




MEMORANDUM

TO: Mayor and Council Members

FROM: Rudy Garza, Assistant City Manager 

DATE: September 11, 2009

SUBJECT: Water Treatment Plant 4, Response to Questions

Recently Council Members Spelman and Shade requested additional information regarding Water Treatment Plant 4. Responses are provided for your review. Should you have further questions, please let me know.

- 1. Provide a listing of any breakdown at Ullrich and Davis in the last 5 years that resulted in serious impact to our mgd capacity, and how long the impact lasted each time.**

Below is a listing of any breakdown at Ullrich, Davis, or within the system over the last five years that resulted in an impact to our MGD capacity. The water system and water plants are more complex than these instances reflect. The impact of the outages can greatly vary depending on the time of the year and the system demands at the time. One of the main goals when scheduling repairs is to minimize as much as possible the impacts to the customer.

For reference, Davis WTP can produce 118 MGD. Ullrich WTP from 2000 – May 2006 could produce 100 MGD, from May 2006 – August 2008 it could distribute 130 – 140 MGD, and is currently rated at 167 MGD.

DAVIS WTP:

- Davis Medium Service Pump Station (finished water pumping to central zone) electric cable failure 6/14/04, temporary repairs made until final repair. Final repair made on 8-8-04 with two four hours shut downs of medium service pump station restricting capacity to 60 MGD.

- Davis WTP Cabling duct bank collapse to Iron Storage and Recycled Buildings on 4/29/04—limit flow to 70 MGD.
- Davis Low Service Pump Station (raw water) electric cable failure around 7/31/04, capacity restricted to 90 MGD; repairs made on 8/5/04.
- Davis Low Service (raw water) Pumps #1 and #2 failed on 6-15-04 and 8-2-04 respectively. These were new pumps still under warranty. Capacity restricted to 110 MGD until 12-22-04.
- Davis WTP electrical cable failure on 12-22-05 temporary repairs made and final repair completed and put back in service 3-27-06 — the cable is not manufactured until ordered.
- Davis WTP basin sludge rake failure on 8-13-07. Capacity restricted to 80 MGD until 9-30-07.
- Davis WTP medium service pump #12 fuse failure in June 2009. Capacity restricted to 100 MGD. Repairs made within one week.

ULLRICH WTP:

- Ullrich WTP expansion from 100 MGD to 167 MGD. Notice to proceed given in November 2003. Originally scheduled to have beneficial use of capacity by May 2005 with final completion in May 2006. Actual availability of full capacity was August 2006. Several issues caused delays to this project.
- Ullrich WTP Low Service (raw water) pumps #2 and #3 experienced bearing issues and excessive vibration. These pumps were under warranty but were rendered inoperable for the summer of 2005 through the summer of 2008. Final repairs made in July 2008. Capacity restricted to 130 - 140 MGD.
- Ullrich's Basin 8 experienced a structural failure limiting capacity to 150 MGD from 7-1-09 thru 8-29-09
- Ullrich WTP Low Service (raw water pumping) electrical cabling failed and had to be replaced in August 2009. Capacity restricted to 120 MGD. Repairs made within 24 hours.

SYSTEM FAILURE IMPACTS TO WTPS

- The Ullrich WTP capacity was restricted to 80 MGD from 100 MGD when the 72" from the plant to downtown failed and had to be repaired in 2001. Green WTP was on line so capacity was met through GWTP.
- The 66" transmission main in Second Street was hit by the contractor working on new City Hall. Capacity at Green WTP restricted to 15 MGD and Ullrich WTP was restricted to 80 MGD while repairs were made from Feb. 02 through May 02.

- The 54" transmission main served from the Davis medium service pump station was hit by a contractor in August 2001. This restricted capacity from the medium service pump station (55 – 60 MGD capacity). Repairs were made within 24 hours. Green WTP was on line and made up the flow in addition to system storage.
- The 66" transmission main at Johnny Morris that was taken out and some segment replaced around 10/08, this restricted capacity from both Ullrich WTP and Davis WTP until repairs were completed. Repairs were made in 24 hours.
- The 54" transmission main from Ullrich WTP in Walsh Tarleton was hit by a contractor on July 6, 2009 restricting capacity from Ullrich WTP's high service pump station. Impacts would have been felt south of the river only. Repairs were completed and capacity restored early on July 8, 2009. Reservoir levels in the south zones were very low.

2. What is driving the rationale for a 300 MGD full build-out versus a smaller size? Why 300 MGD and not 200 or 100? What is the correlation between the size of WTP4 and demand projections?

The driving rationale is providing for Austin's long-term future needs through the next century. Based on long-term demand projections, Austin will need to continue to upgrade WTP 4 over time to meet projected growth in demand. AWU projects it will need a total of approximately 600 to 800 MGD of treatment capacity over the next 100 years. Planning for a 300 MGD facility on Lake Travis and the associated transmission systems provides Austin the expandable facility needed to meet these customer demands for decades into the future. A summary of all projected phases of WTP 4 to the maximum 300 MGD capacity is shown below:

Phase 1:	50 MGD
Phase 2:	25 MGD
Phase 3:	75 MGD
Phase 4:	<u>150 MGD</u>
Build-out Total:	300 MGD

The timing of when future capacity increases will be needed is based on many factors including water conservation and reuse impacts, etc. This phased project approach is expected to result in lower future phase unit costs and reduced lead times for construction of future phases.

3. Please explain the "phased approach." What is phase 1 versus the full build-out? In other words, what would it look like to build the new plant at 50 or 100 MGDs instead of 300?

To take advantage of economies of scale, a portion of the initial cost of the plant project is for components of the plant that can cost effectively be sized now for future expansion.

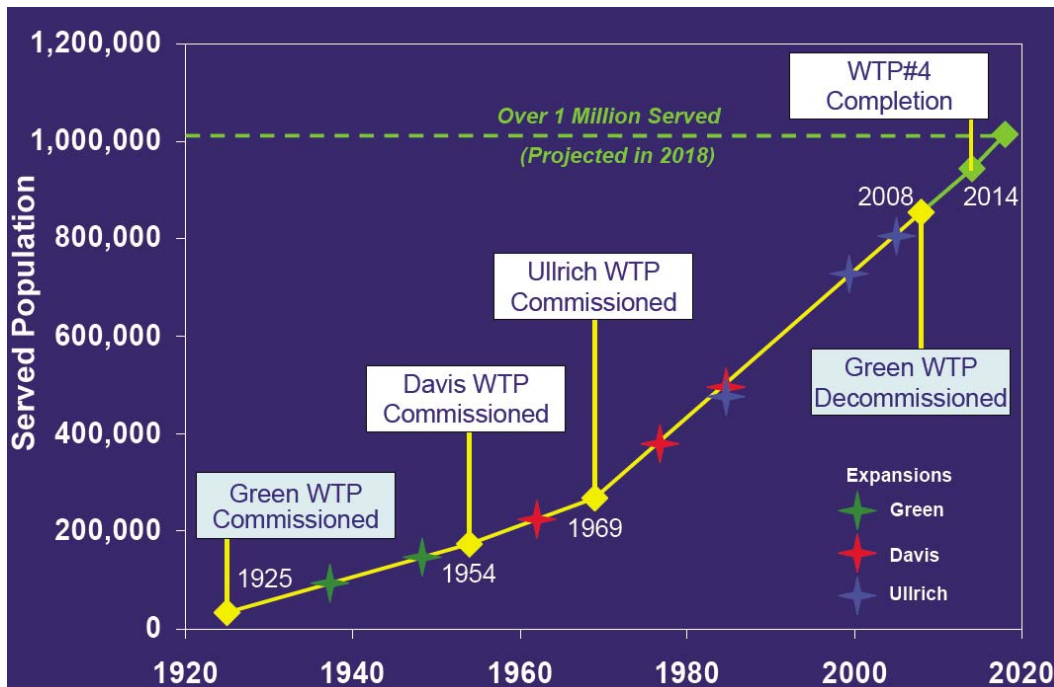
One example is the intake structure (from the lake tap to the raw water pump station). This structure is being sized for 300 MGD to handle future expansion. This cost effective approach allows the City to construct this underwater construction component only once for a relatively small cost compared to building a smaller-scale intake and then the ultimate sized intake. This approach allows the city to benefit from economies of scale.

The following table shows the WTP 4 plant component sizing:

Project Component	Capacity as constructed in Phase I (mgd)
Raw water intake	300
Tunnel - Intake to RWPS	300
Raw Water Pump Station (RWPS)	50
Tunnel - RWPS to WTP	150
WTP Treatment Facilities*	50
WTP Process Piping	150

* Two Upflow Clarifiers with a combined capacity of 75 mgd will be constructed in Phase I, but they will be limited to an operational capacity of 50 mgd to match rest of treatment facilities

For some additional perspective on capacity sizing and phasing, the following chart shows the historical plant construction and expansions at the existing water treatment facilities. Davis WTP was constructed in 1954 at 45 MGD and expanded in three additional phases to its current capacity of 118 MGD. Ullrich was originally constructed as a 40 MGD first phase and was expanded in three additional phases to its current capacity of 167 MGD.



The latest expansion at the Ullrich WTP did not require a new intake structure, clearwell storage, raw water lines or transmission mains for the finished water as would be the case for any new treatment plant. Basic infrastructure is generally sized larger during initial construction to maximize cost efficiency, minimize disturbances to the environment, and optimize resources.

cc: Marc A. Ott, City Manager
Greg Meszaros, Director, Austin Water Utility