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**Engineering Ltd.**

# WATER WORKS ADVISORY COMMITTEE

Town of Turner Valley Council Chamber  
March 30, 2016

## Presentation Outline

- Background
- Water Treatment Plant
- Stage 1 Source Water
- Infiltration Gallery
- Stage 2 Source Water
- Source Aquifer Monitoring Program
- Other Monitoring Programs
- Ministerial Order
- Next Steps & Discussion



## Background

- Dec 2012 - WTP expansion Amendment Application to AEP
- Mar 2013 – Monitoring Program Amendment Application to AEP
- Jun 2013 – Flood
  - BD WTP and 2 of 3 wells destroyed
  - TV 2 of 3 wells destroyed and one disconnected
  - TV WTP starts to deliver water to BD via temporary piping
  - Infiltration pits used as a temporary source of raw water
- Fall 2013 – Permanent Transmission Main to BD constructed
- Dec 2013 – Revised WTP expansion Amendment Application to AEP
- Jan 2014 – Infiltration Gallery Amendment Application to AEP
- Jan 2014 – WWAC Open House
- Feb 2014 – Infiltration Gallery Amending Approval issued
- Winter/Spring 2014 – Infiltration Gallery (Vault Well 5) Construction
- Spring 2014 – Calkins Place Septic Field Decommissioning
- June –Nov 2014 – Infiltration pits used as a temporary source of water
- July 2014 – WTP Amending Approval issued
- October 2014 – Infiltration Gallery (Vault Well 5) goes into production
- October 2014 – Monitoring Program Amending Approval issued
- April/May 2015 – EAB Hearing
- October 2015 – Ministerial Order
- Fall 2015 – WTP expansion complete

## Source Water and Treatment System



Photo: 2013 Post-Flood

## Water Treatment Plant

- EPEA Approval 1242-02-04 (issued July 2014)
  - Addition of 3<sup>rd</sup> Direct Filtration Train for BD
  - Addition of UV
  - Addition of GAC Filters
  - Addition of On-site Chlorine Generation
- Construction Complete in Fall of 2015



## Stage 1 Source Water

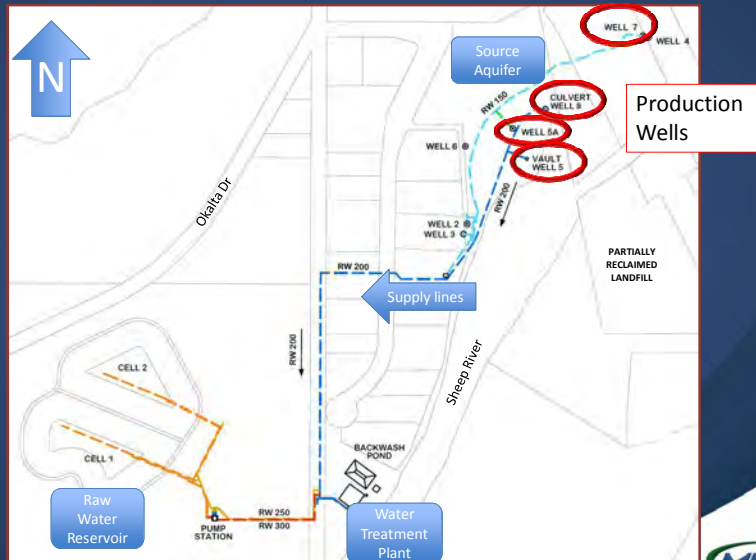
- Four TV wells currently in production:
  - Well 7 (re-established after the floods)
  - Well 5A (re-allocation of diversion point from Well 5, licence issued Feb 2015)
  - CW8 (re-allocation of diversion point from Well 8, licence issued July 2014)
  - VW5 (aka infiltration gallery)
- ±70% pre-flood licenced diversion amount now replaced
- Currently assessing obtainable flowrates from the existing source aquifer. Well diversions based on each individual well.
- Calkins Place Septic Fields abandoned in spring/summer 2014
- BD Well 3 remains in place but not connected
- Investigated old abandoned TV Wells No. 3 & 6 as possible replacements, but water quality proved to be inadequate

# Infiltration Gallery



- EPEA Approval 1242-02-02 (issued Feb 2014)
- Construction in Winter/Spring 2014
  - Vault well (VW5) only, no lateral pipes due to higher than expected winter groundwater levels
  - Tight timeline given need for erosion protection works by spring runoff
- Additional sampling completed due to proximity of septic fields (i.e. orthophosphates, coliforms) and partly reclaimed landfill across river
- Raw water continues to meet AEP Tier 1 and GCDWQ requirements
- Black Diamond – point of diversion transfer to VW5 (approval pending)

# Raw Water System



## Stage 2 Source Water

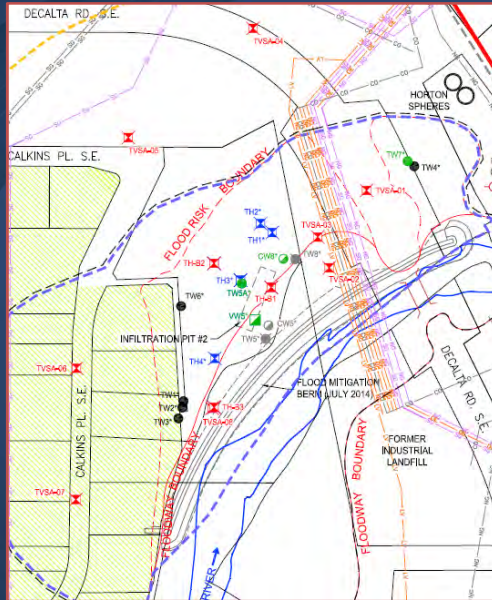
- Groundwater Wells – Exploratory drilling to take place
  - Ten sites considered; one drilled (dry); landowner issues
  - Two more locations slated to be drilled in April 2016
    - Approximately 1km upstream of WTP
    - Approximately 5km upstream of WTP
- Further assessment of Infiltration Pits by WTP
  - Reliable temporary source after the floods
- Existing Source Aquifer site being further analyzed to optimize production
- Black Diamond existing well still remains
- Direct Intake
  - would require upgrades to the WTP and possibly RWR
- Final solution may be a combination of sources
- Benefit of multiple sources is improved reliability

## Source Aquifer Monitoring Program



- Based on recommendations in the 2010 Source Water Program
- Incorporated in the EPEA Approval 1242-02-02
- 8 new monitoring wells installed around the source aquifer site
- 2 River sampling locations
- Sampling twice a year
- Typical “TV Suite” w/ NORMs and PCBs one-time
- No real concerns from monitoring program to date

## Source Aquifer Monitoring



Source Aquifer Monitoring Wells  
 Production Wells  
 Additional Test wells  
 Standby or Abandoned Wells

Drawing courtesy of Stantec

## Other Monitoring Programs

(RWR Stored Water, RWR Groundwater, Water Wells)

- EPEA Approval 1242-02-05 (issued Oct 2014)
  - RWR Groundwater - Pre-October 2014
    - Sampling of 19 monitoring wells 6 times/yr
    - Sampling of Groundwater Interceptors 3 times/yr
  - RWR Groundwater - Post-October 2014
    - Addition of 4 new monitoring wells (brings total to 23)
    - Sampling of 4 original monitoring wells 2 times/yr
    - Sampling of 14 new & original monitoring wells 3 times/yr
    - Sampling of original Groundwater Interceptors 2 times/yr
  - Continue to sample Stored Water once a month
  - Continue to sample Water Well facilities twice a year
  - No concerns with water quality. Note that the RAP was implemented in 2015 due to an anomaly in a stored water sample (three re-tests non-detect and 6 regular tests after all non-detect)

## RWR Groundwater Monitoring Wells



## Ministerial Order

- EAB hearing in April/May 2015
- Ministerial Order Issued in October 2015
  - Monitoring Review Program
    - Assess existing monitoring program to optimize information and incorporate seasonality
  - Sampling Methodology Review
    - Review of sampling protocols, procedures and resulting analytics
  - 3 year Low Flow Sampling Program
    - Pilot Project to test low flow sampling and the current sampling procedures
- Initial submission to AEP due April 1, 2016

## Next Steps

- Transfer the Water Treatment System Approval from Turner Valley to the SRRUC
- Transfer the transmission main from Black Diamond to SRRUC
- Turner Valley to apply for a Code of Practice Consisting Solely of a Distribution System
- Amend all Well licences to be through the works of the SRRUC
- Applications for all of above have just been submitted to AEP. Now being processed.

# Questions?