the construction certification, the construction must be certified by a professional engineer. **Please include the fulfillment of this requirement in this section.**

Chapter 8

22. Section 8.2.3. During the Sanitary Survey on July 18, 2017, it was mentioned that the water system wants to put in a storage tank to provide fire flow storage for the water system. **If updating your WSP to accommodate the ten-year review, please address this in the capital improvement plan (CIP), or provide explanation why it is not addressed.** This would alleviate the need to amend your WSP when you come in to submit for your project.

Chapter 9

23. Table 9.1. This table only provides two years of historical data. **Please provide more historical data or an explanation as to why you cannot.**

Chapter 10

24. Section 10.1. This section references a WSP Program Consistency Statement Checklist to be included with the chapter. If this is referencing the Local Government Consistency (LGC) form, it could not be located. This form can be found at <http://www.doh.wa.gov/Portals/1/Documents/Pubs/331-568.docx>, and is included with this letter for your convenience. **Please include an LGC signed by Mason County Planning Department, the local planning authority.**

Appendix

25. Appendix A. Please submit an updated and signed WFI.

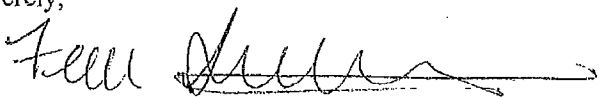
The Department's review of your SWSMP does not confer or guarantee any right to a specific quantity of water. Our review is based on your representation of available water quantity. If the Washington Department of Ecology, a local planning agency, or other authority responsible for determining water rights and water adequacy determines that you have use of less water than you represent, the number of approved connections may be reduced commensurate with the actual amount of water and your legal right to use it.

Regulations establishing a schedule of fees for review of planning, engineering, and construction documents were adopted March 18, 2012 (WAC 246-290-990). An itemized invoice showing the amount due of \$ \$2,280 is enclosed. To ensure your payment is processed correctly, please return your payment in the enclosed envelope.

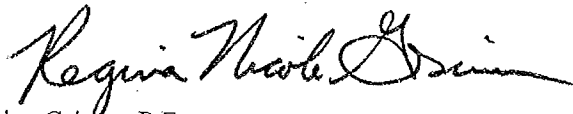
Please submit three copies of the revised pages of the submittal and respond to all comments. In order to help facilitate our review process and aid in finding the necessary information when submitting information satisfying this email's comments please make sure to reference this numbering system, and summarize your responses to the comments and where each response is located. Thanks!

If you have any questions, please do not hesitate to contact Fern Schultz at (360) 236-3031 or by e-mail at fern.schultz@doh.wa.gov, or Regina Grimm at (360) 236-3035 or by e-mail at regina.grimm@doh.wa.gov.

Sincerely,



Fern Schultz
Office of Drinking Water, Regional Planner



Regina Grimm, P.E.
Office of Drinking Water, Regional Engineer

Enclosures

cc: Mason County Health Department
Mason County Planning Department
Department of Ecology

DOH Staff Name: Fern Schultz

System Name: Timberlake Community Club, Inc.

Sublog Number: 17-0402

County: Mason

Water System ID: 88370Y

Fixed Fee for Service

WATER SYSTEM PLANS

Project Type	Fee 1st Review	Fee 2nd Review	Approved? Number Hr 1st Review	Number Hr 2nd Review
(a)(1) Water system plan (new and updated plans) 501 to 999 Seviles	\$2,280			
Total Water system plans	\$2,280	\$0	0	0

SATELLITE MANAGEMENT AGENCY (SMA) PLANS

Project Type	Fee 1st Review	Fee 2nd Review	Approved? Number Hr 1st Review	Number Hr 2nd Review
Total SMA	\$0	\$0	0	0

PROJECT REPORTS

Project Type	Fee 1st Review	Fee 2nd Review	Approved? Number Hr 1st Review	Number Hr 2nd Review
Total Project Reports	\$0	\$0	0	0

CONSTRUCTION DOCUMENTS

Project Type	Fee 1st Review	Fee 2nd Review	Approved? Number Hr 1st Review	Number Hr 2nd Review
Total Construction documents	\$0	\$0	0	0

EXISTING SYSTEM APPROVAL

Project Type	Fee 1st Review	Fee 2nd Review	Approved? Number Hr 1st Review	Number Hr 2nd Review
Total of Existing System approval	\$0	\$0	0	0

GROUP B AND OTHER EVALUATIONS AND APPROVALS

Project Type	Fee 1st Review	Fee 2nd Review	Approved? Number Hr 1st Review	No Number Hr 2nd Review
Total of Other evaluations and approvals	\$0	\$0	0	0

Total Fixed Fee for Service \$2,280 \$0 0 0

Hourly fee for service	Fee	# Hr	System Size
Total Invoice amount	\$2,280	\$0	0

Summary	Total Invoices	Total Hours
	\$2,280	0



Office of Drinking Water
INVOICE

Engineering, Planning, and Sanitary Survey Review Form

TO: MARCUS VIND
TIMBERLAKE COMMUNITY CLUB INC
2880 E TIMBERLAKE DR W
SHELTON WA 98584

Invoice Number	SW1922	
Invoice Date	August 22, 2017	
Billing Period	30 days	SW

DATE	DESCRIPTION	QTY	COST	AMOUNT
4/14/17	REVIEW AND/OR APPROVAL OF PROJECT REPORT TIMBERLAKE COMMUNITY CLUB INC MASON COUNTY WATER SYSTEM PLAN SUBMITTAL #: 17-0402	1	1	\$2280.00
	DOH Share			<u>-\$0.00</u>
	Total			\$2280.00
Payment due within 30 days. Interest shall accrue at 1% per month after 30 days.				

Make Checks Payable to Department of Health

Return Lower Portion to:

Department of Health
PO Box 1099
Olympia, WA 98507-1099

Office of Drinking Water
Engineering, Planning, and Sanitary Survey Review Form

NAME	TIMBERLAKE COMMUNITY CLUB INC	
INVOICE NUMBER	SW1922	
INVOICE DATE	8/22/2017	17-0402 SW
AMOUNT	\$2280.00	

DOH Form #331-332

Return to:
Department of Health
Revenue Section
PO Box 1099
Olympia, WA 98507-1099

For persons with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TTY 1-800-833-6388).

Local Government Consistency Determination Form

Water System Name: _____ PWS ID: _____

Planning/Engineering Document Title: _____ Plan Date: _____

Local Government with Jurisdiction Conducting Review: _____

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

By signing this form, the local government reviewer confirms the document under review is consistent with applicable local plans and regulations. If the local government reviewer identifies an inconsistency, he or she should include the citation from the applicable comprehensive plan or development regulation and explain how to resolve the inconsistency, or confirm that the inconsistency is not applicable by marking N/A. See more instructions on reverse.

Local Government Consistency Statement	For use by water system	For use by local government
	Identify the page(s) in submittal	Yes or Not Applicable
a) The water system service area is consistent with the adopted <u>land use and zoning</u> within the service area.		
b) The <u>growth projection</u> used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.		
c) For <u>cities and towns that provide water service</u> : All water service area policies of the city or town described in the plan conform to all relevant <u>utility service extension ordinances</u> .		
d) <u>Service area policies</u> for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.		
e) <u>Other relevant elements</u> related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.		

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

Signature

Date

Printed Name, Title, & Jurisdiction



March 4th, 2018

Department of Health
Southwest Regional Office
PO Box 47823
Olympia WA 98504
Attention: Fern Schultz, Regina Grim

VIA Email
fern.schultz@doh.wa.gov
regina.grim@doh.wa.gov

**Subject: Timberlake Community Club
Water System Plan Update #17-0402
Comment Responses and revised plan submittal**

Dear Fern:

We have revised the Timberlake WSP per your comments. The following is a point by point response to your comments:

	DOH Comment	Response
1	10 yr WSP Approval option	CHS previously discussed this option with Timberlake Community Club (TCC) and TCC declined to revise the scope of the plan. <No Action>
2	Fig 1.2 Service Area Map	The existing figure has been relabeled to 1.3 and a new Figure 1.2 Water Service Area Map has been added. Text references have been updated.
3	Section 2.1.1 - Population	The 2013-2014 production data was used to estimate the equivalent population. Text revised to clarify. ERU calculation is described in 2.1.5
4	Section 2.1.5 - ERU	The ERU calculation section is expanded to show the derivation of both ADD and MDD.
5	Section 2.1.5 - MDD	The ERU calculation section is expanded to show the derivation of both ADD and MDD.

	DOH Comment	Response
6	Section 2.1.5 – ERU Calc	Utilizing only 12 month accounts (greater than 50 gpd) yields 2013=143.4 GPD and 2014 = 147.5 gpd. The value used of 146 gpd continues to be a good average and allowed us to directly compare to the prior WSP. Text was added to further clarify the filters applied. Only active months were used.
7	Section 2.1.5 – Calc Extent	Water billing and water production have been very consistent, showing more variation to weather patterns than to growth pressures. Billing volume data was not available for 2015 due to changes in billing system and employee turnover. Given the consistency in source production, two years of detailed analysis of individual meter accounts seems adequate to document current conditions. <No Action>
8	Tables 2.2 & 2.3 Non-billed	DSL is a component of Non-Revenue Water. Revised Table 2.5 to read Non-Revenue or DSL as applicable
9	Table 2.3 - WFI	Based on info supplied by TCC, the WFI should be revised.
10	Table 2.3 - Historical	added a new Table 2.4 for Historical Data.
11	Chap 3 General – ERU limitation For each water system attribute in this chapter, evaluate how many ERUs it can supply. At the end of the chapter summarize the number of ERUs for each attribute in a table and indicate the limiting factor for the water system.	Individual text section expanded. Table 3.4 added showing summary.
12	Section 3.1.5 - Demand	Revised section 2.1.5 and 3.1.5 to present and clarify information.
13	Section 3.1.5 - PHD	PHD was calculated individually for each projection using DOH EQ 5.1 as described in 3.1.5 and shown on Table 3.1
14	Section 3.3.1 – Source Capacity	Table 3.2 was added and text revised.
15	Section 3.3.3 - Nesting	As there is adequate storage without nesting, there is no need to consider nesting for this planning period. Text was revised to show ERU

	DOH Comment	Response
		capacity.
16	Section 3.3.5 Modeling	As reported on page 3-19 a new hydraulic model was not required for this update. The prior model was developed in 2009 and included simulations that exceed the current projections. The modeling is included as Appendix F of the WSP. The only significant change was the upsize replacement of a 6" water main to 8". The upsize was modeled in the prior plan. Text was added to clarify the date of the modeling.
17	Section 3.4.5 - DSL	Added ERU values and 2016-2017 data per request.
18	Section 4.1.2 WUE Goals	TCC to set goals. <No Action>
19	Table 6.1 – Disinfection	Table revised.
20	Chapter 7 – General	Section 7.1 revised.
21	Section 7.5 – Construction Certification	Requirement added to the end of 7.5.
22	Section 8.2.3 – Storage Tank	As shown in Chapter 3, additional FS storage is not required in this planning horizon. <No Action>
23	Table 9.1 – Financial Data	Current Table provides actual data for 2014, 2015 and 2016. <No Action>
24	Section 10.1 – LGC	The LGC was signed by Mason County on 4/21/17 and received after initial WSP submittal to DOH.
25	Appendix A - WFI	Revised WFI included in appendix

If you have any questions please feel free to contact me at the number below or by email at evanh@chsengeers.co

Sincerely,
CHS Engineers, LLC

A handwritten signature in blue ink, appearing to read "E. Henke".

Evan Henke, P.E.
Principal

c: Marcus Vind - TCC

**Timberlake Community Club, Inc.
2018 Water System Plan
April, 2018**