

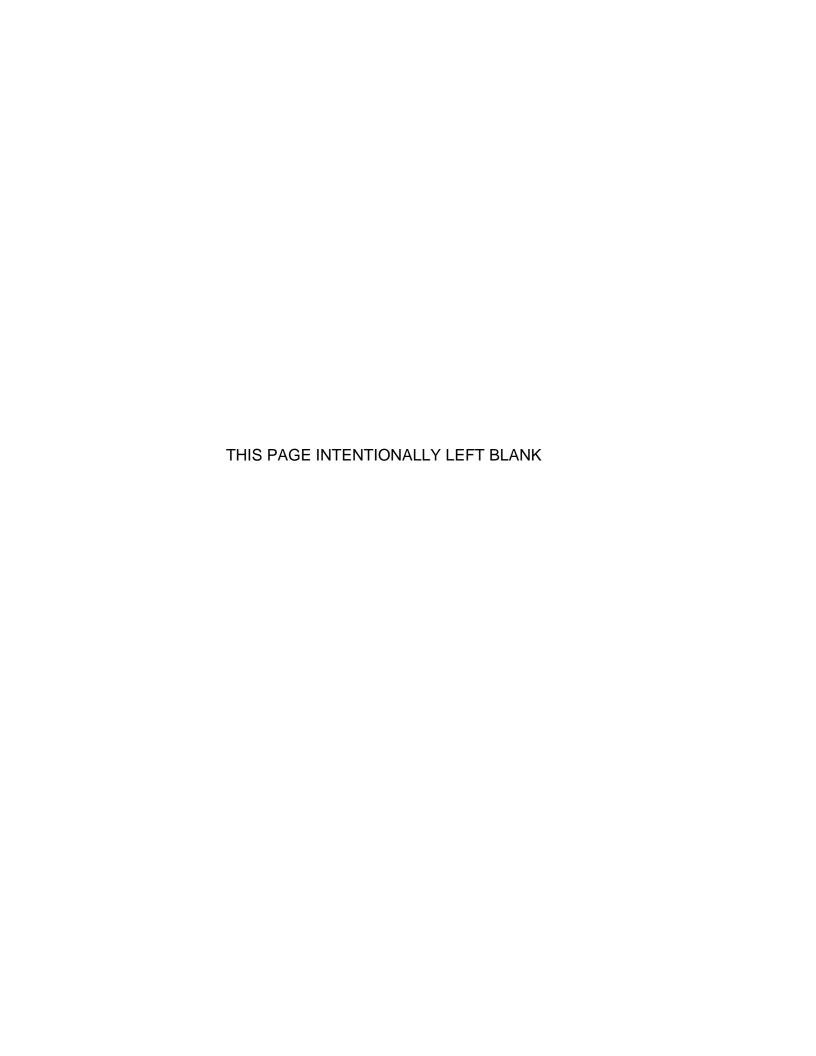
PRODUCTION TEST WELL NO. 2 – DRILLING AND TESTING

Prepared for City of College Place

August 2020 CPL 717.118



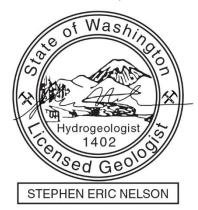
Prepared by: RH2 Engineering, Inc. 114 Columbia Point Drive, Suite C Richland, WA 99352 1.800.720.8052 / rh2.com



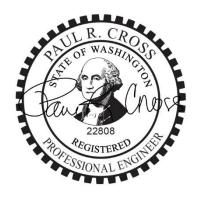
August 2020

This report summarizes the findings of a hydrogeologic investigation, drilling, testing, and analysis of Production Test Well No. 2 in College Place, Washington.

Sincerely, RH2 ENGINEERING, INC.



Signed: 08/07/2020



Reviewed as the Engineer in Responsible Charge Signed: 08/07/2020

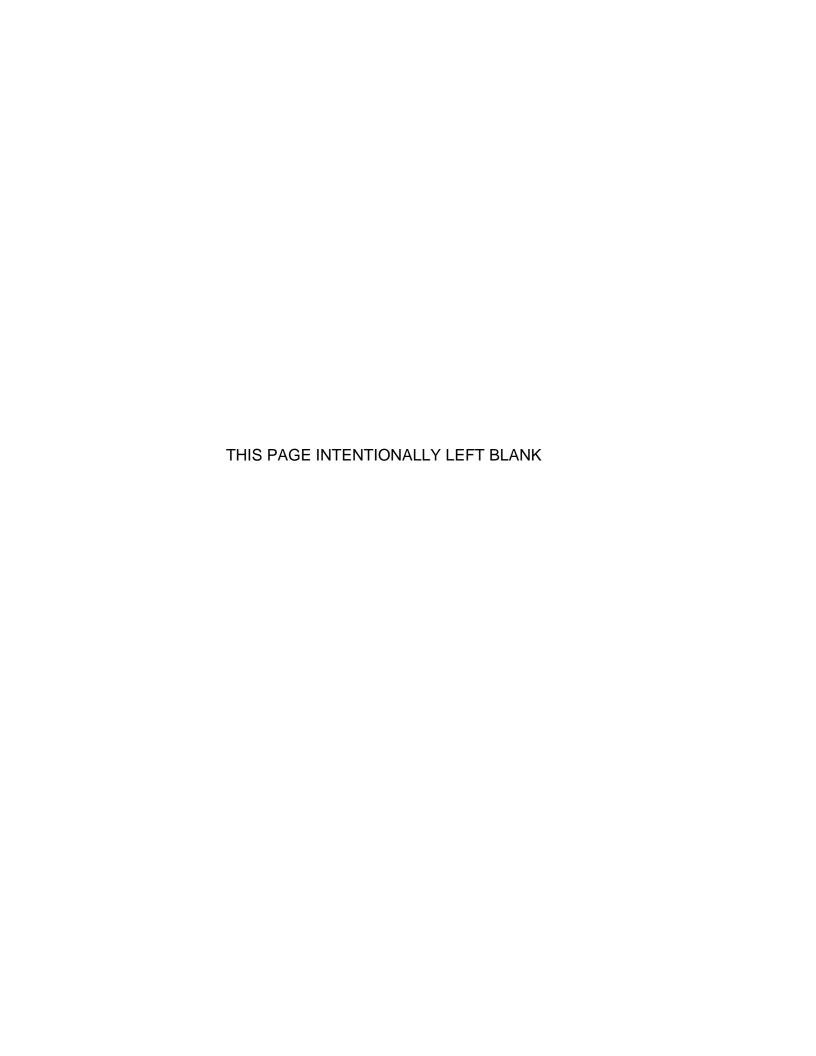


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Introduction

Project Description

This report has been prepared by RH2 Engineering, Inc., (RH2) to document the hydrogeologic investigation, well drilling, construction, testing, and analysis for the City of College Place (City) exploratory test well (Test Well No. 2) that will be converted into Production Well No. 6 (Well No. 6). Test Well No. 2 currently is described as a "test well" until its source approval authorization for municipal use is approved by the Washington State Department of Health (DOH).

Test Well No. 2 was drilled to investigate the hydrogeology of the area near the City's Maple Avenue Reservoirs and complete a well within a basalt aquifer for testing, analysis, and use as a groundwater source of municipal supply. The City has relocated the legal point of groundwater withdrawal of its existing Production Well No. 2 approximately 2,000 feet southwest to the Test Well No. 2 location. The City is authorized by the Washington State Department of Ecology (Ecology) to use existing Production Well No. 2 under seven groundwater certificates (GWCs) (650-D, 651-D, 265-A, 5681-A, 6633-A, 401-D, and G3-26916C), which authorize a maximum instantaneous rate of 6,850 gallons per minute (gpm) and a maximum annual withdrawal of 2,491.75 acre-feet per year (afy). The City currently uses one active City-owned well, Well No. 3, for municipal supply that also rely on the GWCs to authorize groundwater withdrawal for the City. The City also operates an active well for Consolidated Irrigation District (CID) Well No. 5 to provide municipal supply. In 2019, the City completed exploratory Test Well No. 1 and converted it to Production Well No. 4 approximately 1.5 miles south-southeast of Test Well No. 2 (RH2, 2019). Well No. 4 is scheduled to be completed and reported to DOH as active in late summer 2020.

Location

Test Well No. 2 is located on property owned by the City at SE Maple Avenue immediately west of the City's Maple Street Reservoirs in College Place, Washington (Walla Walla County Tax Parcel No. 350725430065) in the north-central part of the City (**Figure 1** and **Figure 2**). The well location is at elevation 820 feet above mean sea level (AMSL) at Latitude 46.048897 N and Longitude 118.377197 W, within the NW ¼ of the NE ¼ Section 36, Township 07 North, Range 35 East WM.

The Test Well No. 2 site was selected after review of local and regional hydrogeologic conditions (RH2, 2018a; 2018b) and proximity to the City's water distribution system. A source at this location would serve the City's Pressure Zone 1.

Walla Walla County Department of Community Health reviewed the Test Well No. 2 site on August 23, 2018 and provided preliminary well site approval for the location. Final well site approval will be established by DOH upon submission of the Source Approval documentation and report.

Stratigraphy and Structural Geology

This area has been studied by numerous investigators (refer to summary in RH2, 2018a). **Table 1** summarizes the hydrostratigraphic units identified in the Walla Walla Basin.

Table 1

Hydrostratigraphic Units in the Subsurface near the City of College Place

Hydrostratigraphic Unit	Approximate Thickness (feet)	General Unit Description
Old Gravel (aquifer)	Up to 300 feet	Rounded, predominantly basaltic gravel in a sandy or silty matrix. Often described as cemented on well logs. Reddish-brown or yellowish-brown in color. Miocene to Pliocene age (approximately 2 to 10 million years old). Deposited as river and alluvial fan deposits derived from erosion of the Blue Mountains.
Old Clay (aquitard)	Up to 500 feet	Yellow, brown, or blue silt and clay. Miocene to Pliocene age (approximately 2 to 10 million years old). Overlies the Columbia River Basalt Group bedrock.
Columbia River Basalt Group (aquifer)	Greater than 2,000 feet	The Columbia River Basalt Group consists of multiple basalt flows with variable thicknesses ranging from about 5 to 150 feet, generally with basalt flow tops, dense flow centers, interbedded sediments, and basalt flow bases. This unit encompasses several formations: Saddle Mountain Basalt; Mabton Interbed (clay); Wanapum Basalt; and Grande Ronde Basalt. Most wells are completed in the Wanapum Basalt.

Basalt Aquifer Conditions

The basalt aquifer parameters in the Walla Walla Basin estimated by Golder Associates (2009) vary widely, ranging from 50 to 290,000 square feet per day (ft²/day), with a mean of $16,550 \text{ ft}^2/\text{day}$. The storage coefficient ranges from 8×10^{-5} to 5×10^{-4} , with a mean of 2×10^{-4} .

Groundwater in the basalt aquifer of the Walla Walla Basin generally flows from the east-northeast to the west-southwest, with flows converging from the surrounding upland areas located to the north, east, and south toward the center of the basin (Golder Associates, 2009).

Regional groundwater level decline in the basalt aquifers of the Walla Walla Basin has been a known issue for many years. Groundwater level has been dropping in the basalt aquifer at an average rate of approximately 3 feet per year. The cumulative decline in water level in the basalt aquifer since the late 1940s, as measured in Production Well No. 2, has been 186 feet, while the decline since 1968 has been 136 feet. These declines are in line with those summarized by Burns, E., Snyder, D., Haynes, J., & Waible, M. (2012).

Depth to water measurements in the wells at the end of the irrigation season are almost 50 to 60 feet deeper than at the start of the irrigation season, and seasonal fluctuation in water levels overprints the long-term water level declines. The depth to groundwater in basalt wells is approximately 200 feet below ground surface (bgs), and the City wells are approximately 780 feet deep. The top of the basalt aquifer is at approximately 550 feet. Therefore, the amount of available drawdown from the current static water level to the top of the basalt aquifer is approximately 350 feet. The available drawdown indicates the long-term sustainability of groundwater wells in the area.

Well Drilling, Liner Installation, and Development

Drilling

Schneider Water Services, Inc., (Schneider) was selected from a competitive public bid process to construct Test Well No. 2. Schneider mobilized a rotary drill rig to the site in June 2019. Schneider used mud rotary and reverse circulation drilling methods to complete the drilling in June 2020. Schneider collected representative samples of drill cuttings from the rotary discharge, typically at intervals of 10 feet, and stored the samples in labeled, sealed plastic bags. The Test Well No. 2 formation log and water well report are attached in **Appendix A**.

Schneider initially installed a 30-inch-diameter boring to install a temporary casing to a depth of 30 feet bgs to form the surface seal.

Schneider drilled a 26-inch-diameter boring to a depth of 532 feet bgs that penetrated unconsolidated to partially consolidated sediment (Old Gravel aquifer and Old Clay aquitard) and advanced 13 feet into the top of the basalt to a depth of 545 feet bgs.

Schneider installed a 24-inch-diameter, 0.5-inch-thick steel casing to the bottom of the borehole at 545 feet bgs, cemented the lower 145 feet in place to seal the casing into the top of the basalt, installed a bentonite grout seal in the annular space between the borehole and the

well casing from 400 feet to 30 feet, and installed a bentonite chip surface seal from 30 feet to ground surface.

Schneider continued drilling an additional 259 feet into the basalt for a total depth of 804 feet bgs.

Hydrostratigraphy at Test Well No. 2

Drilling encountered approximately 532 feet of unconsolidated to partially consolidated sand, gravel, silt, and clay, and 272 feet of dense, fractured, and/or vesicular basalt.

The upper 8 feet of the boring penetrated loose sand and gravel interpreted to be alluvium.

From a depth of 8 to 138 feet bgs, drilling encountered gravel with varying amounts of silt and clay, which is interpreted as the Old Gravel unit. Some water-bearing zones were observed between depths of 100 and 200 feet bgs.

From 138 to 532 feet bgs, drilling encountered predominantly stiff to sticky clay, which is interpreted as the Old Clay unit.

From 532 to 804 feet bgs, drilling encountered basalt with various amounts of fractures and vesicles, and colors ranging from black to gray to brown, with occasional lenses of claystone. The basalt density ranged from very hard to vesicular and slightly rubbly. A lens of clay was encountered at a depth of 620 to 630 feet, which may be equivalent to a similar lens observed during drilling at Test Well No. 1 (RH2, 2019). Multiple water-bearing zones in the basalt were observed during drilling between depths of 571 and 620 feet, 630 and 670 feet, and 700 and 780 feet bgs. The uppermost water-bearing zone in the basalt appeared to be the most productive during recirculation testing at the time of drilling within the water-bearing zone. The basalt is interpreted as the uppermost basalt aquifer, which is used widely in the area for groundwater supply.

The groundwater level in the boring varied as drilling proceeded, but there was no pronounced increase or decrease in level as the borehole deepened, and there was no change in water level in the borehole after penetrating the clay lens. The groundwater level typically ranged between 210 and 230 feet bgs.

The hydrostratigraphic units penetrated during drilling are summarized in **Table 2**, and the formation log is included in **Appendix A**.

Table 2
Hydrostratigraphic Units Penetrated During Drilling

Depth (feet)	Lithology	Thickness (feet)	Aquifer Zone	Well Construction*	
0 to 8	Topsoil and Gravel	8	Alluvium	24 inch cosing	
8 to 138	Gravel with Clay	130	Old Gravel	24-inch casing 0.5-inch-wall thickness	
138 to 532	Clay	398	Old Clay	0.5-inch-wall thickness	
532 to 571	Basalt – Hard	39		Liner Blank	
571 to 620	Basalt – Vesicular	49		Liner Screen	
620 to 630	Clay	10		Liner Blank	
630 to 670	Basalt with Clay Layers	40	Pacalt Aquifor	Liner Screen	
670 to 783	Basalt Fractured, Vesicular	113	Basalt Aquifer		
783 to 793	Clay	10		Linas Dlauls	
793 to 804	Basalt with Clay Layers	7+		Liner Blank	

^{*} Approximate depths; refer to **Appendix B** for well schematic.

Liner Construction

RH2 and Schneider collaborated on a well liner design to provide a permeable and protective liner to facilitate groundwater withdrawal from the water-bearing zones in the basalt aquifer. Schneider installed the liner as designed (**Photo 1**). The liner consists of sections of 18-inch-diameter 304 stainless steel with sections of 18-inch-diameter pipe-size stainless steel wire-wrapped well screen with 0.100-inch openings. The transmitting capacity of the combined length of 170 feet of well screen within the well liner assembly is calculated to exceed 12,000 gpm based on the assumption that pumping would induce no more than 0.1 feet per second entrance velocity through the screen.

The well liner design is summarized in **Table 3**, and a schematic as-built is in **Appendix B**.

Table 3			
Test Well No. 2 Well Liner Design			

Depth (feet)	18-inch-Diameter Stainless Steel Liner Section	Length (feet)
534 to 537	J-Receptor	3
537 to 570	Blank	33
570 to 620	0.100 Slot Screen	50
620 to 650	Blank	30
650 to 660	0.100 Slot Screen	10
660 to 670	Blank	10
670 to 780	0.100 Slot Screen	110
780 to 800	Blank	20

Well Plumbness and Alignment Testing

On June 25, 2020, Schneider performed a plumbness (drift) and alignment survey of the 24-inch-diameter well casing to confirm its straightness for use (**Photo 2**). The results of the plumbness survey (**Appendix C**) indicate that the maximum amount of drift from vertical was 14 inches, which is well within the tolerance for the 534-foot-deep casing. The alignment testing used a 40-foot-long blank pipe that passed freely through the length of the 20-inch casing.



Photo 1 – Sections of the Well Liner Assembly



Photo 2 – Casing Alignment Testing

Well Development

Schneider used pumping, swabbing, bailing, and water injection techniques to develop the liner and basalt aquifer borehole. Well development occurred for several days and was discontinued when well discharge water was clear.

Schneider attached the Ecology Unique Well ID tag AAS 237 to the well casing.

Well Testing

Well Testing Setup

Schneider installed a vertical turbine with the intake set at approximately 400 feet bgs. The pump was driven by a diesel engine rotating a horizontal drive shaft connected to the top of the pump. Two polyvinyl chloride (PVC) pipes were attached to the pump column to allow for manual water level measurements using an electronic tape and installation of a pressure transducer data logger. A tap in the discharge pipe at the wellhead allowed for water quality samples to be collected, and a Rossum sand indicator was installed at the top of the wellhead discharge (**Photo 3**).



Photo 3 – Well Testing Setup.

Discharge from the pump was controlled by a gate valve at the wellhead. The water was conveyed through metal piping into a McCrometer propeller flow meter, traveled approximately 300 feet north to the on-site stormwater pond (**Photo 4**), and then extended approximately 2,200 feet to undeveloped open fields in the discharge area (**Figure 2**). The well

discharge was distributed into eight separate sediment filtration bags to attenuate the discharge onto the field (Photo 5).

On June 8, 2020, Schneider activated the pump for approximately 30 minutes to confirm that the pump, meters, and discharge system were operating correctly. The discharge water was turbid, initially, but cleared after 20 minutes of pumping (**Photo 4**).

An In-Situ brand electronic pressure transducer was installed in the well for the duration of the step-rate and constant-rate tests, for the intervening period between tests, and for several days of recovery following the constant-rate test. Water levels also were measured manually during the step-rate and constant-rate tests using an electric water level meter.

Step-Rate Testing

Static water level at the time of step-rate testing on June 10, 2020, was 228 feet below the top of the well casing (BTOC) or about 219 feet bgs.

Schneider operated the pump for the step-rate test from 11:00 AM to 2:20 PM, and RH2 observed the test and recorded flow and water level data.



Photo 4 – Groundwater Discharge for Pre-Step Test.



Photo 5 – Groundwater Discharge during Constant-Rate Testing.

The pumping rate was adjusted from 900 to 3,000 gpm during three 60-minute periods, and a fourth step was run for 20 minutes at 4,000 gpm. **Table 4** summarizes the step-rate testing schedule. The water level in Test Well No. 2 stabilized (less than 0.5 feet of drawdown over 5 to 10 minutes) for each of the first three steps but did not stabilize during the fourth step. During the first few minutes of each step, the water was slightly turbid but quickly cleared. The water was clear and had no unusual odor or taste. A few millimeters of sand accumulated in the Rossum sand indicator during the step-rate testing. The water level recovered to within 0.5 feet of the static water level within 20 minutes of pump shut off. **Figure 3** illustrates the step-rate testing results and the recovery period after testing.

Table 4
Test Well No. 2 Step-Rate Testing Summary

Step	Pumping Rate (gpm)	Step Duration (minutes)	Time to Stabilize (minutes)	Drawdown (feet)	Short-Term Specific Capacity (gpm/ft)
1	900	60	5	2.5	360
2	2,000	60	5	8.6	232
3	3,000	60	5	15.5	194
4	4,000	20	-	21.5	-

A field meter was used to measure water quality from the discharge, and the results are summarized in the following section.

Constant-Rate Pumping Test

The constant-rate test was conducted the day after the step-rate test, starting at 8 AM on June 11, and ending 24 hours later on June 12, 2020. The static water level was less than 1 foot lower than the day of step-rate testing, at a depth of 229.0 feet BTOC. No changes were made to the pump, meters, or discharge for the constant-rate test. The constant-rate test was started at a rate of 2,500 gpm and held constant with only slight adjustments during the 24 hours of pumping. The water level declined by 15.7 feet to a maximum depth of 244.7 feet BTOC. The water level in the well recovered to 4 feet below the static level within minutes and recovered to the pre-pumping static water level after 60 hours (2.5 days).

Water level data indicate that operation of a nearby well during the constant-rate test, and probably during the step-rate test, induced additional periodic drawdown and recovery at Test Well No. 2 of approximately 0.5 feet every 90 minutes, and a longer period of drawdown every 24 hours at approximately 9:30 AM every day.

Figure 4 illustrates the results of the constant-rate test and subsequent recovery period. This figure also illustrates the well interference induced by the operation of a nearby well.

The pump was reactivated on the morning of June 15, 2020 for 90 minutes at approximately 2,000 to 2,500 gpm for the groundwater level to achieve stability and to allow the City to collect a representative groundwater sample for laboratory analysis. The well was pumped at a rate of 4,000 gpm for 1 hour and then at 5,000 gpm for 2 hours to observe the drawdown at these higher rates. **Figure 5** illustrates the drawdown induced in the well during this brief well purging event.

Figure 6 illustrates the groundwater elevation data for the period of pre-testing background elevation monitoring and post-testing recovery monitoring.

Field Water Quality

Field monitoring parameters measured with a Hach brand hand-held meter during the step-rate testing fluctuated but were in the following range.

- pH 7.8 to 8.3
- Temperature 67 to 69 degrees Fahrenheit (F)
- Specific Conductance 220 to 240 μmhos/cm (micromhos per centimeter)

Groundwater Chemistry Results

Samples of groundwater discharge were collected by City staff at the end of the supplemental pumping at 10:30 AM on June 15, 2020, and submitted to Cascade Analytical Laboratories, Inc., in Wenatchee, Washington, for analysis of inorganic contaminants (IOCs), to Walla Walla Regional Water Testing services for analysis of nitrate and bacteria, and to Edge Analytical in Burlington, Washington for analysis of synthetic organic compounds (SOCs) and radionuclides. Sample analytes and results are summarized in **Table 5**, except for radionuclide results, which were pending analysis at the time of this report. Relatively low values of chloride, hardness,

sodium, and conductivity confirm the high quality of water of the basalt aquifer. Iron concentrations at 0.200 milligrams per liter (mg/L) were below the secondary maximum contaminant level (SMCL) (0.300 mg/L). Manganese concentrations, at 0.03656 mg/L, were slightly below the SMCL (0.05 mg/L). Trace concentrations of SOCs were detected in the water sample, which are more likely attributed to laboratory/sampling sources than to a groundwater source.

The water quality testing results indicate that groundwater from the basalt aquifer at Test Well No. 2 is acceptable for potable use.

The laboratory reports are included as **Appendix D**.

Table 5
Summary of Water Quality Data – Test Well No. 2 (June 15, 2020)

Analyte	Measured Concentration (mg/L)	Analyte	Measured Concentration (mg/L)
Total Organic Carbon	NA	Iron	0.200
Sulfate	5.71	Manganese	0.03656
Chloride	3.53	Antimony	0.000450
Sodium	20.2	Arsenic	0.000195
Magnesium	4.515	Barium	0.05200
Calcium	17.9	Beryllium	< 0.0001
Hardness	63.3	Cadmium	< 0.0001
Conductivity	218 μmhos/cm	Chromium	< 0.0001
Fluoride	0.47	Copper	0.00070
Nitrate-N	0.12	Lead	<0.0001
Nitrite-N	< 0.05	Mercury	< 0.0002
Total Nitrate/Nitrite	0.12	Nickel	0.00044
Cyanide	< 0.01	Selenium	< 0.0005
Turbidity	2.02 NTU	Silver	<0.0001
Color	<4 color units	Silica	NA
Total Coliform	< 1 CFU/100 mL	Thallium	0.000225
Total Ammonia Nitrogen	NA	Vanadium	NA
Total Phosphorus	NA	Aluminum	NA
Alkalinity	NA	Zinc	0.0057
рН	NA	VOCs, SVOCs	pending
Gross alpha	pending	Radium 228	pending

μmhos/cm – micromhos per centimeter

NTU - Nephelometric Turbidity Units

CFU - Coliform Forming Units

Estimates of Basalt Aquifer Parameters

The Cooper-Jacob graphical method (Driscoll, 1986) was used to evaluate constant-rate drawdown data using the 2,500 gpm rate from the first 10 hours of pumping and an estimated transmissivity of approximately 400,000 gallons per day per foot (gpd/ft) for the basalt aquifer.

The storage coefficient could not be determined since drawdown due to pumping was not observed at any wells completed in the same aquifer. A typical storage coefficient value of 0.002 to 0.0001 may be assumed based on the apparent lack of groundwater leakage affecting the drawdown response to pumping.

Response of Groundwater Level to Local Conditions

Pressure transducer measurements during the testing period from June 9, to June 18, 2020, when Test Well No. 2 was both pumping and idle (**Figure 6**) indicates that the groundwater level at Test Well No. 2 is influenced by pumping from at least one nearby well. It appears that a single well was pumped and rested continuously for 90-minute cycles, and periodically pumped for approximately 5 hours every 24 hours. The pumping induces a rapid drawdown and recovery of 0.5 feet in the water level at Test Well No. 2, or a more extended drawdown and recovery of 1.0 feet during the 24-hour-cycle well operation. This pump operation pattern appears to be a pumping schedule to meet continuous demand, with an extended period for daily irrigation demand. Possible wells may include the Walla Walla (WW) University supply wells approximately 3,500 feet to the west, the CID No. 5 well 4,800 feet to the west-northwest, or the Green Tank Irrigation District (GTID) Well Nos. 1, 3, or 4 approximately 2,500 feet to the northwest. The nearest active City well to Test Well No. 2 is Production Well No. 3, approximately 5,100 feet to the south. All of these wells are completed within the same regionally extensive basalt aquifer. **Figure 7** shows the locations of these wells relative to Test Well No. 2.

Video Scan Review

Schneider performed a video scan to view the condition of the casing and well liner assembly to document the completion of Test Well No. 2. The video indicated that the liner was installed at the depths per the design, and that the well casing and liner assembly appeared intact. The water column was generally clear to a depth of 450 feet, turbidity increased with depth, and the water column contained suspended sediment. The upper well screen sections appeared clear and bright, and the lower 50 feet of the lower well screen section appeared partially occluded by sediment, which had either settled on the wires or possibly includes some smeared clay, a residual from drilling activity.

The bottom 10 feet of the well, which includes the tailpipe and open boring below the liner, contained very fine-grained sediment that had settled out of the water column after well development and was not removed during pumping tests.

Conclusions and Recommendations

Test Well No. 2 was completed and tested in the basalt aquifer following the City's specifications for drilling and testing. The well was tested for short 1- to 2-hour periods at several rates between 900 and 5,000 gpm and continuously for 24 hours at a rate of 2,500 gpm. Pumping the well during the 24-hour test induced a drawdown of approximately 16 feet, drawing down from a static water level of 228 feet BTOC to a depth of 244 feet BTOC. The water level declined rapidly to approximately 13 feet and then slowly drew down to 16 feet below the static water level during the long-term test. Operation of a nearby, unidentified well also induced 0.5 to 1.0 feet of drawdown during the testing period. When the testing pump was shut off, the water level recovered rapidly to within 4 feet of static water level, and then recovered completely after 2.5 days.

Test Well No. 2 yields high quality groundwater that may be used for potable supply. None of the IOC parameters exceeded maximum or secondary contaminant levels (MCL or SCLs). Iron (0.2 mg/L) and manganese (0.037 mg/L) concentrations are close to their respective SCLs of 0.3 mg/L and 0.05 mg/L, respectively. The values of specific conductivity (218 μ mhos/cm) and hardness (63.3 mg/L) are consistent with groundwater quality observed in basalt aquifers in the Columbia Basin. As the well is operated for municipal supply, the water quality constituent concentrations may drift over time.

Extrapolation of the constant-rate testing data suggests that pumping rates of 2,500 gpm would result in drawdown to a depth of approximately 250 to 255 feet BTOC and pumping at 3,500 gpm would result in drawdown to a depth of approximately 260 to 270 feet BTOC, respectively. The top of the well liner is at a depth of 534 feet bgs or 537 BTOC. Pump selection and pump setting should consider several factors, including the persistent, year-to-year groundwater level decline observed in the basalt aquifer, the proximity of Test Well No. 2 to other active wells that induce drawdown at the well, and whether the pump and any instrumentation can be safely installed in the 18-inch-diameter liner.

RH2 recommends setting the pump within the 20-inch casing at a depth of approximately 524 feet bgs, or approximately 10 feet above the 18-inch liner. The pump should be designed to operate predominantly at a rate of 2,500 to 3,000 gpm but should be able to accommodate increasing the rate to 3,500 gpm to meet peak day demand for several hours. There is substantial apparent available drawdown in the well, but there is not enough data to extrapolate the effects of long-term continuous operation for more than several days or weeks at rates at or above 3,500 gpm.

Pump selection should consider that in the next 20 years, the static groundwater level may decrease by 3 feet per year, or 60 feet. During the next 20 years, well efficiency may decline which could result in an additional 10 to 15 feet of pumping induced drawdown. This will reduce the available drawdown and increase the total dynamic head to pump groundwater from the well.

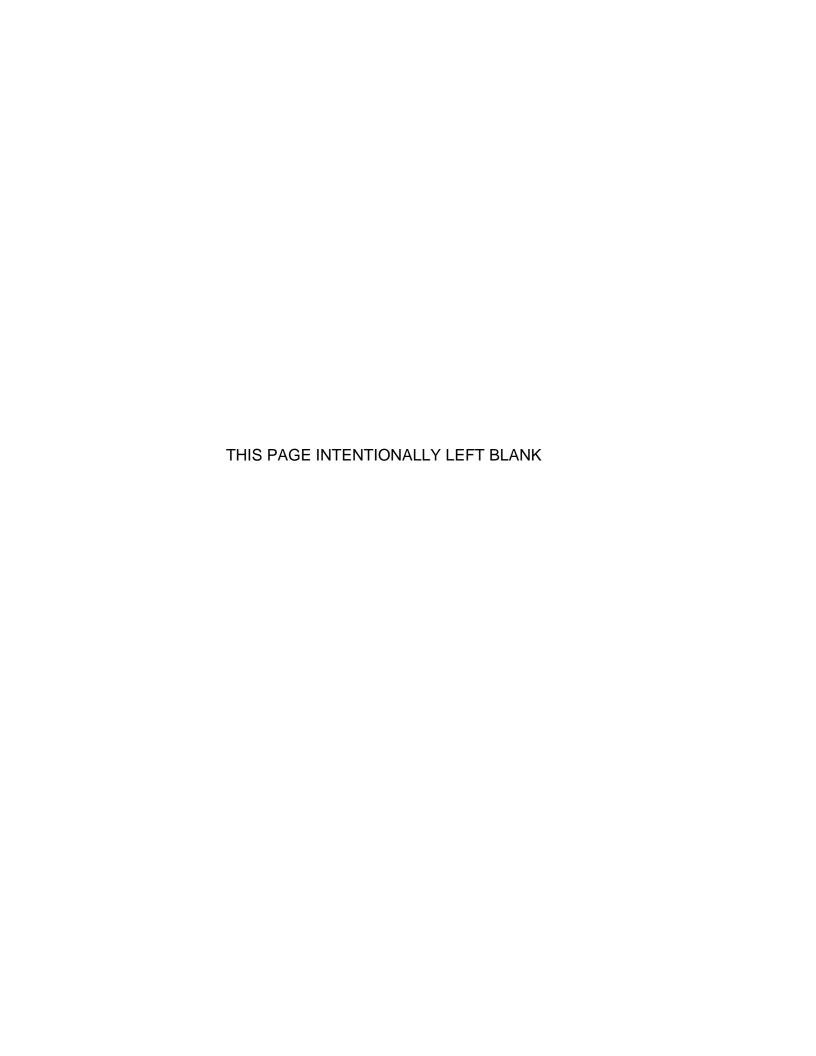
To increase the amount of available drawdown, it may be acceptable in the future with increased understanding of aquifer conditions information to position the pump inside the top of the blank section of the 18-inch-diameter liner to a depth of about 560 feet bgs which is 10 feet above the top of the uppermost liner screen at 570 feet bgs. It may be possible to position the pump intake even deeper within the blank section between the liner screens at a depth of 660 feet bgs. Setting the pump at either of these depth is not recommended until regional groundwater conditions and sustainable yield are understood.

The results of 24-hour testing gave indications of the extent of the basalt aquifer at the well; the nearest active pumping wells are approximately 2,500 to 5,000 feet from Test Well No. 2, confirming that the basalt aquifer is regionally extensive. Continuous monitoring of the groundwater level in Test Well No. 2 is strongly recommended to evaluate the amount of well interference and identify the which active wells withdraw groundwater from the same aquifer, and to observe seasonal effects on groundwater levels and recovery during winter, low demand months. It is critical to understand these influences on groundwater levels at Test Well No. 2 to

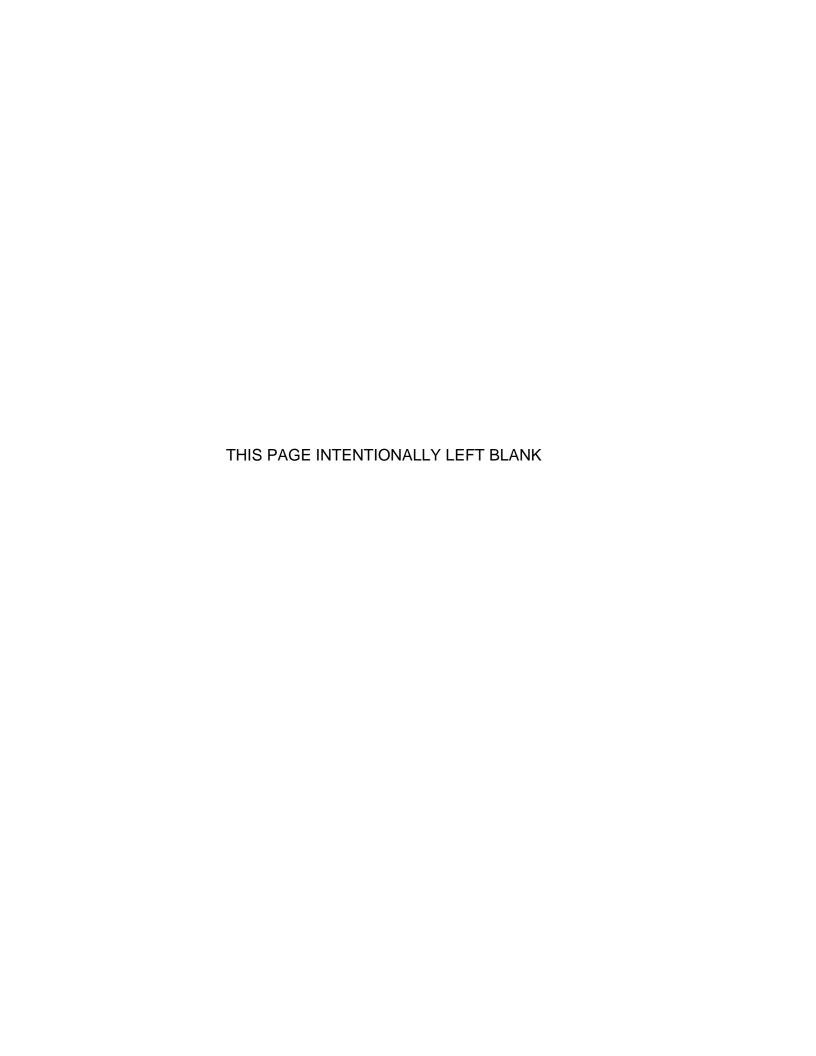
predict future groundwater availability and to reduce some of the uncertainties of extrapolating short-term pumping test results to long-term well operation.

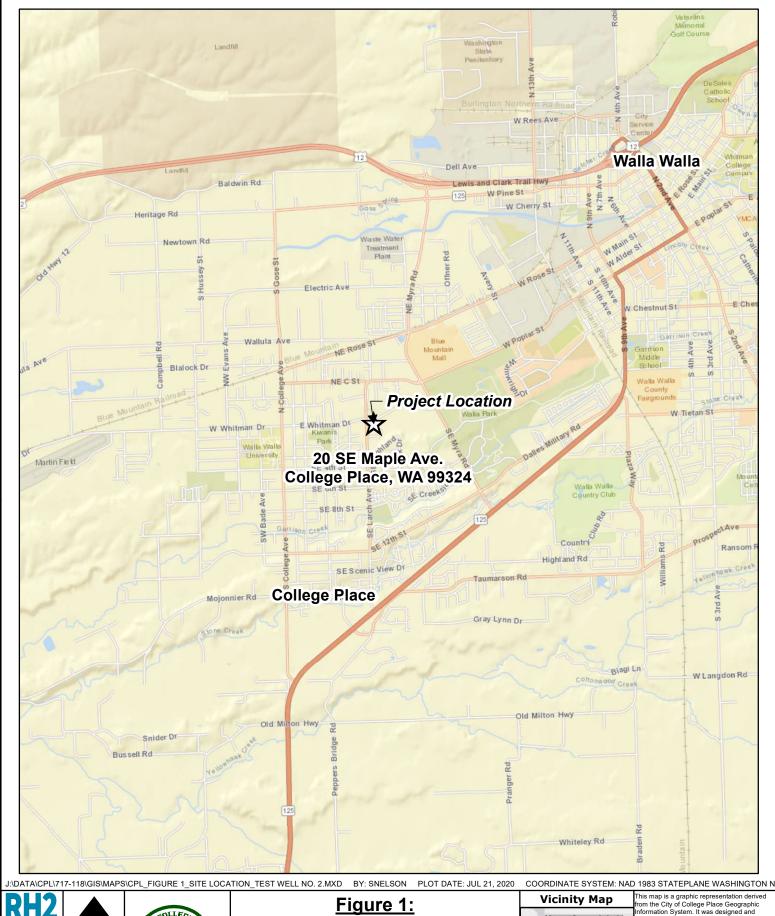
References

- Burns, E., Snyder, D., Haynes, J., & Waibel, M. (2012). *Groundwater status and Trends for the Columbia Plateau Regional Aquifer System, Washington, Oregon, and Idaho*. U.S. Geological Survey Scientific Investigations Report 2012–5261, 52 p.
- Driscoll, F.G. (1986). Groundwater and Wells. Second Edition.
- Golder Associates. (April 24, 2009). City of Walla Walla Aquifer Storage and Recovery Permit Application: Hydrogeologic System Description. Technical Memorandum. Prepared for City of Walla Walla.
- RH2 Engineering, Inc. (2018a). *Hydrogeologic Assessment of Same Body of Public Groundwater* and *Impairment*. Prepared for the City of College Place.
- RH2 Engineering, Inc. (2018b). *Well Siting Study and Recommendations*. Prepared for the City of College Place.
- RH2 Engineering, Inc. (2019). *Test Well No. 1 Exploratory Well Drilling and Testing.* Prepared for the City of College Place.



Figures







DRAWING IS FULL SCALE WHEN BAR MEASURES 1" COLLEGE PLACE

Figure 1:
Test Well No. 2
Project Location Map
City of College Place
Water System Consolidation



This map is a graphic representation derived from the City of College Place Geographic Information System. It was designed and intended for the City of College Place staff use only; it is not guaranteed to survey accuracy. This map is based on the best information available on the date shown on this map.

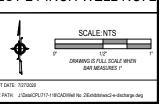
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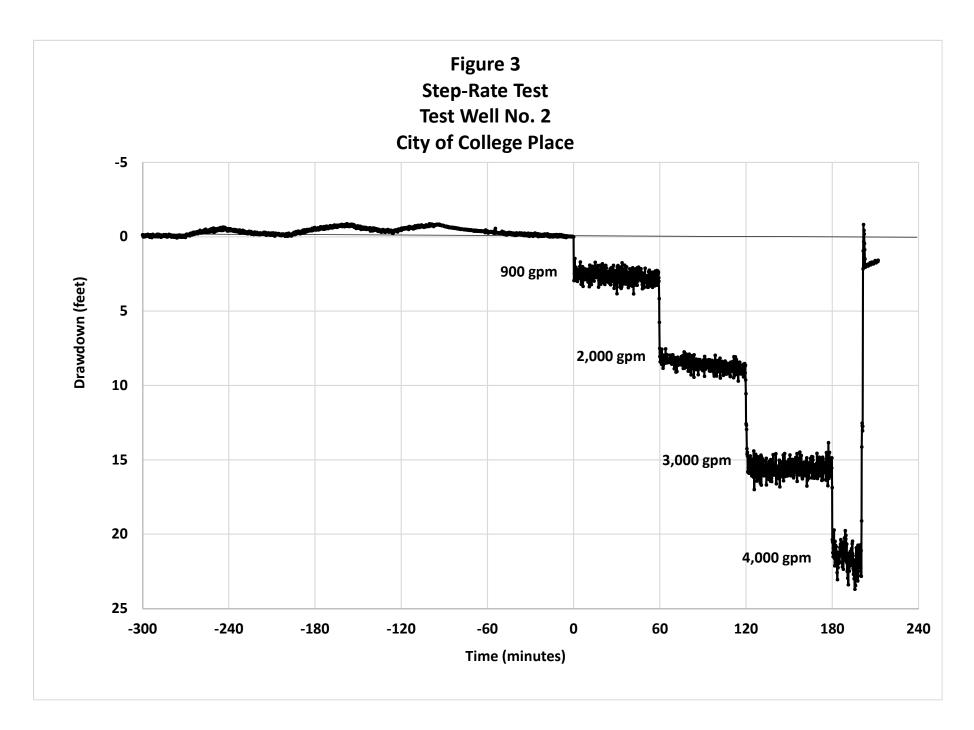
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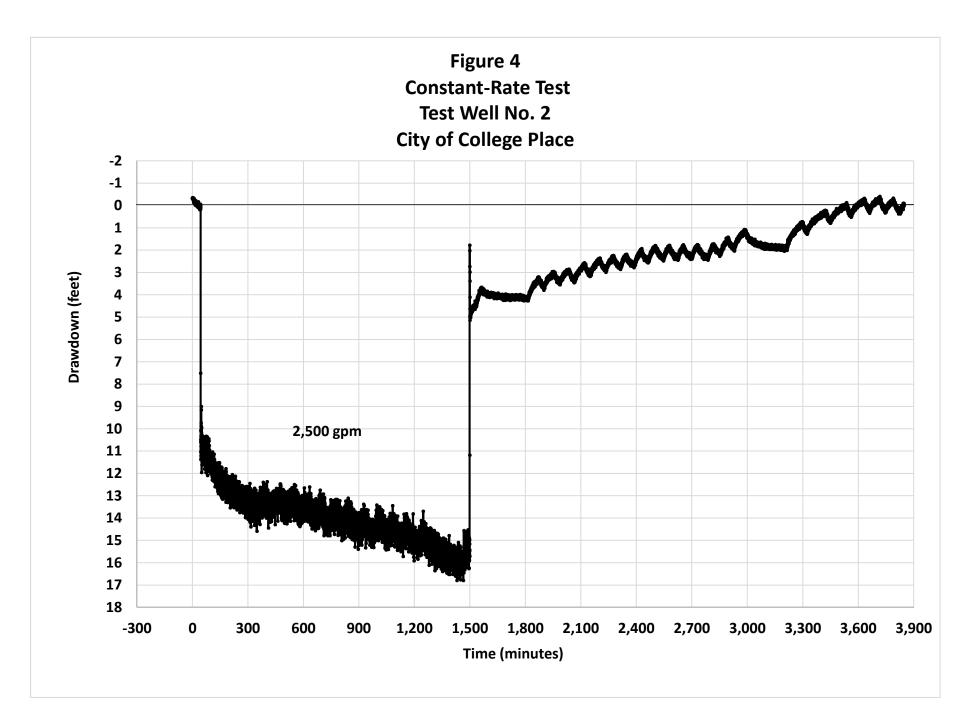


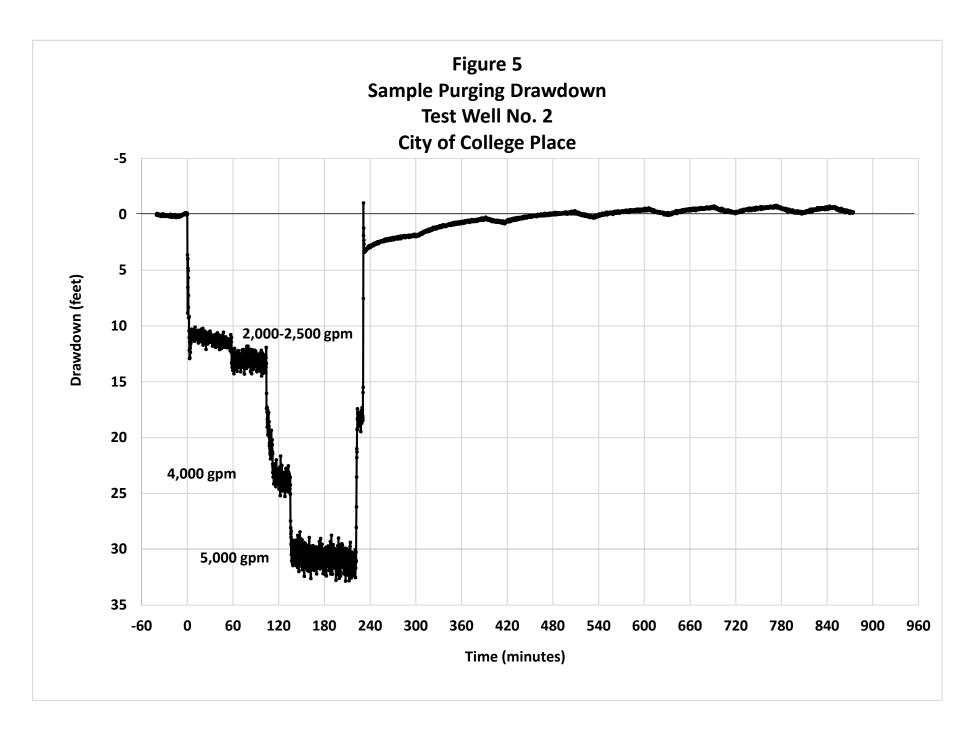
DRILL, DEVELOP AND PUMP TEST 24-INCH WELL NO. 2











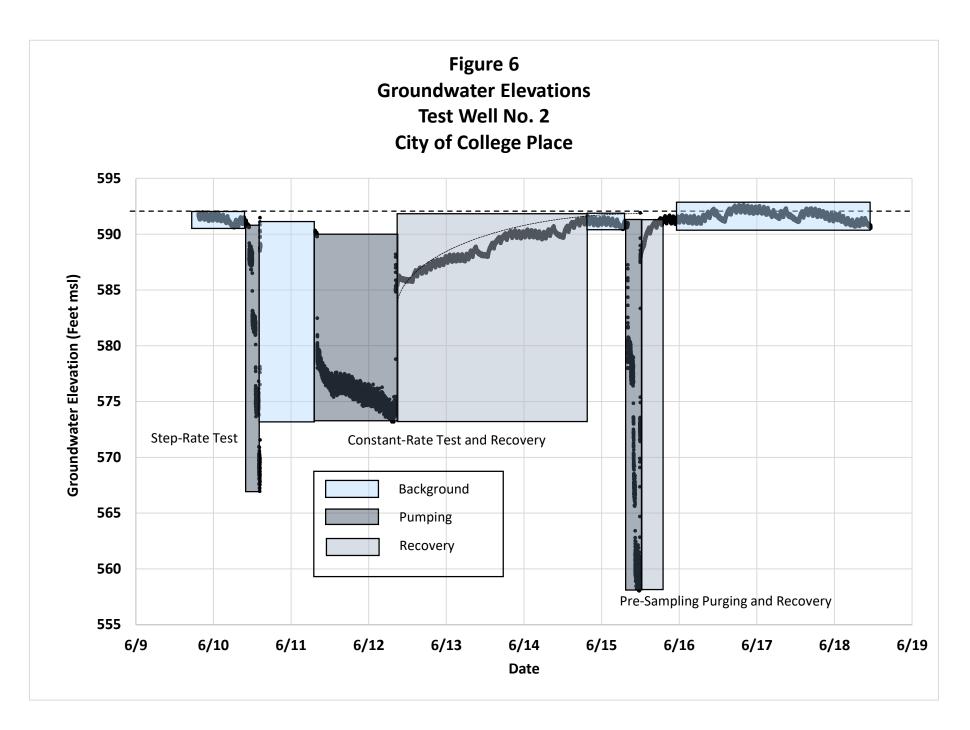
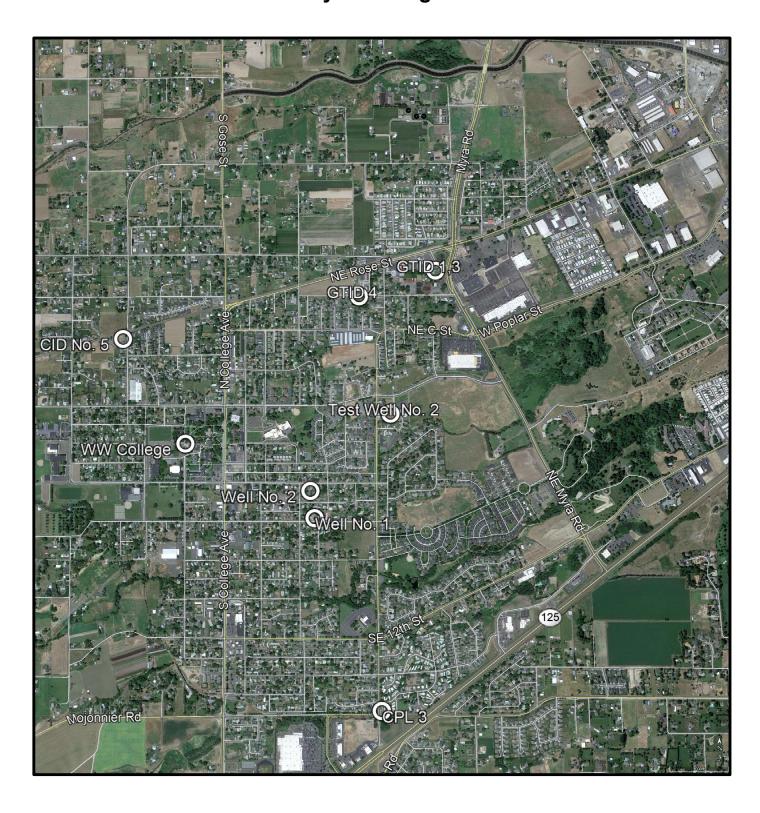
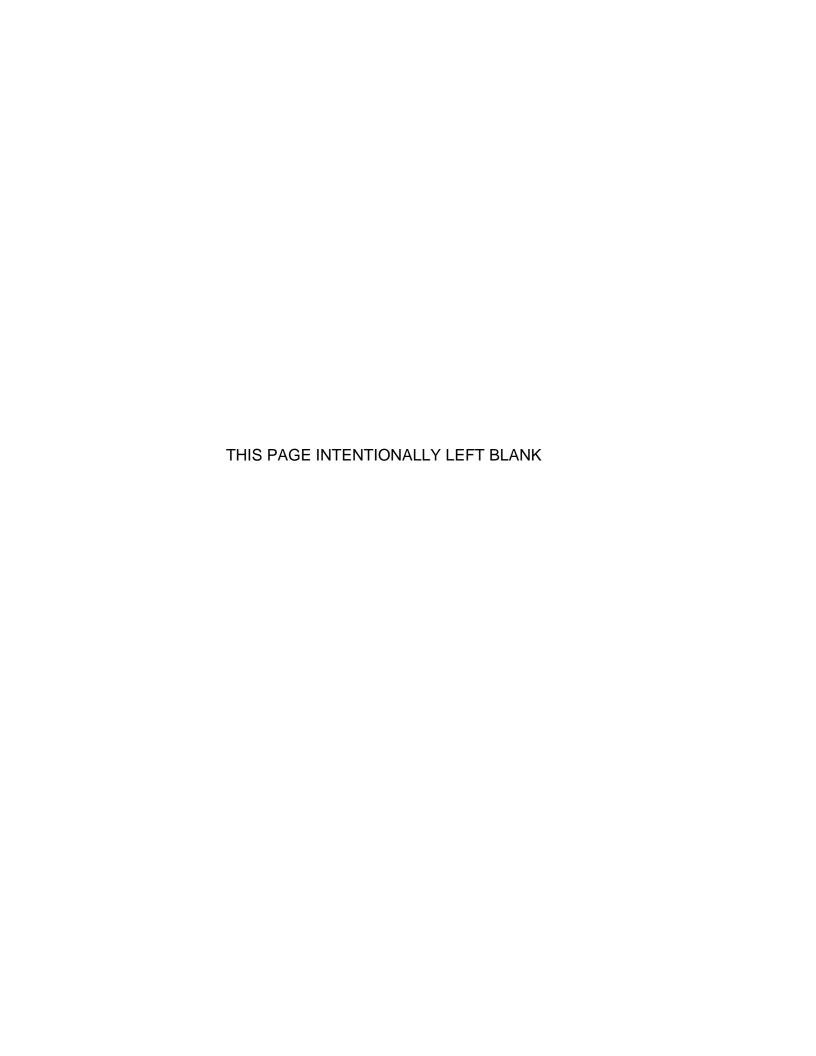
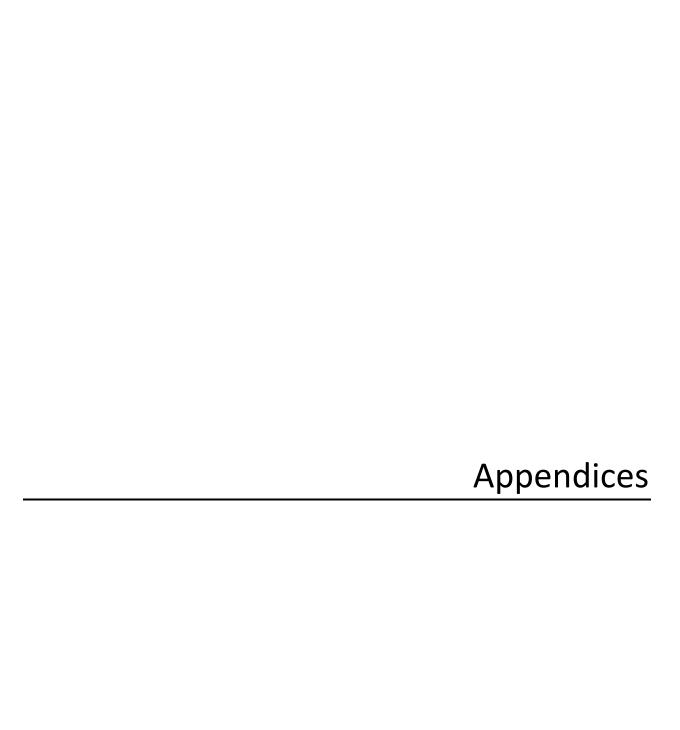


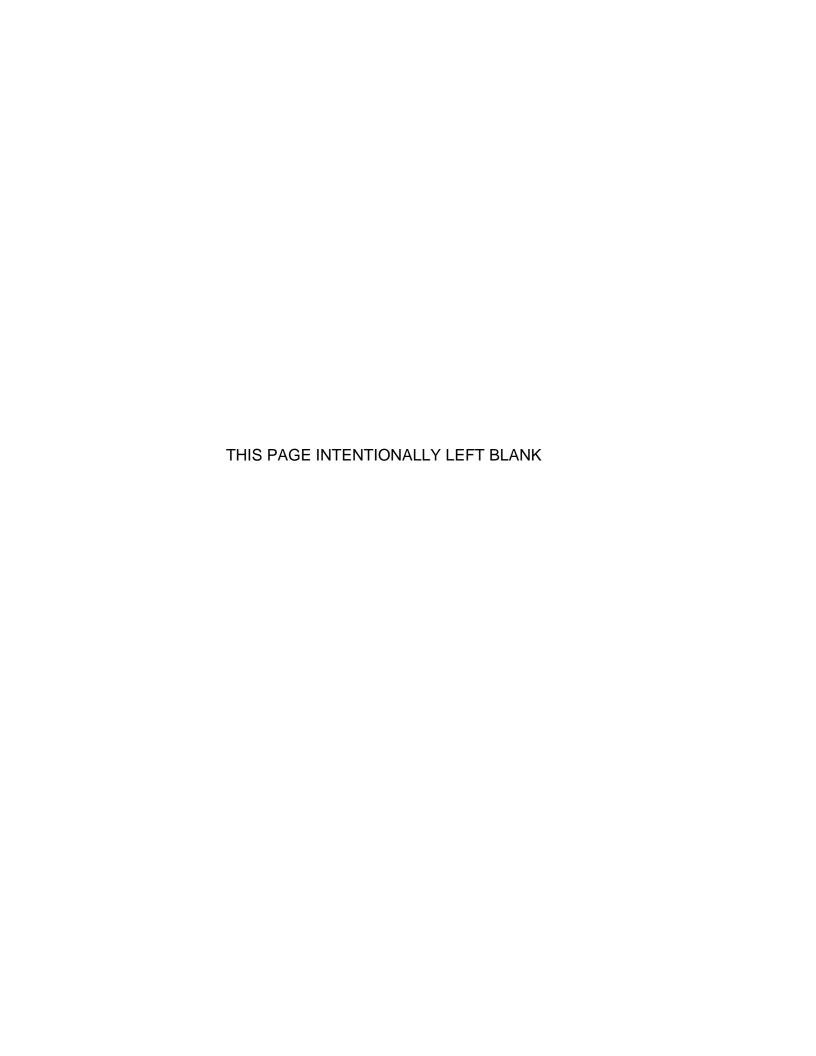
Figure 7 Production Wells near Test Well No. 2 City of College Place



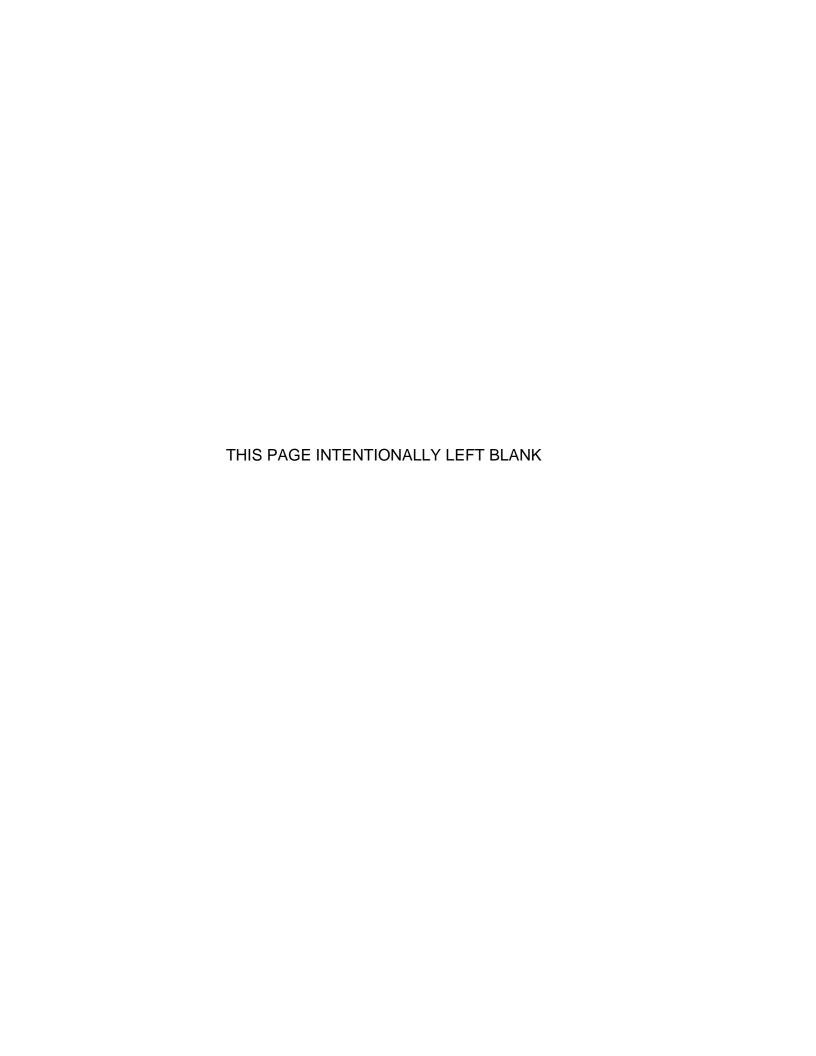
Source: Google Earth







Appendix A Water Well Report and Formation Log





WATER WELL REPORT ECOLOGY	Notice of Intent No. WE 332
Type of Work:	Unique Ecology Well ID Tag
■ Construction	Site Well Name (if more than
☐ Decommission	Water Right Permit/Certification
Proposed Use: ☐ Domestic ☐ Industrial ☐ Municipal	Property Owner Name City
☐ Dewatering ☐ Irrigation ☐ Test Well ☐ Other	Well Street Address 20 SE
Construction Type: Method:	City College Place, WA
■ New well	•
□ Deepening □ Other □ Dug ■ Air- RC ■ Mud-Rotary	Tax Parcel No. 3507254300
Dimensions: Diameter of boring $\frac{36 \text{ to } 20}{100000000000000000000000000000000000$	Was a variance approved for
	If yes, what was the variance
Construction Details: Wall Casing Liner Diameter Diameter From To Thickness Steel PVC Welded Thread □ 24 in. +3.5 545 .500 in. □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	Location (see instructions on NW 1/4-1/4 of the NE 1/4; Latitude (Example: 47.12345 Longitude (Example: -120.12
Perforations: □ Yes ■ No Type of perforator used	
No. of perforations in. by in.	Driller's Log/Con Formation: Describe by color, cha
Perforated from ft. to ft. below ground surface	nature of the material in each laye
Screens: ■ Yes □ No □ K-Packer ➡ Depth ft.	information. Use additional sheet
Manufacturer's Name Johnson Type 304SS Model No. V-shaped wire wrap	Materia
Diameter 18 in. Slot size .100 in. from ft. to ft.	See Attached Formation Lo
Diameter in. Slot size in. from ft. to ft.	***
Sand/Filter pack: ☐ Yes ■ No Size of pack material in.	* Screen Assembly (welded
Materials placed from ft. to ft.	Blank is .375 wall 304SS.
Surface Seal: ■ Yes □ No To what depth? 545 ft.	Screen is 304SS pipe size. Blank w/J-receptor
Material used in seal Neat cement, bentonite grout & chip bentonite	Blank
Did any strata contain unusable water? ☐ Yes ☐ No Type of water? Depth of strata	Screen
Method of sealing strata off	Blank
	Screen
Pump: Manufacturer's Name Type: H.P. Pump intake depth: ft. Designed flow rate: gpm	Blank
	Screen
Water Levels: Land-surface elevation above mean sea level ft. Stick-up of top of well casing 3.5 ft. above ground surface	Blank
Static water level 231 ft. below top of well casing Date 6/16/20	**D'!
Artesian pressure lbs. per square inch Date Artesian water is controlled by (cap, valve, etc.)	**Pilot bit borehole diameter
Artesian water is controlled by (cap, valve, etc.)	and full of slough.
Well Tests: Was a pumping test performed? □ No ■ Yes ⇒ by whom? SWS Yield 2565 gpm with 13.5 ft. drawdown after gpm with ft. drawdown after hrs. Yield gpm with ft. drawdown after hrs. Yield gpm with ft. drawdown after hrs.	
Recovery data (time = zero when pump is turned off – water level measured from well top to water level) Time Water Level Time Water Level Time Water Level	
Date of pumping test 6/11-6/12/20	
Bailer test gpm with ft. drawdown after hrs.	
Air test gpm with stem set at ft. for hrs. Date	
Artesian flow gpm	
Temperature of water 72 ° F Was a chemical analysis made? ■ Yes □ No	Start Date 6/27/19

Notice of Intent No. WE 35227								
Unique Ecology Well ID Tag No. AAS 237								
Site Well Name (if more than one well): Test Well 2								
Water Right Permit/Certificate No. WRIA 32								
Property Owner Name City of College Place								
Well Street Address 20 SE Maple Ave								
City College Place, WA County Walla W	alla							
Tax Parcel No. <u>350725430065</u>								
Was a variance approved for this well? ☐ Yes ■	No							
If yes, what was the variance for?								
Location (see instructions on page 2):		or EWM						
NW 1/4-1/4 of the NE 1/4; Section 1 Towns	hip /N R	ange 35E						
Latitude (Example: 47.12345) 46.04900								
Longitude (Example: -120.12345)118.37720								
Driller's Log/Construction or Decomming Formation: Describe by color, character, size of material and nature of the material in each layer penetrated, with at least of information. Use additional sheets if necessary.	structure, and the	ne kind and						
Material	From	То						
See Attached Formation Log								
* Screen Assembly (welded) - 18" diameter:								
Blank is .375 wall 304SS.								
Screen is 304SS pipe size.	504	507						
Blank w/J-receptor	534	537						
Blank	537	570 620						
Screen	570 620	620 650						
Blank	650	660						
Screen Blank	660	670						
Screen	670	780						
Blank	780	800						
Diank	700	000						
**Pilot bit borehole diameter is 14-3/4" diameter	800	804						
and full of slough.								
G D . 6/27/40	7/2/20							
Start Date 6/27/19 Completed Date	1/3/20							
onsibility for construction of this well, and its complian	nce with all W	ashington well						

construction standards. Materials used and the information reported above are true to my best knowledge and belief.

■ Driller □ Trainee □ PE – Print Name Steve Schneider	Drilling Company Schneider Water Services
Signature	Address 21881 River RD NE
License No. 643	City, State, Zip St. Paul, OR 97137
IF TRAINEE: Sponsor's License No.	Contractor's
Sponsor's Signature	Registration No. SCHNEEI940R8 Date 7/20/20
-	

City of College Place Test Well #2

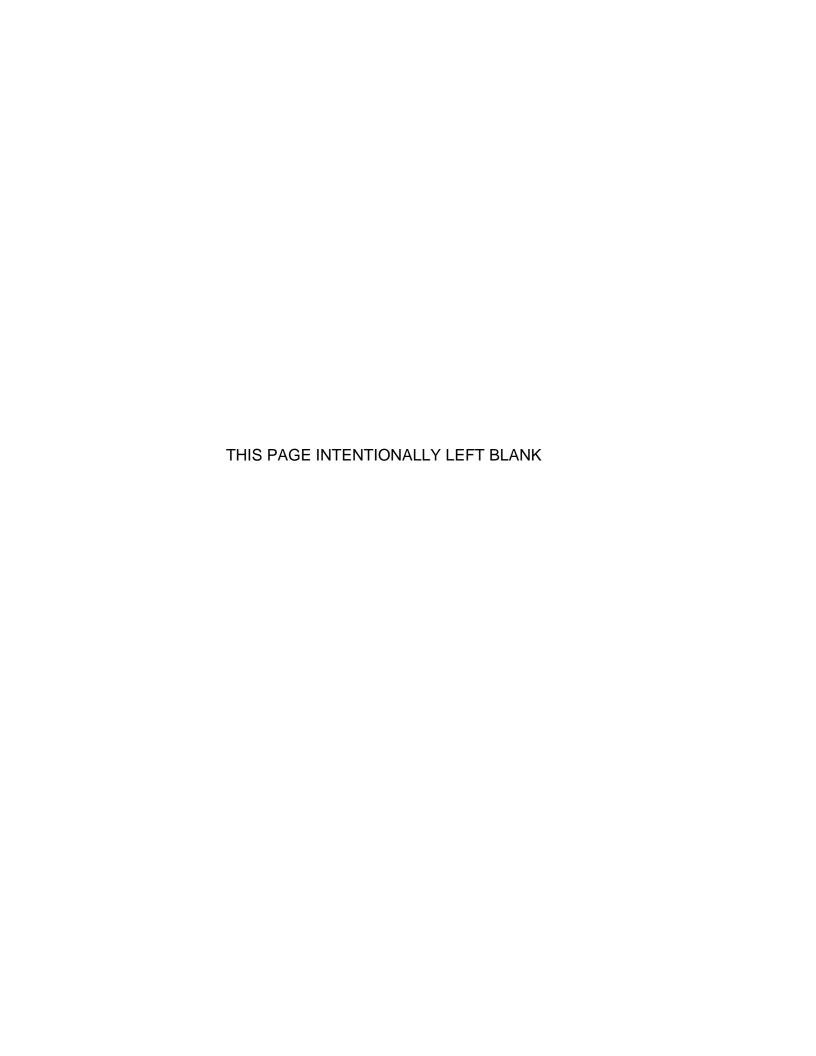
NOI WE34134 - Well Tag ID # AAS 437

Formation Log

by Schneider Water Services

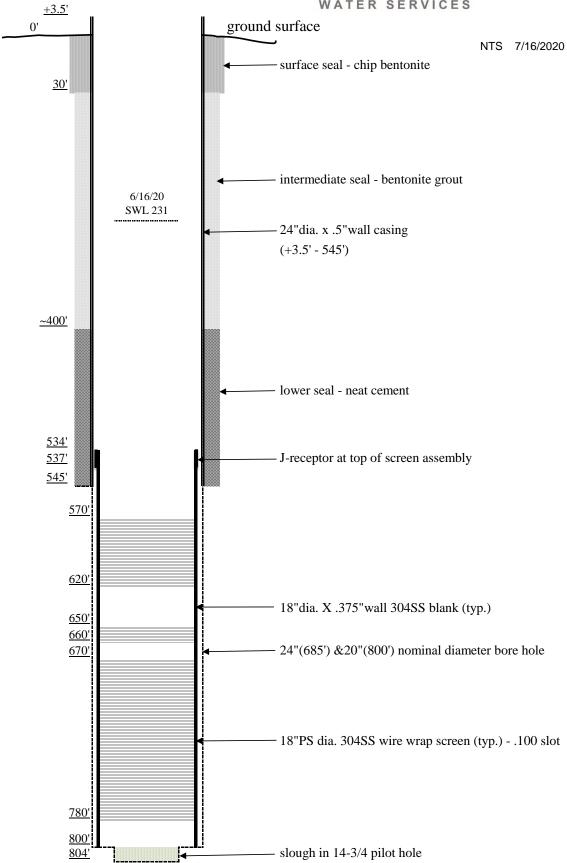
<u>FM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	8	Topsoil & gravel
8	18	Cobbles, gravel, 8"- w/clay, dark brown, sandy, soft
18	30	Gravel, 1"-, w/clay, green, soft & occcasional boulders
30	60	Gravel, 2"-, w/sand, black & brown, coarse-medium
60	70	Gravel, 2" -, w/clay, tan, soft
70	138	Gravel, 2"- w/cobbles & clay, tan, soft
138	190	Clay, tan, soft, silty
190	200	Clay, brown, soft-medium w/gravel, 1-1/2"-
200	208	Gravel, brown, 1-1/2"-
208	263	Clay, grey, soft
263	318	Clay, grey, soft-medium
318	415	Clay, black, soft-medium, silty
415	428	Gravel, black w/clay, grey, soft
428	458	Clay, dark grey, medium w/gravel, black
458	481	Clay, tan, soft-medium, some sandy-silty
481	487	Clay, tan, hard
487	521	Clay, grey, medium-hard
521 532	532	Clay, green, medium-hard
	533	Basalt, black, soft-medium, vesicular
533	540 552	Basalt, black, soft-medium, fractured, vesicular
540 552	562	Basalt, dark grey, medium, occasional fractures
562	571	Basalt, dark grey, medium-hard, occasional fractures Basalt, dark grey, medium-hard, fractured w/minerals
571	578	
578	588	Basalt, grey, medium-hard, fractured Basalt, black, medium, broken, vesicular w/some claystone, green
588	593	Basalt, black & some red, medium, broken, vesicular w/some claystone, green
593	594	Basalt, black, medium, broken, vesicular
594	598	Basalt, black, medium-hard, fractured, some vesicules
598	611	Basalt, dark grey, medium-hard, fractured
611	617	Basalt, dark grey, medium-hard, fractured w/some claystone, tan
617	619	Basalt, dark grey, medium-hard w/some clay, tan, medium
619	620	Basalt, dark grey, medium & clay, tan, medium
620	630	Clay, light grey, medium w/some basalt, dark grey
630	637	Basalt, dark grey, medium, fractured w/some clay, green, grey & tan, hard-medium
637	651	Basalt, dark grey, medium, fractured
651	658	Basalt, black, medium-soft, broken, vesicular w/some clay, green
658	688	Basalt, dark grey - black, medium, fractured w/clay, green
688	696	Basalt, dark grey - black, medium fractured
696	735	Basalt, dark grey - black, fractured w/claystone, blue, hard
735	753	Basalt, dark grey, medium-hard, fractured
753	783	Basalt, dark grey, medium, fractured w/clay, blue, hard
783	793	Clay, blue, medium-hard w/basalt, grey, medium, fractured
793	796	Basalt, dark grey, medium-hard w/some clay, blue, medium
796	803	Basalt, dark grey, medium-hard, fractured w/some clay, blue, hard
803	804	Basalt, dark grey, medium, fractured w/sine clay, blue & red, medium & claystone, blue
		=, z orej, medium, medium w ridgistolie, blue

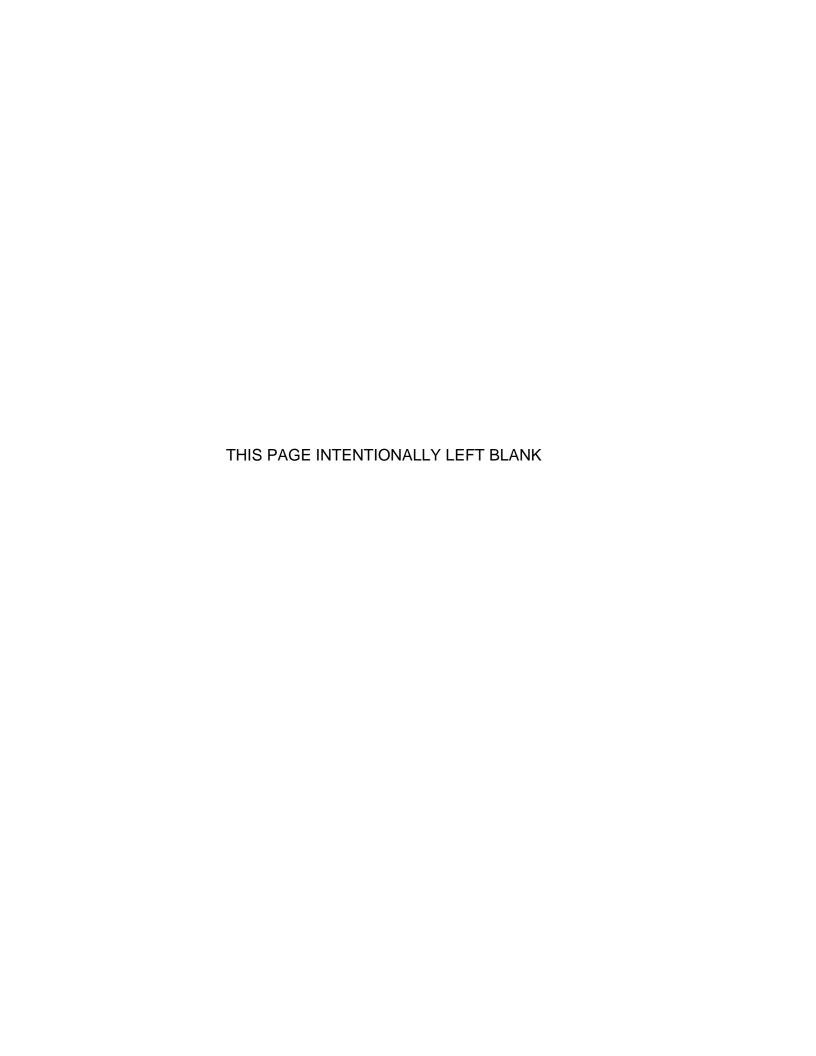
Appendix B Well Liner As-Built Schematic



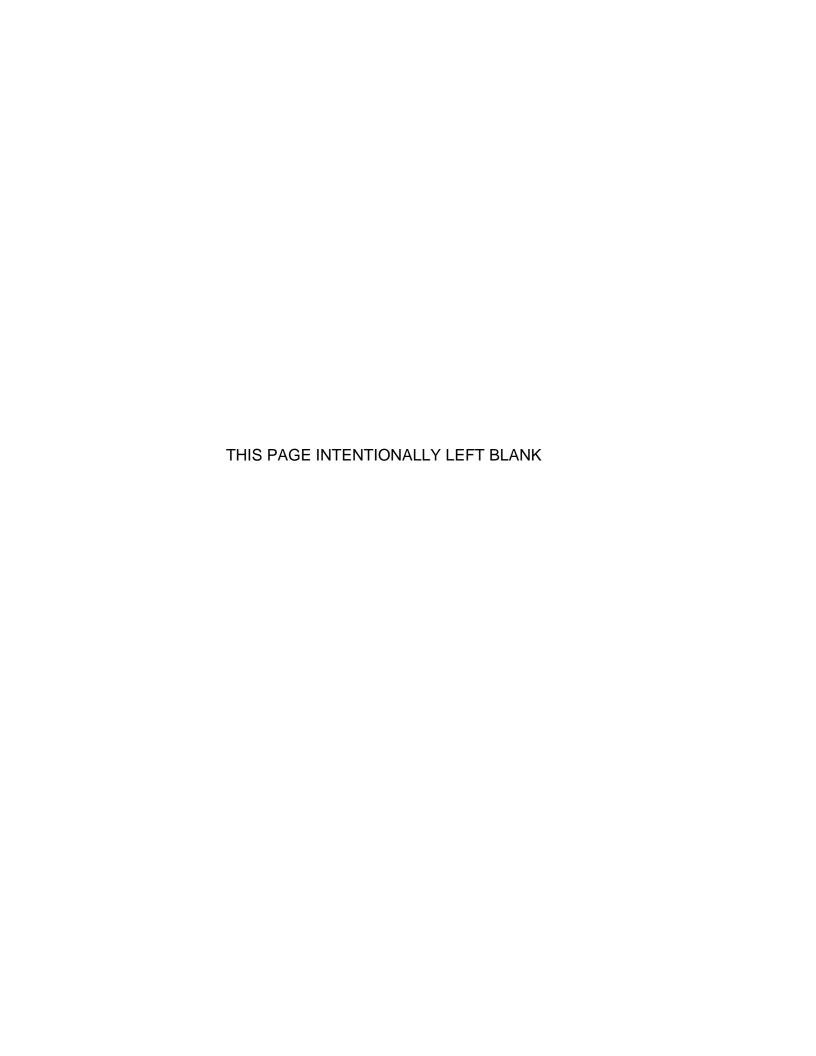
City of College Place TW #2

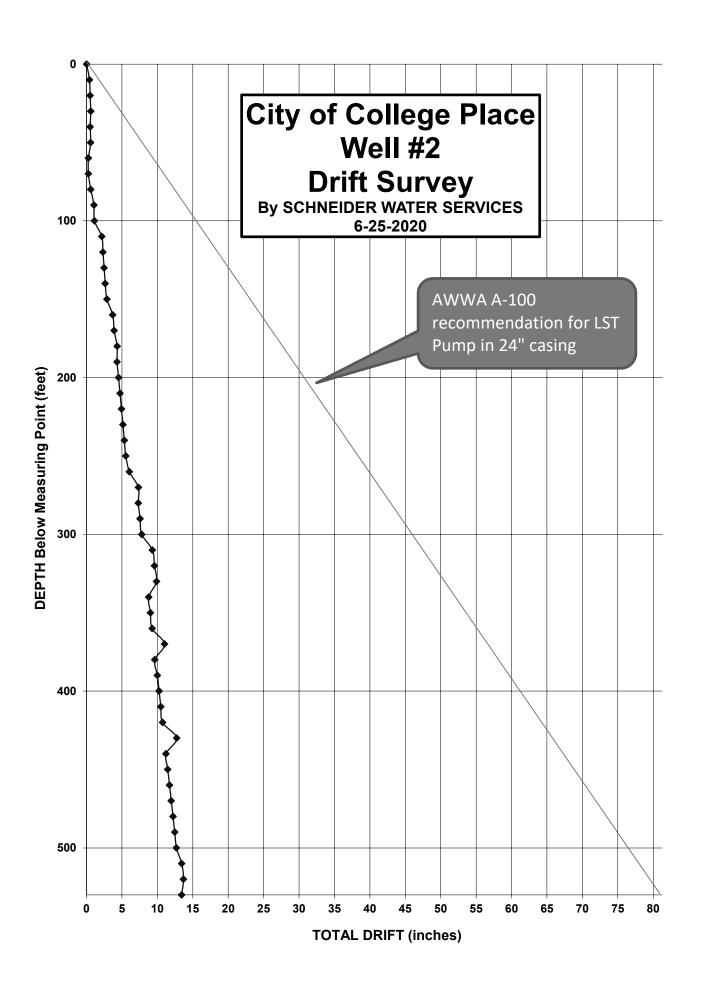






Appendix C Well Plumbness Testing Results





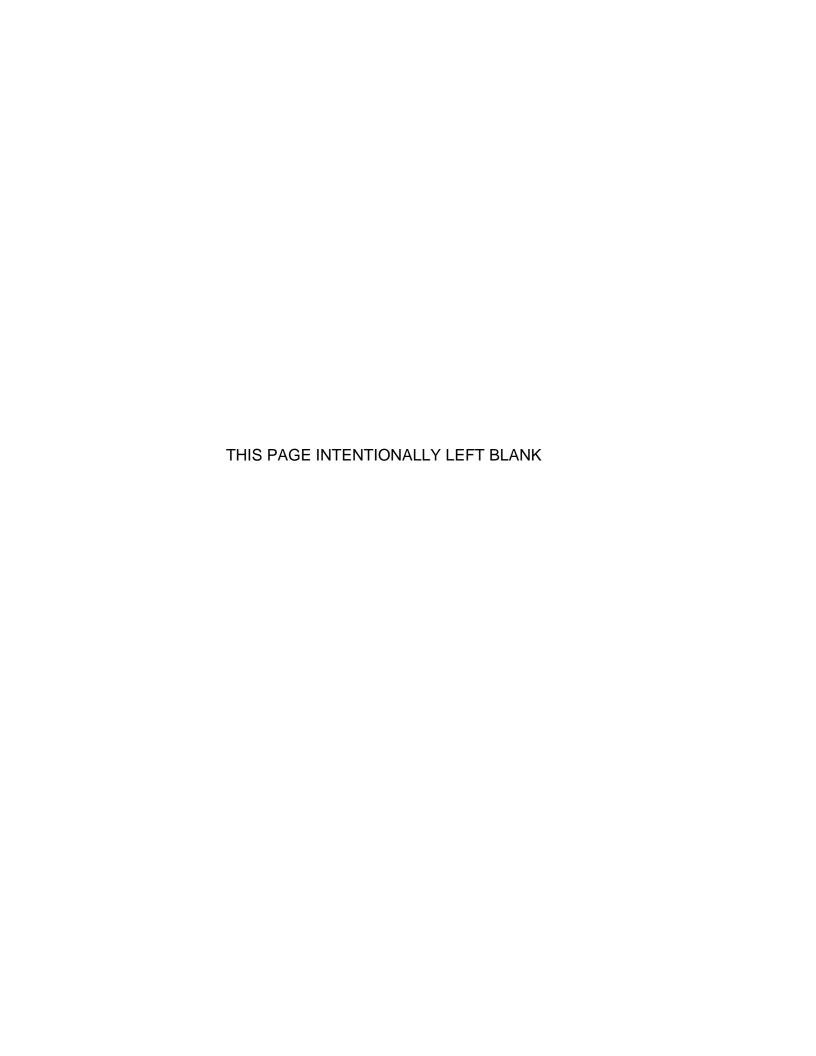
SC	HNEIDER WAT	ER SERVICE	S DRIFT SURV	/EY	Ps	1083			
OWNER: College Vace #2 Date: 6-25-2020 Time: 2:301									
PERSONNEL: E.Z, Coly, led, Victor (LYZ)									
PLUMMET: Diameter (inches) 22.5" Length (inches) 28 15/16									
Measuring Point (M	I.P.) Description (e.g	1. TOC): 1,5 '			4	1/8			
M.P. to Centerline o	of Guide Sheave (fee	et): 9.25'	M.P. AGS (feet)		5	5/32			
Bore or casing ID (inches): 23" ID	Depth BGS ((feet): 530		6	3/16			
T	DIRECTION: S-		DIRECTION:	- W	7	7/32			
Top of Plummet Below Top of M.P.	Measu	rement	Measu	rement	8	1/4			
	inches	32nd	inches	32nd	9	9/32			
0	11	4717	11	16	10	5/16			
10		16	<u> </u>	14	11	11/32			
w	мТ	16	11	₩1Y	12	3/8			
30	11	16		14	13	13/32			
40	11	16	ໄ <u>ຖ່</u>	15	14	7/16			
- 50	<u> </u>	16	11	15	15	15/32			
60	<u>ji</u> i	17	13	16	16	1/2			
70	11	17	1.1	16	17	17/32			
80		17	l l	17	18	9/16			
90	11	17	V)	18	19	19/32			
เงื่อ	10	17	11	18	20	5/8			
llo	l)	1)	7.1	20	21	21/32			
120		17	11	20	22	11/16			
130	N	17	1\	20	23	23/32			
140	N.	17	[]	20	24	3/4			
150	N	16	I.	20	25	15/32			
160	11	طا	11	21	26	13/16			
170	-11	16	11	21	27	27/32			
180	L\	15	11	21	28	7/8			
190	N	16	11	21	29	29/32			
200	11	16	1	21	30	15/16			
210	11	16	11	21	31	31/32			

11

31 31/32

SC	HNEIDER WA	TER SERVICE	ES DRIFT SUR	VEY	P.	5 3 es		
	Plea HZ		6-25-2020 Tin		1	1/32		
PERSONNEL:	, , , , , , , , , , , , , , , , , , , ,				2	1/16		
PLUMMET: Diamete	er (inches)	Length	(inches)		3	3/32		
Measuring Point (M.P.) Description (e.g. TOC):								
M.P. to Centerline o	of Guide Sheave (fe	et):	M.P. AGS (feet)		5	5/32		
Bore or casing ID (i	nches):	Depth BGS	(feet):		6	3/16		
Toward DI	DIRECTION: 5	<u>~</u> \	DIRECTION: E	- W	7	7/32		
Top of Plummet Below Top of M.P.	Meası	urement	Meas	urement	8	1/4		
	inches	32nd	inches	32nd	9	9/32		
490	11	16	<u>l</u>	22	10	5/16		
450	<u> </u>	16	<u> </u>	22	11	11/32		
460	\(16	11	22	12	3/8		
470	11	16)(22	13	13/32		
480	11	16	11	22	14	7/16		
490	<u> </u>	16	11	22	15	15/32		
5∞	11	16	11	22	16	1/2		
510	11	15	11	22	17	17/32		
520		15	((22	18	9/16		
530		16	li li	22	19	19/32		
					20	5/8		
				7 PM - N. A.	21	21/32		
				7 CT CT CT CT CT CT CT CT	22	11/16		
					23	23/32		
					24	3/4		
			1	- to and not see see see see to the test to be see to the see to t	25	15/32		
			***************************************	n (an land han	26	13/16		
					27	27/32		
		- No. 201 201 201 201 201 201 201 201 201 201	***************************************		28	7/		
					29	29/32		
	- 100 100 100 100 100 100 100 100 100 10				30	15/16		
1 Mil	THE PER PER PER PER PER PER PER PER PER PE					31/32		





1008 W. Ahtanum Rd. Union Gap, WA 98903 (509) 452-7707 Fax: (509) 452-7773



3019 G.S. Center Rd. Wenatchee, WA 98801 (509) 662-1888 Fax: (509) 662-8183

Billing Code: 17114

Batch #: 009489

INORGANIC CONTAMINANTS (IOC) ANALYTICAL REPORT

Send Report to: _City_of_College_Place/DW _Paul Hartwig _625 S_College_Ave _College_Place, WA 99324	Bill to: (Client Name) City of College Place/DW 625 S College Ave College Place, WA 99324
Date Collected: (MM/DD/YY) 6 /15 /20	System Group Type: (Circle one) A ^X B Other: (Specify) System Name: City of College Place
-	County: Walla Walla
Lab Sample Number 105-151 011874 Sample Location: 20 SE Maple Ave	Source Numbers(s) 65,,,,
Sample Purpose: (Check Appropriate Box) RC - Routine/Compliance (satisfies monitoring requirements) C - Confirmation (confirmation of chemical result)* I - Investigative (does not satisfy monitoring requirements) O - Other (specify) *Confirmation: Original Sample Lab #	Date Received: (MM/DD/YY) 6 / 15 / 20 Analyzed Date Affaryzed: (MM/DD/YY) 6 / 23 / 20 Reported Date Reported: (MM/DD/YY) 6 / 24 / 20 COMMENTS:
Sample Composition: (Check Appropriate Box) S - Single Source B - Blended (List Multiple Source Numbers in Source Nos. Field) C - Composite (Specify in Comments Field) D - Distribution sample	Sample Type: (Check one) Pre-Treatment/Raw Post-Treatment/Finished Unknown Sample Collected by: Phone Number:

EPA/STATE REGULATED

DOH#	<u>ANALYTE</u>	RESULTS	<u>UNITS</u>	SRL	TRIGGER	MCL	MCL Exceeded	METHOD/Analyst Initials
0004	ARSENIC	0.000195	mg/L	0.0014	0.010	0.010	No	EPA 200.8/RLK
0005	BARIUM	0.05200	mg/L	0.1	2	2	No	EPA 200.8/RLK
0006	CADMIUM	< 0.0001	mg/L	0.001	0.005	0.005	No	EPA 200.8/RLK
0007	CHROMIUM	< 0.0001	mg/L	0.007	0.1	0.1	No	EPA 200.8/RLK
0011	MERCURY	< 0.0002	mg/L	0.0002	0.002	0.002	No	EPA 245.1705
0012	SELENIUM	< 0.0005	mg/L	0.002	0.05	0.05	No	EPA 200.8/RLK
0110	BERYLLIUM	< 0.0001	mg/L	0.0003	0.004	0.004	No	EPA 200.8/RLK
0111	NICKEL	< 0.0001	mg/L	0.005	***		No	EPA 200.8/RLK
0112	ANTIMONY	0.000450	mg/L	0.003	0.006	0.006	No	EPA 200.8/RLK
0113	THALLIUM	0.000225	mg/L	0.001	0.002	0.002	No	EPA 200.8/RLK
0116	CYANIDE	< 0.01	mg/L	0.01	0.2	0.2	No	OIA 1677-09/RMN
0019	FLUORIDE	0.47	mg/L	0.5	2	4	No	EPA 300.0/KT
0114	NITRITE-N	< 0.05	mg/L	0.1	0.5	1	No	EPA 300.0/KT
0020	NITRATE-N	0.12	mg/L	0.5	5	10	No	EPA 300.0/KT
0161	TOTAL NITRATE/NITRITE	0. 12	mg/L	0.5	5	10	No	EPA 300.0/KT



Walla Walla Regional Water Testing Services

714 S. College Avenue College Place, WA 99324

Phone: 509-526-9287 Fax: 509-529-5272

"NIT" TEST PANEL ("NITRATE/NITRITE")

REPORT OF ANALYSIS

Date Collected: (MM/DD/YY) 06/15/20	System Group Type: A B Other (specify):
Water System ID Number: 1 4 0 5 0 K	System Name: College Place
Lab # - Sample #:209-19928	College Place County: Walla Walla
Sample Location: 20 SE Maple Ave	Source Number(s): 506
Sample Purpose: (Check Appropriate Box)	LAB USE ONLY:
☐ RC − Routine/Compliance (satisfies monitoring requirements)	Date Received: (MM/DD/YY) 06/15/20
 □ C − Confirmation (confirmation of chemical result) □ I − Investigative (does not satisfy monitoring 	Date Analyzed: (MM/DD/YY) 06 / 17 / 30
requirements)	Date Reported: (MM/DD/YY) 06/1/17/36
✓ O – Other (specify) ,	Sampler Comments:
New Source assessment	
Sample Composition: (Check Appropriate Box)	Sample Type: (Check Appropriate Box)
✓ S – Single Source ✓ S	✓ Pre-Treatment/Raw
☐ B – Blended (List Multiple Source Numbers in	☐ Post-Treatment/Finished
Source Nos. field)	□ Unknown
☐ C – Composite (Specify in Comments field)	□ None → ∧ S
☐ D − Distribution Sample	Sample Collected by: Dennis Anderson
	Phone Number:
Send Report to:	Bill to: (Client Name)
Hartwig	City of College Place
	# 9976

EPA/STATE REGULATED

DOH#	ANALYTE	RESULTS	UNITS	SRL	TRIGGER	MCL	MCL Exceeded?	METHOD/
				1			(Check if YES)	Analyst initials
0020	Nitrate-N	40.5	mg/L	0.5	5.0	10.0		4500-NO3-D/
0114	Nitrite-N		mg/L	0.1	0.5	1.0		· ·
0161	Total Nitrate + Nitrite		mg/L	0.5		10.0		

NOTES: *Confirmation: Include the original lab number, sample number, and collection date of original sample in either lab or sampler comments section.

SRL (State Reporting Level): The minimum reporting level established by the Washington State Department of Health (DOH).

Trigger Level: DOH drinking water response level. Systems with compounds detected at concentrations in excess of this level may be required to take additional samples or monitor more frequently.

MCL (maximum contaminant level): If the contaminant amount exceeds the MCL, please contact your regional DOH office to determine follow-up actions.

NA (Not Analyzed): In the results column, indicates this compound was not included in the current analysis.

ND (Not Detected): In the results column, indicates this compound was analyzed and not detected at a level greater than or equal to the SRL.

<(0.00X): The compound was not detected in the sample at or above the concentration indicated (usually the lab method reporting limit).

--: No existing value

DOH#	ANALYTE	RESULTS	<u>UNITS</u>	SRL	TRIGGER	<u>MCL</u>	<u>>MCL?</u> Exceeded	METHOD/Analyst Initials
0008	IRON	0.200	mg/L	0.1		0.31	No	EPA 200.7/JRB
0010	MANGANESE	0.03656	mg/L	0.01		0.05 ¹	No	EPA 200.8/RLK
0013	SILVER	₹ 0.0001	mg/L	0.1		0.1 ¹	No	EPA 200.87RLK
0021	CHLORIDE	3.53	mg/L	20		250¹	No	EPA 300.0/KT EPA 300.0/KT
0022	SULFATE	5.71	mg/L	50	M 44	250¹	No No	EPA 200.8/RLK
0024	ZINC	0.001480	mg/L	0.2	to set	5 ¹	NU	LPH LOUI O/ NLN

0014	SODIUM	20.2	mg/L	[*] 5			No	EPA 200.7/JRB
0015	HARDNESS	63.3	mg/L	10	мн		No	SM 2340 B/Calculated
0016	CONDUCTIVITY	218.	umhos/cm	70	N	700¹	No	SM 2510 B/KT
0017	TURBIDITY	2.02	NTU	0.1			No	SM 2130 B/KT
0018	COLOR	₹ 4	color units	15	44 944	15¹	No	SM 2120-B/KT
0026	TOTAL DISSOLVED SOLIDS (TDS)	134.	mg/L	100	-	500¹	No	SM 2540 C/KE
0009	LEAD	< 0.0001	mg/L	0.001	0.015	***	No	EPA 200.8/RLK
0023	COPPER	0.000700	mg/L	0.02	AL 1.3		No	EPA 200.8/RLK

OTHER

0171	ORTHOPHOSPHATE		mg/L	0.01			
0172	SILICA	NA	mg/L	1.0			
0402	ALUMINUM	NA	mg/L	0.05			
0403	ALKALINITY	NA	mg/L	0.1			
0404	MAGNESIUM	4.515	mg/L	0.01		No	EPA 200.7/JRB
0405	CALCIUM	17.9	mg/L	0.5		No	EPA 200.7/JRB
0406	AMMONIA	NA	mg/L	1.0			
	pН	NA					
0421	Total Organic Carbon	NA	mg/L	0.7	 		

105-151

Ø11874

NOTES:

*Confirmation: Include the original lab number, sample number, and collection date of original sample in either lab or sampler comments section.

SRL (State Reporting Level): The minimum reporting level established by the Washington State Department of Health (DOH).

Trigger Level: DOH drinking water response level. Systems with compounds detected at concentrations in excess of this level may be required to take additional samples or monitor more frequently.

MCL (maximum containment level): If the contaminant amount exceeds the MCL, please contact your regional DOH office to determine follow-up actions. NA (Not Analyzed): In the results column, indicates this compound was not included in the current analysis.

ND (Not Detected): In the results column, indicates this compound was analyzed and not detected at a level greater than or equal to SRL.

NTU: Nephelometric turbidity units (a measure of water clarity).

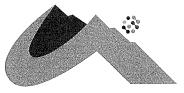
umhos/cm: Micro ohms per centimeter (a measure of water conductivity).

- 1: Secondary MCL (Established for esthetic purposes, not health based)
- <(0.00X): The compound was not detected in the sample at or above the concentration indicated (usually the lab method reporting limit).
- --: No existing value.

. No omoting vario.	
Comments:	
The Arthur Market Control of the Arthur Marke	
The second secon	
	——————————————————————————————————————
	Andy Schut Lab Manager/Yakima

CAIRF - 02 Rev. 2/13

1008 W. Ahtanum Rd. Union Gap, WA 98903 (509) 452-7707 Fax: (509) 452-7773



3019 G.S. Center Rd. Wenatchee, WA 98801 (509) 662-1888 Fax: (509) 662-8183

CASCADE ANALYTICAL A EUROFINS COMPANY

Send Results to:	Billing Address: - SAME -
City of College Place Client Name 675 S. College Ave Street Address	Client Name
Street Address Dlane in D. Correge HVE	Street Address
Street Address College Place WA 99324 City, State Zip	City, State, Zip
(309) 394 - 865 1 Phone #	Fax #
Phone # Email Phartwig @ cpwa.us	Email
Drinking Water Sample Information (1) System Name: (2) WFI System College Place 14050K (6) Source Type (check one): Well/Well Field Summer Summer System (2) Well/Well Field Summer System (3) Well/Well Field Summer System (4) Well/Well Field Summer System (4) Well/Well Field Summer System (5) Well/Well Field Summer System (5) Well/Well Field Summer System (6) Source Type (check one): Well/Well Field Summer System (6) Source Type (check one): Well/Well Field Summer System (6) Source Type (check one): Well/Well Field Summer System (6) Source Type (check one): Well/Well Field Summer System (6) Source Type (check one): Well/Well Field Summer System (6) Source Type (check one): Well/Well Field System (6)	n ID (3) Source # (4) Class (5) County SO6
(7) Name for this Source: Well #6	A flar treatment D Unknown
(8) Sample Taken (check one): Before treatment (9) Treatment Type (check all that apply routinely):	
Chlorination UV light Other	
(10) Date Collected: 6 115 120 (11) Ti (12) Sampled by: Dennis Anderson (13) Address of specific sample site: ZO (14) Sample submitted for approval of new sou (15) Sample submitted for (check one): Routine Compliance Follow-up of Investigative Confirmation (16) Sample composition (check one): Sing	Telephone (509) SE Maple Ave rce? (circle one) Yes No f lab sample #
Comments: (17) Nitrate/Nitrite Lead/Copper	Complete Inorganic Contaminants Other
(18) Customer Signature	Date: 6/15/20
	ory Use Only
Lab Sample # Date R	peceived Date Analyzed Compared Compared
Sample Preservation: (check one) 4°C pH2 VOC / Ascorbic Acid Lab Comments:	SOC / Sodium thiosulfate



Sample Receipt Form

Date Received: 4-15-10 Time Received: 1:38	nitials:)	4
Client Name: Wy of College Place Project Name:		***************************************
Temperature of cooler upon receipt:°C Thermometer ID:	00	.2
Custody seals: Intact Broken None N/A		
Chain of Custody Completed: Client name, address, and phone number; Date and time of sampling; Test requests clear; Completed in ink; Signed by client;	Yes Yes Yes Yes	No No No No
All samples received: tooffles for Gross Alpha + RAO 228.	Yes	No
All samples intact:	Yes	No
Sample ID's match COC form:	Yes	No
Appropriate containers used:	Yes	No
Sufficient amount of sample for analysis:	Yes	No
Correct preservative verified: N/A	Yes	No
Air bubbles in VOC, TTHM, or HAA5 samples:	Yes	No
Sample(s) exceed hold time:	Yes	No
Type of coolant: Ice Blue Ice None Other Comment:		
Shipping Method: FedEx UPS USPS Brett & Sons Hand De	livered (CAI Sampled
Shipping Container: E-CA Cooler E-CA Cooler Box Client's Cooler	None	Other
Samples accepted for analysis:	Yes	No
Reason for Rejection:		AND
Name of Person Contacted: Date Contacted:		

Revision 1.1 CAIFORM-06



714 S. College Ave. College Place, WA 99324 Phone 509-526-WATR (9287) Fax 509-529-5272

COLIFORM BACTERIA ANALYSIS SAMPLE COLLECTION: READ INSTRUCTIONS ON BACK OF GREEN COPY

If instructions are not followed	ed, sample will be rejected								
Date Sample Collected Time Sam Collecte	d								
Month Day Year 9:20	MAM CONTRACT								
Type of Water System (check only one box) Group A Public Group B Public	☐ Private Residence								
Group A and Group B Systems – Provide from 10# 1 4 0 5 0 K	om Water Facilities Inventory (WFI):								
System Name: College	lace								
Contact Person: P. Hart	wig								
Day Phone: () Send results to: (Print full name, address ar	Cell Phone: (509) 301-039 / nd zip code)								
P. Hartwy	Ġ								
Email: Phartwig (w)	cpwa i us								
SAMPLE INI	FORMATION								
Sample collected by (name): Dennis An	derson								
Specific location where sample collected (a	1 // .								
Special instructions or comments:	Joe Ho								
Type of Sample (must check only one box	of #1 through #4 listed below)								
1. ☐ Routine Distribution Sample	2. Repeat Sample (after unsatisfactory routine)								
Provide information below. Chlorinated: Yes No									
Chlorine Residual: Total Free	Unsatisfactory routine lab number:								
3. Raw Water Source Sample Required for Surface Water, GWI, and									
some Spring Sources)	Unsatisfactory routine collect date:								
S D 6 Pecal Coliform	Chloringtod Voc. No.								
Public Systems must provide Source Number from (WFI)									
New source	Chlorine Residual: Total Free								
4.□ Sample Collected for Information O Private Residence Construction / Rep									
LAB USE ONLY DRINKING WA	TER RESULTS LAB USE ONLY								
☐ Unsatisfactory	Satisfactory								
Total Coliform Present and	Total Coliform Absent								
☐ E.coli present ☐ E.coli absent ☐ Fecal coliform	absent absent								
☐ Replacement Sample Required	000079								
Sample not tested because:	Test unsuitable because:								
☐ Sample too old (>30 hours) ☐ Improper container	☐ TNTC ☐ Turbid culture								
Bacterial Density Results: Plate Count Total Coliform /100ml. Fed	/ml. E.coliCFU/100ml.								
MICR Method Code:	Date and Time Received:								
≠2720 □ WA6000 □	6/15/20 01000								
Date Analyzed: 6/15/20/99)	Date Reported: 6/16/20								
Lab/Sample Number	Lab Use:								
209-19927	9976/1								



Burlington, WA Corporate Laboratory (a)

Bellingham, WA Microbiology (b) 805 Orchard Dr Ste 4 - Bellingham, WA 98225 - 360.715.1212

Portland, OR Microbiology/Chemistry (c)

Corvallis, OR Microbiology/Chemistry (d) 1100 NE Circle Blvd, Ste 130 - Corvallis, OR 97330 - 541.753.4946

Bend, OR Microbiology (e) 20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.639.8425



Page 1 of 1

Project: Well #6 - New Source Assessme

SOIL FUMIGANTS REPORT

Client Name: College Place, City of Reference Number: 20-20769

218 SE 4th St

College Place, WA 99324

System ID Number: 14050

Sample Location: Well #6

Date Collected: 6/24/20 07:30

Lab Number: 046-39749

Date Extracted: 504 200630

Field ID:

System Group Type: A

System Name: COLLEGE PLACE WATER DEPT

County: WALLA WALLa

Source Number: 06

Multiple Sources:

Date Received: 6/24/2020 3:43:00PM

Date Analyzed: 06/30/20 Date: Reported: 7/24/20

Sample Type: D - Drinking Water Sample Collected By: Dennis Anderson Sampler Phone: 509-301-0391

Sample Purpose: C - Compliance Sample Composition: Single Source

Approved By: pdm Authorized By:

> Lawrence J Henderson, PhD Director of Laboratories, Vice President

EPA Method 504.1 For State Drinking Water Compliance

DOH#	COMPOUNDS	RESULTS	UNITS	SRL	Trigger	MCL	Lab	Analyst	COMMENT
	EPA Regulated Monitoring Required	İ							
102 103		ND ND	ug/L ug/L	0.01 0.02	0.01 0.02	0.05 0.2	a a	MA MA	
NOTES:									

If a compound is detected > or = to the State Reporting Level, SRL, specified increased monitoring frequencies may occur per DOH.

MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; a blank MCL value indicates a level is not currently established.

Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office.

ND (Not Detected): indicates that the parameter was not detected above the State Reporting Limit (SRL).

An * in front of the parameter name indicates it is not NELAP accredited but it is accredited through WSDOH or USEPA Region 10.

These test results meet all the requirements of NELAC, unless otherwise stated in writing, and relate only to these samples.

If you have any questions concerning this report contact Lawrence J Henderson, PhD, Director of Laboratories, Vice President, at the toll-free phone number above. FORM: cVOC.rpt



Burlington, WA Corporate Laboratory (a)
1620 S Walnut St - Burlington, WA 98233 - 800.755.9295 * 360.75

Bellingham, WA Microbiology (b) 805 Orchard Dr Ste 4 - Bellingham, WA 98225 - 360.715.1212 Portland, OR *Microbiology/Chemistry (c)* 9150 SW Pioneer Ct Ste W - Wilsonville, OR 97070 - 503.682.780

Corvallis, OR Microbiology/Chemistry (d)
1100 NE Circle Blvd, Ste 130 - Corvallis, OR 97330 - 541.753.4946

Bend, OR *Microbiology (e)* 20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.639.8425



Page 1 of 2

Project: Well #6 - New Source Assessme

VOLATILE ORGANIC COMPOUNDS (VOC) REPORT

Client Name: College Place, City of Reference Number: 20-20769

218 SE 4th St

College Place, WA 99324

Field ID:

System Group Type: A

System Name: COLLEGE PLACE WATER DEPT

County: WALLA WALLa

Source Number: 06

Multiple Sources:

Date Received: 6/24/2020 3:43:00PM

Date Analyzed: 06/30/20 Date: Reported: 7/24/20

Sample Type: D - Drinking Water Sample Collected By: Dennis Anderson Sampler Phone: 509-301-0391

Date Collected: 6/24/20 07:30

System ID Number: **14050**Lab Number: 046-39749

Sample Location: Well #6

Sample Purpose: C - Compliance Sample Composition: Single Source

ple Composition: Single Source
Date Extracted: 524 200630

Approved By: pdm
Authorized By: \(\)

C

Lawrence J Henderson, PhD Director of Laboratories, Vice President

EPA Method 524.2 For State Drinking Water Compliance

			4.2 1 01 Ott						
DOH#	COMPOUNDS	RESULTS	UNITS	SRL	Trigger	MCL	Lab	Analyst	COMMENT
	EPA/State Regulated	•	•						
160	TOTAL XYLENES	ND	ug/L	0.5	0.5	10000	а	HY	
57	T - 1,2 - DICHLOROETHYLENE	ND	ug/L	0.5	0.5	100	а	HY	
60	CIS - 1,2 - DICHLOROETHYLENE	ND	ug/L	0.5	0.5	70	а	HY	
47	1,1,1 - TRICHLOROETHANE	ND	ug/L	0.5	0.5	200	а	HY	
48	CARBON TETRACHLORIDE	ND	ug/L	0.5	0.5	5	а	HY	
49	BENZENE	ND	ug/L	0.5	0.5	5	а	HY	
50	1,2 - DICHLOROETHANE	ND	ug/L	0.5	0.5	5	а	HY	
51	TRICHLOROETHYLENE	ND	ug/L	0.5	0.5	5	а	HY	
63	1,2 - DICHLOROPROPANE	ND	ug/L	0.5	0.5	5	а	HY	
66	TOLUENE	1.3	ug/L	0.5	0.5	1000	а	HY	Field Duplicate: 0.9 ug/L, Trip Blank: ND
67	1,1,2 - TRICHLOROETHANE	ND	ug/L	0.5	0.5	5	а	HY	
68	TETRACHLOROETHYLENE	ND	ug/L	0.5	0.5	5	а	HY	
71	CHLOROBENZENE	ND	ug/L	0.5	0.5	100	а	HY	
73	ETHYLBENZENE	ND	ug/L	0.5	0.5	700	а	HY	
74	M/P - XYLENE	ND	ug/L	0.5	0.5		а	HY	
45	VINYL CHLORIDE	ND	ug/L	0.5	0.5	2	а	HY	
75	O - XYLENE	ND	ug/L	0.5	0.5		а	HY	
76	STYRENE	ND	ug/L	0.5	0.5	100	а	HY	
52	P - DICHLOROBENZENE	ND	ug/L	0.5	0.5	75	а	HY	
84	O - DICHLOROBENZENE	ND	ug/L	0.5	0.5	600	а	HY	
95	1,2,4, - TRICHLOROBENZENE	ND	ug/L	0.5	0.5	70	а	HY	
46	1,1 - DICHLOROETHYLENE	ND	ug/L	0.5	0.5	7	а	HY	
56	METHYLENE CHLORIDE	ND	ug/L	0.5	0.5	5	а	HY	
102	*1,2 - DIBROMOETHANE (EDB)	ND	ug/L	0.5	0.02	0.05	а	HY	Screening Only
103	*1,2-DIBROMO-3-CHLOROPROPANE	ND	ug/L	0.5	0.04	0.2	а	HY	Screening Only

NOTES:

If a compound is detected > or = to the State Reporting Level, SRL, specified increased monitoring frequencies may occur per DOH.

MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; a blank MCL value indicates a level is not currently established.

MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; a blank MCL value indicates a level is not currently established.

Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office.

ND (Not Detected): indicates that the parameter was not detected above the State Reporting Limit (SRL).

An * in front of the parameter name indicates it is not NELAP accredited but it is accredited through WSDOH or USEPA Region 10.

These test results meet all the requirements of NELAC, unless otherwise stated in writing, and relate only to these samples.

If you have any questions concerning this report contact Lawrence J Henderson, PhD, Director of Laboratories, Vice President, at the toll-free phone number above. FORM: cVOC.rpt



Lab Number: 046-39749 Report Date: 7/24/20 15:09

VOLATILE ORGANIC COMPOUNDS (VOC) REPORT

PA/State Unregulated	DOH#	COMPOUNDS	RESULTS	UNITS	SRL	Trigger	MCL	Lab	Analyst	COMMENT
59 2.2 - DICHLOROPROPANE ND		EPA/State Unregulated	-	-		-				
59 2.2 - DICHLOROPROPANE ND	58	1,1 - DICHLOROETHANE	ND	ug/L	0.5	0.5		а	HY	
1.1 - DICHLOROPROPENE	59	2,2 - DICHLOROPROPANE	ND	ug/L	0.5	0.5		а	HY	
DICHLORODIFLUOROMETHANE	86	BROMOCHLOROMETHANE	ND	ug/L	0.5	0.5		а	HY	
October Coloration Colora	62	1,1 - DICHLOROPROPENE	ND	ug/L	0.5	0.5		а	HY	
65 CIS - 1,3 - DICHLOROPROPENE ND Ug/L 0.5 0.5 0.5 0.5 1.3 - DICHLOROPROPENE ND Ug/L 0.5 0.5 0.5 0.5 1.3 - DICHLOROPROPENE ND Ug/L 0.5	104	DICHLORODIFLUOROMETHANE	ND	ug/L	0.5	0.5		а	HY	
TRANS-1,3 - DICHLOROPROPENE ND ug/L 0.5 0.5 a HY	64	*DIBROMOMETHANE	ND	ug/L	0.5	0.5		а	HY	
1.3-DICHLOROPROPYLENE, TOTAL ND ug/l. 0.5 0.	65	CIS - 1,3 - DICHLOROPROPENE	ND	ug/L	0.5	0.5		а	HY	
S3 CHLOROMETHANE	69	TRANS- 1,3 - DICHLOROPROPENE	ND	ug/L	0.5	0.5		а	HY	
1,3 - DICHLOROPROPANE		1,3-DICHLOROPROPYLENE, TOTAL	ND	ug/L	0.5	0.5		a	HY	
1,1,1,2 - TETRACHLOROETHANE ND ug/L 0.5 0.5 a HY	53	CHLOROMETHANE	ND	ug/L	0.5	0.5		а	HY	
SOPROPYLBENZENE	70	1,3 - DICHLOROPROPANE	ND	ug/L	0.5	0.5		a	HY	
1,2,3 - TRICHLOROPROPANE ND ug/L 0.5 0.5 0.5 a HY	72	1,1,1,2 - TETRACHLOROETHANE	ND	ug/L	0.5	0.5		а	HY	
BROMOBENZENE	87	ISOPROPYLBENZENE	ND		0.5	0.5		а	HY	
BROMOBENZENE	79	1,2,3 - TRICHLOROPROPANE	ND	_	0.5	0.5		a	HY	
81	78		ND	ug/L	0.5	0.5		а	HY	
81 O - CHLOROTOLUENE ND ug/L 0.5 0.5 a HY 88 N - PROPYLBENZENE ND ug/L 0.5 0.5 a HY 89 1.3.5 - TRIMETHYLBENZENE ND ug/L 0.5 0.5 a HY 54 BROMOMETHANE ND ug/L 0.5 0.5 a HY 52 P - CHLOROTOLUENE ND ug/L 0.5 0.5 a HY 90 TERT - BUTYLBENZENE ND ug/L 0.5 0.5 a HY 90 TERT - BUTYLBENZENE ND ug/L 0.5 0.5 a HY 91 1.2.4 - TRIMETHYLBENZENE ND ug/L 0.5 0.5 a HY 92 SEC - BUTYLBENZENE ND ug/L 0.5 0.5 a HY 93 P - ISOPROPYLTOLUENE ND ug/L 0.5 0.5 a HY 94 N - BUTYLBENZENE	80			_	0.5	0.5		a	HY	
No	81	O - CHLOROTOLUENE	ND		0.5	0.5		a	HY	
BROMOMETHANE	88	N - PROPYLBENZENE	ND		0.5	0.5		а	HY	
ND	89	1,3,5 - TRIMETHYLBENZENE	ND			0.5		a	HY	
ND	54	BROMOMETHANE	ND	ug/L	0.5	0.5		a	HY	
TERT - BUTYLBENZENE	82	P - CHLOROTOLUENE	ND		0.5	0.5		a	HY	
92 SEC - BUTYLBENZENE ND ug/L 0.5 0.5 a HY HY 83 M - DICHLOROBENZENE ND ug/L 0.5 0.5 a HY 93 P - ISOPROPYLTOLUENE ND ug/L 0.5 0.5 a HY 94 N - BUTYLBENZENE ND ug/L 0.5 0.5 a HY 95 CHLOROETHANE ND ug/L 0.5 0.5 a HY 97 HEXACHLOROBUTADIENE ND ug/L 0.5 0.5 a HY 96 NAPHTHALENE ND ug/L 0.5 0.5 a HY 98 1,2,3 - TRICHLOROBENZENE ND ug/L 0.5 0.5 a HY 85 TRICHLOROFLUOROMETHANE ND ug/L 0.5 0.5 a HY 27 CHLOROFORM 0.7 ug/L 0.5 a A HY 28 BROMOFICHLORO	90	TERT - BUTYLBENZENE	ND		0.5	0.5		a	HY	
ND	91	1,2,4 - TRIMETHYLBENZENE	ND	ug/L	0.5	0.5		a	HY	
93 P - ISOPROPYLTOLUENE ND ug/L 0.5 0.5 0.5 a HY 94 N - BUTYLBENZENE ND ug/L 0.5 0.5 0.5 a HY 95 CHLOROETHANE ND ug/L 0.5 0.5 0.5 a HY 96 NAPHTHALENE ND ug/L 0.5 0.5 a HY 98 1,2,3 - TRICHLOROBENZENE ND ug/L 0.5 0.5 a HY 98 1,2,3 - TRICHLOROMETHANE ND ug/L 0.5 0.5 a HY 85 TRICHLOROFLUOROMETHANE ND ug/L 0.5 0.5 a HY EPA Regulated - Under Trihalomethanes Program 31 TOTAL TRIHALOMETHANE 0.7 ug/L 0.5 60 80 a HY 27 CHLOROFORM 0.7 ug/L 0.5 a HY 28 BROMODICHLOROMETHANE ND ug/L 0.5 a HY 29 CHLOROFORM ND ug/L 0.5 a HY 30 BROMOFORM ND ug/L 0.5 a HY State Unregulated - Other ND ug/L 0.5 a HY State Unregulated - Other ND ug/L 0.5 A HY State Unregulated - Other ND ug/L 0.5 A HY State Unregulated - Other ND ug/L 0.5 A HY State Unregulated - Other ND ug/L 0.5 A HY State Unregulated - Other ND ug/L 0.5 A HY State Unregulated - Other ND ug/L 0.5 A HY State Unregulated - Other ND ug/L 0.5 A HY State Unregulated - Other ND ug/L 0.5 A HY State Unregulated - Other ND ug/L 0.5 A HY State Unregulated - Other ND ug/L 0.5 A HY State Unregulated - Other ND ug/L 0.5 A HY State Unregulated - Other ND ug/L 0.5 A HY State Unregulated - Other ND ug/L 0.5 A HY State Unregulated - Other ND ug/L 0.5 A HY State Unregulated - Other ND ug/L 0.5 A HY State Unregulated - Other ND ug/L 0.5 A HY State Unregulated - Other ND ug/L 0.5 A HY State Unregulated - Other ND Ug/L 0.5 A HY State Unregulated - Other ND Ug/L 0.5 A HY State Unregulated - Other ND Ug/L 0.5 A HY State Unregulated - Other ND Ug/L 0.5 A HY State Unregulated - Other	92	SEC - BUTYLBENZENE	ND	ug/L	0.5	0.5		a	HY	
N - BUTYLBENZENE	83	M - DICHLOROBENZENE	ND	ug/L	0.5	0.5		a	HY	
STATE STAT	93	P - ISOPROPYLTOLUENE	ND	ug/L	0.5	0.5		а	HY	
97 HEXACHLOROBUTADIENE ND ug/L 0.5 0.5 a HY 96 NAPHTHALENE ND ug/L 0.5 0.5 a HY 98 1,2,3 - TRICHLOROBENZENE ND ug/L 0.5 0.5 a HY 85 TRICHLOROFLUOROMETHANE ND ug/L 0.5 0.5 a HY EPA Regulated - Under Trihalomethanes Program 31 TOTAL TRIHALOMETHANE 0.7 ug/L 0.5 60 80 a HY Field Duplicate: 0.5 Trip Blank: ND 27 CHLOROFORM 0.7 ug/L 0.5 a HY 28 BROMODICHLOROMETHANE ND ug/L 0.5 a HY 29 CHLORODIBROMOMETHANE ND ug/L 0.5 a HY 30 BROMOFORM ND ug/L 0.5 a HY 4 HY Ug/L 0.5 a HY	94	N - BUTYLBENZENE	ND	ug/L	0.5	0.5		a	HY	
96 NAPHTHALENE ND ug/L 0.5 0.5 a HY 98 1,2,3 - TRICHLOROBENZENE ND ug/L 0.5 0.5 a HY 85 TRICHLOROFLUOROMETHANE ND ug/L 0.5 0.5 a HY EPA Regulated - Under Trihalomethanes Program 31 TOTAL TRIHALOMETHANE 0.7 ug/L 0.5 60 80 a HY Field Duplicate: 0.5 Trip Blank: ND 27 CHLOROFORM 0.7 ug/L 0.5 a HY 28 BROMODICHLOROMETHANE ND ug/L 0.5 a HY 29 CHLORODIBROMOMETHANE ND ug/L 0.5 a HY 30 BROMOFORM ND ug/L 0.5 a HY State Unregulated - Other ND ug/L 0.5 a HY	55	CHLOROETHANE	ND	ug/L	0.5	0.5		a	HY	
98 1,2,3 - TRICHLOROBENZENE ND ug/L 0.5 0.5 a HY 85 TRICHLOROFLUOROMETHANE ND ug/L 0.5 0.5 a HY EPA Regulated - Under Trihalomethanes Program 31 TOTAL TRIHALOMETHANE 0.7 ug/L 0.5 60 80 a HY Field Duplicate: 0.5 Trip Blank: ND 27 CHLOROFORM 0.7 ug/L 0.5 a HY 28 BROMODICHLOROMETHANE ND ug/L 0.5 a HY 29 CHLORODIBROMOMETHANE ND ug/L 0.5 a HY 30 BROMOFORM ND ug/L 0.5 a HY State Unregulated - Other ND Ug/L 0.5 a HY	97	HEXACHLOROBUTADIENE	ND	ug/L	0.5	0.5		а	HY	
TRICHLOROFLUOROMETHANE ND ug/L 0.5 0.5 a HY	96	NAPHTHALENE	ND	ug/L	0.5	0.5		а	HY	
EPA Regulated - Under Trihalomethanes Program 31 TOTAL TRIHALOMETHANE 0.7 ug/L 0.5 60 80 a HY Field Duplicate: 0.5 Trip Blank: ND 27 CHLOROFORM 0.7 ug/L 0.5 a HY 28 BROMODICHLOROMETHANE ND ug/L 0.5 a HY 29 CHLORODIBROMOMETHANE ND ug/L 0.5 a HY 30 BROMOFORM ND ug/L 0.5 a HY State Unregulated - Other	98	1,2,3 - TRICHLOROBENZENE	ND	ug/L	0.5	0.5		а	HY	
31 TOTAL TRIHALOMETHANE 0.7 ug/L 0.5 60 80 a HY Field Duplicate: 0.5 Trip Blank: ND 27 CHLOROFORM 0.7 ug/L 0.5 a HY 28 BROMODICHLOROMETHANE ND ug/L 0.5 a HY 29 CHLORODIBROMOMETHANE ND ug/L 0.5 a HY 30 BROMOFORM ND ug/L 0.5 a HY State Unregulated - Other	85	TRICHLOROFLUOROMETHANE	ND	ug/L	0.5	0.5		a	HY	
31 TOTAL TRIHALOMETHANE 0.7 ug/L 0.5 60 80 a HY Field Duplicate: 0.5 Trip Blank: ND 27 CHLOROFORM 0.7 ug/L 0.5 a HY 28 BROMODICHLOROMETHANE ND ug/L 0.5 a HY 29 CHLORODIBROMOMETHANE ND ug/L 0.5 a HY 30 BROMOFORM ND ug/L 0.5 a HY State Unregulated - Other		EPA Regulated - Under Trihalomet	│ thanes Proc	∣ ° ıram		I				
27 CHLOROFORM 0.7 ug/L 0.5 a HY 28 BROMODICHLOROMETHANE ND ug/L 0.5 a HY 29 CHLORODIBROMOMETHANE ND ug/L 0.5 a HY 30 BROMOFORM ND ug/L 0.5 a HY State Unregulated - Other	31	•		1	0.5	60	80	а	HY	Field Duplicate: 0.5 ug/L,
28 BROMODICHLOROMETHANE 29 CHLORODIBROMOMETHANE 30 BROMOFORM ND ug/L Ug/L Ug/L 0.5 a HY HY HY State Unregulated - Other	27	CHLOROEORM	0.7	ug/I	O.F.				LIN	I I I I Blank: ND
29 CHLORODIBROMOMETHANE ND ug/L 0.5 a HY BROMOFORM ND ug/L 0.5 a a HY HY State Unregulated - Other				1 -						
30 BROMOFORM ND ug/L 0.5 a HY State Unregulated - Other				"						
State Unregulated - Other				1 -						
				l ag, L	0.0					
U MEIHYLIERI-BUTYLETHER ND ug/L 1.0 a HY		•	l	1	١, -	1				
	U	METHYL TERT-BUTYL ETHER	ND	ug/L	1.0			a	Н	

NOTES:
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Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office.

ND (Not Detected): indicates that the parameter was not detected above the State Reporting Limit (SRL).

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Burlington, WA Corporate Laboratory (a)

Bellingham, WA Microbiology (b) 805 Orchard Dr Ste 4 - Bellingham, WA 98225 - 360.715.1212 Portland, OR Microbiology/Chemistry (c) 9150 SW Pioneer Ct Ste W - Wilsonville, OR 97070 - 503.682.7802

Corvallis, OR Microbiology/Chemistry (d)
1100 NF Circle Blvd. Ste 130 - Corvallis, OR 97330 - 541.753

Bend, OR *Microbiology (e)* 20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.639.8425



Page 1 of 1

SYNTHETIC ORGANIC COMPOUNDS (SOC) REPORT

Client Name: College Place, City of Reference Number: 20-20769

218 SE 4th St Project: Well #6 - New Source Assessme

College Place, WA 99324

Date Collected: 6/24/20 07:30 Field ID:

System ID Number: **14050** System Group Type: A

Lab Number: 046-39749 System Name: COLLEGE PLACE WATER DEPT

Sample Location: Well #6 County: WALLA WALLA

Sample Purpose: C - Compliance Source Number: 06
Sample Composition: Single Source Multiple Sources:

Approved By: hy,pdm Date Analyzed: 06/29/20 Authorized By: \(\int \) Date: Reported: 7/24/20

Sample Type: D - Drinking Water
Lawrence J Henderson, PhD
Director of Laboratories, Vice President

Sample Collected By: Dennis Anderson
Sampler Phone: 509-301-0391

EPA Method 508.1 For State Drinking Water Compliance

	LFA	wethou 50	0.11013ta	THE DITTE	Killy vval	LEI COI	IIPIIAIICE	1	T
DOH#	COMPOUNDS	RESULTS	UNITS	SRL	Trigger	MCL	Lab	Analyst	COMMENT
	PCBs/Toxaphene								
36	TOXAPHENE	ND	ug/L	1	1	3	а	MA	
122	CHLORDANE, TECHNICAL	ND	ug/L	0.2	0.2	2	а	MA	
	EPA Unregulated								
173	AROCLOR 1221	ND	ug/L	20	20		а	MA	
174	AROCLOR 1232	ND	ug/L	0.5	0.5		а	MA	
175	AROCLOR 1242	ND	ug/L	0.3	0.3		а	MA	
176	AROCLOR 1248	ND	ug/L	0.1	0.1		а	MA	
177	AROCLOR 1254	ND	ug/L	0.1	0.1		а	MA	
178	AROCLOR 1260	ND	ug/L	0.2	0.2		а	MA	
180	AROCLOR 1016	ND	ug/L	0.08	0.08		а	MA	
153	PCBS (Total Aroclors)	ND	ug/L	0.2		0.5	а	MA	

NOTES:

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Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office. ND (Not Detected): indicates that the parameter was not detected above the State Reporting Limit (SRL).

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Burlington, WA Corporate Laboratory (a)
1620 S Walnut St. - Burlington, WA 98233 - 800,755,9295 • 360,757

Bellingham, WA Microbiology (b) 805 Orchard Dr Ste 4 - Bellingham, WA 98225 - 360.715.1212

Corvallis, OR Microbiology/Chemistry (d)
1100 NE Circle Blvd, Ste 130 - Corvallis, OR 97330 - 541.753.4946

Bend, OR Microbiology (e)

20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.639.8425

Portland, OR Microbiology/Chemistry (c)



Page 1 of 1

HERBICIDES IN DRINKING WATER

Client Name: College Place, City of Reference Number: 20-20769

218 SE 4th St Project: Well #6 - New Source Assessme

College Place, WA 99324

Date Collected: 6/24/20 07:30 Field ID:

System ID Number: 14050 System Group Type: A

Lab Number: 046-39749 System Name: COLLEGE PLACE WATER DEPT

Sample Location: Well #6 County: WALLA WALLA

Sample Purpose: C - Compliance Source Number: 06
Sample Composition: Single Source Multiple Sources:

Date Extracted: 515_200707 Date Received: 6/24/2020 3:43:00Pl

Approved By: hy,pdm Date Analyzed: 07/07/20 Authorized By: Update: Reported: 7/24/20

Sample Type: D - Drinking Water
Lawrence J Henderson, PhD
Director of Laboratories, Vice President

Sample Collected By: Dennis Anderson
Sampler Phone: 509-301-0391

EPA Method 515.4 For State Drinking Water Compliance

			J.4 1 01 3ta						
DOH#	COMPOUNDS	RESULTS	UNITS	SRL	Trigger	MCL	Lab	Analyst	COMMENT
	EPA Regulated								
37	2,4 - D	ND	ug/L	0.1	0.1	70	а	KRM	
38	2,4,5 - TP (SILVEX)	ND	ug/L	0.2	0.2	50	а	KRM	
134	PENTACHLOROPHENOL	ND	ug/L	0.04	0.04	1	а	KRM	
137	DALAPON	ND	ug/L	1	1	200	а	KRM	
139	DINOSEB	ND	ug/L	0.2	0.2	7	а	KRM	
140	PICLORAM	ND	ug/L	0.1	0.1	500	а	KRM	
	Other								
138	DICAMBA	ND	ug/L	0.2	0.2		а	KRM	
225	DCPA (ACID METABOLITES)	0.17	ug/L	0.1	0.1		а	KRM	Confirmation DUP
135	2,4 DB	ND	ug/L	1.0	1.0		а	KRM	DCPA=1.6
223		ND	ug/L ug/L	2.0	2.0		a	KRM	
226		ND	ug/L ug/L	0.5	0.5		a	KRM	
220	5,5 - DICHEOROBENZOIC ACID	ND	ug/L	0.5	0.5		a	KKIVI	
NOTES:									

NOTES:

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MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; a blank MCL value indicates a level is not currently established.

Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office. ND (Not Detected): indicates that the parameter was not detected above the State Reporting Limit (SRL).

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Page 1 of 2

SYNTHETIC ORGANIC COMPOUNDS (SOC) REPORT

Client Name: College Place, City of Reference Number: 20-20769

> 218 SE 4th St Project: Well #6 - New Source Assessme

College Place, WA 99324

Date Collected: 6/24/20 07:30 Field ID: System ID Number: 14050 System Group Type: A

Lab Number: 046-39749 System Name: COLLEGE PLACE WATER DEPT

Sample Location: Well #6 County: WALLA WALLa

Sample Purpose: C - Compliance Source Number: 06 Sample Composition: Single Source Multiple Sources:

Date Extracted: 525 200701 Date Received: 6/24/2020 3:43:00Pl

Approved By: hy,pdm Date Analyzed: 07/01/20 Authorized By: \(\) Date: Reported: 7/24/20

> Sample Type: D - Drinking Water Sample Collected By: Dennis Anderson Lawrence J Henderson, PhD Sampler Phone: 509-301-0391 Director of Laboratories, Vice President

FPΔ Method 525.2 For State Drinking Water Compliance

Egulated E (BHC - GAMMA) XYCHLOR OR NE (A)PYRENE (LHEXYL)-ADIPATE CHLOR ND N	ug/L ug/L ug/L ug/L ug/L ug/L ug/L	0.01 0.02 0.1 0.2 0.1 0.02 0.6	0.01 0.02 0.1 0.2 0.1 0.02	2 0.2 40 2 3	a a a a	MA MA MA MA	COMMENT	
E (BHC - GAMMA) XYCHLOR OR NE A)PYRENE /(LHEXYL)-ADIPATE CHLOR	ND ND ND ND ND ND	ug/L ug/L ug/L ug/L ug/L ug/L	0.02 0.1 0.2 0.1 0.02	0.02 0.1 0.2 0.1	0.2 40 2	a a	MA MA	
E (BHC - GAMMA) XYCHLOR OR NE A)PYRENE /LHEXYL)-ADIPATE CHLOR	ND ND ND ND ND ND	ug/L ug/L ug/L ug/L ug/L ug/L	0.02 0.1 0.2 0.1 0.02	0.02 0.1 0.2 0.1	0.2 40 2	a a	MA MA	
XYCHLOR LOR NE A)PYRENE (LHEXYL)-ADIPATE (LHEXYL)-PHTHALATE CHLOR	ND ND ND ND ND	ug/L ug/L ug/L ug/L ug/L	0.1 0.2 0.1 0.02	0.1 0.2 0.1	40 2	а	MA	
OR NE A)PYRENE (/LHEXYL)-ADIPATE (/LHEXYL)-PHTHALATE CHLOR	ND ND ND ND	ug/L ug/L ug/L ug/L	0.2 0.1 0.02	0.2 0.1	2			
NE A)PYRENE /(LHEXYL)-ADIPATE /(LHEXYL)-PHTHALATE CHLOR	ND ND ND 0.7	ug/L ug/L ug/L	0.1 0.02	0.1		а	MA	1
A)PYRENE /LHEXYL)-ADIPATE /LHEXYL)-PHTHALATE CHLOR	ND ND 0.7	ug/L ug/L	0.02	-	3			
/LHEXYL)-ADIPATE /LHEXYL)-PHTHALATE CHLOR	ND 0.7	ug/L		0.02		а	MA	
/LHEXYL)-PHTHALATE CHLOR	0.7		0.6		0.2	а	MA	
CHLOR			0.0	0.6	400	а	MA	
	l	ug/L	0.6	0.6	6	а	MA	Duplicate = 0.6 ug/L
THI OD EDOVIDE	ND	ug/L	0.04	0.04	0.4	а	MA	
THUR EPUNIDE	ND	ug/L	0.02	0.02	0.2	а	MA	
HLOROBENZENE	ND	ug/L	0.1	0.1	1	а	MA	
HLOROCYCLO-PENTADIENE	ND	ug/L	0.1	0.1	50	а	MA	
NE	ND	ug/L	0.07	0.07	4	а	MA	
nregulated								
	ND	ug/L	0.1	0.1		а	MA	
HLOR	ND	ug/L	0.4	0.4		а	MA	
IN	ND	ug/L	0.1	0.1		а	MA	
ACHLOR	ND	ug/L	1.0	1.0		а	MA	
SUZIN	ND	ug/L	0.2	0.2		а	MA	
CHLOR	ND	ug/L	0.1	0.1		а	MA	
ENE	ND	ug/L	0.2	0.2		а	MA	
CIL	ND	ug/L	0.2	0.2		а	MA	
Inregulated - Other	ND	ug/L	0.1			а	MA	
U CH EN	ZIN HLOR NE IL	ZIN ND HLOR ND NE ND IL ND Iregulated - Other	CHLOR ND ug/L ZIN ND ug/L HLOR ND ug/L NE ND ug/L IL ND ug/L iregulated - Other ug/L ug/L	CHLOR ND ug/L 1.0 ZIN ND ug/L 0.2 HLOR ND ug/L 0.1 NE ND ug/L 0.2 IL ND ug/L 0.2 regulated - Other .2	CHLOR ND ug/L 1.0 1.0 ZIN ND ug/L 0.2 0.2 HLOR ND ug/L 0.1 0.1 NE ND ug/L 0.2 0.2 IL ND ug/L 0.2 0.2 regulated - Other ug/L 0.2 0.2	CHLOR ND ug/L 1.0 1.0 ZIN ND ug/L 0.2 0.2 HLOR ND ug/L 0.1 0.1 NE ND ug/L 0.2 0.2 IL ND ug/L 0.2 0.2 regulated - Other Ug/L 0.2 0.2	CHLOR ND ug/L 1.0 1.0 a ZIN ND ug/L 0.2 0.2 a HLOR ND ug/L 0.1 0.1 a NE ND ug/L 0.2 0.2 a IL ND ug/L 0.2 0.2 a regulated - Other ug/L 0.2 0.2 a	CHLOR ND ug/L 1.0 1.0 a MA ZIN ND ug/L 0.2 0.2 a MA HLOR ND ug/L 0.1 0.1 a MA NE ND ug/L 0.2 0.2 a MA IL ND ug/L 0.2 0.2 a MA regulated - Other ND ug/L 0.2 0.2 a MA

NOTES:

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Lab Number: 046-39749 Report Date: 7/24/20 15:09

SYNTHETIC ORGANIC COMPOUNDS (SOC) REPORT

	SINIILIE		11000	- IVII V					\ 1	
DOH#	COMPOUNDS	RESULTS	UNITS	SRL	Trigger	MCL	Lab	Ana	alyst COMMENT	
208	EPTC	ND	ug/L	0.1			а	M.	Α	
218	MOLINATE	ND	ug/L	0.1			а	M.	4	
232	4,4-DDD	ND	ug/L	0.1			а	M.	Α	
233	4,4-DDE	ND	ug/L	0.1			а	M.	4	
234	4,4-DDT	ND	ug/L	0.1			а	M.	Α	
261	DIMETHYL PHTHALATE	ND	ug/L	1.0			а	M.	Α	
243	TRIFLURALIN	ND	ug/L	0.1			а	M.	Α	
244	ACENAPHTHYLENE	ND	ug/L	0.2			а	M.	Α	
246	ANTHRACENE	ND	ug/L	0.2			а	M.	Α	
247	BENZO(A)ANTHRACENE	ND	ug/L	0.2			а	M.	Α	
248	BENZO(B)FLUORANTHENE	ND	ug/L	0.2			а	M.	Α	
250	BENZO(K)FLUORANTHENE	ND	ug/L	0.2			а	M.	Α	
251	CHRYSENE	ND	ug/L	0.2			а	M.		
253	FLUORANTHENE	ND	ug/L	0.2			а	M.		
256	PHENANTHRENE	ND	ug/L	0.2			а	M.		
257	PYRENE	ND	ug/L	0.2			а	M.		
258	BENZYL BUTYL PHTHALATE	ND	ug/L	1.0			а	M.		
259	DI-N-BUTYL PHTHALATE	ND	ug/L	1.0			а	M.		
260	DIETHYL PHTHALATE	ND	ug/L	1.0			а	M.		

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