City of Adrian

Water Supply Development Account Loan and Grant Application

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2013 Water Master Plan

City of Adrian
P.O. Box 226
Adrian, OR 97901-0226

Water Master Plan Update

October 2013

20TH ANNIVERSARY 1993-2013
KELLER associates

REGISTERED PROFESSIONAL ENGINEER
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JULY 8, 2008
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10/11/13
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EXECUTIVE SUMMARY

ES.1 INTRODUCTION

In January 2013 the City of Adrian, Oregon contracted with Keller Associates, Inc. to prepare a water system master plan update for the City. Adrian is a small farming community located in eastern Oregon along the banks of the Snake River, approximately 12 miles south of Nyssa and 26 miles south of Ontario. This report evaluates the existing water distribution and supply system and makes recommendations to address existing deficiencies and future needs. Figure 1.1 illustrates the study area evaluated in this facility planning study, which coincides with City limits, plus the existing reservoir site and transmission lines to and from the tank.

The City of Adrian has three functioning wells, one 200,000 gallon water storage tank, and services a population of 180 through 104 connections. A review of 2012 billing records reveals an estimated 122 equivalent dwelling units (EDU). Original system construction took place between 1978 and 1982. Wells 2 and 3 are low-flow, backup sources, only operating during max demand periods. Well 4 is the City's main supply source and is operated year-round. All flow is disinfected with liquid chlorine injected at Well 4.

ES.2 PLANNING CRITERIA – WATER QUALITY AND SERVICE GOALS

The Oregon Administrative Rules (OAR) for public drinking water systems identify treatment and pressure requirements but do not dictate minimum supply or storage. When not covered by the OAR, the planning criteria established herein are based on industry standards and planning standards selected by the City. The City of Adrian is committed to maintaining a quality potable water system and providing adequate supply to the service area.

ES.2.1 Population and Land Use

Adrian is a relatively small city which has seen a growth of 37% over the last two decades. The planning rate selected by the City for the purposes of this study is 1.45% annual growth, which is the historical 20-year average. Projected populations are identified in Table ES.1.

ES.2.2 System Demands

Three years (2010-2012) of metered daily production data for Well 4 and metered monthly usage data was analyzed to determine total system demands. These historical demands were used to select baseline (2012) demand values as a starting point for future projections, and per capita values were selected to multiply by new population to calculate future demands. Projected demands are identified in Table ES.1.

Table ES.1: Projected System Demands (gpd)

Seasonal Demand Scenario	Design Baseline (gpd)	Planning Criteria (gpcd)	2017	2022	2032
Projected Population	**180**		**193**	**208**	**240**
Average Winter Day	17,436	98	18,710	20,180	23,316
Average Annual Day	34,276	193	36,785	39,680	45,856
Average Summer Day	57,412	323	61,611	66,456	76,792
Maximum Day	95,500	546	102,598	110,788	128,260
Peak Hour	193,935	1092	208,131	224,511	259,455

ES.2.3 Supply

The City has elected to comply with industry standards to provide a redundant supply of equal capacity. The targeted firm capacity of the system (supply capacity excluding the single largest source) is the maximum day demand flow rate.

ES.2.4 Storage

Recommended total storage capacity is equal to the combined operational, peaking/equalization, fire protection, and standby storage volumes.

Operational storage is the normal fluctuation volume of the tank between the pump "on" and "off" settings. Peaking storage needs are determined from local demand patterns which represent the variation in hourly demand. Because there is no hourly consumption data for Adrian, an operational and peaking volume of 25% of max day usage was used in storage calculations, which is comparable to other similarly sized communities in the region.

Fire protection storage is the volume reserved to meet typical minimum flow demands for fighting fires with the City's system. The required fire protection volume was calculated by assuming a two-hour fire event with a demand of 1,500 gpm.

Standby storage is the reserve volume provided to allow for extenuating circumstances such as extended power outages or other unanticipated events. There is no minimum regulatory standby storage volume, but the City set an initial goal of supplying seven (7) days of emergency storage.

ES.2.5 Distribution

Oregon regulations require that public water systems maintain a minimum system pressure of 20 psi at all connections at all times, to prevent contamination of the drinking water. Operating pressures should typically range between 60 and 80 psi, but not less than 40 psi under all demand conditions excluding fire flow (typically limited by peak hour demands).

In sizing new pipelines, the principal design criterion is that the pipelines be large enough to deliver peak hour and fire protection demands while maintaining adequate system pressures. The following are additional design criteria that are recommended when sizing new waterlines:

- In no case should pipelines supplying water to fire hydrants be smaller than 6 inches.
- Minimum service size should be ¾ inches.
- Minimum distribution line size should be 6 inches.
- New pipelines should be capable of delivering 50+year projected future demands while meeting requirements for minimum pressure.

It is also recommended that all connections be metered and meters be periodically calibrated and replaced every 15-20 years.

ES.2.6 Water Quality

Selected planning criteria for water quality standards match those established by the Safe Drinking Water Act for primary constituents, and the National Secondary Drinking Water Regulations set forth by EPA for secondary (nuisance) constituents. Concentration limits for notable constituents in Adrian's water are identified in the evaluation sections of this report, where they are compared against reported constituent levels in Adrian's water.

ES.2.7 Emergency Operation

Industry standards recommend either that power components be equipped with dedicated standby power including automatic switch-over capability or that adequate storage volumes be provided at sufficient elevation to maintain system pressures and meet average day demands. Standby storage has already been discussed in the water storage planning criteria. Oregon regulations also require provisions for auxiliary power if not a gravity system.

Standby power is highly recommended to allow uninterrupted water supply and can be a useful means to reduce or replace the need for excess storage. It is recommended that all well pumps be equipped with on-site backup power or dedicated portable generator.

ES.3 SYSTEM DEFICIENCIES

A summary of the existing system deficiencies includes:

1. There is insufficient backup power for the water supply, specifically at Well 4.
2. Wells 2 and 3 do not provide sufficient supply redundancy with Well 4 offline. (Maximum day demand exceeds the existing firm supply capacity.)
3. The existing system does not meet mechanical redundancy needs for fire flows with the largest pump offline.
4. There is insufficient water storage to provide desired standby storage.
5. Many water system components are aging and nearing the end of their useful life, including well pumps and flow meters.

6. All wells have significant water quality problems that affect taste, odor, and cause disinfection byproducts in the tank, which prevents use of the full storage volume. In addition, Adrian has been issued eight contaminant violations for total coliform in the last five years.
7. There are a number of dead end water lines throughout the system.

ES.4 RECOMMENDED IMPROVEMENTS

Multiple improvements are recommended in this report to correct the noted system deficiencies, including a new supply source, additional storage, some operational changes, and several pipeline projects. The alternatives evaluated for each improvement mainly consisted of location, material, sizing, and routing, and are discussed in more detail in the body of the report. Additional supply sources such as surface water and regionalization are also evaluated in more detail in the body of this report. The following improvements were selected by the City as the best apparent solution to correct existing deficiencies and meet water demands for the next 20 years.

Table ES.2: Capital Improvement Plan

Item (2013 Project Costs*)	Priority 1	Priority 2
Priority 1 - Water System Improvements (2014-2017)		
New Supply		
New Well & Wellhouse	$ 590,000	
Transmission Piping - New Well to Tank	$ 400,000	
Arsenic Treatment System (if necessary)	$ 550,000	
Tank Mixing System	$ 40,000	
Distribution Loop - 4th & Owyhee Streets (new pipe)	$ 200,000	
Distribution Loop - 1st & Owyhee Streets (pipe replacements)	$ 130,000	
Distribution Loop - North end 10-inch Loop	$ 286,000	
Total Priority 1 (Rounded)	**$ 2,196,000**	
Priority 2 - Water System Improvements (2017-2024)		
Expand Storage Reservoir		$ 280,000
Distribution Loop - 5th Street		$ 54,000
Distribution Loop - RR-Parker Lane (south Hwy)		$ 80,000
Distribution Loop - High Street (north Hwy)		$ 73,000
Distribution Loop - 2nd Street		$ 68,000
Total Priority 2 (Rounded)		**$ 555,000**
Total	**$ 2,751,000**	

Notes*

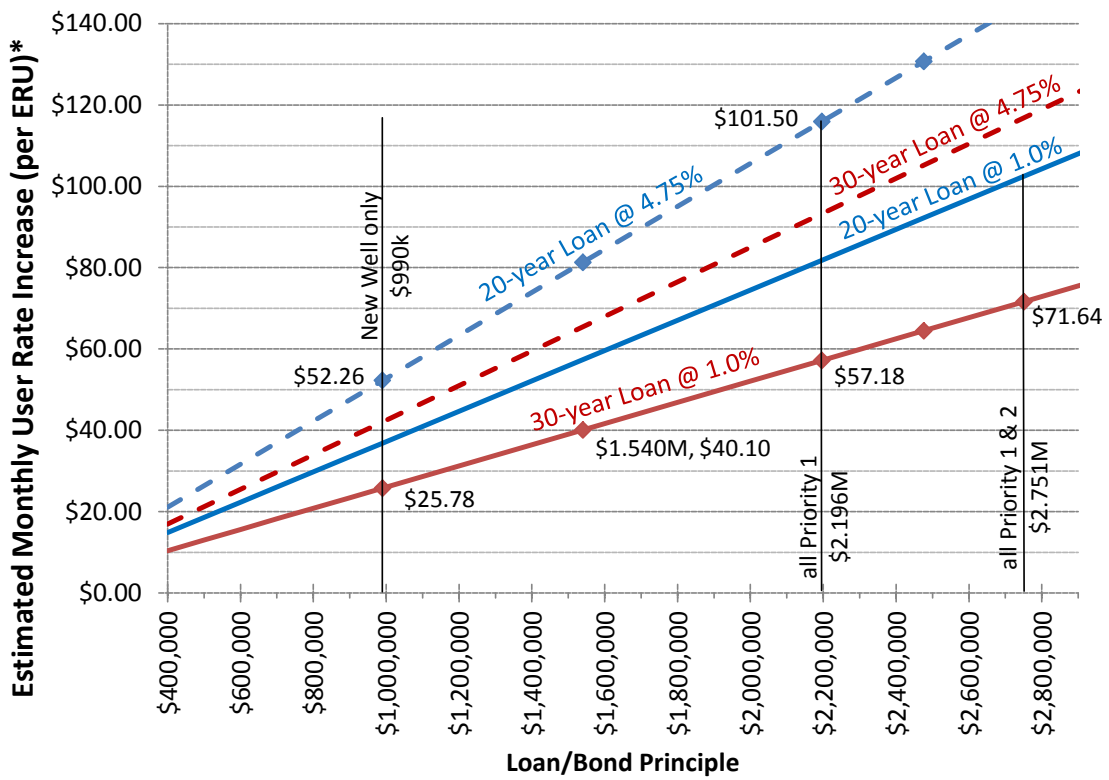
1) All costs in 2013 Dollars. Costs include engineering and contingencies.
2) Timing of Priority 2 Improvements depends on when growth occurs. Development participation could reduce cost of future facilities.
3) The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

ES.5 RECOMMENDED SCHEDULE AND FINANCING

Priority 1 improvements are a reflection of the conclusions made in Chapter 5 that solve the existing mechanical and supply redundancy, water quality, and fire flow protection deficiencies. Keller Associates recommends that Adrian proceed immediately with the improvements listed in Priority 1. Priority 2 improvements are those that Keller Associates foresees Adrian will need to make in the next 5-10 years to maintain their water system and meet future needs.

Funding for the recommended improvements could be provided by a variety of sources including the Economic Development Administration (EDA), U.S. Department of Agriculture – Rural Utilities Services (USDA-RUS), Direct State Loans or Bonds, or the Oregon Infrastructure Finance Authority (IFA). It is recommended that the City pursue funding from as many sources as possible, although the most likely source will be the IFA. The IFA has funded other recent projects for Adrian, including this study, so the City and agency have an established working relationship. The IFA also has multiple funds to work with and can offer special rate and term incentives to smaller, lower-income communities such as Adrian. Chart ES.1 was provided to the City as a planning tool to estimate possible impacts to user rates. The chart does not represent specific funding packages established for the recommended projects.

Chart ES.1: Potential Loan Principle vs. User Rate Impacts



*based on annual payments and 124 EDUs (in 2013)

In addition to funding project costs, it is recommended that Adrian raise their water rates in order to fund their annual O&M budget and proposed annual replacement costs. Table ES.3 outlines the various O&M budget totals and corresponding monthly rates per EDU estimated to keep the Adrian water fund solvent into the future.

Table ES.3: Projected Total Rate Impacts for New Well with Arsenic Treatment

	Actual			Projected/Recommended					
Projected Connections	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2022**
New Growth (Connections/yr) [1]	**0**	**1**	**1**	**2**	**2**	**2**	**2**	**2**	**2**
Beginning # of Connections	**102**	**103**	**104**	**106**	**108**	**110**	**112**	**114**	**124**
New Growth (EDUs/yr) [1]	0	1	1	2	2	2	2	2	2
Beginning # of EDUs	120	121	122	124	126	128	130	132	142
Population	175	180	180	183	185	188	191	193	208
Annual Costs-O, M & R									
Existing O&M [2]	$35,183	$33,353	$33,026	$34,000	$35,000	$36,100	$37,200	$38,300	$44,400
Infrastructure Replacement Fund [2]	$0	$0	$0	$12,400	$12,800	$13,200	$13,600	$14,000	$16,200
New Improvements O,M&R [2,3]	--	--	--	-	-	$10,000	$10,300	$10,600	$12,200
Existing SDWR Loan Payment	$0	$0	$9,629	$10,000	$15,000	$15,000	$15,000	$15,000	$15,000
New Bond/Loan Payment [4]	--	--	--	-	-	$59,672	$59,672	$59,672	$59,672
Total O, M & R Costs	**$35,183**	**$33,353**	**$42,655**	**$56,400**	**$62,800**	**$133,972**	**$135,772**	**$137,572**	**$147,472**
Minimum Recommended Rates									
Existing Loan Payment/EDU	-	-	-		$9.92	$9.92	$9.92	$9.92	$9.92
New Bond/Loan Payment/EDU	-	-	-			$38.85	$38.85	$38.85	$38.85
Total Base Rate/EDU [5]	$33.75	$33.75	$33.75	$33.75	$43.67	$87.92	$87.96	$88.00	$88.19
User Rate Income									
Revenue [6]	**$48,272**	**$45,905**	**$48,562**	**$49,358**	**$65,154**	**$134,013**	**$136,167**	**$138,322**	**$149,130**
Net Revenue	$13,089	$12,552	$5,907	-$7,042	$2,354	$40	$394	$750	$1,658
Accumulated Reserve (end of year)	$77,520	$88,654	$102,767	$95,725	$98,079	$98,120	$98,514	$99,264	$106,721

(1) Based on a 1.45% growth rate for projected years
(2) O&M costs increased by 3% per year to offset inflation
(3) Estimated increase to budget due to added improvements
(4) Assumes the City obtains a 30 year loan for $990,000 at 1% interest rate
(5) including loan payments
(6) Estimate includes usage charges above base and reduction factor for school paying at decreased rate

This study further recommends that the City submit a request for the scope of the existing SDWL agreement to be amended to include a portion of the Priority 1 improvements recommended by this study; such as, additional siting, drilling, and water testing efforts necessary to secure a quality water source. The existing loan limit awarded to the City has not been fully expended. Incorporating some priority improvements is beneficial to the City by allowing further improvement planning efforts, such as property acquisition and aquifer assessment, to continue while funding for project construction is secured. This approach is in the best interest for the people of Adrian to avoid “lost time” and provide quality water as soon as possible.

CHAPTER 1 – INTRODUCTION

1.1 INTRODUCTION

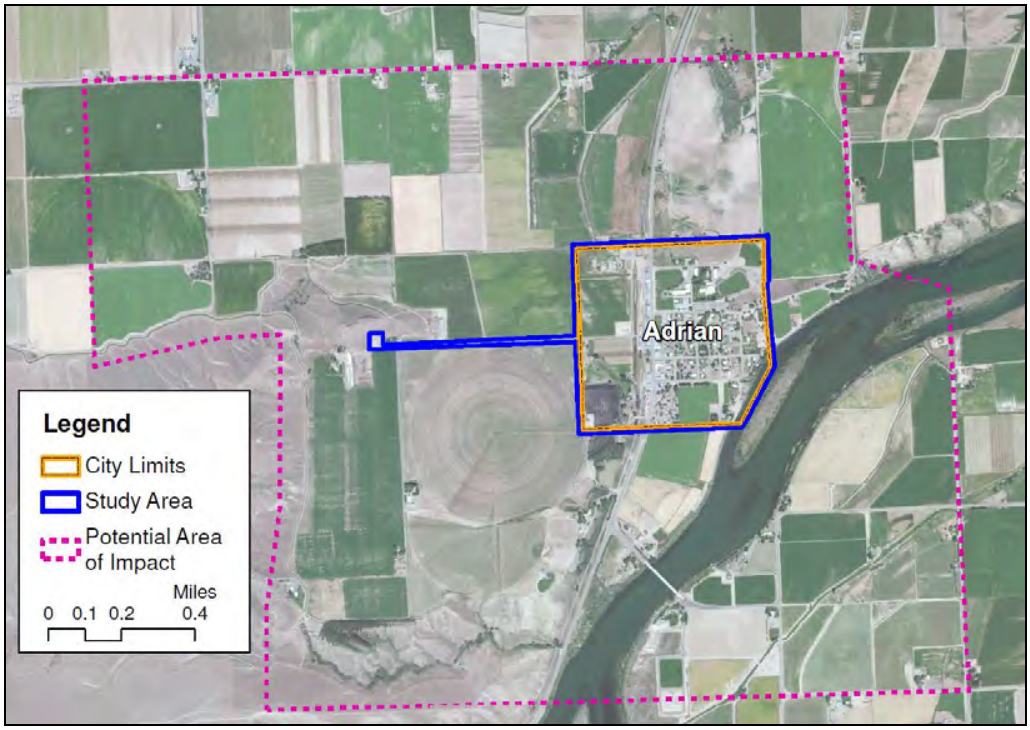
In January 2013 the City of Adrian, Oregon contracted with Keller Associates, Inc. to prepare a water system master plan update for the City.

Adrian is a small farming community located in eastern Oregon along the banks of the Snake River, approximately 12 miles south of Nyssa and 26 miles south of Ontario. The City's economy depends primarily on commerce from the surrounding agricultural areas.

The City of Adrian is committed to maintaining a quality potable water system and providing adequate supply to the service area. This report evaluates the existing water distribution and supply system and makes recommendations to address existing deficiencies and future needs.

Figure 1.1 illustrates the study area evaluated in this facility planning study, which coincides with City limits, plus the existing reservoir site and transmission lines to and from the tank. It should be noted that evaluation of potential water supply sources and other alternatives considered encompass areas outside the study boundary. The area is generally bounded by the Snake River to the east and south, surrounding sagebrush hills to the west and south, and the Snake River plain to the north. There has been no indication of current development interest in the vicinity of Adrian that would suggest an expansion of the distribution system beyond the City limits at this time.

Figure 1.1: Study and Impact Area Boundaries (see Appendix A*)



* Larger version of figure provided in Appendix A (typical for all figures)

1.2 REFERENCE DOCUMENTS

Recommendations of this study rely heavily on the content and discussions developed in the technical memorandum by GSI Water Solutions, Inc., included as Appendix B. Other related documents that were used as part of this master plan include record drawings for original water system construction, design and development records for Well 5, the 1977 City comprehensive plan, and a previous water study completed by Keller Associates in 2002. Copies of these documents and reports are included in Appendix C.

1.3 SCOPE

The scope of this document includes the following:

- Establish a study area, regulatory requirements, and planning criteria that will guide the master planning effort
- Evaluate the existing water system
  - Review the existing water system conditions, including an analysis of the following: system pressures, facility and pipe capacities, available fire protection, well supply, water storage, transmission, and delivery.
  - Provide the City a schematic of the City water system
- Evaluate water demands, water supply, and water rights
  - Compare future demands to existing City water rights
- Develop a hydraulic water model of the City's water system
- Evaluate water system improvement alternatives and develop a best apparent alternate to meet existing and 20-year system needs
- Summarize the recommended improvements into a master plan and capital improvement plan, including potential water rate considerations

1.4 PROJECT FUNDING AND COMPLETION

The study was completed with funds from a Safe Drinking Water Loan provided by the Oregon Business Development Department - Infrastructure Finance Authority (OBDD-IFA). Funds from local, state, and federal funding sources will likely be pursued to implement the identified Capital Improvements Plan which is discussed in more detail in Chapter 6.

CHAPTER 2 – REGULATORY REQUIREMENTS, PLANNING CRITERIA, AND ENVIRONMENTAL CONDITIONS

2.1 GENERAL

This section summarizes the planning criteria, study area, and regulatory requirements as they pertain to the City's water distribution system. The Oregon Administrative Rules (OAR) for public drinking water systems identify treatment and pressure requirements but do not dictate minimum supply or storage. When not covered by the OAR, the planning criteria established herein are based on industry standards and planning standards selected by the City.

2.2 WATER SUPPLY AND DELIVERY

The City is not required to have more than one source; however, industry standards are to provide a redundant supply of equal capacity. Typically, the firm capacity of a system (supply capacity excluding the single largest source) should be sufficient to provide the maximum day demand flow rate. The City has elected to comply within this standard.

2.3 WATER STORAGE

Keller Associates recommends a minimum storage capacity equal to the combined operational, peaking and fire protection storage, as described below.

- **Operational Storage:** Operational storage is the normal fluctuation volume of the tank. It is the volume of water drained from the reservoirs during normal operation before the well(s) begin pumping to refill the reservoirs. Operation levels should be sufficient to prevent excessive pump cycling, and to account for sensitivity in level control sensors.

- **Peaking/Equalization Storage:** Peaking or equalization storage refers to the additional storage required to meet peak hour demands and fluctuations in the water demand during the day. The needed peaking storage will increase as the city grows.

- **Fire Protection Storage:** Fire protection storage is the volume reserved to meet typical minimum flow demands for fighting fires with the City's system.

- **Standby Storage:** Keller Associates recommends that the City consider providing additional standby storage above the operating and fire needs to allow for extenuating circumstances such as extended power outages or other unanticipated circumstances. There is no minimum regulatory standby storage volume, but Keller Associates recommends at least the volume required to supply average day demands for eight (8) hours. The City Council and staff have set a goal of supplying seven (7) days of standby storage.

2.4 DISTRIBUTION SYSTEM

2.4.1 System Pressures

Oregon regulations[1] require that public water systems maintain a minimum system pressure of 20 psi at all connections at all times, to prevent contamination of the drinking water. This includes the industry standard analysis scenario of peak-day-demand-plus-fire-flow conditions. Operating pressures should typically range between 60 and 80 psi, but not less than 40 psi under all demand conditions excluding fire flow (typically limited by peak hour demands).

2.4.2 Sizing Future Pipelines

In sizing new pipelines, the principal design criterion is that the pipelines be large enough to deliver peak hour and fire protection demands while maintaining adequate system pressures. The following are additional design criteria that are recommended when sizing new waterlines:

- In no case should pipelines supplying water to fire hydrants be smaller than 6 inches.
- Minimum service size should be ¾ inches.
- Minimum distribution line size should be 6 inches.
- New pipelines should be capable of delivering 50+year projected future demands while meeting requirements for minimum pressure.

2.4.3 Water Meters

Manufacturers recommend that residential water meters be replaced every 15-20 years. Keller Associates recommends that the City of Adrian continue requiring meters for all new users, including parks and other community facilities that connect to the system. A fully metered system will meter all sources and consumers.

2.5 FIRE PROTECTION

Fire fighting in Adrian depends upon water drawn from fire hydrants on the City's potable water distribution system. Providing adequate fire protection often governs distribution pipeline sizes, pipe looping requirements, and reservoir storage needs. The governing authority determining required fire flows is the Adrian Rural Fire Protection District (RFPD). Since the Adrian RFPD does not have any published minimum requirements, Malheur County code was consulted; the code refers to Oregon State Ordinance, which in turn refers to the standards of the International Fire Code (IFC) and International Building Code (IBC). The IFC and IBC state the minimum fire flow requirements by flow and duration for various classifications and square footage of structures. Table 2.1 lists the IFC and IBC recommendations for structures in the Adrian service area.

[1] OAR 333-061-0025(7)

Table 2.1: IFC/IBC Based Fire Flow Requirements

Structure	Area Class	Unadjusted Flow Req.	Reduced Flow Req.*	Duration
Single family dwellings	0 - 3,600 sf	1,000 gpm	1,000 gpm	2 hrs
Large Homes	> 3,600 sf	1,500 gpm	1,500 gpm	2 hrs
High School (unsprinklered, 17,200 sf)	12,901-17,400 sf	2,250 gpm	1,500 gpm	2 hrs
Grade School (unsprinklered, 18,400 sf)	17,401-21,300 sf	2,500 gpm	1,500 gpm	2 hrs
Elementary School (sprinklered, 22,000 sf)	21,301-25,500 sf	2,750 gpm	1,500 gpm	2 hrs

* IFC/IBC allows a reduction in flows up to 25% for fire alarm systems and up to 75% for sprinkler systems, but no less than 1,500 gpm

Planning Criteria

As listed, the Adrian schools consist of several large square footage buildings with differing flow requirements determined by their size and whether they have a sprinkler system. Based on input from the Adrian RFPD, the City has elected to provide a minimum of 1,000 gpm for fire protection and desires to provide more on a site-by-site basis where financially feasible. Specifically, for all school buildings a demand of 1,500 gpm was used for the distribution system evaluation. (see Section 4.5 for more detail regarding fire flows at the school).

2.6 WATER QUALITY

The United States government, through the Safe Drinking Water Act, has established drinking water quality standards for public drinking water systems in an effort to ensure public health. The standards cover two categories of contaminants - primary and secondary.

Primary drinking water standards, which are enforced by the U.S. Environmental Protection Agency (EPA) and the Department of Environmental Quality (DEQ), set limits on contaminants posing a risk to life and health, such as arsenic. In planning for water treatment facilities, sufficient elimination of these regulated contaminants is the chief concern. These primary constituents are required to be measured and reported on a regular basis.

The National Secondary Drinking Water Regulations as set forth by the EPA are non-enforceable guidelines regulating aesthetic water quality parameters. The constituents are not of concern for public health and safety, but are considered a nuisance. Typical nuisance pollutants subject to secondary regulations and found in the Adrian area include iron and manganese. Other unregulated nuisance pollutants found in the Adrian area include hydrogen sulfide, hardness, and ammonia. In order to have acceptable quality water supply, the water quality should meet or exceed the published limits, or the water should have concentrations that are treatable by various methods.

2.7 RELIABILITY AND EMERGENCY OPERATION

Industry standards recommend either that power components be equipped with dedicated standby power, including automatic switch-over capability, or that adequate storage volumes be provided at sufficient elevation to maintain system pressures and meet average day demands. Standby storage has already been discussed in the water storage planning criteria. Oregon regulations[2] also require provisions for auxiliary power if not a gravity system.

Standby power is highly recommended to allow uninterrupted water supply and can be a useful means to reduce or replace the need for excess storage. The City could utilize a combination of standby storage and backup power where storage is utilized for short outage events and backup power is manually initiated during prolonged events. The City of Adrian currently has a 30-amp portable diesel generator available to power existing well pumps up to 10 hp (Wells 2 and 3 only), but this generator serves double duty for also powering other City components, such as wastewater lift station pumps. It is recommended that any new well pumps be equipped with on-site backup power or another dedicated portable generator.

2.8 EXISTING STUDY AREA CONDITIONS

This portion of the report presents a general overview of existing environmental conditions that may impact implementation of recommended improvements. An Environmental Information Document (EID) for priority improvements has not been prepared in conjunction with this study.

2.8.1 Physical Aspects: Topography, Geology and Soils

The City of Adrian and surrounding area gently slopes east and north to the Snake River, with elevations ranging from approximately 2200 to 2400 feet above sea level.

Geologic strata in the area is typified by quaternary sands and gravels underlain by lacustrine silt and sandstones known as the Glenns Ferry Formation. A detailed discussion about the geology in the area is contained in the technical memorandum prepared by GSI Water Solutions in Appendix B.

2.8.2 Surface and Groundwater Hydrology

There are multiple small irrigation ponds and ditches near Adrian. The Snake River is immediately southeast of the city.

The City is not located over any known sole-source aquifer. Groundwater supply comes primarily from the Glenns Ferry Formation. A more in-depth discussion of the groundwater hydrology can be found in the technical memorandum in Appendix B.

[2] OAR 333-061-0064(5)(d)(A)

2.8.3 Floodplains / Wetlands

Although Adrian is adjacent to the Snake River, the majority of the city and the water system are located outside the designated floodplain. There is a canal running through town, which is crossed by several existing and proposed pipelines, and some designated wetlands immediately south of the City.

2.8.4 Important Farmlands Protection

The existing distribution service area is within the Adrian city limits and considered urban. However, area outside the city limits is predominately farmland. Proposed improvements beyond the boundaries of existing facilities should consider the impacts to surrounding farmland. In addition, much of the ground outside of City limits is designated as Exclusive Farm Use (EFU) by Malheur County, which limits the potential land use and land division actions. Based on communication with Alvin Scott at the Malheur County Planning Department, a perpetual easement could be obtained for water infrastructure without violating EFU restrictions. Specifically, an easement would not restrict the property owner's ability to further partition their EFU-designated property, nor would it have any effect on zoning or taxes.

2.8.5 Public Health and Water Quality Considerations

Several secondary water quality issues have been identified related to the potable water supply for the City of Adrian. Currently, the only required water treatment is disinfection. The City's wells are disinfected with liquid chlorine. Water quality issues and proposed solutions are discussed in more detail elsewhere in this study.

2.8.6 Land Use and Development

The City of Adrian has limited zoning data on file. The study area is primarily residential with limited commercial and public service. The city is comprised of several commercial establishments located along the highway and several scattered community structures. These community structures include school buildings, storage sheds, churches, and utility facilities. There are no existing or planned residential subdivisions or large commercial developments.

2.8.7 Other Utilities and Energy Consumption

The City of Adrian owns and operates water and sewer utilities. The sewer system is comprised of collection piping, a lift station, and 2-cell lagoon. The existing water system utilizes electrical energy for pumping water from the wells into the storage tank. Additional wells or water treatment equipment may increase the energy consumption of the system.

2.8.8 Socioeconomic Profile / Population Statistics

According to 2010 data collected by the US Census Bureau[3] the following socioeconomic and population statistics apply to the study area:

[3] factfinder2.census.gov

- 2010 population = 177
- Male population = 87 (49%)
- Median age = 44
- Population over 65 = 40 (23%)
- Race = 48 (27%) Hispanic or Latino
- Unemployed = 3.9%
- Median household income = $33,125

The majority of employment is in management, business, science, and arts (35.3%) or natural resources, construction and maintenance occupations (32.4%). The percent of persons living below the poverty line is approximately 32%.

2.9 POPULATION

2.9.1 Historic Populations

Adrian is a relatively small city which has seen a growth of 37% over the last two decades. City staff report that most residential growth has been new trailers and retired folks. Historical populations are listed in Table 2.2, along with rates of growth. The 2010 census average household size was 2.53 people.

Table 2.2: City of Adrian Historical Populations

	City of Adrian		Malheur County	
Year	Population	Average Annual Growth Rate	Population	Average Annual Growth Rate
1970		-	23,169	-
1980		-	26,896	1.50%
1990	131	-	26,038	-0.32%
2000	147	1.16%	31,615	1.96%
2010	175	1.76%	31,345	-0.09%
2011	180	2.86%	31,445	0.32%
2012	180	0.00%	31,395	-0.16%
	1990-2012 average:	**1.45%**		**0.85%**

2.9.2 Population Projections

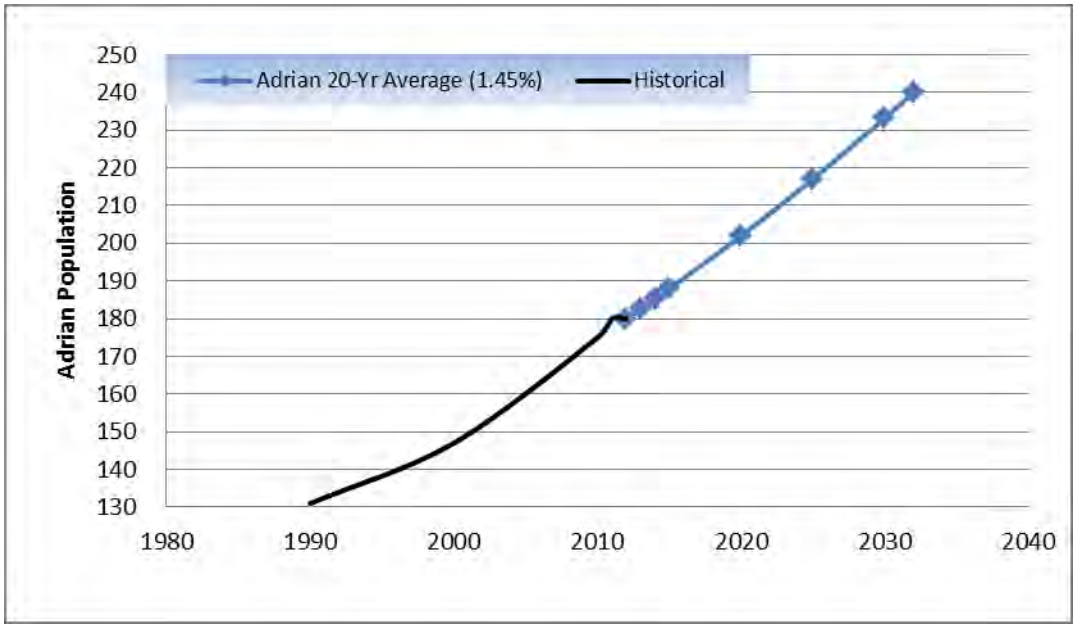
Table 2.3 shows population projections based on various annual growth rates. It should be noted that population projections should be re-evaluated regularly based on actual population changes to plan for the future. The planning rate selected by the City for the purposes of this study is 1.45% annual growth, which is the historical 20-year average. Several factors were considered by the planning committee when selecting the planning growth rate including:

- Using a conservative growth rate is wise to allow a cushion for unexpected population spikes. Also due to the small population, the real difference in projected populations at different rates is small.
- The planned Grassy Mountain Gold Mine near Vale may lead to more growth in the Adrian area.
- Several landowners in the City have expressed interest in developing their property (specifically Dick Davis in southwest corner).

Table 2.3: Projected Populations

Year	2002 Adrian Water Plan	Malheur County 40-Yr Average	Malheur County 20-Yr Average	Adrian 20-Yr Average	ECO North west Forecast	2004 PSU Malheur County 20-Yr Forecast	2012 PSU Malheur County 20-Yr Forecast
Growth Rate	**2.00%**	**0.73%**	**0.85%**	**1.45%**	**0.38%**	**0.95%**	**0.51%**
2012	180	180	180	180	180	180	180
2015	191	184	185	188	182	185	183
2020	211	191	193	202	186	194	188
2025	233	198	201	217	189	203	192
2030	257	205	210	233	193	213	197
2032	267	208	213	240	194	217	199
				Planning Criteria			

Chart 2.1: City of Adrian Population Trends



2.10 LAND USE

The City of Adrian includes lands being used for residential, general commercial, public, and agricultural purposes. Figure 2.1 represents the existing and anticipated future land use distribution in the city. Existing land use, depicted in solid colors, was prepared from City records. Projected future changes to land use, indicated with diagonal hatching, are based on discussions with City personnel. The only projected changes are conversion of vacant and agriculture lands to residential, commercial, or industrial use. Table 2.4 summarizes the amount of land used for each purpose.

Figure 2.1: Projected Land Use Zoning (see Appendix A)

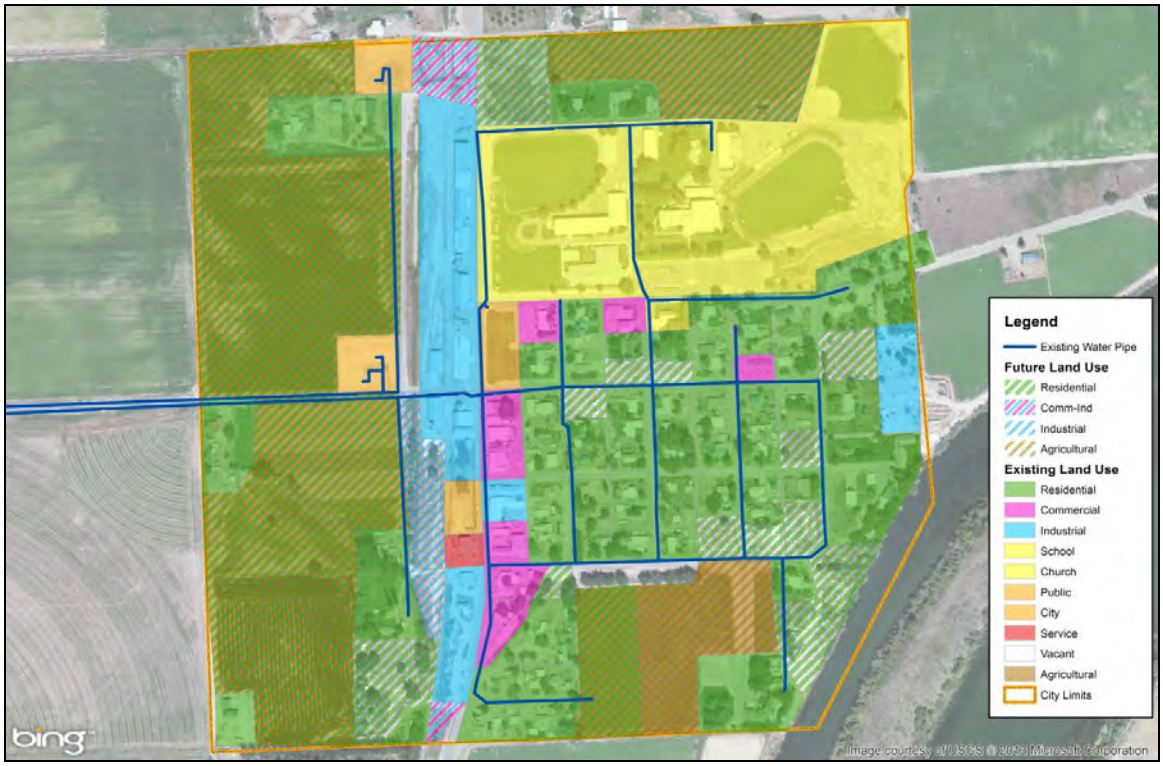


Table 2.4: City of Adrian Land Use Summary

Land Use	Existing (ac)	Percent (%)	Future (ac)	Percent (%)
Residential	42.3	27.5 %	98.4	63.9 %
Commercial, Industrial	15.3	9.9 %	19.4	12.6 %
Public (School, Church, City, Service)	31.1	20.2 %	31.1	20.2 %
Vacant	15.5	10.1 %	0	-
Agricultural	49.8	32.3 %	5.1	3.3 %
TOTAL	**154**	**100**	**154**	**100**

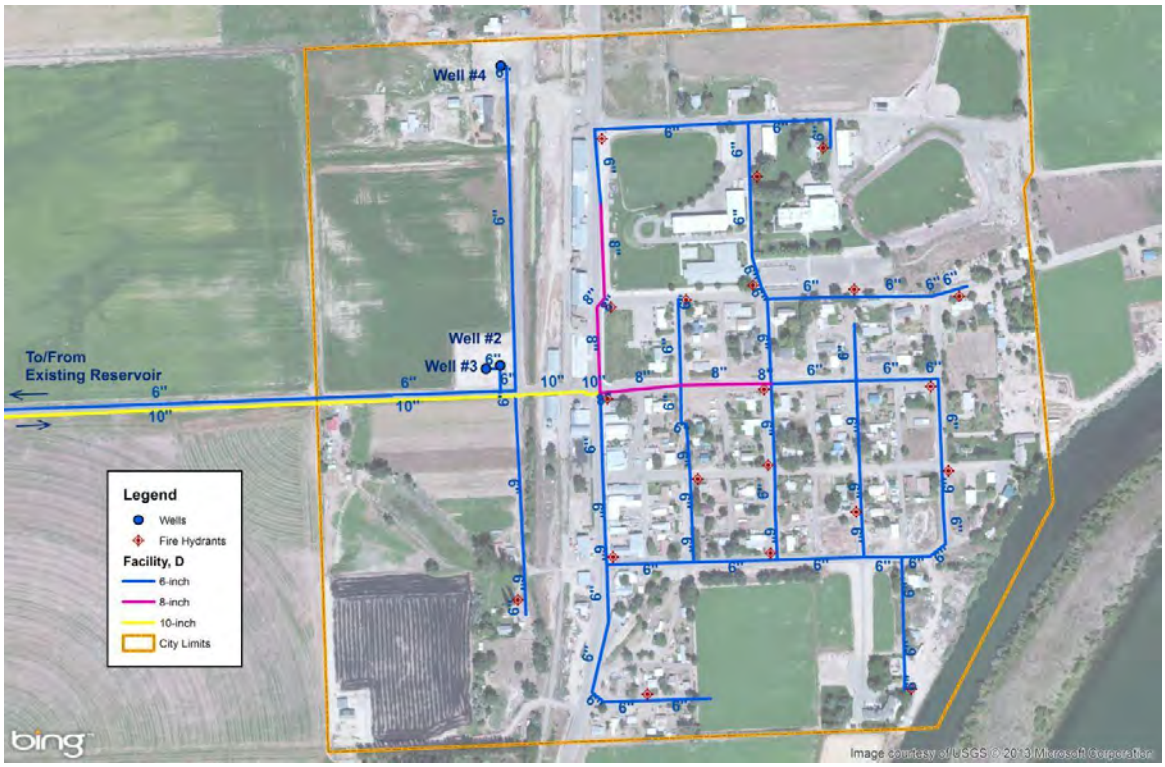
Dividing the current developed residential acreage by the current population yields an estimated 4.25 people/acre. Applying this density to the projected residential area correlates to an additional 239 people within the city limits, which would not be reached until the year 2071 at the assumed annual growth rate.

CHAPTER 3 – EXISTING CONDITIONS

3.1 GENERAL

This section inventories the existing system and summarizes the conditions of the existing well, storage reservoir, and distribution system. Existing consumption and production data is also presented and the capacity of system components compared against design requirements. The existing system is illustrated in Figure 3.1.

Figure 3.1: Existing Water System (see Appendix A)



3.2 WATER SUPPLY AND STORAGE INVENTORY

The City of Adrian has three functioning wells and one water storage tank, and services a population of 180 through 104 connections. A review of 2012 billing records reveals an estimated 122 equivalent dwelling units (EDU). An EDU correlates to one residential connection. Non-residential connections and high consumption users were assigned more than 1 EDU according to metered usage and current billing rate (see also Section 4.7). Original system construction took place between 1978 and 1982. An overview of each facility follows.

3.2.1 Wells 2 and 3

Wells 2 and 3 are located on the same lot on the west side of town at the corner of Main Street, Well Road, and Emerald Slope Road. The 200'x200' well lot is

fenced and owned by the City. Both wells were constructed in 1978 within one month of each other and approximately 50 feet apart. Wells 2 and 3 are only used a few days a year during peak summer months. Wells 2 and 3 pumps must be operated manually. Wellhead 2 is housed in a wood shed, while Wellhead 3 is located in an above-grade concrete vault. The individual discharge lines intersect on the well lot and a single line ties into the main transmission line leading from Well 4 to the tank. Physical properties of each well are listed in Table 3.1. Additional information is provided in the GSI report included in Appendix B.

Table 3.1: Well Inventory

	Well #2	Well #3	Well #4 (main)
Well			
Year Constructed	Oct. 1978	Nov. 1978	Feb. 1982
Casing Dimensions	8" nom. (27')	8" nom. (33')	10" nom. (40')
Well Depth	536'	401'	375'
Static Water Depth	388'	362'	340'
Original Well Test Data	55 gpm, drawdown to 395' after 13 hrs	50 gpm, drawdown to 266' after 4 hrs*	250 gpm, drawdown to 350' after 4 hrs
Year Pump Installed	unknown	1978 (original)	~2009 (replacement)
Pump Depth	unknown	unknown	315'
Pump Type	submersible	submersible	submersible
Pump Power, Phase	10 hp, 3 phase	10 hp, 3 phase	20 hp, 3 phase
Pump Capacity (gpm)	60 gpm	90 gpm?	150 gpm
Flow meter (Y/N)	Y	Y (shared w/ #2)	Y - probe in MH vault (2005)
Standby Power**	Portable Generator, Manual switch	Portable Generator, Manual switch	N
Estimated Current Well Capacity (gpm)	30 gpm	30 gpm	60-170 gpm
Transmission Piping			
Diameter, Material	6"	6"	6"
Length, Discharge	3762' total (12' dedicated 3750' common)	3802' total (52' dedicated 3750' common)	4953' total (1286' dedicated 3667' common)

* from driller's log, believed to be typo that should say 366'

** existing portable generator is 30amps and can only power up to a 10-hp motor

3.2.2 Well 4

Well 4 is located approximately ¼ mile north of Wells 2 and 3 on the north end of town near the intersection of High Street and Well Road. The 200'x200' well lot is fenced and owned by the City. The well was constructed in 1982 to augment the meager supply of Wells 2 and 3. City staff reports it has never been

redeveloped or rehabilitated. However, the City has reported replacing the pump due to high sand content in the well (most recently about 4-5 years ago). The wellhead is located in an above-grade concrete vault. Well 4 is the City's main supply well and is operated year-round. A propeller-type flow meter installed on the discharge line in the manhole near the wellhead sends a signal to the control panel. Instantaneous flows and total meter readings are recorded daily. Other physical properties of the well are listed in Table 3.1. Additional information is provided in the GSI report included in Appendix B.

3.2.3 Wells 1 and 5 (offline)

Wells 1 and 5 are well holes that were drilled and pump tested but never connected to the system. Well 1 is located at the tank site approximately 20 feet west of the tank. The well was constructed in 1978 along with the tank, but showed poor water quality when it was pump tested and was abandoned.

In 2005, the city made efforts to add a redundant supply by drilling Well 5. Two well holes, one test and one production, were drilled on a well lot approximately 1¼ miles west of town along Clover Lane. Tests indicated adequate water quality; however, the agreement with the landowner fell through. Production pumps were never installed, transmission pipeline construction was never started, and both well holes were closed with welded caps. Although Well 5 has some potential as a future source, obtaining the necessary easements or land ownership is uncertain. Therefore, the City has determined to look elsewhere for additional water supply.

3.2.4 Water Storage Tank

The water storage tank was also constructed in 1978 and is the only water storage for the City. It is a partially buried, square (45' wide x 15' high) concrete tank. Based on city-supplied record drawings, Keller Associates calculated the existing active, useable storage to be approximately 200,000 gallons. This is less than the initially reported and assumed 250,000 gallon capacity (which was likely based on exterior overall dimensions ignore lost volume due to the hopper bottom). The normal operating level during the winter is only about half full for water quality reasons, which severely limits operational, fire suppression, and peaking storage. A single 6-inch transmission line conveys water from the wells to the tank and discharges onto a splash plate near the roof of the tank. The tank has a hopper bottom with 10-inch outlet and no baffles or other internal equipment. Tank level is controlled by floats that control the Well 4 pump. Original design drawings show future plans for the tank to be expanded to the south with a common wall.

3.2.5 Disinfection

Water from Well 4 is disinfected with 12.5% liquid chlorine dosed by an injection pump located at the well. The dosing equipment and chemical (55–gallon drums) are housed in a shed built on the south side of the well vault. Chlorine is dosed year-round, and personnel report a heat lamp in the shed is sufficient to prevent freezing. Personnel report using approximately 2.5 gallons per day of chlorine. The pumping facilities enclosure is very rudimentary and dilapidated.

3.3 DISTRIBUTION SYSTEM INVENTORY

This section outlines the pipe materials, pipe conditions, meter conditions, and valve and fire hydrant needs. A hydraulic analysis of the distribution system is presented in Section 4.5 of this report. The City's water distribution system is composed of a network of water pipes totaling approximately 3.1 miles, and ranging from 6 to 10 inches in diameter, as illustrated in Figure 3.1. Table 3.2 lists the length of pipe and percent of total for each pipe size and material.

Table 3.2: Water Distribution Pipe Size Summary

Size (in)	Material	Length (ft)	% of Total
6	PVC [a]	10,752	65%
8	PVC [a]	994	6%
8	asbestos cement [b]	639	4%
10	asbestos Cement [b]	4,080	25%
Total		**16,465 feet**	**100%**

[a] assumed based on calibration efforts – no record drawings
[b] per record drawings (1977)

3.3.1 Water Meters

All customers have existing water meters and are billed based on metered consumption. Meters were originally installed in the mid-1980s as the distribution system was expanded following reservoir and well construction. Meter readings measure in cubic feet and are manually recorded monthly, eleven to twelve months of the year (skipping December or January based on weather). During months when flows are not recorded, users are only billed at the base rate (i.e. December) and billed for 2 months of metered usage the following month (i.e. January).

3.3.2 Water Valves and Fire Hydrants

The age of the valves and fire hydrants generally corresponds to the age of the adjacent water lines. The City has approximately 20 triple-port fire hydrants generally located on a grid pattern of alternating intersections throughout the city.

3.4 WATER PRODUCTION AND CONSUMPTION

3.4.1 Water Production

Daily meter reading data for Well 4 was evaluated to determine average and maximum production values. (Wells 2 and 3 only operate a few days per year, and production is not regularly recorded.) The data is recorded by hand and includes a totalizing meter reading, instantaneous flow, amount of chlorine dosed, and residual chlorine at the tank. As shown in Chart 3.1, instantaneous flow readings range from 40 to 185 gpm but vary based on the season, indicating seasonal drawdown of the well. This phenomenon is discussed in more detail in the supply evaluation section of this report.

Chart 3.1: Well 4 Flow Rates

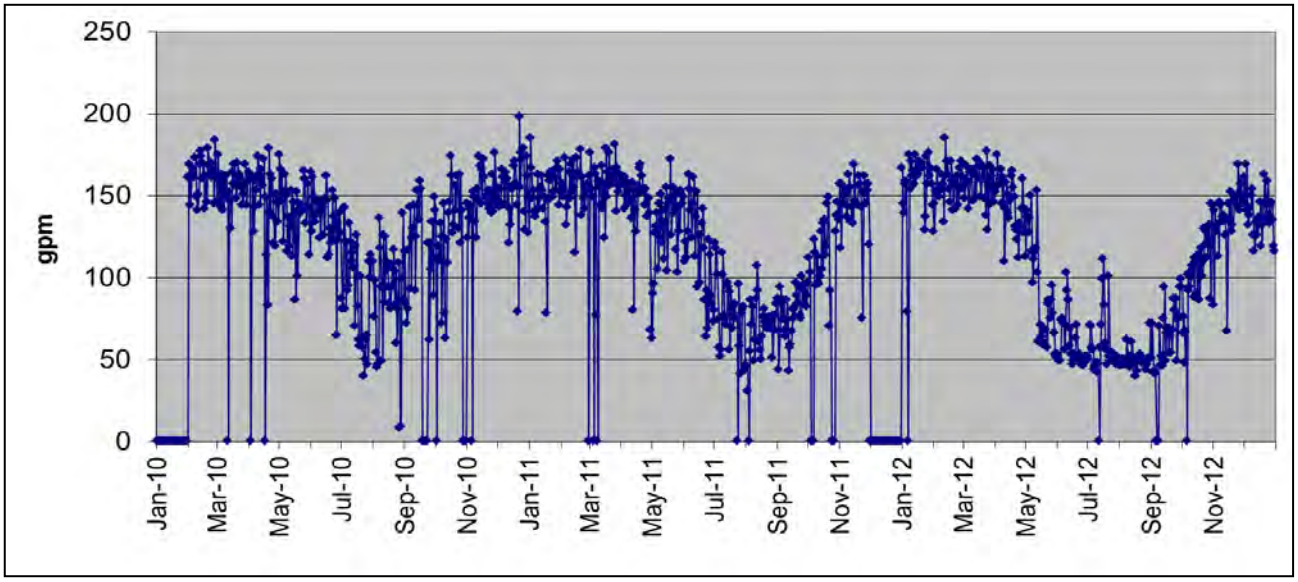
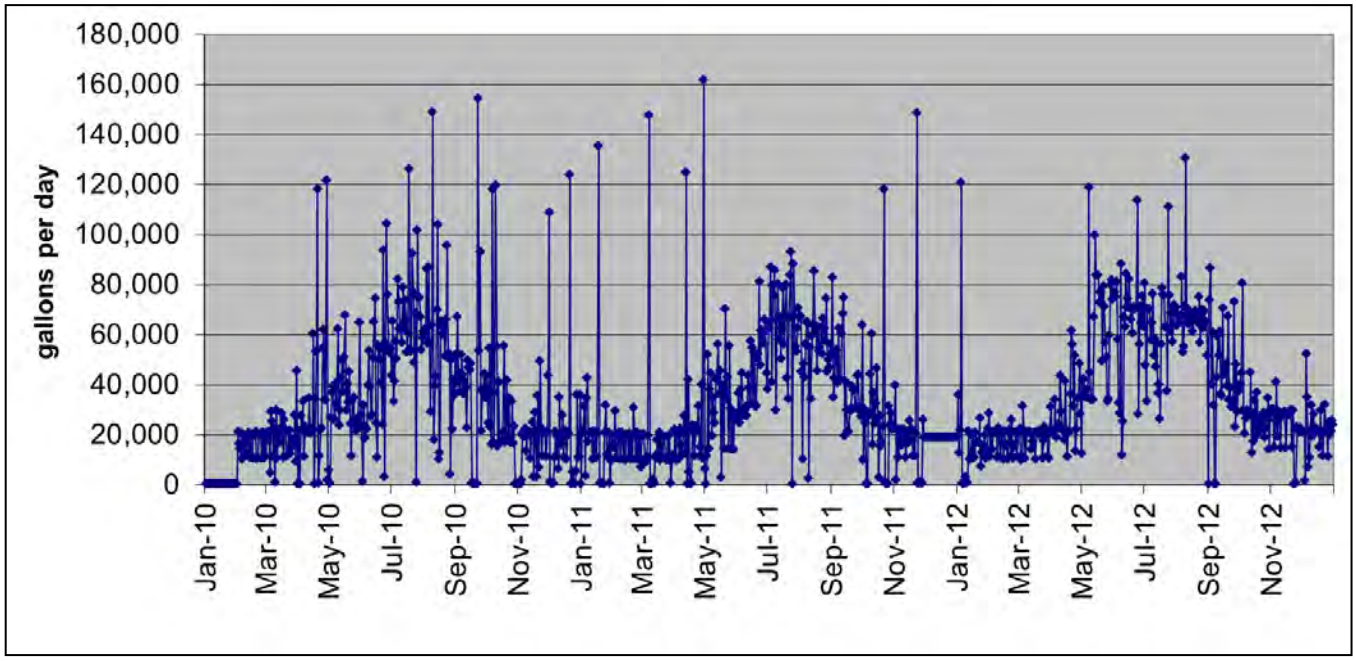
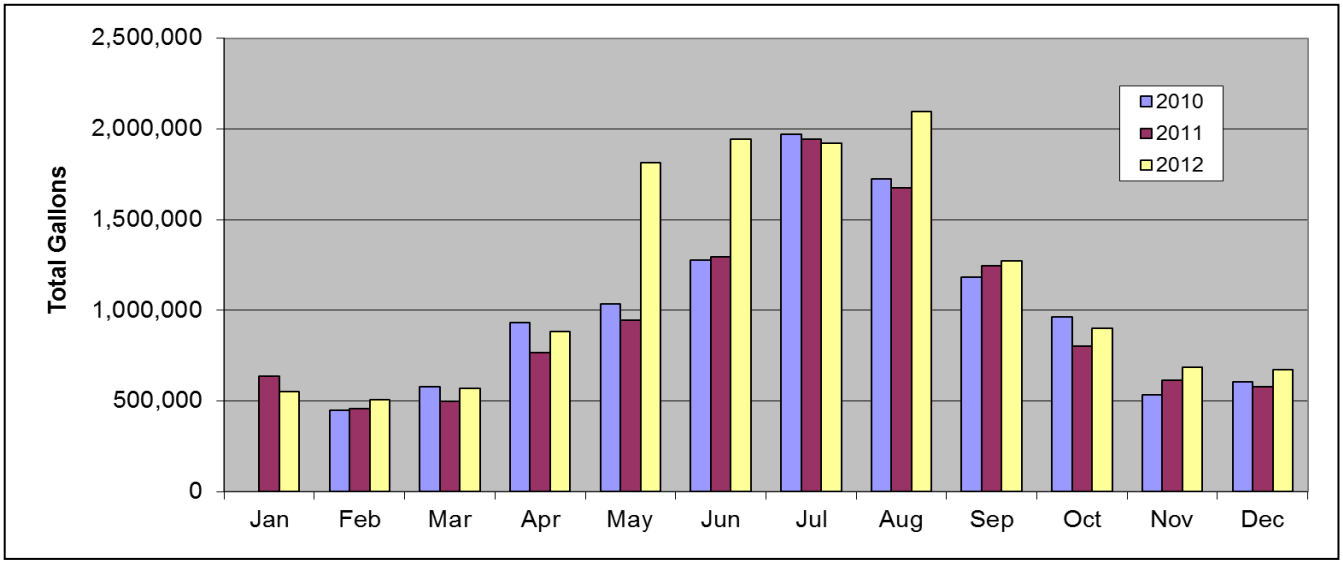


Chart 3.2: Well 4 Production Data - Daily



Processed daily production totals are presented in Chart 3.2. Typical production is just under 20,000 gpd during winter months, and near 100,000 gpd during the irrigation season. Several large production days up to 160,000 gallons were recorded; however, these were typically followed by a few days of near zero production and never more than 76,000 gallons. Days of extremely high and low production indicate a stockpiling of water for well maintenance or other reasons, and were averaged when determining true maximum day usage. Monthly production totals for each of the three years analyzed is shown in Chart 3.3.

Chart 3.3: Well 4 Production Data - Monthly



3.4.2 Metered Usage

Monthly billing data from all metered connections was analyzed to determine total water usage within the system. Between November and March, users average less than 800 cubic feet (~6,000 gallons) per month per connection. Recorded consumption increases during the summer, and peaks near 3,000 c.f. (~22,450 gallons) per month per connection. Table 3.3 summarizes flows from the top ten users in 2012.

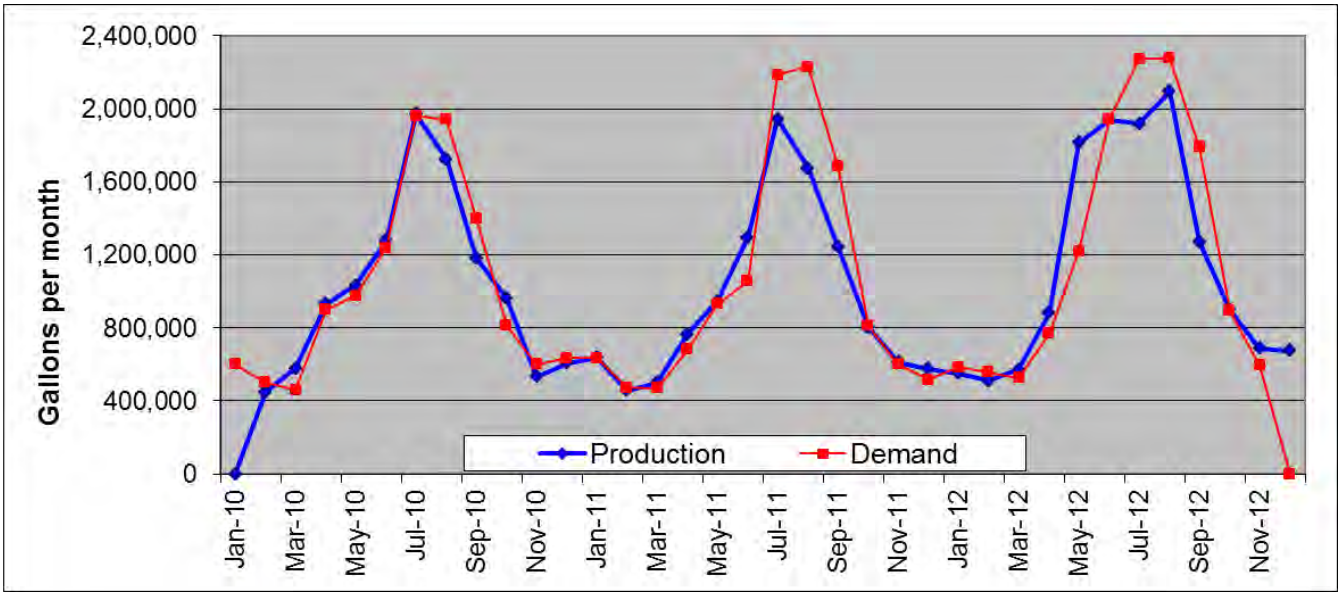
Table 3.3: Top Water Users

	Total Jan-Nov 2012 (cf)	Total Jan-Nov 2012 (gal)	Avg Jan-Nov 2012 (gpd)	% Of System Total	
Top Ten					
64 Adrian Schools	243,130	1,818,992	5,446	14%	School
36 Dennis Daugherty	143,689	1,075,018	3,219	8%	Residential
62 Dwane Daugherty	75,152	562,254	1,683	4%	Residential
03 Mike Frein	56,573	423,254	1,267	3%	Residential
53 The Mirage (Café & Bar)	49,788	372,492	1,115	3%	Business
66 DMD Investments	39,946	298,858	895	2%	Residential Rental
69 Alan Atagi	39,516	295,641	885	2%	Residential
75 Martin Manufacturing	39,157	292,955	877	2%	Business & Rental
95 Dick Davis	32,127	240,360	720	2%	Residential
11 Keith Baldwin	31,419	235,063	704	2%	Residential
Total	**750,497**	**5,614,888**	**16,811**	**42%**	
Lowest (non-zero)					
67 Church	310	2,319	6	0.01%	Church

3.4.3 Water Balance

Performing a water balance involves comparing production data to usage data to determine the amount of water loss in the system, which is used as a check when estimating demands for the system. As shown in Chart 3.4, totalized usage data often exceeds total production during the summer months.

Chart 3.4: Monthly Total Production vs. Usage



A comparison of total annual production and usage in Table 3.4 reveals the discrepancy does not average out across the year. One potential explanation for this unusual discrepancy is water produced by Wells 2 or 3, which was not recorded or included in total water production data. However, the City operator reports that these wells are only used a few days of the year, which would not produce enough water to make up the difference.

Table 3.4: Annual Production vs. Usage

Year*	Total Production	Total Usage	% Loss
2010	11,251,600	11,432,433	-2%
2011	11,463,600	12,280,162	-7%
2012	13,143,800	13,427,096	-2%

* Excludes Jan 2010 and Dec 2012 data

The mismatched data does not allow an evaluation of the existence of leaks or volume of water leaked in the system. The data is also an indicator that the well meter, connection meters, or both are not measuring accurately. It is recommended that the well meter be calibrated and multiple connection meters be tested to determine the source of error. In absence of more conclusive data, the daily production data was utilized to estimate system demands, since monthly usage data would not provide maximum day information.

3.4.4 Daily Demand Patterns

Hourly water demand data is not available for Adrian's water system. Given the absence of 24-hour water production data, Keller Associates assumed two times the maximum day demand to estimate peak hour demands, which is typical for industry standards.

3.4.5 System Demands

Daily production data was utilized to estimate existing system demands reported in Table 3.5. As discussed earlier, the max recorded production day does not correlate to the maximum usage day. Reporting a lower maximum day demand is justified by inspection of the daily well data (see Chart 3.2) and supported by analysis of the user meter readings.

Table 3.5: Existing Water Demands

	2010	2011	2012	Planning Criteria*
gpd				
Max Day (Usage)	95,500	92,800	87,900	95,500
Avg Day	33,857	31,279	37,690	34,276
Avg Summer	54,071	53,430	64,735	57,412
Avg Winter	16,163	18,399	17,745	17,436
Avg Irr. Demand	37,908	35,032	46,990	39,976
Irr.%	70.1%	65.6%	72.6%	69.6%
gpm				
Max Day (Usage)	66	64	61	66
Avg Day	24	22	26	24
Avg Summer	38	37	45	40
Avg Winter	11	13	12	12
Avg Irr. Demand	26	24	33	28
gpcd				
Population	**175**	**178**	**180**	
Max Day (Usage)	546	521	488	546
Avg Day	193	176	209	193
Avg Summer	309	300	360	323
Avg Winter	92	103	99	98
Avg Irr. Demand	217	197	261	225

* Only reflects Well 4 production

CHAPTER 4 – SYSTEM EVALUATION

4.1 PROJECTED WATER DEMANDS

Future demands were calculated utilizing the per capita values from Table 3.5 applied to the projected populations. These projected demands assume the current trend of exaggerated summer use for irrigation will continue. The demands are also based on Well 4 production data. Table 4.1 summarizes the projected system demands used for planning purposes.

Table 4.1: Projected System Demands (gpd)

Seasonal Demand Scenario	Design Baseline (gpd)	Planning Criteria (gpcd)	2017	2022	2032
Projected Population	**180**		**193**	**208**	**240**
Average Winter Day	17,436	98	18,710	20,180	23,316
Average Annual Day	34,276	193	36,785	39,680	45,856
Average Summer Day	57,412	323	61,611	66,456	76,792
Maximum Day	95,500	546	102,598	110,788	128,260
Peak Hour	193,935	1092	208,131	224,511	259,455

4.2 WATER SUPPLY EVALUATION

The two most notable deficiencies with the City's water supply are poor water quality and low pumping capacities. Water quality is evaluated in Section 4.6. Table 4.2 provides a breakdown of total system pumping capacities and illustrates that the selected criteria to provide a firm capacity equal to max day demands is not being met. Other deficiencies specific to each source are discussed in the following subsections.

Table 4.2: Pumping Capacity Analysis

	Pumping Capacity*
Well 4	100 gpm
Well 2 or 3 **	30 gpm
Well 1	NA
Total Capacity	<130 gpm (drawdown influence)
Firm Capacity (largest well out of service)	30 gpm
Max Day Demand	**66 gpm**
Firm Capacity Deficiency	**36 gpm**

* as reported in previous study

** Well 2 and 3 cannot be operated simultaneously due to drawdown conflicts

4.2.1 Wells 2 and 3

The main deficiencies with Adrian's backup Wells 2 and 3 are related to quality and quantity. City staff have reported the presence of methane in the water produced from both these wells. The sharp decline in flow rate after the pumps are turned on is also problematic. Production rates falling from 50 gpm to 10 gpm within several minutes indicates a severe drawdown of the aquifer while pumping. The two wells cannot be operated simultaneously due to overlapping cones of depression. There are several possible explanations for the significant drawdown: the aquifer may not be able to recharge naturally due to the surrounding strata, the aquifer may be blinded which has slowed hydraulic conductivity, or the static water level may be low. Pump performance is most certainly not at peak efficiency, which is leading to increased power costs. The low production rate also does not provide a worthwhile supply, especially if the drawdown is simultaneously interfering with Well 4 production.

4.2.2 Well 4

Several of the same deficiencies discussed with Wells 2 and 3 are present at Well 4. Pump production rates for Well 4 also decline, although not as dramatically as Wells 2 and 3. The pumping rate generally varies between 120 gpm and 150 gpm, except during the summer when the rates can drop to half that much. The impacts of aquifer drawdown are more evident during summer months, when it appears the water level drops, either because of the season and regional demands, or because of the increased local removal by the City of Adrian. In either case, operating near 60 gpm is likely not at the peak efficiency design point for the pump, which is leading to increased power costs.

Well 4 also has some water quality issues. Staff report the presence of a black sludge and foul odors in the water produced by Well 4. The odors come from several secondary contaminants including iron, manganese, and hydrogen sulfide. In efforts to control water quality issues, the City disinfects at a very high chlorine dose, which can lead to additional quality issues. A review of water quality is provided in Section 4.6.

Table 4.3: Summary of Supply Deficiencies

Condition / Operational Issue	Well #2	Well #3	Well #4 (main)
Water Quality	Methane in water	Methane in water	Black sludge, bad odor
Yield	Sharp drop in production (10 gpm) after short time	Sharp drop in production (10 gpm) after short time	Declining yield, extreme drawdown in summer, production drops to 60 gpm
Well Facilities	Insufficient enclosure	Insufficient enclosure	Insufficient enclosure
Disinfection	No disinfection	No disinfection	Inadequate disinfection
Sand Content			Produces sand

4.2.3 Water Rights versus Demand

A summary of the City's water rights is summarized in Table 4.4. All the water rights are for groundwater. The City's original licensed water right is a groundwater right with a priority date of 1981, which authorizes pumping at any of the first four wells. The City also acquired a water right for Well 5 with a priority date of 2005. More detailed documents about these water rights can be found in Appendix B and C.

Table 4.4: Adrian Water Right Summary

Water Right	Locations	(cfs)	(gpm)
G-9912	Wells 1, 2, 3, 4	0.91*	408
G-16074	Well 5	1.0	449

* Total combined right, each location has separate diversion rate limit

While the City's existing licensed water rights exceed the existing pumping capacities and are sufficient for current and future demands, transfers would need to be applied for to alter the diversion points to any new wells.

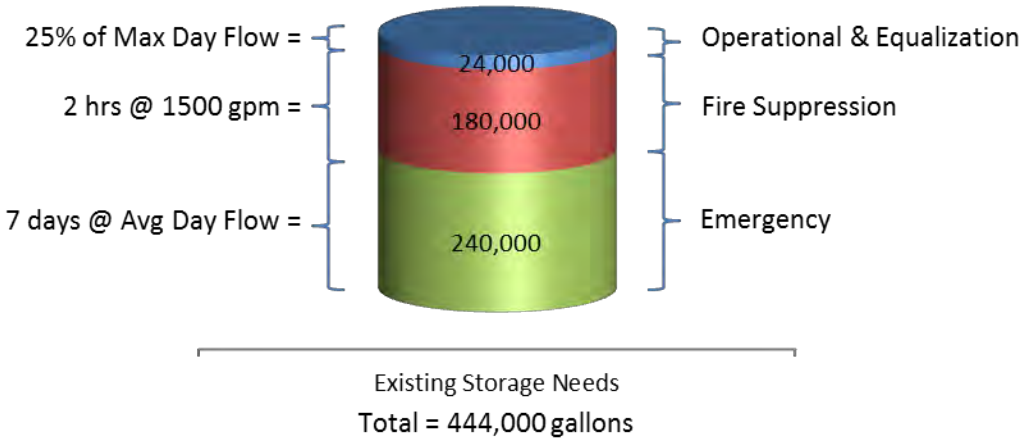
The current 408 gpm water right is adequate to meet the future 2032 maximum day demand of 89 gpm and even the peak hour demand of 180 gpm. No additional water rights are needed, but extension applications were submitted to OWRD in June 2013, which are necessary to maintain viability of the rights. More detail can be found in the technical memorandum in Appendix B.

4.3 WATER STORAGE EVALUATION

Based on city-supplied record drawings, Keller Associates calculated the existing active, useable storage to be approximately 200,000 gallons. Storage provides for fire protection demand, operational and peaking (daily peaking demand) volumes, and some emergency standby storage. The fire protection storage was calculated by assuming a two-hour fire event with a demand of 1,500 GPM.

Operational storage is the volume of water between the pump "on" and "off" settings. Peaking storage needs are determined from local demand patterns which represent the variation in hourly demand. Because there is no hourly consumption data for Adrian, an operational and peaking volume of 25% of max day usage was used in storage calculations, which is comparable to other similarly sized communities in the region. Based on a known max day demand of 95,000 gallons and the assumed peaking factor, the total required peaking/equalization volume was estimated at 24,000 gallons. Chart 4.1 illustrates the proportions of storage volumes recommended for existing system demands based on the selected planning criteria.

Chart 4.1: Existing Storage Needs

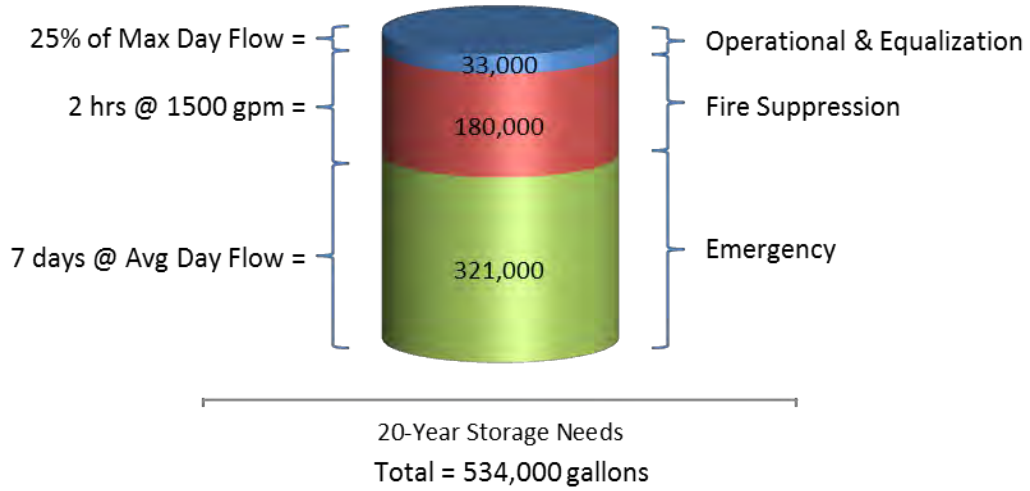


Total Storage Available	**200,000**	**gallons**
Total Storage Recommended	**444,000**	**gallons**
Additional Existing Storage Needed	**244,000**	**gallons**

As shown, the existing tank is 4,000 gallons short of providing the total required equalization and fire protection volumes, and does not provide any additional emergency storage for demands during loss-of-supply events such as power outages or extended pump failure. The City would like to provide enough storage for 7 days of annual average flows during a water supply failure, which requires more than double the current storage capacity.

Chart 4.2 illustrates the proportions of storage volumes recommended for future system demands. As shown, the existing tank is 13,000 gallons short of providing the future total required equalization and fire protection volumes, and does not provide any additional emergency storage for demands during loss-of-supply events. To provide enough standby storage for 7 days requires more than 2 ½ times the current storage capacity. If no action is taken, the future storage capacity will not be in compliance with planning criteria established for this study.

Chart 4.2: Future 20-year Storage Needs



Total Storage Available	**200,000**	**gallons**
Total Storage Recommended	**534,000**	**gallons**
Additional Storage Needed	**334,000**	**gallons**

4.4 HYDRAULIC MODEL

Bentley WaterCAD v8i was used to create the hydraulic model of the City water supply, storage and distribution system. The software applies the Hazen-Williams formula in an iterative manner for complex networks to determine system pressures based on various flow scenarios. The software also has the ability to determine fire flows available to each node by methodically analyzing each node (pipe junction) at different flow rates, and checking every other node to determine the maximum amount of water available without drawing the pressure levels below established limits at any node in the system.

Information regarding pipe diameters, network connectivity, and material types was available from a previous study conducted by Keller Associates, and updated from City records to match improvements made since the last study was completed.

The model was calibrated using field observed data under static conditions and during hydrant flow tests. Each hydrant flow test involved measuring pressures at two closed fire hydrants while opening a third and measuring the flow. A map of the hydrants tested and the resulting data is included in Appendix D.

Once calibrated, the base model was exercised to evaluate the capacity and pressure deficiencies of the existing system. Multiple future pipe network scenarios were then created and exercised in the model to establish the preferred improvements necessary to meet existing and future needs. Model results for various scenarios are included in Appendix D.

4.5 DISTRIBUTION SYSTEM HYDRAULIC EVALUATION

Static pressures in the system range from 40 psi near the school to 80 psi near the river. These pressures are only slightly outside the preferred range of 60-80 psi, and do not warrant pressure boosting or reducing stations for this size of system.

The model was used to mimic the existing Adrian water system operating at calculated peak hour demands. Under this evaluation, it was determined that the existing distribution system is capable of delivering 2012 peak hour demands of 132 GPM, while maintaining pressures above 40 psi throughout the system. The pressures in the system range typically from 45 psi to 71 psi under this demand scenario.

The distribution system was also evaluated at max day demands to determine available fire protection throughout the service area, with a minimum system pressure of 20 psi during a fire event. Fire flow demands as listed in Table 2.1 were applied. The model indicates that required fire flows and system pressures can be provided everywhere in the system except at the most extreme southeast connection and the school. In the southeast part of town, a single demand of 1,500 gpm was assigned due to a large residence nearby. The model estimates the system is still capable of supplying more than 1,400 gpm at this location before local pressures drop below 25 psi (20 psi limit plus a 5 psi factor of safety). Since the discrepancy is minimal, no improvements are recommended specific to increasing fire flows at this location.

Fire flow supplied to the school involves multiple buildings, differing demands, and several hydrant locations with insufficient available fire flows. Published fire flow values for the size of buildings at the school require between 2,000 and 3,000 gpm for 2 hours (Table 2.1). The requirements can be reduced to 1,500 gpm if a sprinkler system has been installed. Of the three main school buildings, only one is known to have a fire suppression sprinkler system. As shown in Figure 4.1, the largest flow in this area supplied by the existing system is approximately 1,200 gpm. Multiple iterations of the model, including improvements, reveal the system as a whole is not capable of supplying more than 1,600 gpm without extensive upgrades to the size of all lines between the school and the reservoir. The local fire authority has identified 1,500 gpm as a reasonable target fire flow for the system. Recommended improvements to increase the fire flows supplied in this area are discussed in Chapter 6. We recommend the City work with both fire and school officials to resolve the actual fire flow needs and encourage alternative solutions, such as installing sprinkler systems.

Figure 4.1: Existing System Fire Flow Deficiencies (see Appendix A)

There are several dead end lines in the system that cause odor and taste issues due to lack of flow. Several extensions are recommended to loop these lines.

The distribution system was evaluated to determine if the existing water mains were capable of delivering future peak day demands plus fire protection in the existing system and areas of future development. The model pipe network was expanded to extend water service throughout the City limits and demands were applied to mimic build-out conditions within City limits (year 2071 demands). The distribution system was evaluated at both peak hour demands and max day plus fire protection demands. Under this evaluation, no additional deficiencies were identified beyond those already determined for existing demands.

Based on these findings, an intermediate evaluation for 20-year planning horizon demands was not modeled. Only approximately 14 acres is required for 20-year growth projections. This area can be provided by infill of vacant lots and expansion on the fringes of existing development, which will require minimal expansion of the existing piping network.

In addition to identified improvements, Keller Associates recommends that Adrian implement a yearly maintenance and replacement schedule and budget so that funds can be saved and then utilized to perform the proper maintenance at the appropriate time to maintain the water system. Chapter 6 of this report discusses the recommended improvements that will provide adequate water distribution, storage, and pressures for the future conditions of Adrian.

4.6 WATER QUALITY EVALUATION

As stated by this and previous reports, poor taste and odor complaints from Adrian residents are commonplace. Overall water quality is poor enough that several of the residents use private water suppliers (i.e. Culligan bottled water) or have point-of-use treatment such as household filters. Multiple contaminants, including arsenic, iron, manganese, hydrogen sulfide, and ammonia, are present in the City's source water and contribute to the complaints. A summary of the existing levels and treatment standards for the constituents of specific concern in Adrian's water is provided in Table 4.5, followed by a general discussion for each. A comprehensive list of all primary and secondary constituents and water quality test reports are provided in Appendix E.

Table 4.5: Water Quality Parameters of Special Note[1]

Constituents	Standard (mg/L)	Existing Conditions Well 4 (mg/L)	Existing Conditions Well 5[2] (mg/L)
I. EPA Primary Constituents	< EPA Standards		
Arsenic	0.01	<0.003	0.051
II. EPA Secondary Constituents	<EPA Standards		
Iron	0.3	0.06	1.9
Manganese	0.05	0.09	<0.05
Total Dissolved Solids	500	504	232
III. Other Nuisance Constituents	<Industry Recommendations		
Hydr. Sulfide (H_2S)	0.05	0.51	<0.05
Hardness	150	74.7	82.3
Ammonia[3]	0.2	2.38	<0.04

1. See Appendix E for a comprehensive list of constituents and limits
2. Well 5 is in target aquifer for future well. Water quality likely similar.
3. World Health Organization Standard

Arsenic is a water contaminant that is naturally occurring and enters ground water from the soils in and around Adrian. While arsenic causes no taste or odor in drinking water, it has several serious side effects if consumed beyond safe levels. These side effects include cancer, skin damage, stomach pain, nerve damage, and blindness.

Iron is a naturally occurring contaminant in drinking water and is typically found in concentrations ranging from 0.5 mg/L to 50 mg/L depending on the geologic characteristics of the area. Excessive iron in drinking water can cause discoloration and taste problems.

Manganese is a metal found naturally in ground and surface water supplies at concentrations ranging from 1 µg/L to 10 mg/L. Its presence in drinking water is not considered a health risk, but it can lead to discoloration and precipitate deposition on water fixtures. Iron and manganese are responsible for the "hard" taste in many waters and can be treated by adding a polyphosphate when constituent levels are low to moderate.

The presence of hydrogen sulfide adversely affects the smell and taste of the water. Hydrogen sulfide causes the "rotten egg" taste and odor problems commonly encountered in many Treasure Valley wells. At concentrations of 1 mg/L, hydrogen sulfide may tarnish some metals or leave black stains on laundry and porcelain fixtures.

Ammonia is found naturally in groundwater supplies or as a result of agricultural and industrial processes. According to the studies performed by the World Health Organization, natural levels of ammonia are usually below 0.2 mg/L in groundwater. Ammonia does not usually affect anything other than the taste and smell of the water. Toxilogical effects from ammonia do not become an issue until concentrations of 200 mg/kg of body weight are reached. There is not an EPA standard for ammonia.

Primary water quality is acceptable by EPA standards, but multiple secondary limits are exceeded by Well 4 water or other potential source aquifers represented by the water quality in Well 5. In order for the City to achieve its commitment to provide good quality water to its residents, a higher quality water source or additional treatment of existing sources is required. A detailed discussion of the water quality found in each of the City's wells and potential source aquifers in the area is provided in the technical memorandum of Appendix B.

In addition to elevated levels of contaminants, other notable quality issues exist. Water quality test reports also revealed the existence of organic material in water from Well 4. Organics can increase taste and odor issues, especially in stagnant water. The low demand relative to tank volume of Adrian's system during winter months can result in stagnant water. To decrease the volume of stagnant water and help improve quality, the Adrian operator lowers the tank level to approximately half full, except during peak summer months.

Quality issues associated with disinfection also exist. A chlorine residual of 0.2 mg/L in a water distribution system can be used to eliminate the growth of bacteria and other contaminants throughout the distribution system. Chlorination is used to oxidize constituents such as hydrogen sulfide, which helps reduce associated aesthetic effects. The poor quality of Well 4 water has led City staff to dose chlorine at high levels (~2.5 gpd). High residual chlorine levels can produce disinfection byproducts in stagnant water, especially in the presence of organics. Also, despite maintaining a chlorine residual, the city has been issued eight maximum contaminant level violations for total coliform in the last five years. Adequate mixing and turn-over of stored water can help reduce the development of byproducts and help ensure a uniform residual distribution, thereby reducing coliform hits. The installation of a tank mixing system is highly recommended, even if a new, better quality source of water is added to the system.

4.7 FINANCIAL / BUDGET DEFICIENCIES

Ensuring proper financial policies are in place today is imperative to prepare for the expected and unexpected financial burdens tomorrow. The City currently has 100 single EDU connections that are charged a base of $33.75 per month, per connection, plus $0.004/cubic foot (CF) above 1,003 CF. Three connections (2 EDUs each) are charged a base of $67.50 per month, plus $0.004/CF above 2,006 CF. The school (estimated at 16 EDUs by flow) does not pay a base but is charged at $0.008/CF for all flow. Table 4.6 summarizes the City's current water fund financial status. Chart 4.3 compares

recent revenues to expenditures and Chart 4.4 provides a breakdown of the most recent expenditures.

Table 4.6: Fiscal Year 2012 Adrian Water Fund Summary

Current Residential Water Rates	$33.75 per mo.
Current Number of Accounts	105
Annual Water System Income	$ 48,562
Annual Water System O&M Expenses (2012)	$ 33,026
Safe DW Loan payment*	$ 9,629
Approximate Annual Gain	**$ 5,907**
Current Water Fund Balance (end of FY)	$ 117,767

* 1st payment made in 2012, interest only - loan terms not finalized. City estimates an annual principal and interest loan payment near $15,000.

Chart 4.3: Historical Revenue and Expenditures

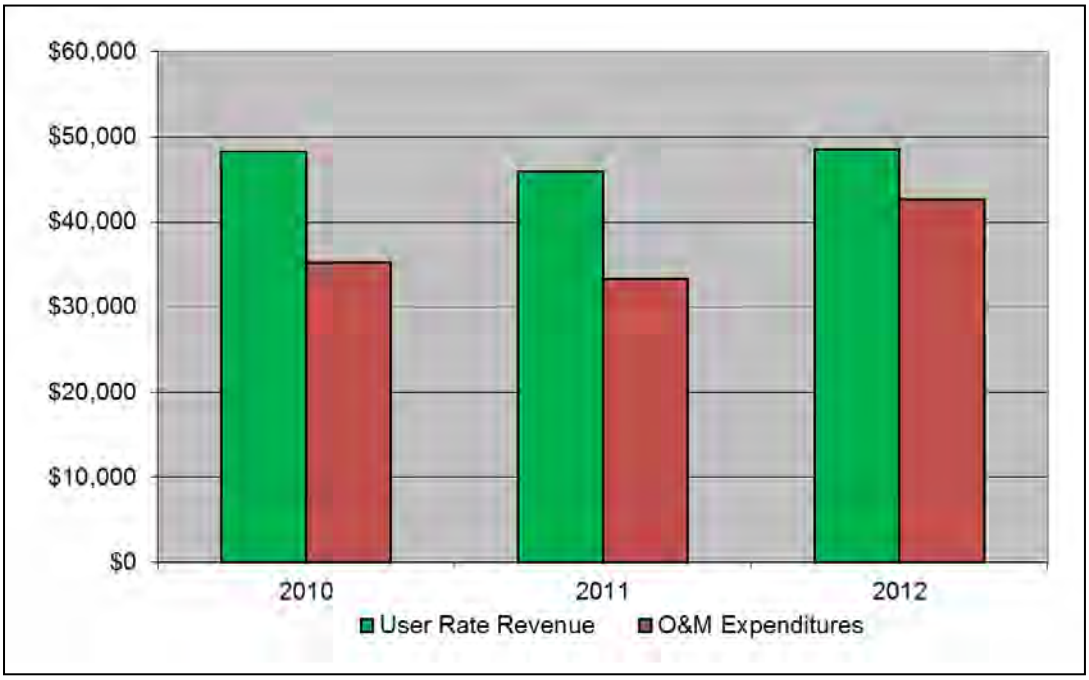
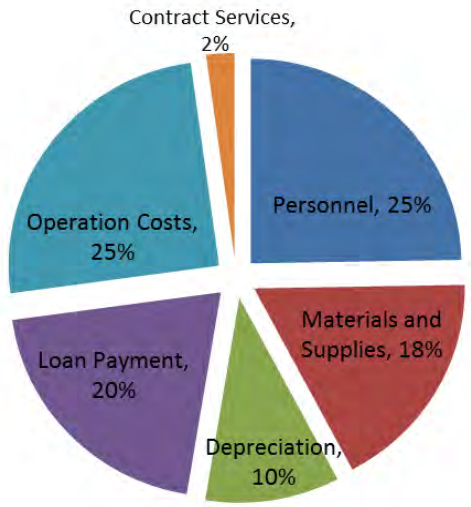


Chart 4.4: Fiscal Year 2012 Budget Breakdown



The following statements can be made about the Adrian Water Budget:

- Excluding the Safe Drinking Water loan payment, current revenues are exceeding O&M expenses by approximately $15,000 per year.
- The current water fund balance is sufficient to cover the operating budget for two years.
- The City earmarks a "rolling" $15,000 of the total Water Fund balance for loan payments related to the Safe Drinking Water Revolving Loan. It is anticipated that the annual payment will be near $15,000 so the "fund" will only last for one year before needing to be replenished.
- An analysis of budgets for the past 3 years reveals the City claims system depreciation as an expenditure, but has spent little money on infrastructure replacements. Rather, the revenue becomes part of the water fund balance. Keller Associates recommends creation of a replacement fund by earmarking a portion of the Water Fund for future replacements and annually contributing to the fund an amount equal to the depreciation value.
- At this time, it appears that current rates are sufficient to meet current operating expenses and either depreciation (replacement fund) or the loan payment but not both.

4.8 SUMMARY OF DEFICIENCIES

A summary of the existing system deficiencies are summarized below.

1. There is insufficient backup power for the water supply, specifically at Well 4.
2. Wells 2 and 3 do not provide sufficient supply redundancy with Well 4 offline. (Maximum day demand exceeds the existing firm supply capacity.)
3. The existing system does not meet mechanical redundancy needs for fire flows with the largest pump offline.

4. There is insufficient water storage to provide desired standby storage.
5. Many water system components are aging and nearing the end of their useful life, including well pumps and flow meters.
6. All wells have significant water quality problems that affect taste, odor, and cause disinfection byproducts in the tank, which prevents use of the full storage volume.
7. There are a number of dead end water lines throughout the system.

CHAPTER 5 – DEVELOPMENT AND EVALUATION OF ALTERNATIVES

5.1 GENERAL

This section presents an evaluation of several improvement alternatives for water supply, storage, and distribution deficiencies in the City of Adrian's water system.

The various alternatives are discussed in detail with estimated costs, advantages, and disadvantages. Each of the design alternatives are developed to meet the needs for a minimum of a 20-year period for facilities, and a minimum of a 50+-year period for the piping distribution system, or the equivalent development benchmarks. It is important to note that 50+-year and 20-year period planning criteria rest on the assumption of certain demands and populations occurring within each time period. These timing assumptions for populations and demands are only projections which may or may not be accurate due to the unpredictable nature of development and population growth. Equivalent development benchmarks could reasonably occur earlier or later than the proposed time periods. For this reason, timing for many of the recommended improvements is based on population rather than a year.

5.2 NO ACTION ALTERNATIVE (ALTERNATIVE 0)

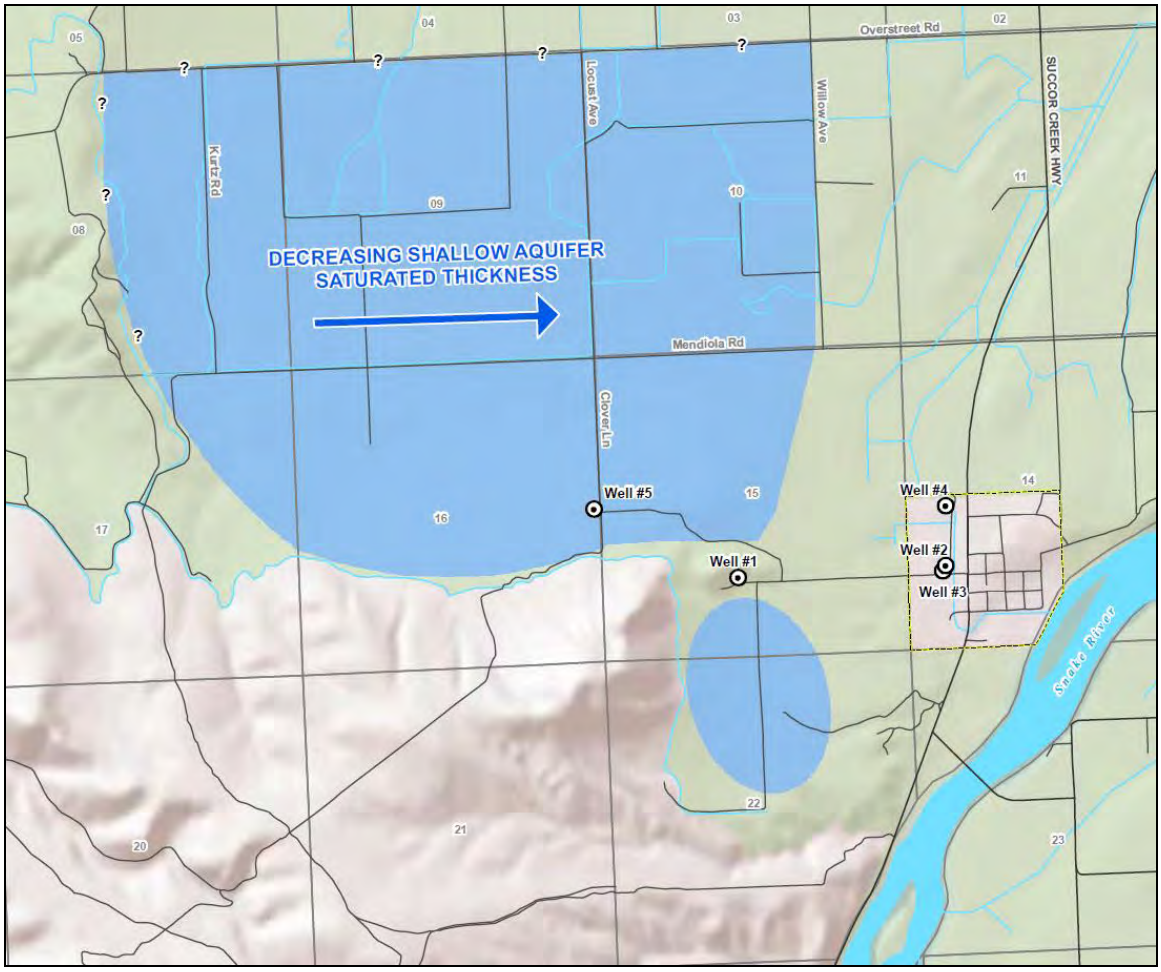
For all segments of the system (supply, storage, distribution), the first available alternative is to make no improvements to address system deficiencies. By selecting no action, the water system would remain out of compliance with current public drinking water standards and neither water quality nor quantity would be improved. Since the City is committed to providing an adequate supply of quality water to Adrian residents, the no-cost No Action Alternative is not a viable option. Although not quantified, no action may have an actual cost in terms of increased power, chemical, or repair expenses necessary for water treatment and maintenance to keep aging or inefficient components operating. No action will only be taken if no funds are available to implement recommended improvements.

5.3 SUPPLY ALTERNATIVES

5.3.1 New Shallow Aquifer Well, Screen Contaminants (Alternative 1)

The first supply alternative available to the City is construction of a new well. Several considerations were discussed during development of this alternative, most notably an evaluation of the upper and lower aquifers and the decision to drill a shallow or deep well. As outlined in the supply technical memorandum produced by GSI (Appendix B), the two aquifers have differing qualities and quantifies of water. Although arsenic may be present, the upper aquifer generally provides a higher quality of water and higher yield potential than the lower aquifer. Therefore, a new well alternative will target the water supply of the upper (shallow) aquifer. Possible locations for the new well are shown in the Technical Memo Figure 2.

Figure 5.1: Potential Well Drilling Locations – Shallow Aquifer (see Appendix A)
(see also Figure 2, Appendix B)



Under this alternative the new well would become the primary source while Wells 2, 3, and 4 would remain online for backup redundancy only. Treatment for arsenic is a possibility that cannot be determined until test well monitoring is completed. Other planning items associated with this alternative include:

- Requires property and/or easement acquisition in "exclusive farm use" lands
- Requires water right transfer(s)
- Treatment and production uncertain until test well and monitoring are completed (potential price to evaluate = $30,000, included in total capital cost)
- New transmission pipeline and tank level control changes required
- Potential costs:

	With Treatment	**w/o Treatment**
Capital*	$1.4 M to $1.6 M	$990,000
Additional Operational Costs per 100 Gallons	$0.07	$0.04

* includes $400k for transmission piping which will vary depending on location of well

5.3.2 Treat and Recondition Existing Well(s) 2, 3, and/or 4 (Alternative 2)

A second possible solution is treatment and reconditioning of the existing wells. For this option, a new, small-scale water treatment plant would be constructed at Wells 2 and 3. Water from all of the wells would be processed through a treatment train proposed to contain filters to remove contaminants. Along with additional treatment, each well hole would be reconditioned. Reconditioning efforts would include an initial video inspection to evaluate the condition of the well hole and compatibility with reconditioning methods. Methods for reconditioning could include installation of screens, creation of a new sand pack, chemical injections to improve hydraulic conductivity, and/or cleaning of well-hole debris, among others. Lowering well pumps could also improve pumping capacity, if there is enough space in the well hole. Planning items associated with this alternative include:

- Well condition/redevelopment uncertainties
- Firm supply capacity of system would not change – full redundancy not provided
- Requires higher operation certification
- Preliminary cost estimate for reconditioning wells = $45,000 each
- Preliminary cost estimate for water treatment train = $1.1 M
- Additional operational cost for water treatment = $0.09 per 100 gallons

5.3.3 Surface Water Supply (Alternative 3)

A third alternative considered was the use of surface water. Although there are some springs in the area, the most likely source is the Snake River, which would require construction of a new water treatment plant. Surface water treatment is a complex process especially when considering the fluctuating and potentially high turbidity of the Snake River. A new water intake structure would also need to be constructed within the river. Surface water supply would allow abandonment of the existing wells, or the wells could be retained for redundant supply, possibly for irrigation use. Significant planning items are associated with this alternative, including:

- Requires land purchase or transmission piping to Well 2/3 site
- Requires booster station to fill reservoir
- Higher operator certification required
- Multiple construction and operation permits required
- Water rights must be acquired or transferred
- Preliminary cost estimate = $1.5M
- Additional Operational cost of surface treatment = $0.11 per 100 gallons

A preliminary evaluation of using the Trout Farm spring as a surface water supply was considered. However, it was not pursued further for the following reasons:

- Requires water right transfer
- Requires purchase or lease agreement for purchase/use of spring
- Requires 12,100 feet of transmission line to bring water to the City system

- Requires water crossing of the Snake River
- Requires booster station
- Would still require sophisticated disinfection and may also require filtration or other advanced treatment depending on quality of water
- Total potential capital cost higher than surface water treatment of Snake River

5.3.4 Bulk Water from Nyssa/Parma (Alternative 4)

Regionalization was another alternative considered; however, the closest water systems are at Nyssa, OR and Parma, ID. Connection to either system would require construction of more than 12 miles of transmission pipeline involving multiple canal and bridge crossings, plus a booster station, and metering. Availability of water from neighboring communities and political agreements would also have to be confirmed. If this option were pursued, it is recommended that the existing wells and storage be maintained for fire protection and a backup supply.

- Preliminary capital cost estimate = $4.1M
- Bulk water cost estimate = $5,500 per month

5.3.5 Private / Individual / Point-of-use Water Filtration Units (Alternative 5)

A less common solution to the water quality issues would be installation of point-of-use filtration units at each connection. This alternative may avoid part of the high capital costs of other alternatives, but does not solve the need for an additional supply source. There are also multiple coordination items to consider when implementing a point-of-use technology, including who owns, installs, and maintains the equipment; property access; and disposal of filtration waste. Planning considerations associated with this alternative include:

- Fundability for individual filtration systems is uncertain
- Maintenance highly dependent on homeowners
- Additional water supply still required ($70,000 to $590,000)
- Preliminary cost estimate for filtration units ($210,000 to $950,000, city total)
- Additional operational cost estimate = $150 per unit per year

5.4 STORAGE ALTERNATIVES

It has been demonstrated that a new reservoir is needed to meet the selected planning criteria. The following options were those evaluated during selection of the preferred storage alternative. Multiple alternatives can be developed by combining various volume, location, and construction material options.

5.4.1 Volume Option 1 – Zero Additional Gallons, provide mixing

One option immediately available to the City is installation of a mixing system in the existing tank with no additional storage. Several different mixing technologies exist, including both mechanical (surface or submerged mixers) and passive (directional nozzles or valves) products. Mechanical mixers require a

power source while passive technologies induce current by using residual momentum and head produced by the well pumps. Currently there is no power at the tank, but there is power at surrounding residences. Installation of a mixing system would address stagnation and disinfection byproduct issues experienced during low demand periods and allow completely full operation of the tank year-round. Under this alternative the City would rely on the fire protection volume doubling as standby storage, which provides 5.1 days of storage at existing average day demands. While not ideal, this would be acceptable since the odds of both an extended lack of supply and fire flow event occurring at the same time is much lower than either event occurring individually.

5.4.2 Volume Option 2 – Duplicate Existing Storage = 200,000 gallons

Another logical alternative is to follow through on the previous design concept and construct a duplicate tank the same size as the existing reservoir. A new total volume of 400,000 gallons would provide enough storage for separate dedicated operational, emergency, and fire protection volumes. Total storage would be slightly less than that shown in Chart 4.1, but would be adequate for existing operational and fire demands plus 5.7 days of standby storage at existing average day demands. A total storage volume of 400,000 gallons would be sufficient for future (20-year) operational and fire demands plus 4 days of standby storage at future average day demands. This option does not satisfy the selected criteria for 7 days of standby storage in addition to operational and fire suppression volumes. However, 7 days of storage could still be provided in an emergency without impacting operational storage, by utilizing a portion of the fire protection storage. Implementation of this alternative should also include mixing for both tanks.

5.4.3 Volume Option 3 – Total Future Needs = 534,000 gallons

This alternative would require a new second reservoir nearly 1.7 times the size of the existing tank. Due to the size of the existing lot and steep topography, a large tank may not be feasible without acquiring additional property. A taller tank with a footprint similar to the existing reservoir, or two new tanks may need to be considered. Multiple tanks of differing sizes also introduces the need for more complex filling/emptying control logic and complicates pressure zone coordination. Implementation of this alternative should include mixing for both tanks.

5.4.4 Location Option 1 – Existing Reservoir Site

The original plans for the existing reservoir included plans for a future expansion of the tank within the boundaries of the existing lot. The site is on a steep slope that results in a partially buried tank. There is sufficient space for a new reservoir, but the type and size of construction should also be considered to maximize the use of available space. Also, clearances for construction equipment are tight.

5.4.5 Location Option 2 – New Site

Selecting a new site for construction of a new reservoir would allow sufficient space for construction activities, but results in additional piping to link the

reservoirs and wells. Also, it is preferred to place the new tank at the same elevation as the existing tank to simplify level controls, which further limits possible sites. This option would also require purchase of property or a permanent easement.

Environmental Considerations

Among other considerations, selection of a new site will likely require an archeological survey to evaluate the existence or likelihood of uncovering cultural resources at the site.

5.4.6 Construction Type 1 – Concrete

Since the existing tank is constructed of concrete, the default alternative for new construction is also concrete. A new concrete tank has many advantages, including the ability for common wall construction, which may reduce the overall footprint of construction activities. The configuration of the existing tank could be replicated to simplify the interconnection design and level control logic. Concrete construction can have a slightly higher capital cost of other materials, but life cycle costs are often lower due to decreased maintenance. In addition, the City is already used to the maintenance requirements of a concrete tank.

5.4.7 Construction Type 2 – Steel

Welded or bolted steel tanks can provide a lower capital cost alternative, though with increased maintenance and life cycle costs. A steel tank requires periodic coating. A steel tank would involve clearances from the existing tank and may involve a much larger footprint of construction activities for erection equipment. Also, a steel tank most likely could not be partially buried and would require a retaining wall if constructed on the existing site. The extra excavation and retaining wall construction add costs that could make this option less cost-effective than other options. A steel tank may be a more viable option for a new site where these construction limitations may be mitigated.

5.5 DISTRIBUTION ALTERNATIVES

When discussing distribution improvements, the main alternatives to consider are repair versus replacement, types of repair technologies, size of pipe, and pipe route. The distribution evaluation of this study and recommended improvements does not focus on the construction technologies, but rather just reports the recommended size and routes necessary to satisfy demand requirements. As such, a list of alternatives for consideration was not developed. City staff provided input during development of the distribution improvement priority list, including route selection. Keller Associates' design concept when developing improvement pipe sizes and routes was to construct new pipelines along projected future system routes when possible instead of replacing existing lines. This philosophy not only reduces total construction costs by working on one pipeline rather than two, but also creates more loops in the system network, which addresses localized pressure loss and water quality concerns.

5.6 REGIONALIZATION

The public water systems nearest to Adrian are in the cities of Nyssa, OR and Parma, ID, each approximately 12 miles away. The construction of a large diameter transmission line for that distance would likely cost more than $5 million, and multiple bridge and canal crossings, surface repairs, and a booster station could double the price tag. Given the extreme cost and hydraulic complications, this is not a viable option and is not considered further.

CHAPTER 6 – SUMMARY OF RECOMMENDATIONS

This section summarizes the recommended improvements and associated costs for the water storage, water supply, and distribution facilities. Future recommendations and maintenance and replacement suggestions are also discussed.

6.1 MASTER PLAN IMPROVEMENTS

6.1.1 Drill New Well (Priority 1)

The most urgent and immediate need for the water system is a second water source to meet redundancy requirements and improve water quality. Alternative 2, reconditioning existing wells, has uncertain outcomes and would not provide the necessary redundancy. Alternatives 3 and 4, surface water and regional bulk water source, are both more expensive and more complicated solutions. Alternative 5, point-of-use units, also does not provide redundancy. Supply Alternative 1, shallow aquifer well, was selected to maximize the yield potential and minimize the potential need for water treatment.

As outlined in the technical memorandum in Appendix B, a specific site for the new well has not been selected. The City will need to pursue property easement and/or ownership negotiations as part of the site selection process. Also, a test well should be constructed first and water quality tested before committing to the site and construction of the final well. Figure 5.1 (see also Tech Memo Figure 2 Appendix B) shows the area with the highest likelihood of good water quality and quantity for siting a new well. It is recommended the well be drilled to an approximate depth of 200 feet with a 10-inch to 12-inch borehole diameter, and a targeted pumping capacity of 100 gpm, and should be equipped with a standby power generator. A new well with this pumping capacity will meet redundant water supply requirements for the projected 20-year population. If a portable generator is provided for the new well, a plug and transfer switch should also be installed at Well 4 to provide backup power at the existing well site.

Well construction will also involve installation of a transmission pipeline to connect the new well with the existing system. Since the well site is unknown, the length of pipe required to connect the well and reservoir is also unknown. An estimated 5,300 feet of pipeline at a unit cost of $75/ft was utilized to determine potential costs.

<u>Arsenic Treatment</u>
Based on the water quality evaluations, it is possible that some form of water treatment will be required to remove arsenic from the groundwater. Water testing following test well construction will reveal if this portion of the project is necessary. The technical memorandum prepared by GSI (Appendix B) provides more information on testing and well design procedures to evaluate and potentially mitigate the risk of arsenic.

Due to the nature of treatment and the yet undetermined well location, it is recommended that the City approach the possibility of arsenic treatment

systemically and make decisions as new information becomes available after each step. The first step would be to determine the well location and drill a test well. The second step would be to test the water quality at various depths and attempt to screen out arsenic if possible. Should screening prove unsuccessful and arsenic treatment required, specific water quality testing should be performed to determine viable treatment options. Depending on the complexity of the viable treatment options, pilot testing may be required prior to implementation to ensure the treatment works before incurring the full cost of construction and implementation. The pilot testing process could cost up to $10,000 and require up to four weeks of time for each pilot test.

Based on preliminary water quality data, three potential treatment options were evaluated on a planning level as part of this planning study. These treatment options are represented by the suppliers Separmatic, Culligan Water, and Lowprest.

- Separmatic has offered to perform pilot testing of their diatomaceous earth filtration system free of charge because their technology has not yet been proven for arsenic removal. The City would likely incur some costs for testing oversight and lab fees, but the cost will be relatively minimal. Other suppliers will not likely provide free testing, and details will have to be discussed with each supplier during the pre-design phase. Pilot testing the Separmatic system may be a good opportunity for the City because if the treatment is successful, it would have low capital and maintenance costs as well as a small footprint and simple operations.
- Lowprest offers a coprecipitation/sand filtration system which is proven for removal of arsenic and other water quality concerns.
- Culligan Water offers a softening/anion system which is also proven for arsenic removal and other water quality concerns.

If the City does not pursue the Separmatic system or if the system is unsuccessful, it is recommended that Adrian pursue the Culligan system for further testing and evaluation. The Lowprest system may also prove to be an attractive option when life cycle costs are considered. A life cycle cost comparison between competing systems will be more meaningful once more information is known about the required treatment.

Treatment Waste Handling

With any treatment approach, there will be a concentrated by-product containing all of the unwanted contaminants removed from the drinking water. Because of the arsenic in this waste, it may require special disposal. This waste can be conveyed to the wastewater treatment lagoons through the City's sanitary collection system. However, Oregon DEQ has required the City to develop a plan for handing the waste accumulated in the lagoon.

Adrian's wastewater lagoons have no discharge point because the volume evaporates. Regardless, the arsenic cannot be allowed to permanently accumulate in the lagoons. When the lagoon is cleaned, the sludge must be tested for arsenic concentration. At that point, the City will need to coordinate with the potential receiving landfill and DEQ to determine the final disposal method.

If the arsenic concentration is greater than 5.0 mg/L, it cannot be taken to a standard landfill based on standard regulatory limits for landfills (TCLP). In that case, the sludge will need to be taken to a landfill capable of receiving special waste. The nearest and most likely location is the Simco Road Regional Landfill located 25 miles east of Boise, Idaho. For planning purposes, Simco Road is the assumed disposal location. Disposal is likely only necessary once every 20-30 years.

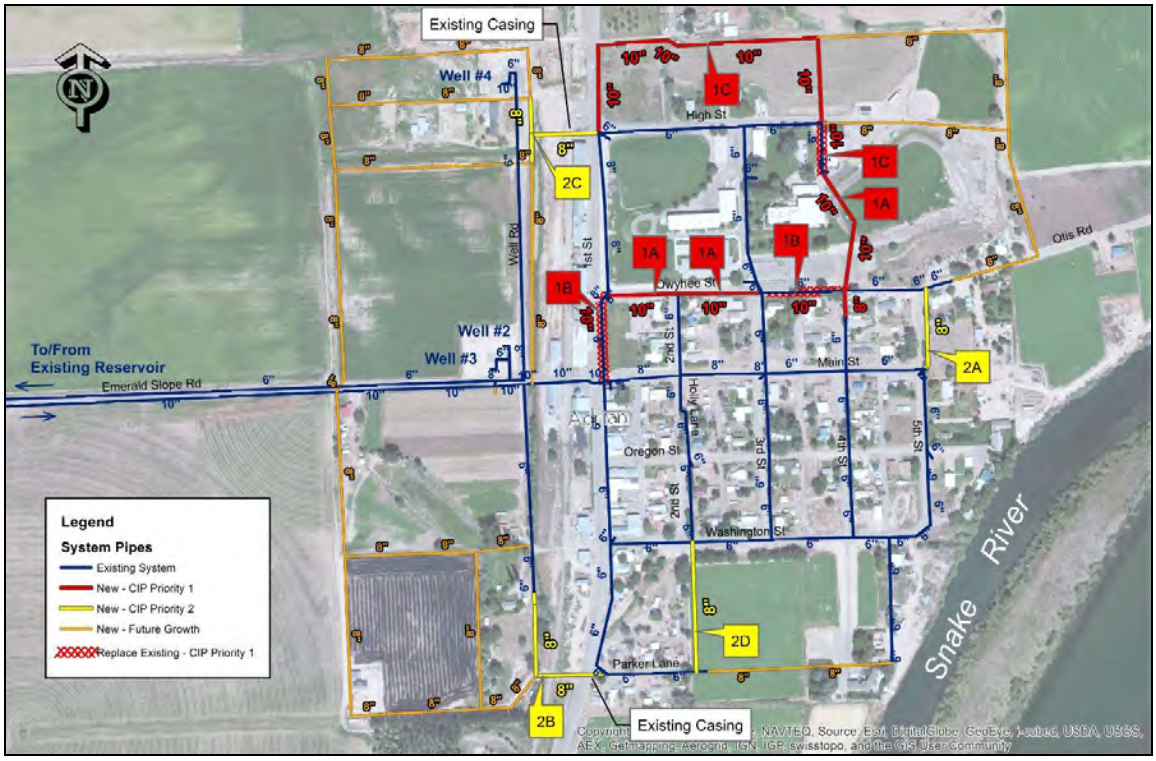
6.1.2 Tank Mixing – Existing Reservoir (Priority 1)

Installation of tank mixing equipment (Volume Option 1) will greatly reduce the likelihood of stagnant water and byproduct development in the stored water. Several different mixing technologies exist, including both mechanical (surface or submerged mixers) and passive (directional nozzles or valves) products. It is recommended that the City invite bids from multiple manufacturers to determine the most economical installation and operation for the City's needs. Tank mixing equipment could be installed immediately and would not interfere with efforts to incorporate a new supply source. Once installed, the tank could also be operated at full capacity again, thereby increasing the fire and standby storage provided for the system.

6.1.3 Distribution Priority 1 Improvements

Recommended distribution system improvements are shown on Figure 6.1. Priority 1 distribution improvements address the goal of providing a fire flow of 1,500 gpm at the school. The final recommendation is creation of a continuous 10-inch loop, which can be accomplished in several phases.

Figure 6.1: Distribution System Master Plan (see Appendix A)



4th & Owyhee Streets Loop - Priority 1a

The first phase of the fire flow improvements would involve construction of new 10-inch pipelines on Owyhee Street between 1st and 3rd streets, and across school property along the imaginary extension of 4th Street between Owyhee Street and the dead-end line south of High Street. The improvement cost also includes a segment of 8-inch pipeline to extend the 6-inch dead-end line on 4th street through to Owyhee. The 8-inch segment involves some obstacles including large trees, a steep incline, and no road for a construction path. The phase 1A portion of the 10-inch loop provides the greatest immediate benefit by boosting potential fire flows from near 900 and 1200 gpm (upper and lower pipelines, respectively) to 1410 and 1490 gpm, respectively.

1st & Owyhee Streets Loop - Priority 1b

The second phase of the fire flow improvements would involve replacement of the 6-inch pipeline on Owyhee Street between 3rd and 4th Streets and the 8-inch pipeline along 1st Street between Main and Owyhee with upsized 10-inch pipe. Since it is a replacement project, alternate trenchless construction technologies such as pipe bursting may be possible, although excavation would still be required to install valves, make main reconnections to the system, and reconnect services. Construction along 1st Street will also likely require extra traffic control and additional special backfill to meet highway department requirements. The phase 1B portion of the 10-inch loop boosts potential fire flows at the school to 1470 and 1530 gpm (upper and lower pipelines, respectively).

North End Loop - Priority 1c

The third and last phase of the fire flow improvements would involve construction of a new 10-inch pipeline looping from the intersection of High and 1st Streets,

along the northern edge of the City limits, to the intersection of High and 4th Streets. The segment of 6-inch pipe on school property would also be replaced with 10-inch pipe to complete the loop. The phase 1C portion of the 10-inch loop boosts potential fire flows at the school to 1500 gpm in the upper pipeline. This is only a 30 gpm improvement over phase 1B flows, so implementation of this improvement should be driven by available funds and development north of High Street. Model iterations indicate that installing 8-inch pipe provides 1490 gpm in the upper pipeline, assuming the 6-inch segment is still replaced with 10-inch pipe. Alternatively, the 6-inch pipeline along High Street could be upsized to achieve similar flows; however, replacement would not take advantage of new construction to cover a portion of the pipe costs.

6.1.4 New Concrete Reservoir (Priority 2)

The preferred storage alternative is construction of a 200,000-gallon concrete reservoir on the existing tank site (Volume Option 1, Location Option 1, Construction Type 1). This alternative maximizes the use of the existing site while still providing sufficient storage for future demands. It is anticipated that there is enough room on the south side of the existing tank for new construction and that the new tank can share a common wall with the existing tank. Cost estimates for this improvement include incorporating a tank mixing technology for the new tank.

6.1.5 Distribution Priority 2 Improvements

Priority 2 distribution improvements focus on completing loops within the system to improve water quality and service reliability.

<u>5th Street Loop – Priority 2a</u>
This improvement would construct an 8-inch pipeline along 5th street between Main and the dead end line on east Owyhee.

<u>Railroad-Parker Lane Hwy Crossing – Priority 2b</u>
This improvement would construct an 8-inch pipeline between the dead-end line west of the old Railroad and canal, south and east, to the dead-end line along the highway at Parker Lane. Construction would connect to an existing 8-inch pipe crossing the highway at Parker Lane.

<u>High Street Hwy Crossing – Priority 2c</u>
This improvement would create a temporary 8-inch dead end pipeline west of the highway at High Street and Well Road. The pipeline would target providing reliable supply to the few residences at the end of High Street which currently operate on their own wells or use the Well 4 supply pipeline and experience fluctuating pressures. Construction would connect to an existing 8-inch pipe crossing the highway at High Street. As further development occurs, future pipelines along Well Road would turn the dead-end into an 8-inch loop.

<u>South 2nd Street Loop – Priority 2d</u>
This improvement would construct an 8-inch pipeline along 2nd street between Washington and the dead end line on Parker Lane.

An alternate route proposed in the previous study would extend the Parker Lane pipeline east to create a loop with the dead-end pipeline at south 4th/5th Street. From an engineering standpoint, the Parker Lane alternative would eliminate two dead-end lines with the most economical amount of pipe and provide a main line for development. However, City staff report that the property owner is unlikely to develop the farm field that the pipeline would cross, and would likely not allow pipeline construction. Even if the Parker Lane pipeline were extended, the improvement 2d as shown in the Master Plan may still be required to serve development in the area. The final pipeline alignment should be reevaluated as development occurs in this area.

6.2 OTHER / OPERATIONAL IMPROVEMENTS

It is critical that the City of Adrian takes measures to plan for the sustainability and financial viability of the water system now and in the future. A replacement/rehabilitation/ maintenance program for each component of the water system is critical to maintain the integrity of the system and continue to provide water service. No additional operation and maintenance staff is required to operate the proposed Priority 1 and 2 improvements (unless arsenic treatment is required), nor will these improvements change the "Very Small Public Drinking Water System" classification of the water system. However, it should be noted that operator costs are likely to increase as the City's current staff retire. The wage/salary costs paid by Adrian are much lower than industry standards. Furthermore, while the classification of the water system likely would not change if arsenic treatment is required (due to the small size of Adrian), the complexity of the system and qualifications to operate would increase dramatically and may require a change in staff capability.

6.2.1 Existing Wells

While the master plan does not call for major improvements to Wells 2, 3, or 4 to change the water quality or quantity of these wells, they will be the City's backup water supply once the new well is operational. Consequently, it is recommended that the City continue to maintain and keep these wells and pumping equipment operable and in good working condition as part of the City's ongoing O&M program.

6.2.2 Leak Detection and Fire Hydrant, Valve and Water Line Replacement

Comparisons between water production volumes and water consumption volumes were not sufficient to draw conclusions about leaks in the system. This lack of data can be mitigated if the City moves forward with the recommendation from Section 2.4 to check and calibrate flow meters. Typical residential water meters should be tested every 5-10 years and have a typical useful life of about 20-25 years. The City should begin budgeting for future meter replacement.

System loss should be monitored each year. In addition to an aggressive plan to regularly check the accuracy of the water meters, a leak detection and water line replacement program should be implemented. A leak detection program can range from simple observations of areas around water pipelines that are moist to more sophisticated methods using electrical and sonar devices that can be used to identify leaks not visible above ground. Eventually, the newest water

distribution pipelines, valves, and fire hydrants will reach their useful life and will have to be replaced. It is advisable that the City set aside funds for the replacement of its distribution system. Table 6.1 summarizes the recommended annual budget for leak detection and pipeline replacement based on the City's lineal feet of water mains and their estimated remaining life. If no replacements are needed in any one year, the unused funds should be saved for future replacements.

Keller Associates also recommends that the City implement an annual flushing program to clean the water lines as well as inspect fire hydrant performance. This program should conform with typical industry recommendations that all dead-end lines be configured with a means to flush and lines be flushed semiannually to expel stagnant water and bio-film. Valves should be exercised at least annually.

6.2.3 Water Meters

Currently most of the City's connections are connected to a water meter. There are two locked meters for which flows were not reported, one connection without a meter, and one shared meter. Also the City park areas are not metered. The City should install, repair, and replace meters now so all active connections are metered. It is recommended that meter readings be taken at all meters, even if there exists an agreement not to bill on usage, in order to better track actual water consumption.

Keller Associates also recommends that the City begin saving for the replacement of five residential meters each year. Doing so will ensure funds are available to replace meters in a 20-year cycle and provide a reserve fund to replace meters if they fail. It is estimated that meter replacement will cost approximately $250 per meter, assuming labor is furnished by the City.

6.2.4 Cross-Connection Control

It is recommended that the City of Adrian implement a cross-connection control program that takes reasonable and prudent measures to protect the water system against contamination and pollution from cross-connections. This program should include the following minimum measures.

- An inspection program to locate cross-connections and determine required suitable protection. For new connections, suitable protection must be installed prior to providing water service.
- Required installation and operation of adequate backflow prevention assemblies.
- Annual inspections and testing of all installed backflow prevention assemblies by a licensed tester.
- Dis*continuan*ce of service to any structure, facility, or premises where suitable backflow protection has not been provided for a cross-connection.

6.2.5 Annual Replacement Summary

An annual replacement budget summary is shown in Table 6.1.

Table 6.1: Annual Replacement Budget

Maintenance Task	Cost/Yr
Clean and inspect storage tank [1]	$ 200
Well Pump [2]	$ 1,500
Replace distribution pipelines, valves, and hydrants [3]	$ 9,400
Residential water meter replacement/repair [4]	$ 1,250
Total Annual Cost	**$ 12,350**
Additional Monthly Cost Per EDU[5]	**$ 8.30**

Assumptions:

[1] Tank cleaning and inspection should take place every 5-10 years

[2] $30,000 pump and appurtenances replacement every 20 years

[3] Pipeline age varies, but generally assumed to have 70 years of useful life. There is approximately 16,500 feet of pipeline in the City, so the City should budget for replacing approximately 235 feet per year. A replacement cost of $40/ft was used which assumed water line replacements will occur concurrently with road repairs.

[4] Water Meter replacement includes purchasing new meters or repairing existing meters. Estimated purchase cost is $250 each for parts and labor. City personnel to provide replacement labor.

[5] Based on current estimate of 124 total EDUs.

6.3 CAPITAL IMPROVEMENT PLAN

The City of Adrian has prioritized the recommended system improvements into two groups, as shown in Table 6.2. Priority 1 improvements are the most urgent and address immediate deficiencies. Priority 2 improvements are to be implemented as funds become available.

Priority 1 is a reflection of the conclusions made in Chapter 5 that solve the mechanical and supply redundancy, water quality, and fire flow protection deficiencies. Priority 2 improvements are those that Keller Associates foresees Adrian will need to make in the next 5-10 years to maintain their water system and meet future needs. Keller Associates recommends that Adrian proceed immediately with the improvements listed in Priority 1.

Table 6.2: Capital Improvement Plan

Item (2013 Project Costs*)	Priority 1	Priority 2
Priority 1 - Water System Improvements (2014-2017)		
New Supply		
New Well & Wellhouse	$ 590,000	
Transmission Piping - New Well to Tank	$ 400,000	
Arsenic Treatment System (if necessary)	$ 550,000	
Tank Mixing System	$ 40,000	
Distribution Loop - 4th & Owyhee Streets (new pipe)	$ 200,000	
Distribution Loop - 1st & Owyhee Streets (pipe replacements)	$ 130,000	
Distribution Loop - North end 10-inch Loop	$ 286,000	
Total Priority 1 (Rounded)	**$ 2,196,000**	
Priority 2 - Water System Improvements (2017-2024)		
Expand Storage Reservoir		$ 280,000
Distribution Loop - 5th Street		$ 54,000
Distribution Loop - RR-Parker Lane (south Hwy)		$ 80,000
Distribution Loop - High Street (north Hwy)		$ 73,000
Distribution Loop - 2nd Street		$ 68,000
Total Priority 2 (Rounded)		**$ 555,000**
Total	**$ 2,751,000**	

Notes*

4) All costs in 2013 Dollars. Costs include engineering and contingencies.
5) Timing of Priority 2 Improvements depends on when growth occurs. Development participation could reduce cost of future facilities.
6) The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

6.4 FUNDING PROCESS AND SOURCES

Funding is a necessary component of these projects as the City does not currently have the funds to finance these projects. The City can fund water system improvements with cash reserves, federal or state grants, or by issuing debt either to various federal or state agencies with lending programs, or to the municipal bond market. Grants, money the City would not repay, are preferred. If grants are unavailable or insufficient to fund priority improvements, then the City will need to borrow money to fund the improvements. To repay the debt, the City can increase water rates sufficient to pay all operating costs and annual debt service (principal and interest). Alternatively, the City can issue voter-approved general obligation (GO) bonds and assess property taxes to pay annual debt service until the debt is fully repaid. This section summarizes funding programs that could be available to the City. These programs can be implemented individually or as a package.

6.4.1 Loan and Grant Sources

Economic Development Administration (EDA)

The EDA's investment policy is designed to establish a foundation for sustainable job growth and the building of durable regional economies throughout the United States. EDA assistance is available to rural and urban areas of the United States experiencing high unemployment, low income, or other severe economic distress. Priority for the grant and loan funds are based on economic development potential. Congress has been appropriating between $50 million and $70 million annually for EDA's Western Region (the states of Alaska, California, Hawaii, Idaho, Montana, Oregon, and Washington) for projects that retain or create jobs. The program funds up to 50% of the project cost, and the balance must come from local matching funds. Projects must show a very strong connection to jobs, and competition from the larger states in the seven-state region is very strong. In the past, the maximum funding awarded to a project was $2.5 million.

U.S. Department of Agriculture, Rural Utilities Services (USDA-RUS), Water and Wastewater Loans and Grants

These loans and grants are available to develop water and waste disposal systems in rural areas and towns with a population less than 10,000. Applicants must be unable to obtain the financing from other sources at rates and terms they can afford and/or their own resources. Eligibility for this program is based on user rates, median household income, and compliance issues. Applications are accepted at any time at the state or area office.

Direct State Loans, Revenue Bonds, and General Obligation Bonds

The City has three legal means of borrowing money: first, direct State of Oregon loans; second, revenue bonds; and third, general obligation bonds.

- The direct state loans do not require the City to issue bonds, but requires a pledge to keep water rates high enough to pay operating and maintenance costs and pay for the debt service.
- A revenue bond can be issued under the authority of the Uniform Revenue Bond act of the State of Oregon. A revenue bond still requires that the City Council pledge to keep water rates high enough to pay operating and maintenance costs and pay for the debt service.
- The City has the power to issue general obligation bonds, but only upon voter approval. The City Council can decide annually through the budgeting process to pay the next year's debt service partially from user fee revenues, system development charge revenues, or property tax assessments.

Oregon Infrastructure Finance Authority (IFA)

The IFA administers the following funding programs:

- *Water/Wastewater Financing Program.* This loan program funds the design and construction of public infrastructure needed to ensure compliance with the Safe Drinking Water Act or the Clean Water Act. To be eligible, projects must be owned and operated by a public entity. Funded projects could include construction of improvements or expansion of drinking water system,

water source, treatment, storage and distribution, wastewater collection, treatment and disposal facilities, storm water system, rights of way/easement purchase, design and construction engineering, and planning technical assistance for small communities.

There are two requirements for eligibility. First, a system must have received, or is likely to soon receive, a Notice of Non-Compliance by the appropriate regulatory agency, or is a facility plan or study required by a regulatory agency. Second, a registered Professional Engineer will be responsible for the design and construction of the project. The maximum loan amount is $10 million per project. Grants of up to $750,000 could be awarded depending on the financial review. Applicants are not eligible for the grant funds if the median household income is equal or greater than 100 percent of the state median household income. Funding under this program is also available for preliminary engineering, engineering studies and economic investigations. Project award amounts for these technical assistance projects are up to $20,000 for grants and up to $50,000 for loans.

- *Special Public Works Fund.* This program provides funds for publically owned facilities that support economic and community development in Oregon. Funds can be used for planning, designing, purchasing, improving/ constructing publically owned facilities, replacing publically owned essential community facilities, and emergency projects as a result of disaster. Construction loans range from less than $100,000 to $10 million.

  This program offers up to $500,000 in grants (but not more than 85% of the total project cost) for qualifying projects, which must either create or retain "traded-sector" jobs. (These are jobs in businesses selling goods or services in markets for which national or international competition exists, as determined by IFA.) The ratio of project cost (loan and grant) to jobs created or retained cannot exceed $5,000 per job.

- *Community Development Block Grant (CDBG).* The Oregon Business Development Department (OBDD) administers the State of Oregon's annual federal allocation of Community Development Block Grant (CDBG) funds for non-metropolitan cities and counties. Urban cities and counties and tribes are not included in the state's program because they receive CDBG funds directly from the U.S. Department of Housing and Urban Development (HUD). Projects must meet one of three national objectives: (1) benefiting low- and moderate-income persons; (2) prevention or elimination of slums or blight; or (3) meeting other community development needs having particular urgency that pose a serious and immediate threat to the health or welfare of the community.

  The primary objective of the CDBG program is the development of viable (livable) urban communities by expanding economic opportunities, providing decent housing and a suitable living environment principally for persons of low and moderate income. "Low income" means income equal to or less than 50 percent of the area median (adjusted by family size). "Moderate income" means income equal to or less than 80 percent of the area median (adjusted by family size). Applicable income limits are determined by HUD on an annual basis for all Oregon counties and metropolitan statistical areas by HUD.

The 2013 CDBG Method of Distribution (MOD) and the 2013 CDBG Grant Management Handbook (GMH) are the relevant documents for guidance in determining recipient and project eligibility and current CDBG program requirements. These documents are available on the OBDD-IFA website.

- *Safe Drinking Water Revolving Loan Fund (SDWRLF).* The SDWRLF and the Drinking Water Protection Loan Fund (DWPLF) are loan programs that fund drinking water system improvements needed to maintain compliance with the Federal Safe Drinking Water Act. The SDWRLF is designed for collection, treatment, distribution and related infrastructure projects. The DWPLF is designed for the protection of drinking water sources. Although funds are available for all sizes of water systems, 15% of the funds are reserved for community water system with a population less than 10,000.

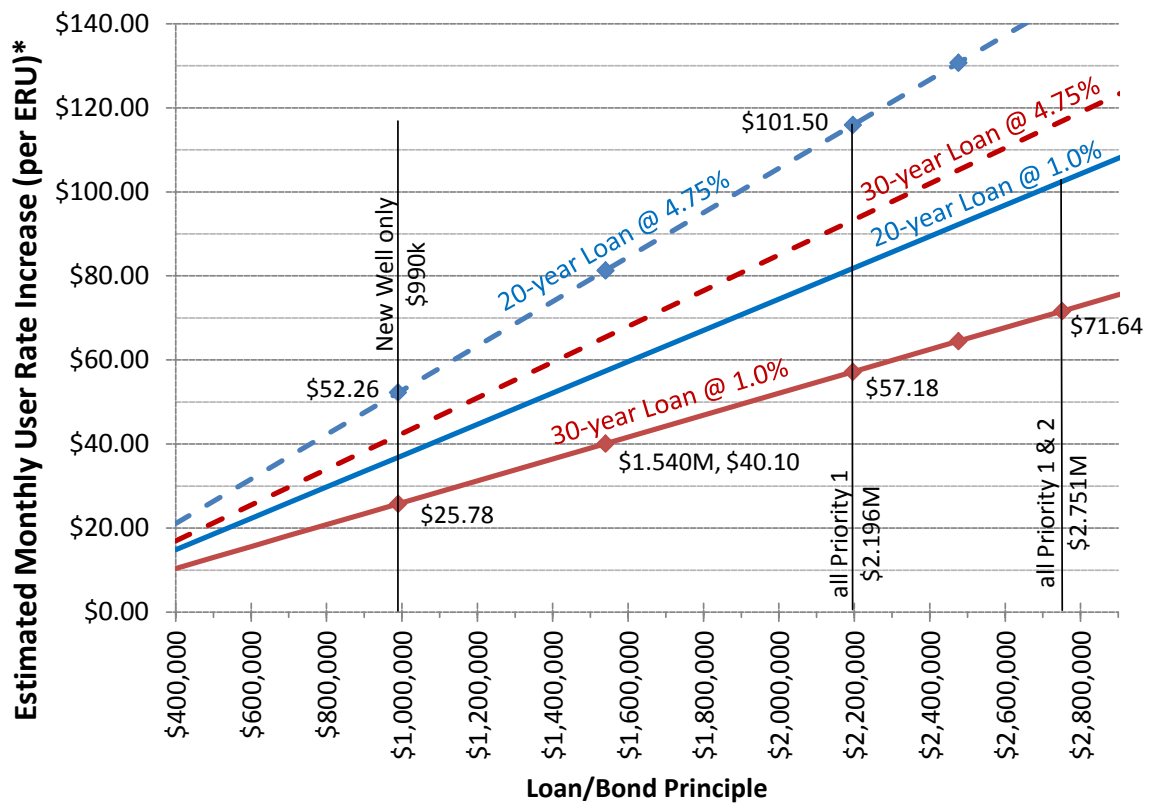
  Criteria for use of the funds include solving an existing or potential health hazard or noncompliance under federal/state water quality standards. Money cannot be used for certain activities such as water rights, administration, ongoing operations, primarily fire suppression, projects that do not directly address noncompliance/health risks, and future community growth beyond the planning period. The SDWRLF program can provide up to $6 million per project. Principle forgiveness and subsidized interest are possible with the SDWRLF program. The maximum loan amount for the DWPLF program is $100,000 per project. Letters of interest (LOIs) can be completed online at any time.

6.4.2 User Rate Impacts

Funding through grants and loans will most likely come in the form of a 25-year to 30-year loan from the IFA. However other sources are possible, and affect user rates differently according to the loan terms. Chart 6.1 illustrates a range of possible impacts to user rates for various loan principles, interest rates, and terms. This chart is provided as a planning tool for the City and does not represent specific funding sources or packages established for these projects.

Each series provided in Chart 6.1 illustrates how changes in duration or rate of the loan impacts user rates. The estimated upper limits (worst case scenario) for loans from any source are a 20-year term and 4.75%. Any increase in duration of the loan (at the same rate) will reduce the payment per EDU per month. Any decrease in interest rate (at the same term) will also reduce the payment per EDU per month. The estimated lower limits (best case scenario) for loans from any source are a 30-year term and 1.00%. The estimated increase to user rates is based on an estimated 124 EDUs in 2013. Individual data points corresponding to total project costs for each priority/phase have also been labeled. Grants or loan forgiveness would reduce the principle amount and result in even lower estimated rate increases.

Chart 6.1: Potential Loan Principle vs. User Rate Impacts



*based on annual payments and 124 EDUs (in 2013)

In addition to funding project costs, it is recommended that Adrian raise their water rates in order to fund their annual O&M budget and proposed annual replacement costs. Table 6.3 outlines the various O&M budget totals and corresponding monthly rates per EDU estimated to keep the Adrian water fund solvent into the future.

The City currently has an outstanding Safe Drinking Water Loan with the IFA. The first interest-only payment of about $9,600 was made in 2012 and City staff believe the annual principal and interest payment for this existing loan will be about $15,000; although the principle, rate, and term of the loan have not been finalized. The current user rate is sufficient to cover this payment, but isn't sufficient to also cover the recommended replacement program or any additional debt obligation.

Table 6.3: Projected Total Rate Impacts for New Well with Arsenic Treatment

	Actual			Projected/Recommended					
Projected Connections	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2022**
New Growth (Connections/yr) [1]	**0**	**1**	**1**	**2**	**2**	**2**	**2**	**2**	**2**
Beginning # of Connections	**102**	**103**	**104**	**106**	**108**	**110**	**112**	**114**	**124**
New Growth (EDUs/yr) [1]	0	1	1	2	2	2	2	2	2
Beginning # of EDUs	120	121	122	124	126	128	130	132	142
Population	175	180	180	183	185	188	191	193	208
Annual Costs-O, M & R									
Existing O&M [2]	$35,183	$33,353	$33,026	$34,000	$35,000	$36,100	$37,200	$38,300	$44,400
Infrastructure Replacement Fund [2]	$0	$0	$0	$12,400	$12,800	$13,200	$13,600	$14,000	$16,200
New Improvements O,M&R [2,3]	--	--	--	-	-	$10,000	$10,300	$10,600	$12,200
Existing SDWR Loan Payment	$0	$0	$9,629	$10,000	$15,000	$15,000	$15,000	$15,000	$15,000
New Bond/Loan Payment [4]	--	--	--	-	-	$59,672	$59,672	$59,672	$59,672
Total O, M & R Costs	**$35,183**	**$33,353**	**$42,655**	**$56,400**	**$62,800**	**$133,972**	**$135,772**	**$137,572**	**$147,472**
Minimum Recommended Rates									
Existing Loan Payment/EDU	-	-	-		$9.92	$9.92	$9.92	$9.92	$9.92
New Bond/Loan Payment/EDU	-	-	-			$38.85	$38.85	$38.85	$38.85
Total Base Rate/EDU [5]	$33.75	$33.75	$33.75	$33.75	$43.67	$87.92	$87.96	$88.00	$88.19
User Rate Income									
Revenue [6]	**$48,272**	**$45,905**	**$48,562**	**$49,358**	**$65,154**	**$134,013**	**$136,167**	**$138,322**	**$149,130**
Net Revenue	$13,089	$12,552	$5,907	-$7,042	$2,354	$40	$394	$750	$1,658
Accumulated Reserve (end of year)	$77,520	$88,654	$102,767	$95,725	$98,079	$98,120	$98,514	$99,264	$106,721

(1) Based on a 1.45% growth rate for projected years
(2) O&M costs increased by 3% per year to offset inflation
(3) Estimated increase to budget due to added improvements
(4) Assumes the City obtains a 30 year loan for $990,000 at 1% interest rate
(5) including loan payments
(6) Estimate includes usage charges above base and reduction factor for school paying at decreased rate

The actual impact to user fees is dependent on the terms of the loan and the overall cost of the project. For budgeting and project selection purposes the City can assume a $2.60 per EDU per month rate increase for every $100,000 of loan principle to be repaid (based on a 30-yr loan at 1% interest).

It is also recommended to adjust how the monthly fees are assessed from a per-connection basis to per-Equivalent Dwelling Unit (EDU - an EDU correlates to one residential connection). This will increase the amount of revenue the City collects from non-residential customers. Transitioning to a base rate per EDU will require allocation of EDUs to non-residential users. While Table 6.3 shows a large, single rate increase, it is strongly recommended that the City begin raising rates now and implement multiple smaller rate increases in a staged approach.

6.4.3 Existing versus Future Debt

The City's current Safe Drinking Water Loan (SDWL) was originally granted by IFA for an estimated $500,000 to cover study and construction costs for Well 5. Following the abandonment of the Well 5 site, a portion of the undispersed loan principle was approved for use in completing this master plan. Based on current work invoice estimates and loan assumptions[4], the estimated annual loan payment is approximately $13,400 ($9.02/month per EDU). If the full $500,000

[4] $309k loan, $125k principle forgiveness, 20-year term, 3.87%

loan was utilized, annual payments are estimated at $27,300 ($18.33/month per EDU).

It is anticipated that there will still be a balance of unused SDWL principle after the current study efforts are completed. It is recommended that the City submit a request for the scope of the existing SDWL agreement to be amended to include a portion of the Priority 1 improvements recommended by this study; such as, additional siting, drilling, and water testing efforts necessary to secure a quality water source. It can be argued that the original loan was awarded to help Adrian secure a new water supply, which has not been completed, and these requested additional efforts would be in line with the objective of the original scope of work covered by the loan. While the impact to user rates would not change substantially whether money is spent under the current loan or a future loan (assuming similar terms), there are benefits to pursuing some work now.

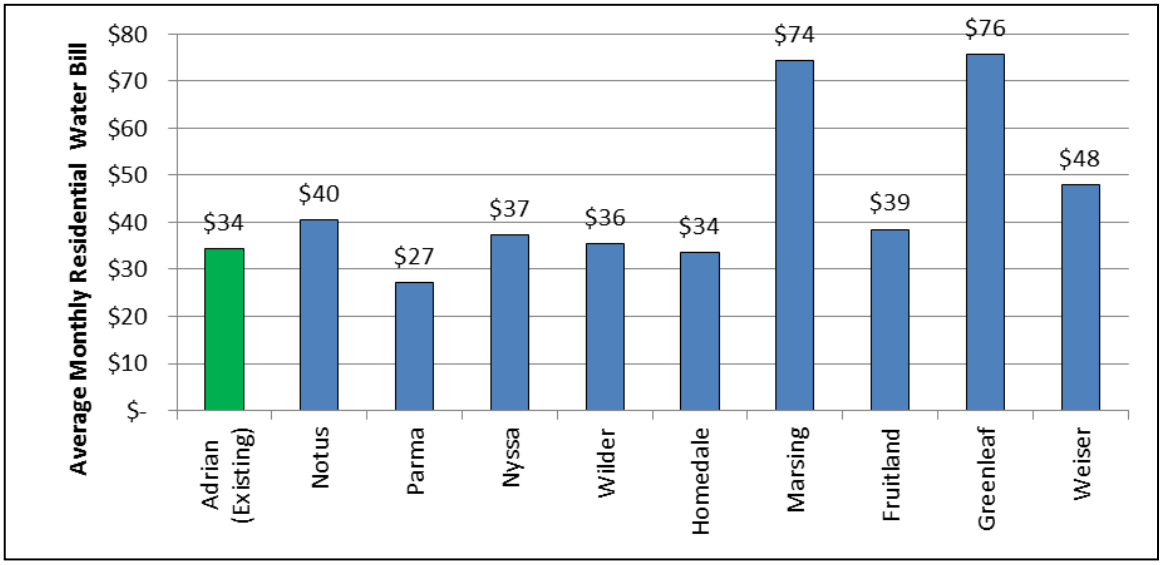
- Property acquisition and site selection can be a long process and making progress on those steps now, concurrent with applications for other funding sources, may shorten the overall timeframe between study approval and construction implementation.
- Completion and testing of a test well early in the project is beneficial to establish water quantity and quality (including the presence/absence of arsenic) for two reasons. Knowledge of the need for arsenic treatment could move the project up the state's priority list and help secure funds. Conversely, no need for arsenic treatment reduces the project cost and thereby increases the likelihood of securing funds, even at a lower spot on the priority list. Also, no need for arsenic treatment could free up funds for use on other improvements, such as expansion of the storage reservoir.

The recommended additional scope would include property acquisition, siting, design, drilling, and testing of a test and production well. It is also proposed that installation of mixing equipment in the existing reservoir be included because of the immediate benefit to the City's water quality. A reservoir mixing system would allow the City to utilize its entire existing storage volume year-round. Further work to install a well pump, build the well house, and connect the new well to the City system would likely be covered by other future funds.

6.4.4 User Rate Comparisons

When discussing increases to user fees, it is often helpful to compare the City's rates to rates for other water systems in the area of similar size. Chart 6.2 illustrates the normalized monthly user rates for multiple systems based on each municipality's rate structure and Adrian's average monthly consumption of 8,700 gallons per user. As shown, Adrian's existing water rates are about average; however, several of the cities compared are also contemplating increases to finance their own improvement projects.

Chart 6.2: Monthly User Rate Comparisons



6.4.5 Connection Fee Comparisons

The City's current water connection fee is $600 which essentially only covers the cost of the water meter assembly. Connection fees, sometimes called system development charges, are a means for the City to assess development costs incurred to accommodate growth by expanding system distribution and capacity. For purposes of this study, the connection fee was calculated based on growth and demands for the next 20-years, which is the planning horizon of the recommended improvements. The portion of cost for each project in the capital improvement plan that benefits growth was determined as illustrated in Table 6.4. The distribution improvements in the CIP are needed to meet existing fire flow deficiencies. Consequently, no portion of the cost was assigned to growth. It should be noted that it is our understanding that all waterline extensions required for growth would be constructed at the developer's cost.

An explanation of the methodology for allocating a percentage of the cost of the CIP to growth is provided in the following two paragraphs. For the new well, the calculation considered the percentage of the new system capacity that was required to meet future demands, which correlates to a pumping capacity increase from 66 gpm to 90 gpm, or 27% (=24/90). For additional storage, the entire additional volume is necessary for existing demands (according to the planning criteria) but also provides benefit to future users. Therefore, the percentage of storage capital costs attributed to growth was made to match the population increase over the next 20 years, or 25% (=60/240).

The resulting capital costs attributed to growth for all projects were summed and then divided by the projected number of connections (40) that will be added to the system in the next 20 years.

Table 6.4: Capital Costs Attributed to Growth

Item (2013 Project Costs*)	Improvements	% Benefiting Growth	$ Benefiting Growth
Priority 1 - Water System Improvements (2014-2017)			
New Supply [a]			
New Well & Well House	$590,000	27%	$157,000
Transmission Piping - New Well to Tank	400,000	27%	107,000
Arsenic Treatment System (if necessary)	550,000	27%	147,000
Tank Mixing System [b]	40,000	25%	10,000
Distribution Loop - 4th & Owyhee Streets (1A)	200,000	0%	0
Distribution Loop - 1st & Owyhee Streets (1B)	130,000	0%	0
Distribution Loop - North end 10-inch Loop (1C)	286,000	0%	0
TOTAL PRIORITY 1 (Rounded)	$2,196,000		$421,000
Priority 2 - Water System Improvements (2017-2024)			
Expand Storage Reservoir [b]	$280,000	25%	$70,000
Distribution Loop - 5th Street (2A)	54,000	0%	0
Distribution Loop - RR-Parker Lane (2B)	80,000	0%	0
Distribution Loop - High Street (2C)	73,000	0%	0
Distribution Loop - 2nd Street (2D)	68,000	0%	0
TOTAL PRIORITY 2 (Rounded)	$555,000		$70,000
TOTAL	**$2,751,000**		**$491,000**

% Allocation CALCULATIONS

[a]Ratio of additional 20-year peak day demand to total 20-year peak day demand 27%

[b]Ratio of 20-yr population growth to total 20-year population 25%

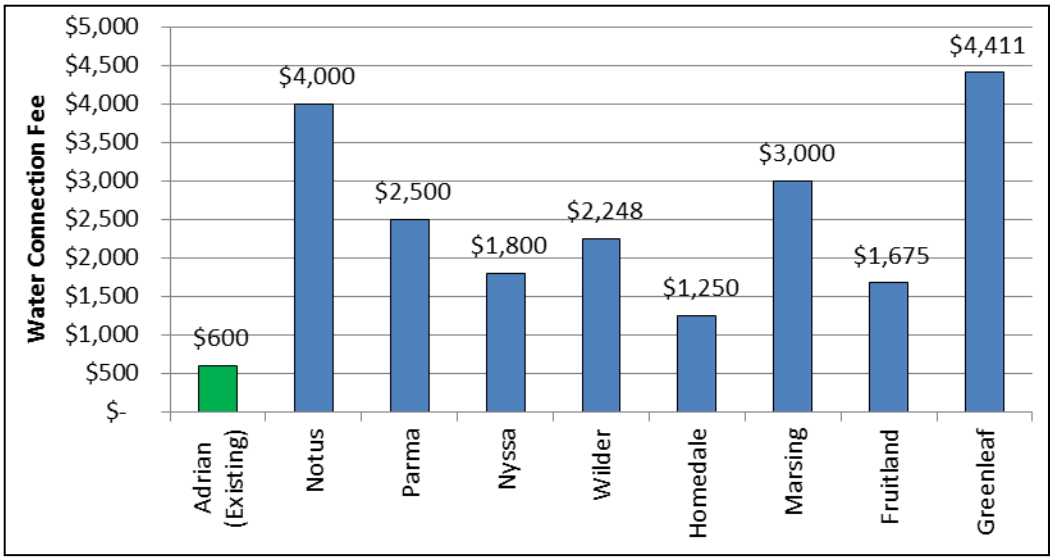
Connection Fee CALCULATIONS

Estimated Number of additional EDUs to 2032 **40**

Growth Cost per EDU for System Improvements **$12,275**

This connection fee analysis results in a water connection fee of $12,275 for water supply and storage improvements. A $12,300 water connection fee is substantially higher than neighboring communities, as illustrated in Chart 6.3. One of the difficulties for Adrian is that the number of new connections in the next 20 years is small, which results in a high connection fee per new connection (note: larger systems can spread costs across more new connections resulting in lower fees). It is recognized that the connection fee has to be competitive in the market to not stifle development. Consequently, it is recommended that City consider a reasonable new connection fee. However, it is also strongly recommended that the City raise the water connection fee to more fairly assess the costs of expanding the water system to accommodate new growth.

Chart 6.3: Connection Fee Comparisons



6.4.6 City Implementation

The City of Adrian intends to implement and take ownership of the recommended improvements. It is anticipated that additional operational requirements will be minimal and that existing staff will be capable of managing these activities if arsenic treatment is not required. If arsenic treatment is required, Keller Associates recommends the City budget be increased by $10,000 per year for additional operational costs. During construction, it is anticipated that the Consultant will complete construction management activities and construction observation services at key points in the construction process.

City staff (including the City attorney) will be available to provide minor supplemental services as required during construction. Management of the finances and budget will be under the direction of the City clerk, with assistance from the consulting engineer for handling construction related expenses and pay requests. The City will continue to employ a licensed operator to oversee the water system operations.

The potential project implementation schedule is highly dependent on funding availability. The rate impacts of the project are significant and the City will need more time to evaluate the potential options. In light of these facts, it is difficult to establish a firm schedule for implementation of the priority improvements. However, we have outlined the following key steps moving forward:

1. Finalize and obtain approval for water master plan from IFA and OHA-DWP.
2. Initiate conversations and negotiations for new well site.
3. Obtain property, environmental, funding, and water right clearance to drill test well.
4. If water quality and quantity is acceptable, secure property/easement and water right transfers.
5. Finalize funding terms and loan agreement.

6. Complete rate adjustment based on final funding terms. (Some rate adjustments are recommended now to enable the City to create a reserve fund, prior to project construction.)
7. Complete design of improvements.
8. Complete construction and commissioning of facilities.

While the overall timeline to complete the entire process is dependent on many factors out of the City's control, it is believed that the project can be implemented within 2-3 years if pursued diligently.

6.4.7 Environmental Reviews

In order to approve funding, some sources may require that an Environmental Information Document (EID) be prepared for the selected projects. An EID documents existing conditions and potential impacts of the project and outlines activities to mitigate those impacts. An EID was not prepared as part of this study and would require additional work by a consulting firm to prepare prior to funding acquisition.

Some projects may qualify for a categorical exclusion which waives the requirement for an EID. Categorical exclusions are usually associated with projects taking place on property that has already been disturbed by construction activities, such as city streets, wells lots, or the existing reservoir site. However, activities on undeveloped ground will likely require an archeological survey and consultation with multiple agencies as part of the EID.

6.4.8 Public Participation

Many funding agencies require a component of public participation in project selection to approve funding applications. Demonstrating public participation is typically a component of the EID.

APPENDIX A

FIGURES

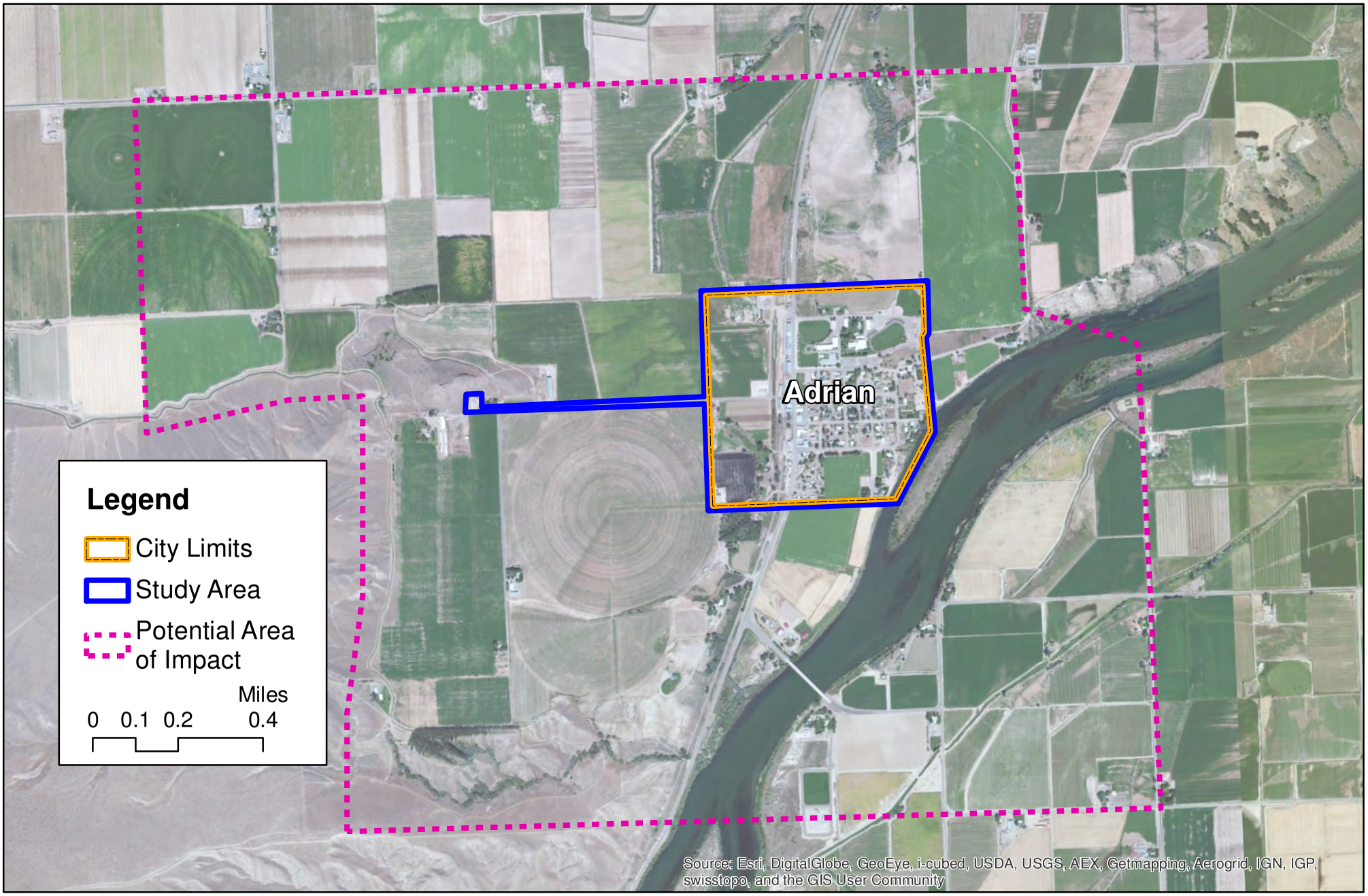


Figure:	Title:	Project :	Prepared for:	
1.1	Study & Impact Area Boundaries	2013 WATER SYSTEM MASTER PLAN	CITY of ADRIAN, OREGON	KELLER associates

Path: P:\213013\GIS\Maps-Figs\Fig_Land Use-Future.mxd Print Date: 9/5/2013

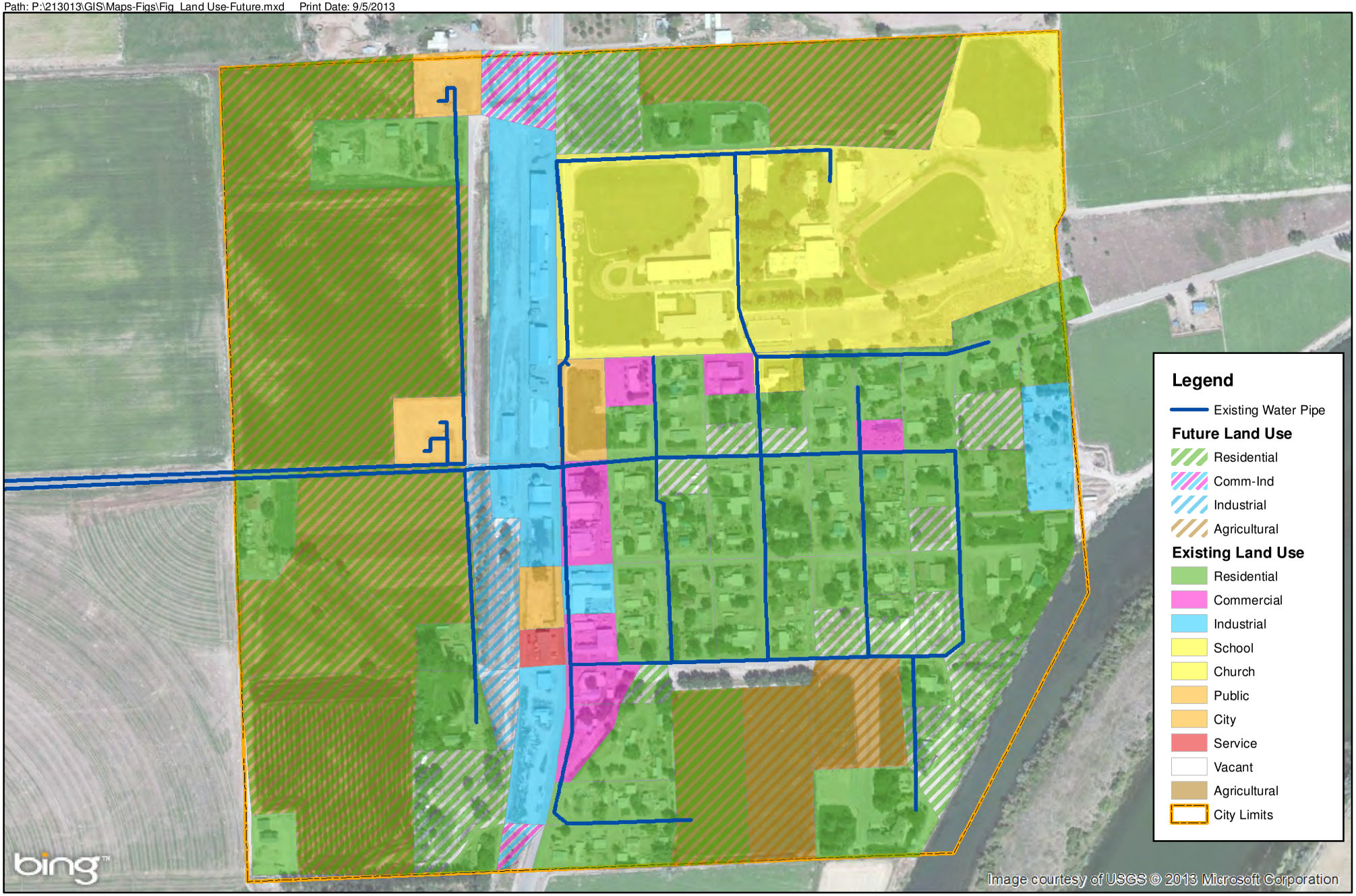
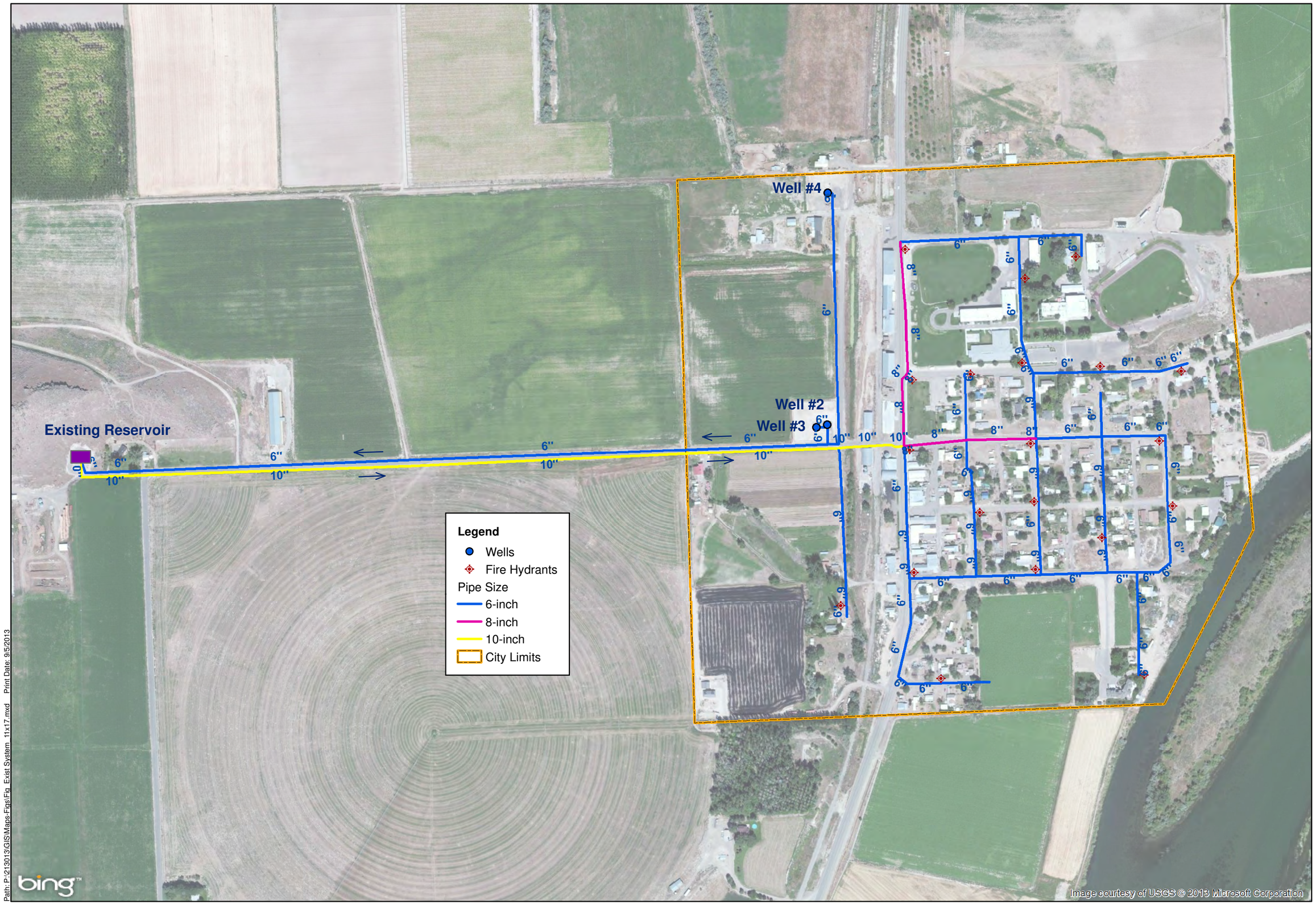


Figure:	Title:	Project :	Prepared for:		
2.1	Projected Future Land Use	2013 WATER SYSTEM MASTER PLAN	CITY of ADRIAN, OREGON		KELLER associates



Path: P:\213013\GIS\Maps-Figs\Fig_Exist.System_11x17.mxd Print Date: 9/5/2013

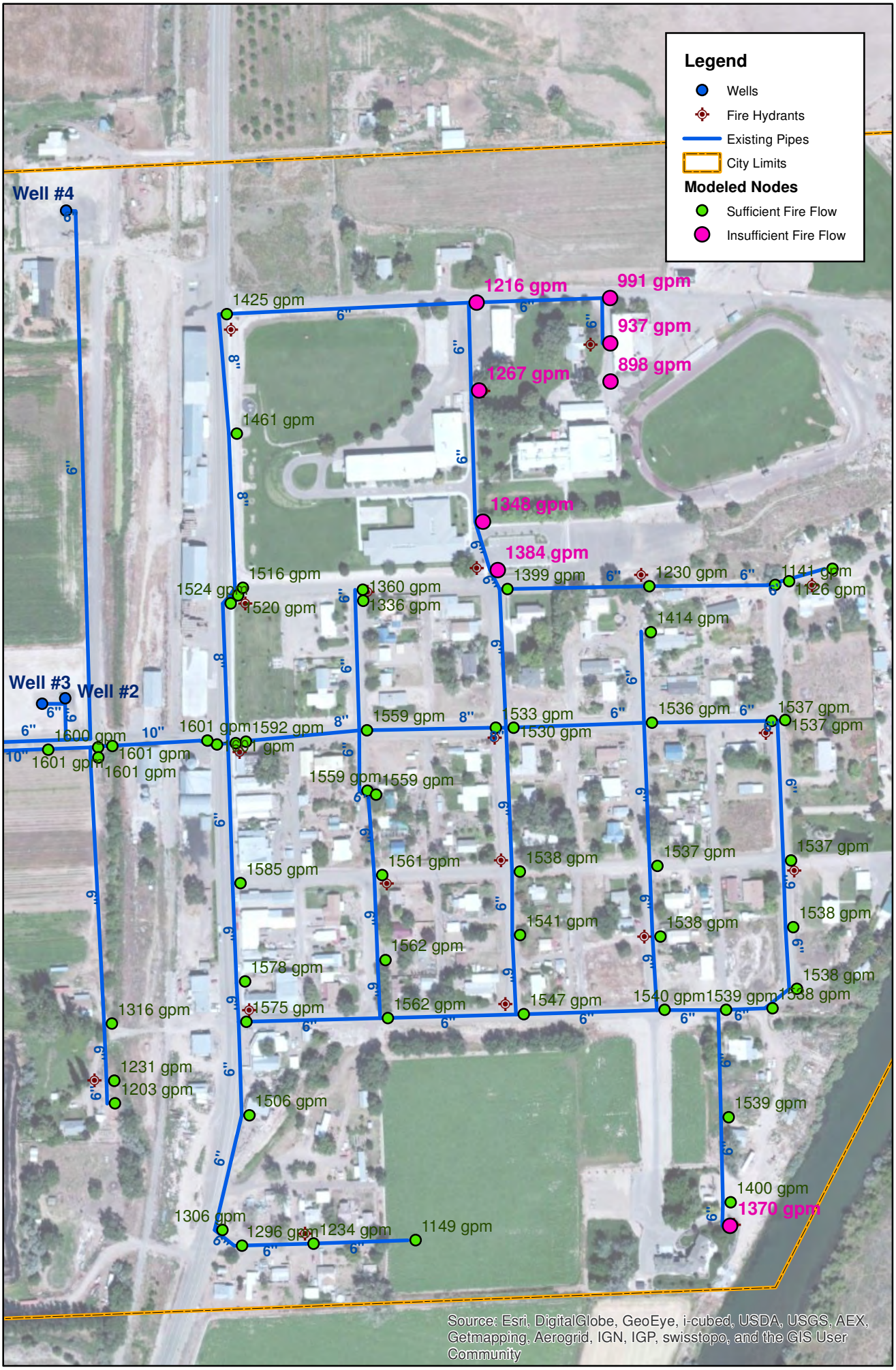
KELLER associates

Prepared for: CITY of ADRIAN, OREGON

Project : 2013 WATER SYSTEM MASTER PLAN

Title: Existing Water System

Figure: 3.1



KELLER associates

Prepared for: CITY of ADRIAN, OREGON

Project : 2013 WATER SYSTEM MASTER PLAN

Title: Existing System Fire Flow Deficiencies

Figure: 4.1

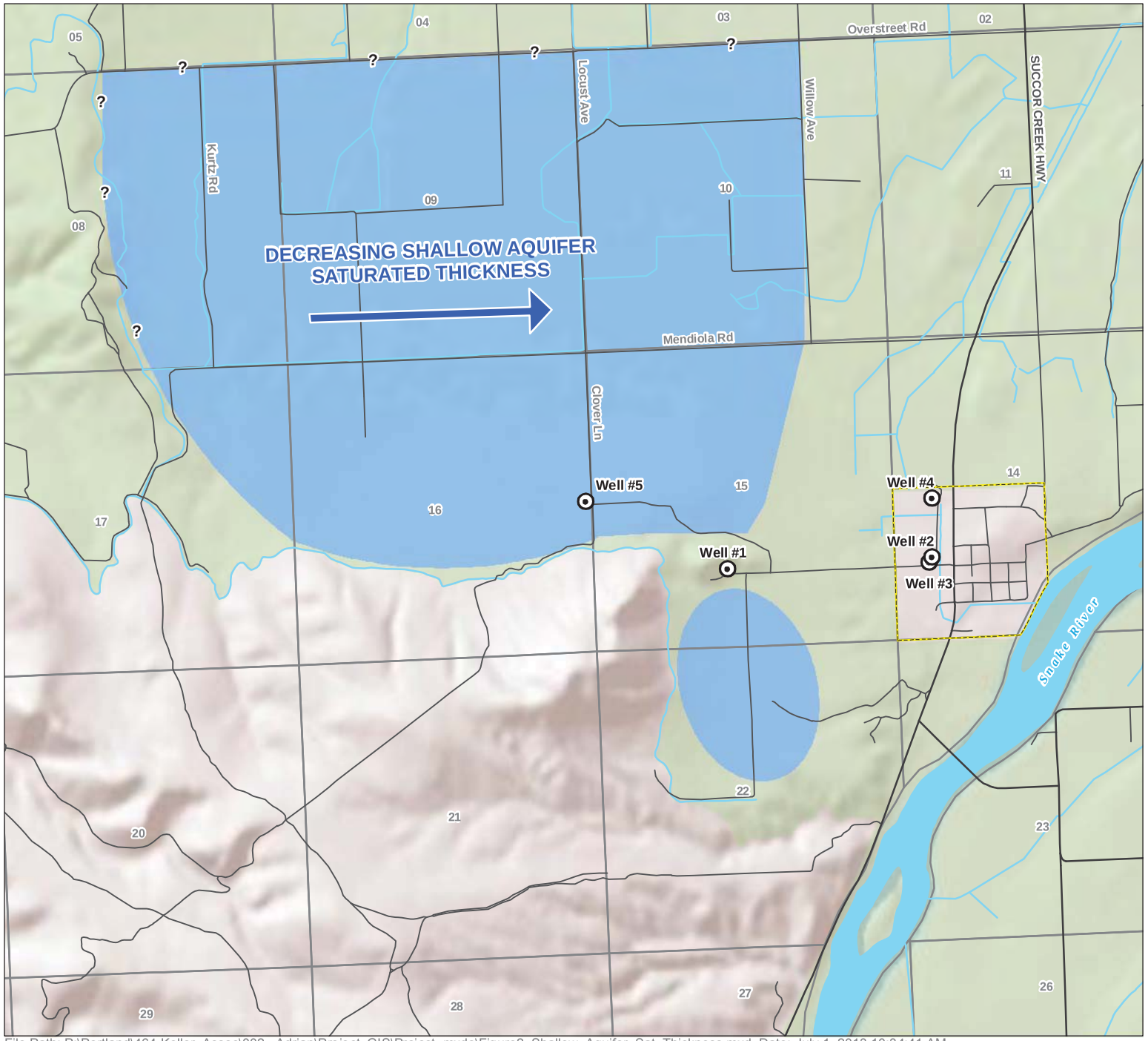


FIGURE 2

Shallow Aquifer Saturated Thickness

City of Adrian, Oregon

LEGEND

- Well
- Higher Potential in Shallow Aquifer for Water Production Based on Saturated Thickness Calculated from Available Well Logs
- Exclusive Farming Area
- City of Adrian
- Road
- Watercourse
- Waterbody

N

0 1,250 2,500
Feet

MAP NOTES:
Date: July 1, 2013
Data Sources: Keller, USGS, ESRI

GSI Water Solutions, Inc.

File Path: P:\Portland\464-Keller_Assoc\002 - Adrian\Project_GIS\Project_mxds\Figure2_Shallow_Aquifer_Sat_Thickness.mxd, Date: July 1, 2013 10:34:41 AM

Figure 5.1 - see also Appendix B

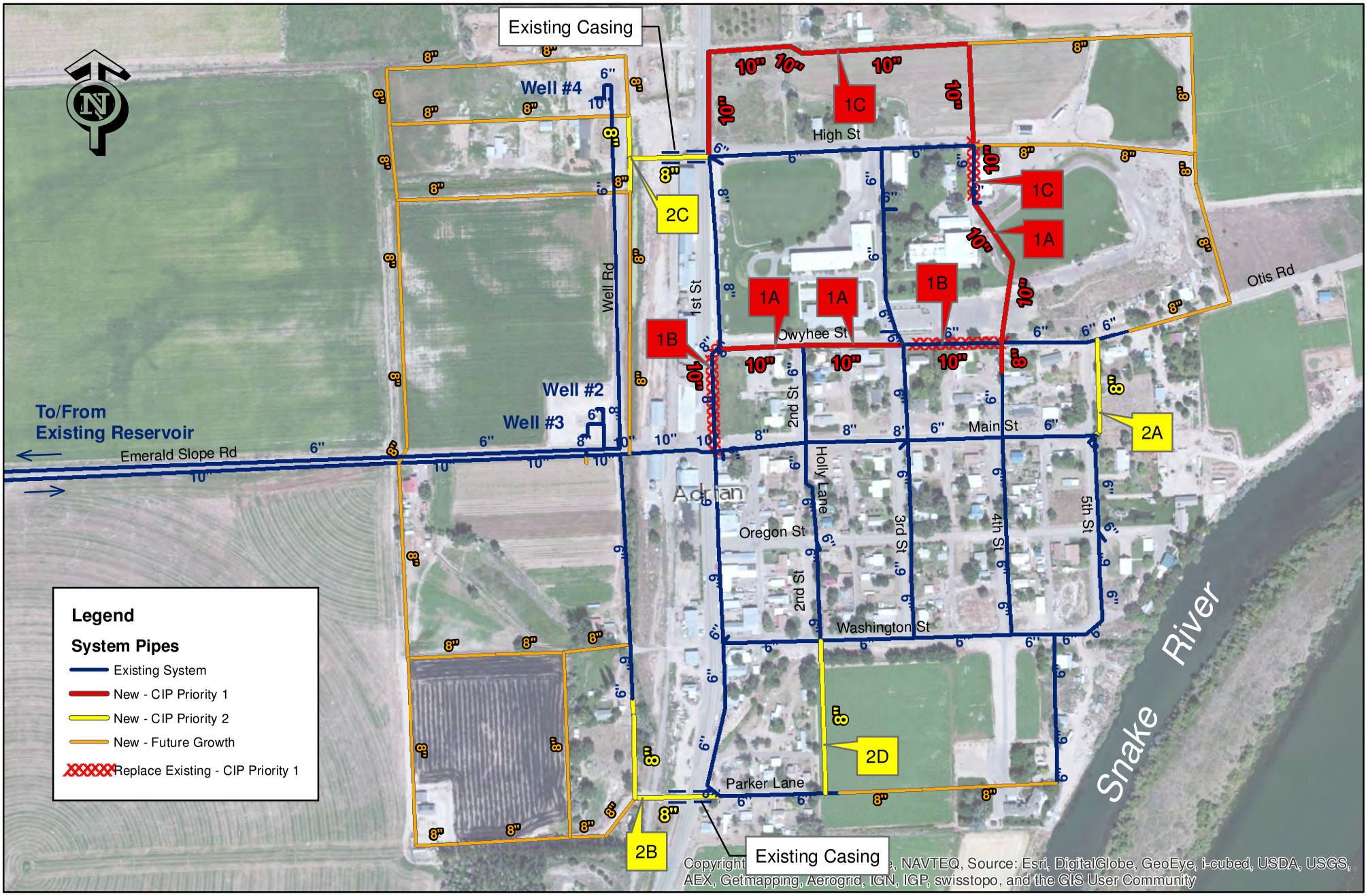


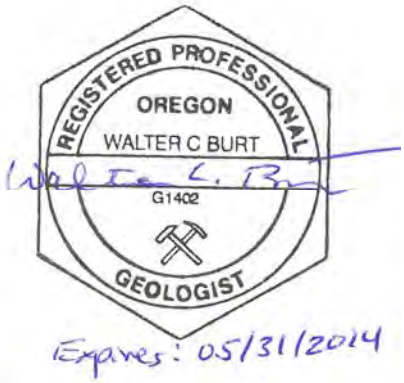
Figure:	Title:	Project :	Prepared for:	
6.1	Distribution System Master Plan	2013 WATER SYSTEM MASTER PLAN	CITY of ADRIAN, OREGON	KELLER associates

APPENDIX B

SUPPLY EVALUATION

GSI Water Solutions, Inc.

Technical Memorandum



To: Justin Walker, PE – Keller Associates

From: Lizzi Bartosik
Walter Burt, RG

Date: July 25, 2013

Re: **Groundwater Supply Source Evaluation, Water Master Plan Update, City of Adrian, Oregon**

1.0 Introduction

This technical memorandum summarizes GSI Water Solutions, Inc.'s (GSI) groundwater supply source evaluation, prepared in support of a water master plan (WMP) update for the City of Adrian (City), Oregon. The City retained Keller Associates (Keller) in early 2013 to update the City's WMP. Keller contracted GSI to assist with evaluating the City's existing groundwater supply source and identify alternatives for improving the quality of the water supply and developing additional capacity. The objectives of GSI's work were to:

1. Assess the condition and capacity of the City's existing groundwater supply source, including the City's water rights and supply wells
2. Identify and evaluate alternatives for accomplishing the City's dual objectives of developing additional groundwater supply source capacity and improving water quality
3. Outline a process and costs for permitting, drilling, testing and authorizing the use of a new supply well

The remainder of this TM includes an assessment of the condition and capacity of the City's existing supply source, and an evaluation of options for expanding the City's groundwater supply capacity.

2.0 Source Condition Assessment

The City's water supply currently is sourced from groundwater wells. The City currently owns four wells, wells 1 through 4, shown on Figure 1. Well 4 is the City's primary water supply well, and occasionally is supplemented during peak day demand periods from Well 2. Well 3 is equipped with a pump and is connected to the system, but is not currently being used. The

City owns a fourth well, Well 1, which is not equipped with a pump and has never been used because of poor water quality. The City also drilled a new well (Well 5) in 2005 on farm land located near the City. However, the City was not able to obtain permanent access to the well because of property ownership and land use issues. The remainder of this section summarizes (1) aspects of the regional and local hydrogeology that are relevant to the evaluation of the City's supply evaluation; (2) the condition and capacity assessment of existing wells; and (3) the status and capacities of the City's water rights.

2.1 Hydrogeologic Setting

Three major water bearing geologic units exist in the vicinity of the City. These include the unconsolidated Quaternary sands and gravels in the main valleys, saturated sections of the upland gravels above the valleys, and the occasional sand and gravel layers, which occur locally within the Glenn's Ferry Formation (Bruck, 1986). For the purposes of this evaluation, these units are considered to comprise two separate aquifer systems termed the Upper Aquifer and Lower Aquifer. Each of these is described in the following sections.

2.1.1 Upper Aquifer

The Quaternary sands and gravels of the main valley and saturated gravel deposits comprising upland terraces were combined together for the purposes of this evaluation into a single unit termed the Upper Aquifer. The Upper Aquifer is bounded on the sides and underlain by the Glenns Ferry Formation. Groundwater in this unit is derived primarily from precipitation, percolation of irrigation water, canal and ditch leakage, and inflow from the highlands to the valley. Groundwater in the aquifer generally flows toward the rivers where it discharges from the system as springs along the contact of the underlying Glenns Ferry Formation or directly into the Snake River. Yields of wells completed in the Upper Aquifer in the vicinity of the City typically range from several 10s to several 100s gpm. Drill cuttings from the Upper Aquifer units are commonly described as brown or tan, indicative of oxidizing conditions within the aquifer. The Upper Aquifer groundwater may contain elevated arsenic and iron, as well as uranium in some locations.

The texture and saturated thickness of the Upper Aquifer are the primary factors determining potential well yield at a given location in the region. Review of driller's reports for wells completed in the region indicates that the more favorable areas for completion of a production well in the Upper Aquifer are west of the City, as shown on Figure 2.

2.1.2 Lower Aquifer

The Glenns Ferry Formation comprises the Lower Aquifer in the vicinity of the City. The Glenns Ferry Formation is primarily composed of lacustrine silt and sandstones. However, discontinuous water bearing sands capable of providing sufficient amounts of water for domestic and irrigation purposes occur throughout the Glenns Ferry Formation, but appear to be more common at depths greater than 150 feet. Drill cuttings of the Glenns Ferry Formation are commonly described as having a blue or gray coloration, indicative of a reducing (no oxygen) environment. Water from wells completed in the Glenns Ferry Formation commonly contains relatively high concentrations of hydrogen sulfide, methane and manganese, consistent with a highly-reducing environment in the aquifer.

2.1.3 Water Quality

Groundwater samples were obtained from wells completed in the Upper Aquifer and Lower Aquifer in the vicinity of the City to further characterize the quality of water from each aquifer for the purposes of evaluating source alternatives, including assessing treatment needs. The water quality sample from the Upper Aquifer was obtained from former City Well 5 through a temporary access agreement with the landowner of the property where the well is situated. The sample representing the Lower Aquifer was obtained from the City's Well 4.

Groundwater from Well 5 was slightly oxidizing and no odor was detected in the water. Arsenic was the only constituent tested that exceeded the primary maximum contaminant level (MCL) established for drinking water; the concentration of arsenic detected in the sample from Well 5 was 0.051 mg/L, approximately five times the 0.01 mg/L MCL. Nitrate was detected at a concentration of 2.3 mg/L. Also of note for treatment and design purposes is that the values for corrosivity and iron both exceeded their applicable secondary maximum contaminant levels (SMCLs), which are regulated levels based on aesthetics (i.e. color and odor). Water quality results for the Upper Aquifer at Well 5 are summarized in Table 1.

The water sample from Well 4 was reducing with typically high levels of manganese, hydrogen sulfide and methane. Methane was detected in the sample at a concentration of 3.97 mg/L; however, methane does not have an associated maximum contaminant level (MCL) and is primarily an aesthetic and potentially a safety concern. Manganese, total dissolved solids, and corrosivity values exceeded their applicable SMCLs. Water quality results for the sample obtained from Well 4, representing the Lower Aquifer, are summarized in Table 1.

2.2 Existing City Wells

Two of the City's four wells, wells 2 and 4, are presently used. Well 4 is the primary supply well and Well 2 is only used a few days a year to supplement Well 4 during the peak summer season. The locations of each well are shown on Figure 1, and general information regarding each well drilled by the City is provided in Table 2. Overall conclusions regarding the condition and capacities of the City's existing wells are summarized below.

- Well's 1 through 4 are all completed with open (not lined or screened) boreholes according to state filed well reports.
- Well 1 has never been utilized due to poor water quality.
- Wells 2 and 3 provide a combined capacity of approximately 30 gpm; however, these wells cannot be run simultaneously due to interference between the two wells, indicating that the aquifer productivity in the vicinity of the wells is relatively low.
- Well 4 is the City's primary drinking water supply well and is completed in the Lower Aquifer. Well 4 has a capacity that appears to vary from as little as 50 gpm in the mid-summer to 170 gpm in the winter. The variability in well capacity appears to be caused by fluctuations in water levels within the aquifer, based on evaluation of well construction details, pumping history and pump specifications. Depressed pumping levels appear to limit the capacity of the well in the summer. Well 4 also is known to produce sand, which decreases the life span of pumping equipment.
- Total source capacity from wells 2, 3 and 4 during the peak demand season appears to be between 80 and 100 gpm.

2.3 Water Rights Evaluation

2.3.1 Introduction to Water Rights in Oregon

Under Oregon water law, with a few exceptions, the use of public water (groundwater or surface water) requires a water right issued by the Oregon Water Resources Department (OWRD). The right to use water typically is granted first in the form of a water use permit. A permit describes the amount (rate and/or volume) of water that can be used (the rate of use), the location where water can be diverted (the point of diversion), the location where the water can be used (the place of use), what the water can be used for (the character of use), and often a number of terms and conditions of water use. A permit also describes the water right's priority date that established the priority of the water rights holder's use of the water source, which is typically the date the application for a permit is filed. Water rights with the oldest (most senior) priority dates can continue to receive water during times of water shortage when water rights with more recent priority dates (junior water rights) are required to stop diverting water.

Water use permits include a time schedule for development of the water use described by the permit. If more time is needed beyond the completion date (C-Date) stated by the permit, the permit holder may request an "extension of time" from OWRD. When a permit holder has completed development of the water use described by the permit, a request for a water right certificate can be submitted to OWRD. Municipal water rights can be certificated incrementally in portions of not less than 25 percent of the rate or volume authorized by the permit; this is referred to as "partial perfection." The water right certificate is the final step in the current water right process in Oregon and is the best way to ensure the protection of water use because water right certificates are not subject to subsequent legislative and administrative changes that commonly relate to undeveloped (permitted) uses. Water use under a municipal use water right certificate is not subject to cancellation in Oregon because of non-use, unlike some other water rights.

The holder of a water right must apply to OWRD to make any changes to the use of water authorized by a water right (e.g., the point of diversion, place of use, or character of use). There are different administrative processes for making such changes depending on the type of water right. When a water right is in the permit phase (still being developed), the permit holder can request a change to the point of diversion and, under limited circumstances, the place of use through an application for a permit amendment. For a certificated water right, the water right holder can request a change to the point of diversion, place of use, and/or the character of use of the water right through an application for a water right transfer. Under either of these processes, OWRD reviews the proposed change to determine if it will cause "enlargement" (impermissible expansion) of the water right or "injury" to other existing water rights (preventing a water right from receiving water to which it is entitled).

2.3.2 Water Rights Held by the City of Adrian, Oregon

Water rights held by the City of Adrian (City) were reviewed using information available from OWRD's on-line water right information system and also the official water rights files maintained by OWRD at its main office in Salem, Oregon. Based on this review, GSI developed a summary of the City's existing water rights, including the current status and any issues and/or limitations associated with the water rights. Table 3 provides an overview of the City's existing water rights.

Permit G-9912 (Application G-10619)

Permit G-9912 authorizes the City's use of a total 0.91 cubic feet per second (cfs), or 408 gpm of groundwater for municipal purposes from the City's four water supply wells completed in the lower alluvial aquifer unit (Glens Ferry Formation). The total rate of water use authorized by the permit is further limited on a per well basis as follows: 0.22 cfs (99 gpm) from Well 1, 0.12 cfs (54 gpm) from Well 2, 0.12 cfs (54 gpm) from Well 3, and 0.45 cfs (202 gpm) from Well 4. The City has constructed all four of the wells associated with this permit; however, the City currently uses only three of the wells: Wells 2, 3, and 4 (primarily wells 3 and 4). Based on the available City production records for the wells, the City has historically used a maximum of 0.62 cfs (278 gpm) under the permit; however, the City's current rate at which it can pump is less than this as a result of seasonal aquifer pumping capacity limitations and production interference between the wells.

The completion date the City's development of the water use currently listed under Permit G-9912 was October 1, 1990. An extension of time for the permit was filed with OWRD in July 2013 to request an extension of the completion date to October 1, 2039 to provide time for the City to further develop its use of water under the permit up to the maximum rate of use authorized, and to fully comply with the water use conditions of the permit. The water use conditions of the permit include the following:

1. Each well listed on the permit needs to be equipped with an access port or airline for water level measurement. Currently only Wells 2 and 4 are equipped to allow for water level measurements; water level measurement access needs to be provided at Wells 1 and 3.
2. The use of water from each well needs to be measured. The City currently has flow metering installed for measuring flow from Wells 2, 3, and 4. Although Well 1 is not currently used by the City, a flow meter will need to be installed at Well 1 if the City decides to use this well in the future.

Permit G-16074 (Application G-16386)

Permit G-16074 authorizes the City's use of 1.0 cfs (448 gpm) of groundwater for municipal purposes from one well completed in the shallow alluvial aquifer unit (Quaternary sand and gravel). The City currently does not have a water supply well on-line for use of groundwater under this permit, nor has it in the past.

The current completion date for the City's development of the water use under Permit G-16074 was July 20, 2011. An extension of time for the permit was filed with OWRD in July 2013 that requested an extension of the completion date to October 1, 2050 to provide time for the City to develop its use of water under the permit and to comply with the water use conditions of the permit listed below.

1. Prior to any use of water under the permit, a flow meter must be installed for measuring the amount of water used.
2. A record of volume of water used each month must be kept and reported to OWRD annually.
3. Each well listed on the permit needs to be equipped with an access port for water level measurement.

The single well location listed on Permit G-16074 is for a well (Well 5) that the City no longer has access to for use under this permit. In order to add an alternate well location to the permit,

the City will need to file a permit amendment application to OWRD requesting the addition of one or more well locations to the permit. The permit amendment application cannot be filed until the recently submitted time extension application is approved by OWRD.

2.3.3 Summary

The City holds two water use permits that collectively authorize the use of 1.91 cfs (856 gpm) of groundwater for municipal use. Permit G-9912 authorizes the use of 0.91 cfs (408 gpm) of groundwater from the deep alluvial aquifer from the City existing water supply wells, Wells 1, 2, 3, and 4. Permit G-16074 authorizes the use of 1.0 cfs (448 gpm) of groundwater from the upper alluvial aquifer from one, yet to be constructed well.

Applications were submitted to OWRD in July 2013 for both of the City' water use permits that requested additional time for the City to develop the full use of water authorized by the permits and to fully comply with the water use conditions affixed to the permits. Approval of the time extensions by OWRD will be needed before the City can develop additional use of water under the permits (beyond that developed prior to the current completion dates) or before changes can be made to the permits to allow the City to utilize the permits at any new/additional water supply wells.

Once the City has completed its development of water use under these permits, the City should move forward with the final step of the water right process - requesting a water right certificate from OWRD.

3.0 Future Groundwater Source Options

The City currently has sufficient water rights and source capacity to meet existing demands; however, the City lacks source redundancy, and thus the firm capacity (available capacity without the highest capacity well) is insufficient to meet average daily and peak demands. Also, the total existing source capacity is insufficient to meet future peak demands, based on current projections. Finally, the City desires to improve the aesthetic quality of water delivered to its customers. For these reasons, we evaluated the feasibility of potential options to develop additional groundwater source supply capacity, including improving the capacity of existing wells, or drill new well/wells. The remainder of this section describes the potential feasibility and costs for each alternative.

3.1 Improve the Capacity of Existing Wells

The benefits of adding source capacity by improving the capacity of existing wells include (1) ancillary infrastructure improvements could be reduced, (2) minimized permitting requirements and thus (3) potentially lower overall capital improvement costs.

The capacity of a well may be limited by one or more of the following: the water transmitting properties of the aquifer, available drawdown within the well, or well performance. We evaluated potential factors limiting the ability of the City to pump their existing wells at higher rates to assess whether capacities could be improved by some combination of rehabilitation, reconstruction or lowering pumps. While a definitive assessment of well performance and aquifer properties cannot be completed without pumping and non-pumping water level data

and a video survey of each well, several lines of evidence lead to the following conclusions regarding the existing wells:

- While the potential that well plugging could be limiting well capacities cannot be ruled out without additional assessment, it is unlikely to be a significant factor, based on well construction and lack of other indications of plugging. Consequently, the potential to improve well performance, and thus the capacity of existing wells by rehabilitating them is low. Furthermore, should evidence of well plugging be present, conducting aggressive physical rehabilitation methods in the open boreholes of the City's wells may be risky because of the potential for over-excavation or collapse of the borehole.
- The potential to increase well capacities by lowering pumps to provide additional available drawdown is considered very low. Comparison of withdrawal volumes to daily recorded pumping rates for Well 4 demonstrate that periods when pumping rates in the well are low correspond to periods of higher withdrawals (e.g., summer), and presumably seasonally low water levels in the aquifer. In our opinion, decreased pumping rates in the well are caused by excessive drawdowns in the aquifer during high demand periods because the aquifer pumping capacity appears to be limited. We understand that the pump in Well 4 already has been lowered to the depth of the producing zones within the aquifer, and thus further lowering of the pump will not result in additional capacity.
- The pump in Well 4 has been replaced on several occasions and reportedly at least once because of excessive wear due to sand production. Placement of a liner and screen in the well and/or reduction in the pumping rate may increase the reliability of the well by reducing pump wear and the potential for excessive drawdown.

As previously stated, these conclusions are based on limited information. Additional assessment is necessary to verify factors limiting existing well capacities and whether rehabilitation or reconfiguration of the wells might yield capacity benefits. Should the City elect to further evaluate whether the capacity of existing wells can be improved, the following is the recommended assessment process:

1. The first step to assess whether existing capacity can be improved would be to verify the reliable capacities of the existing wells and evaluate whether well capacities are limited by well performance or aquifer conditions. This step entails conducting well performance testing to provide baseline information regarding well capacity, performance, aquifer characteristics and the potential to increase capacity as it is currently constructed. Well performance testing would involve pumping each well for a period of time and collecting accurate flow rate and water level measurements.
2. After performance testing, the pump would be removed from the well and a video survey conducted to investigate the existing condition of the well. The video would identify potential defects in the well casing, biological material or fouling, and general well integrity. The video also would help determine if the well is still fully intact, or if any caving or collapse of sediment within the open and productive portion of the well has occurred.
3. Should indications of fouling be noted during the well video, follow up water quality testing would be completed to assess the causes and potential treatment methods for fouling.

4. The last step is to complete a cost-benefit analysis of capacity improvement alternatives, which could include rehabilitation, modification of the well, or lowering/modifying the well pump and well operations.

3.2 Installing a New Groundwater Supply Well

The more certain alternative for developing additional groundwater source capacity to provide the City with redundancy and capacity for future growth is to drill a new groundwater supply well(s). The City holds water right permits for both the Upper and Lower aquifers, and either permit has sufficient capacity to meet projected future demands. The remainder of this section summarizes the relative merits and disadvantages of drilling a well in each aquifer, identifies more favorable areas, describes the process for siting, drilling and permitting a new production well, and summarizes planning level costs.

3.2.1 Upper Aquifer

The Upper Aquifer consists of unconsolidated alluvial sand and gravel deposits overlying older consolidated sediments of the Glenns Ferry Formation. The sediments comprising the Upper Aquifer thin or pinch out in the vicinity of the river and are essentially thin to absent within the City limits, as well as on the east side of the Snake River within Oregon. Consequently, prospects for siting a well in the Upper Aquifer within the City, or adjacent to the river, are poor. The areas with the most favorable hydrogeological conditions for siting and construction of a new groundwater supply well in the Upper Aquifer are located west of the City limits (Figure 2). These areas were delineated on the basis of the presence of sand and gravel, and an approximate saturated thickness of the aquifer of 50 feet or more. A reasonable target well yield for an Upper Aquifer well is 100+ gpm. However, completion of a test well to assess production potential and water quality is recommended prior to investing in a full scale production well, regardless of the location.

Drilling a well in the Upper Aquifer presents several advantages, including:

- The Upper Aquifer generally has a higher yield potential than the Lower Aquifer
- The City already holds a water right permit for the aquifer; a new well can be added to the permit once the pending permit extension has been approved by OWRD
- The Upper Aquifer generally produces water of higher aesthetic quality than the Lower Aquifer, and has less complex and costly treatment requirements;

Disadvantages or challenges associated with completing a well in the Upper Aquifer include:

- Favorable areas of the aquifer are located outside of the limits of the City's distribution system, requiring substantial new transmission and potentially pumping infrastructure
- All potentially favorable areas are located on land zoned for exclusive farm use (EFU), which would require either acquisition of property by the City or obtaining a permanent easement from a willing landowner and associated acquisition and/or legal costs; County planning officials indicate that a permanent easement can be used to access EFU land for installation of a supply well
- The shallow aquifer is more vulnerable to contamination from surface sources

- Treatment may be required for arsenic, as well as iron for aesthetic purposes, based on water quality analytical results from sampling Well 5. However the test drilling program could be designed to allow for depth-discrete water quality sampling to assess whether arsenic is present and potentially in which strata. Association of the arsenic with a particular stratum may allow design of the production well in such a way as to sleeve off the source of arsenic, assuming a low permeability layer separates the arsenic from other, higher quality producing zones in the aquifer.

3.2.2 Lower Aquifer

The Lower Aquifer is consists of semi-consolidated lacustrine silt and clay with occasional sand and gravel lenses of the Glenns Ferry Formation. The Glenns Ferry Formation underlies much of the region near the City on both sides of the Snake River, and is exposed in the bedrock topographic highs near the City, as well as near river level, where younger alluvial deposits have been removed. The Lower Aquifer is present near ground surface under the entire area of the City, and thus is the only option for completing a new well or wells within City limits.

Driller's reports generally show that water-bearing sand layers in the Lower Aquifer are more prevalent on the west side of the Snake River in the vicinity of the City. However, the presence, extent and productivity of the water-producing sand lenses and layers within the Lower Aquifer are not well understood, and for the purposes of this evaluation, it is assumed that a Lower Aquifer well or wells sited within or outside of the City limits would have an equivalent potential of encountering productive strata.

Capacities up to 100 gpm have been recorded for wells completed in the Lower Aquifer; however, it should be assumed for planning purposes that the capacity of a new Lower Aquifer well would be 50 gpm or less. Completion of a test well to assess production potential and water quality is recommended prior to investing in a full scale production well because of the uncertainty regarding aquifer productivity and water quality at a given location. Other considerations for locating a Lower Aquifer production well include maximizing the distance from other wells to reduce or eliminate potential interference with other wells (City or private) that might affect well capacity.

Drilling a well in the Lower Aquifer presents the following advantages:

- The aquifer is present throughout the study area, and therefore a new well could be located within or near the footprint of the City's distribution system, reducing the costs for new conveyance and potentially for land acquisition or easements
- The quality of water from a Lower Aquifer well would be substantially similar to existing wells, and thus additional or separate treatment processes for different water qualities would not be needed
- The City already holds a water right permit for the aquifer; a new well can be added to the permit once the pending permit extension has been approved by OWRD

Disadvantages or challenges associated with completing a well in the Lower Aquifer include:

- The Lower Aquifer generally produces water of very poor aesthetic quality, with complex and costly treatment needs to address the aesthetic quality issues

- The yield potential of the Lower Aquifer is lower than the Upper Aquifer, and well interference appears to be a factor limiting well yields during the peak summer pumping season
- Generally a Lower Aquifer well will be more costly than an Upper Aquifer well for comparable or less capacity

3.2.3 Well Siting and Installation Process

The following provides the general process for siting, drilling and permitting a new groundwater supply well.

Step 1 – Well Siting

Because the Lower Aquifer exists throughout the City and surrounding areas, selection of a well location to utilize this aquifer can focus on where the well is best suited given the existing infrastructure. If the Upper Aquifer is selected, additional considerations in well siting will be required. This includes targeting the well where there is a high likelihood that the aquifer is present below the site, acquiring either ownership or a permanent easement, and needed land use approvals for the site. Prior to acquisition of property for a new supply well, we recommend that the City obtain temporary access for the purposes of drilling a test well to verify that the location is suitable for installing a production well and other permanent facilities.

Step 2 – Drill Test Well and Confirm Yield and Water Quality

The results of the test well will be used to confirm yield, water quality treatment requirements and to refine the design of the production well, including depth, production intervals, diameters and seal depths. The test well drilling program should be designed to enable depth- discrete water quality samples to be obtained to evaluate whether the production well can be designed to improve the quality of produced water.

Step 3 - Amend Existing Groundwater Permit

Once the aquifer and well location are selected, the water right permit for the selected aquifer will require amendment to authorize withdrawal at the new location and any potential additional locations. The process for approving the permit amendment may take up to 6 months and, it is important for the City to understand that installation of a new well prior to OWRD approval of the permit entails the risk that OWRD may find reasons to not approve the amendment, and thus not authorize use of the well. This step can be completed prior to or after completion of a test well. If completed prior to the test well, it is advisable to include several new potential well sites on the amendment as a contingency in case the test well shows that the selected site is unsuitable for a production well.

Step 4 - Install the New Water Supply Well

A new production well with a capacity of 50 to more than 100 gpm would be approximately 200 feet deep in the Upper Aquifer and potentially greater than 400 feet deep for the Lower Aquifer. We anticipate that the diameter of the upper casing (pump chamber) would be 10 to 12-inches, and the lower borehole would be lined with screen and potentially an engineered filterpack.

The Oregon Health Authority Drinking Water Program has design standards and an evaluation process for authorizing use of new municipal sources of potable water. The initial step in the OHA process for a new well is to submit the proposed design and specifications for the new well to OHA prior to drilling.

Step 5 - Aquifer Testing

Once the well has been installed and developed the yield and water quality of the completed well will be confirmed through completion of a monitored pumping test and water quality sampling. Final treatment and distribution system design can be completed once the well capacity and water quality have been confirmed.

Step 6 – Final Plan Review Submittal

As-built drawings and testing information from the well, as well as design drawings for the pumping and distribution system will be submitted to OHA after the well is completed and wellhead, distribution and treatment system improvements are designed. The final step in the approval process will be to provide as-built drawings and water quality testing results from the completed system.

3.3 Costs

Approximate planning level costs (in 2013 dollars) associated with assessing and rehabilitating (if possible) the existing wells, or installing a test well followed by a production well in the Upper Aquifer or the Lower Aquifer are summarized in Table 4. These costs are for the well work and associated professional services for siting, design, and drilling and testing oversight, and do not include additional infrastructure modifications such as piping, wellhead improvements and treatment.

4.0 References

Bruck, Glenn R., 1986, Pesticide and nitrate contamination of ground water near Ontario, Oregon: U. S. Environmental Protection Agency, EPA-91019-88-238, 15 p.

Gannett, Marshall., R, 1990, Hydrogeology of the Ontario area, Malheur County, Oregon: State of Oregon Water Resources Department, Ground Water Report No. 34, 53 p.

Table 1
Water Quality Results
Upper and Lower Aquifers

Analyte	Units	MCL/SMCL	Well #4	Well #5
Acidity	mg/L		-268	-163
Alkalinity	mg/L		298	184
Chloride	mg/L	250 (SMCL)	76	8
Color	C.U.	15 (SMCL)	<5	20
Conductivity	µmhos		907	444
Corrosivity		Non-Corosive (SMCL)	+0.17	+0.14
Cyanide-Total	mg/L	0.2	<0.005	<0.005
Fluoride	mg/L	4	1.01	1.05
Hardness	mg/L		90.4	123
Ca Hardness	mg/L		74.7	82.3
Nitrate	mg/L	10	<0.2	2.3
Nitrite	mg/L	1	<0.01	<0.01
Odor	T.O.N.	3 (SMCL)	2	No Odor Detected
pH	S.U.		7.9	8
Sulfate	mg/L	250 (SMCL)	61	37
Sulfide (H_2S)	mg/L		0.51	<0.05
Turbidity	NTU		1.9	12.2
Total Dissolved Solids	mg/L	500 (SMCL)	504	232
Ammonia	mg/L		2.38	<0.04
Methane	mg/L		3.97	0.00055
TOC	mg/L		1.36	0.39
Carbonate	mg/L		0	0.0
Bicarbonate	mg/L		298	184
Aluminum	mg/L	0.05-0.2 (SMCL)	<0.10	<0.10
Antimony	mg/L	0.006	<0.005	<0.005
Arsenic	mg/L	0.01	<0.003	0.051
Barium	mg/L	2	0.16	0.06
Beryllium	mg/L	0.004	<0.0005	<0.0005
Cadmium	mg/L	0.005	<0.0005	<0.0005
Calcium	mg/L		29.9	33
Chromium	mg/L	0.1	0.003	0.003
Copper	mg/L	1.3	<0.01	<0.01
Lead	mg/L	0.015	<0.005	<0.005
Magnesium	mg/L		3.98	10
Manganese (total)	mg/L	0.05 (SMCL)	0.09	<0.05
Manganese (dissolved)	mg/L		0.09	<0.05
Mercury	mg/L	0.002	<0.0002	<0.0002
Molybdenum	mg/L		<0.05	<0.05
Nickel	mg/L		<0.02	<0.02
Potassium	mg/L		22.69	8.6
Selenium	mg/L	0.05	<0.005	<0.005
Silver	mg/L		<0.010	<0.010
Sodium	mg/L		137	39.7
Thallium	mg/L	0.002	<0.001	<0.001
Uranium	µg/L	30	<1	7
Zinc	mg/L	5	<0.01	<0.01
Iron (total)	mg/L	0.3 (SMCL)	0.06	1.9
Iron (dissolved)	mg/L		<0.05	<0.05

Table 2
City of Adrian Wells

Well	Year Constructed	Drilled Depth (ft)	Cased Depth (ft)	Seal Depth (ft)	Diameters Casing/Lower Borehole (in)	Estimated Capacity (gpm)	Initial Tested Specific Capacity (gpm/ft of drawdown)	Comments
1	1978	228	125 Open borehole below casing	25	6-inch/6-inch	100+	2.1	• Not equipped – poor water quality • Completed in Lower Aquifer
2	1978	536	27 Open borehole below casing	27	8-inch/8-inch	30	0.14	• Affected by interference from Well 2 • Well capacity approximate • Completed in Lower Aquifer
3	1978	401	33 Open borehole below casing	27	8-inch/8-inch	30	0.19	• Well not used • Affected by interference from Well 2 • Completed in Lower Aquifer
4	1978	375	40 Open borehole below casing	40	10-inch/10-inch	60 (peak summer) - 170 (winter)	Unknown	• Primary supply • Capacity varies seasonally, like due to aquifer level fluctuations • Well has produced sand in past, causing pump wear and failure • Completed in Lower Aquifer
5	2005	225	165 SS wire-wrap screen 165′ – 215′	155	8-inch/8-inch	110 (est)	4.7	• Never used and no longer in City's possession • Completed in Upper Aquifer

Table 3
City of Adrian Water Rights

Application	Permit	Certificate	Authorized Points of Appropriation	Authorized Rate cfs	Priority Date	Authorized Use
G-10619	G-9912	--	Well 1	0.22	12/31/1981	Municipal
			Well 2	0.12		
			Well 3	0.12		
			Well 4	0.45		
G-16386	G-16074	--	One Well (Well 5)	1.0	2/10/2005	Municipal

Table 4

Groundwater Source Planning Costs*

Alternative	Contractor Services	Professional Services	Totals**
Assessment, Rehabilitation/Reconstruction (Per Well)	$20,000 - $36,000	$5,000 - $12,000	$25,000 - $48,000
Upper Aquifer Test Well	$25,000-$30,000	$16,000-$20,000	$41,000 - $50,000
Upper Aquifer Production Well (200', 10 - 12" dia. pump chamber)	$50,000 - $75,000	$15,000 - $20,000	$65,000 - $95,000
Lower Aquifer Test Well	$30,000 - $50,000	$18,000 - $25,000	$48,000 - $75,000
Lower Aquifer Production Well (400', 10 - 12" dia. pump chamber)	$75,000 - $110,000	$20,000 - $25,000	$95,000 - $135,000

Notes:

**Costs for completion of wells only, excluding piping and above-ground infrastructure and infrastructure at a new well*

***Costs include 20% contingency*

FIGURE 1

Existing Wells and Pipe Infrastructure

City of Adrian, Oregon

LEGEND

- Well
- Existing Pipe
- City of Adrian
- Road
- Watercourse
- Waterbody

N

0 375 750
Feet

MAP NOTES:
Date: July 1, 2013
Data Sources: Keller, USGS, ESRI

GSI Water Solutions, Inc.

File Path: P:\Portland\464-Keller_Assoc\002 - Adrian\Project_GIS\Project_mxds\Figure1_Existing_Wells_Pipe_Infrastructure.mxd, Date: July 1, 2013 10:18:42 AM

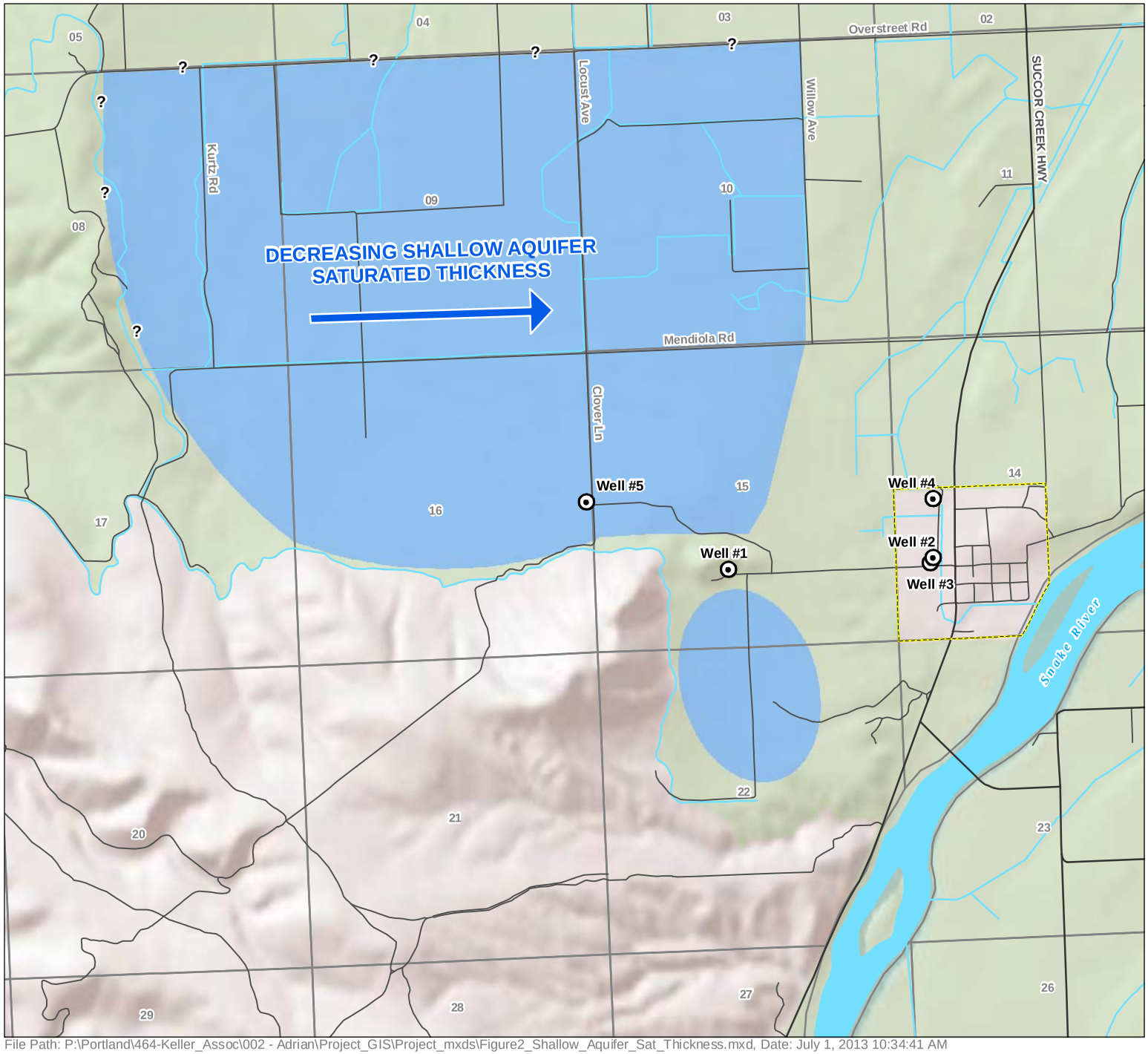


FIGURE 2

Shallow Aquifer Saturated Thickness

City of Adrian, Oregon

LEGEND

- Well
- Higher Potential in Shallow Aquifer for Water Production Based on Saturated Thickness Calculated from Available Well Logs
- Exclusive Farming Area
- City of Adrian
- Road
- Watercourse
- Waterbody

N

0 1,250 2,500
Feet

MAP NOTES:
Date: July 1, 2013
Data Sources: Keller, USGS, ESRI

GSI Water Solutions, Inc.

File Path: P:\Portland\464-Keller_Assoc\002 - Adrian\Project_GIS\Project_mxds\Figure2_Shallow_Aquifer_Sat_Thickness.mxd, Date: July 1, 2013 10:34:41 AM

APPENDIX C
EXISTING SYSTEM DATA

" COPY ONLY "

WATER WELL REPORT
STATE OF OREGON

State Well No. .....

State Permit No. .....

WELL # 1

(1) OWNER:

Name CITY OF ADRIAN

Address

City ADRIAN, OREGON 97901 State

(2) TYPE OF WORK (check):

New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐

If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Rotary Air ☒ Driven ☐
Rotary Mud ☐ Dug ☐
Cable ☐ Bored ☐

(4) PROPOSED USE (check):

Domestic ☐ Industrial ☐ Municipal ☒
Irrigation ☐ Test Well ☐ Other ☐
Thermal: Withdrawal ☐ Reinjection ☐

(5) CASING INSTALLED: Steel ☒ Threaded ☐ Plastic ☐ Welded ☒

6" Diam. from 0 ft. to 124.71 ft. Gauge .250

" Diam. from ft. to ft. Gauge

LINER INSTALLED:

" Diam. from ft. to ft. Gauge

(6) PERFORATIONS: Perforated? ☐ Yes ☒ No

Type of perforator used

Size of perforations in. by in.

perforations from ft. to ft.

perforations from ft. to ft.

perforations from ft. to ft.

(7) SCREENS: Well screen installed? ☐ Yes ☒ No

Manufacturer's Name

Type Model No.

Diam. Slot Size Set from ft. to ft.

Diam. Slot Size Set from ft. to ft.

(8) WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☒ No If yes, by whom?

Yield: gal./min. with ft. drawdown after hrs.
" " " "

Air test gal./min. with drill stem at ft. hrs.

Bailer test 100 gal./min. with 48 ft. drawdown after 1 hrs.

Artesian flow g.p.m.

Temperature of water 65° Depth artesian flow encountered ft.

(9) CONSTRUCTION: Special standards: Yes ☐ No ☒

Well seal—Material used Cement

Well sealed from land surface to 25 ft.

Diameter of well bore to bottom of seal 10 in.

Diameter of well bore below seal 6 in.

Number of sacks of cement used in well seal 5 sacks

How was cement grout placed?

Pressure Grouted

Was pump installed? Type HP Depth ft.

Was a drive shoe used? ☒ Yes ☐ No Plugs Size: location ft.

Did any strata contain unusable water? ☐ Yes ☒ No

Type of Water? depth of strata

Method of sealing strata off

Was well gravel packed? ☐ Yes ☒ No Size of gravel:

Gravel placed from ft. to ft.

(10) LOCATION OF WELL:

County MALHEUR Driller's well number

SW ¼ SW ¼ Section 15 T. 21 R. 46 W.M.

Tax Lot # Lot Blk Subdivision

Address at well location:

(11) WATER LEVEL: Completed well.

Depth at which water was first found 163 ft.

Static level 160 ft. below land surface. Date 2/14/78

Artesian pressure lbs. per square inch. Date

(12) WELL LOG: Diameter of well below casing 6"

Depth drilled 228 ft. Depth of completed well 228 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Top Soil	0	18	
Sandstone	18	21	
Sandy Yellow Clay	21	75	
Medium Sand	75	83	
Sandy Yellow Clay	83	93	
Medium Sand	93	96	
Yellow Clay	96	110	
Sand & Pea Gravel	110	114	
Yellow Clay	114	160	
Coarse Sand W/B (5 gpm)	160	163	
Dark Sandstone	163	184	
Fractured Sandstone W/B	184	188	
Blue Sandstone (60 gpm)	188	190	
Soft Sandstone (90 gpm)	190	194	
Blue Soft Sandstone	194	228	

Work started 2/10/78 19 Completed 2/14/78 19

Date well drilling machine moved off of well 2/15/78 19

Drilling Machine Operator's Certification:

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

[Signed] /s/ Winfield L Page Date 2/22/1978
(Drilling Machine Operator)

Drilling Machine Operator's License No. 65

Water Well Contractor's Certification:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Name PAGE BROTHERS DRILLING
(Person, firm or corporation) (Type or print)

Address Rt 2 Box 371 Vale, Oregon 97918

[Signed] /s/ Winfield L Page
(Water Well Contractor)

Contractor's License No. 564 Date 2/22/19 78

NOTICE TO WATER WELL CONTRACTOR
The original and first copy of this report are to be filed with the WATER RESOURCES DEPARTMENT, SALEM, OREGON 97310 within 30 days from the date of well completion.

SP*12658-690

NOTICE TO WATER WELL CONTRACTOR
The original and first copy of this report are to be filed with the
WATER RESOURCES DEPARTMENT, SALEM, OREGON 97310
within 30 days from the date of well completion.

COPY

WATER WELL REPORT

STATE OF OREGON
(Please type or print)
(Do not write above this line)

State Well No. .....
State Permit No. .....

WELL # 1

(1) OWNER:

Name CITY OF ADRIAN
Address BOX 226 ADRIAN, OREGON 97901

(2) TYPE OF WORK (check):

New Well [X] Deepening [ ] Reconditioning [ ] Abandon [ ]
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Rotary [X] Driven [ ]
Cable [ ] Jetted [ ]
Dug [ ] Bored [ ]

(4) PROPOSED USE (check):

Domestic [ ] Industrial [ ] Municipal [X]
Irrigation [ ] Test Well [ ] Other [ ]

(5) CASING INSTALLED:

Threaded [ ] Welded [X]
6" Diam. from 0 ft. to 124.71 ft. Gage .250
" Diam. from ft. to ft. Gage
" Diam. from ft. to ft. Gage

(6) PERFORATIONS:

Perforated? [ ] Yes [X] No.
Type of perforator used
Size of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

(7) SCREENS:

Well screen installed? [ ] Yes [X] No
Manufacturer's Name
Type Model No.
Diam. Slot size Set from ft. to ft.
Diam. Slot size Set from ft. to ft.

(8) WELL TESTS:

Drawdown is amount water level is lowered below static level
Was a pump test made? [ ] Yes [X] No If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "
Bailer test 100 gal./min. with 48 ft. drawdown after 1 hrs.
Artesian flow g.p.m.
Temperature of water 65 Depth artesian flow encountered ft.

(9) CONSTRUCTION:

Well seal—Material used CEMENT
Well sealed from land surface to 25 ft.
Diameter of well bore to bottom of seal 10 in.
Diameter of well bore below seal 6 in.
Number of sacks of cement used in well seal 5 sacks
How was cement grout placed? PRESSURE GROUTED

Was a drive shoe used? [X] Yes [ ] No Plugs Size: location ft.
Did any strata contain unusable water? [ ] Yes [X] No
Type of water? depth of strata
Method of sealing strata off
Was well gravel packed? [ ] Yes [X] No Size of gravel:
Gravel placed from ft. to ft.

(10) LOCATION OF WELL:

County MALHEUR Driller's well number
SW ¼ SW ¼ Section 15 T. 21 R. 46 W.M.
Bearing and distance from section or subdivision corner

(11) WATER LEVEL: Completed well.

Depth at which water was first found 163 ft.
Static level 160 ft. below land surface. Date 2/14/78
Artesian pressure lbs. per square inch. Date

(12) WELL LOG:

Diameter of well below casing 6"
Depth drilled 228 ft. Depth of completed well 228 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Top Soil	0	18	
Sandstone	18	21	
Sandy Yellow Clay	21	75	
Medium Sand	75	83	
Sandy Yellow Clay	83	93	
Medium Sand	93	96	
Yellow Clay	96	110	
Sand & Pea Gravel	110	114	
Yellow Clay	114	160	
Coarse Sand W/B (5 gpm)	160	163	
Dark Sandstone	163	184	160
Fractured Sandstone	184	188	
Blue Sandstone (60 gpm)	188	190	
Soft Sandstone (90 gpm)	190	194	
Blue Soft Sandstone	194	228	

Work started 2/10/78 19 Completed 2/15/78 19
Date well drilling machine moved off of well 2/15/78 19

Drilling Machine Operator's Certification:

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

[Signed] /s/ Winfield Page Date 2/22/78 19
(Drilling Machine Operator)
Drilling Machine Operator's License No. 65

Water Well Contractor's Certification:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Name PAGE BROTHERS DRILLING
(Person, firm or corporation) (Type or print)
Address RT 2 BOX 371 VALE, OREGON 97918

[Signed] /s/Winfield Page
(Water Well Contractor)
Contractor's License No. 564 Date 2/2 /78 19

(USE ADDITIONAL SHEETS IF NECESSARY)

NOTICE TO WATER WELL CONTRACTOR
The original and first copy of this report are to be filed with the WATER RESOURCES DEPARTMENT, SALEM, OREGON 97310 within 30 days from the date of well completion.

WATER WELL REPORT
STATE OF OREGON
(Please type or print)
(Do not write above this line)

State Well No. .....
State Permit No. .....

WELL # 2

(1) OWNER:
Name CITY OF ADRIAN
Address BOX 226 ADRIAN, OREGON 97901

(2) TYPE OF WORK (check):
New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:
Rotary ☒ Driven ☐
Cable ☐ Jetted ☐
Dug ☐ Bored ☐

(4) PROPOSED USE (check):
Domestic ☐ Industrial ☐ Municipal ☒
Irrigation ☐ Test Well ☐ Other ☐

(5) CASING INSTALLED: Threaded ☐ Welded ☒
8" Diam. from 0 ft. to 27 ft. Gage .250
" Diam. from ft. to ft. Gage
" Diam. from ft. to ft. Gage

(6) PERFORATIONS: Perforated? ☐ Yes ☒ No.
Type of perforator used
Size of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

(7) SCREENS: Well screen installed? ☐ Yes ☒ No
Manufacturer's Name
Type Model No.
Diam. Slot size Set from ft. to ft.
Diam. Slot size Set from ft. to ft.

(8) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☒ Yes ☐ No If yes, by whom? PAGE BROS DRILLING
Yield: 55 gal./min. with 395 ft. drawdown after 13 hrs.
" " " "
" " " "
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m.
Temperature of water 76 Depth artesian flow encountered ft.

(9) CONSTRUCTION:
Well seal—Material used CEMENT
Well sealed from land surface to 27 ft.
Diameter of well bore to bottom of seal 12 in.
Diameter of well bore below seal 8 in.
Number of sacks of cement used in well seal 5 sacks
How was cement grout placed? PRESSURE GROUTED
Was a drive shoe used? ☒ Yes ☐ No Plugs Size: location ft.
Did any strata contain unusable water? ☐ Yes ☒ No
Type of water? depth of strata
Method of sealing strata off
Was well gravel packed? ☐ Yes ☒ No Size of gravel:
Gravel placed from ft. to ft.

(10) LOCATION OF WELL:
County MALHEUR Driller's well number
NE ¼ SE ¼ Section 15 T. 21 R. 45 W.M.
Bearing and distance from section or subdivision corner

(11) WATER LEVEL: Completed well.
Depth at which water was first found 388 ft.
Static level 4 ft. below land surface Date 10/23/78
Artesian pressure lbs. per square inch Date

(12) WELL LOG: Diameter of well below casing 8"
Depth drilled 536 ft. Depth of completed well 536 ft.
Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Sticky Clay	0	12	
Blue Shale	12	38	
Coarse Black Sand	38	40	4
Fine Sand & Shale	40	42	
Fine Sandstone & Clay	42	53	

Work started 10/18/78 19 Completed 10/23/78 19
Date well drilling machine moved off of well 10/23/78 19

Drilling Machine Operator's Certification:
This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.
[Signed] /s/ Winfield Page Date 10/23/78 19
(Drilling Machine Operator)
Drilling Machine Operator's License No.

Water Well Contractor's Certification:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Name PAGE BROTHERS DRILLING
(Person, firm or corporation)
Address RT 2 BOX 37 VALE, OR 97918
[Signed] /s/ Winfield Page
(Water Well Contractor)
Contractor's License No. 56 Date 11/ , 19

(USE ADDITIONAL SHEETS IF NECESSARY)

P*45656-119

NOTICE TO WATER WELL CONTRACTOR
The original and first copy of this report are to be filed with the
STATE ENGINEER, SALEM, OREGON 97310
within 30 days from the date of well completion.

C O P Y

WATER WELL REPORT

STATE OF OREGON

(Please type or print)

(Do not write above this line)

State Well No. .....

State Permit No. .....

WELL # 3

(1) OWNER:

Name CITY OF ADRIAN

Address BOX 226 ADRIAN, OREGON 97901

(2) TYPE OF WORK (check):

New Well [X] Deepening [ ] Reconditioning [ ] Abandon [ ]

If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Rotary [X] Driven [ ]
Cable [ ] Jetted [ ]
Dug [ ] Bored [ ]

(4) PROPOSED USE (check):

Domestic [ ] Industrial [X] Municipal [ ]
Irrigation [ ] Test Well [ ] Other [ ]

(5) CASING INSTALLED: Threaded [ ] Welded [X]

8" Diam. from 0 ft. to 33 ft. Gage #250

" Diam. from ft. to ft. Gage

" Diam. from ft. to ft. Gage

(6) PERFORATIONS: Perforated? [ ] Yes [X] No.

Type of perforator used

Size of perforations in. by in.

perforations from ft. to ft.

perforations from ft. to ft.

perforations from ft. to ft.

(7) SCREENS: Well screen installed? [ ] Yes [X] No

Manufacturer's Name

Type Model No.

Diam. Slot size Set from ft. to ft.

Diam. Slot size Set from ft. to ft.

(8) WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? [X] Yes [ ] No If yes, by whom? PAGE BROS DRILLING

Yield: 50 gal./min. with 266 ft. drawdown after 4 hrs.

" " " "

" " " "

Bailer test gal./min. with ft. drawdown after hrs.

Artesian flow g.p.m.

Temperature of water 72 Depth artesian flow encountered ft.

(9) CONSTRUCTION:

Well seal—Material used CEMENT

Well sealed from land surface to 27 ft.

Diameter of well bore to bottom of seal 12 in.

Diameter of well bore below seal 8 in.

Number of sacks of cement used in well seal 5 sacks

Number of sacks of bentonite used in well seal sacks

Brand name of bentonite CEMENT WAS PRESSURE GROUTED

Number of pounds of bentonite per 100 gallons of water lbs./100 gals.

Was a drive shoe used? [X] Yes [ ] No Plugs Size: location ft.

Did any strata contain unusable water? [ ] Yes [X] No

Type of water? depth of strata

Method of sealing strata off

Was well gravel packed? [ ] Yes [X] No Size of gravel:

Gravel placed from ft. to ft.

(10) LOCATION OF WELL:

County MALHEUR Driller's well number

SW ¼ SW ¼ Section 15 T. 21 R. 46 W.M.

Bearing and distance from section or subdivision corner:

(11) WATER LEVEL: Completed well.

Depth at which water was first found 362 ft.

Static level 4 ft. below land surface. Date 11/14/78

Artesian pressure lbs. per square inch. Date

(12) WELL LOG: Diameter of well below casing 8"

Depth drilled 401 ft. Depth of completed well 401 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Brown Sandy Clay	0	28	
Brown Clay	28	38	
Blue Clay	38	362	
Black Coarse Sand	362	369	4
Silt Stone	369	401	

Work started 11/14/78 19 Completed 11/30/78 19

Date well drilling machine moved off of well 11/30/78 19

Drilling Machine Operator's Certification:

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

[Signed] /s/ Winfield Page Date 11/30/ 1978
(Drilling Machine Operator)

Drilling Machine Operator's License No. 65

Water Well Contractor's Certification:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Name PAGE BROTHERS DRILLING
(Person, firm or corporation) (Type or print)

Address RT 2 BOX 371 VALE, OREGON 97918

[Signed] /s/ Winfield Page
(Water Well Contractor)

Contractor's License No. 564 Date 11/30/78 19

(USE ADDITIONAL SHEETS IF NECESSARY)

SP-8066-113

WATER WELL REPORT
STATE OF OREGON

FEB 24 1982

CH2M HILL
BOISE

State Well No. .....

State Permit No. .....

WELL # 4

(1) OWNER:
Name CITY OF ADRIAN
Address
City ADRIAN, OREGON 97901 State

(2) TYPE OF WORK (check):
New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:
Rotary Air ☒ Driven ☐
Rotary Mud ☐ Dug ☐
Cable ☐ Bored ☐

(4) PROPOSED USE (check):
Domestic ☐ Industrial ☐ Municipal ☒
Irrigation ☐ Test Well ☐ Other ☐
Thermal: Withdrawal ☐ Reinjection ☐

(5) CASING INSTALLED:
Steel ☒ Plastic ☐
Threaded ☐ Welded ☒

10" Diam. from 0 ft. to 40 ft. Gauge .250
14" Diam. from 0 ft. to 38 ft. Gauge .250

LINER INSTALLED:
..." Diam. from ... ft. to ... ft. Gauge ...

(6) PERFORATIONS:
Perforated? ☐ Yes ☒ No
Type of perforator used
Size of perforations in. by in.
... perforations from ... ft. to ... ft.
... perforations from ... ft. to ... ft.
... perforations from ... ft. to ... ft.

(7) SCREENS:
Well screen installed? ☐ Yes ☒ No
Manufacturer's Name ...
Type ... Model No. ...
Diam. ... Slot Size ... Set from ... ft. to ... ft.
Diam. ... Slot Size ... Set from ... ft. to ... ft.

(8) WELL TESTS:
Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☒ No If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
Air test 250 gal./min. with drill stem at 350 ft. 4 hrs.
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m.
Temperature of water 70° Depth artesian flow encountered ... ft.

(9) CONSTRUCTION:
Special standards: Yes ☐ No ☒
Well seal—Material used Cement
Well sealed from land surface to 40 ft.
Diameter of well bore to bottom of seal 14 in.
Diameter of well bore below seal 10 in.
Number of sacks of cement used in well seal 12 sacks
How was cement grout placed?
Pressure Grouted

Was pump installed? ... Type ... HP ... Depth ... ft.
Was a drive shoe used? ☒ Yes ☐ No Plugs ... Size: location ... ft.
Did any strata contain unusable water? ☐ Yes ☒ No
Type of Water? depth of strata
Method of sealing strata off
Was well gravel packed? ☐ Yes ☒ No Size of gravel: ...
Gravel placed from ... ft. to ... ft.

(10) LOCATION OF WELL:
County MALHEUR Driller's well number
NW ¼ SW ¼ Section 14 T. 21 R. 46 W.M.
Tax Lot # 9200 Lot Blk Subdivision
Address at well location:

(11) WATER LEVEL: Completed well.
Depth at which water was first found 340 ft.
Static level 11 ft. below land surface. Date 2/05/82
Artesian pressure lbs. per square inch. Date

(12) WELL LOG:
Diameter of well below casing 10"
Depth drilled 375 ft. Depth of completed well 355 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Top Soil	0	2	
Brown Sandy Clay	2	35	
Sandy Blue Clay	35	152	
Blue Sandstone	152	155	
Blue Clay	155	240	
Sandy Blue Clay	240	320	
Blue Sandstone	320	340	
Blue Sand, Medium	340	375	11

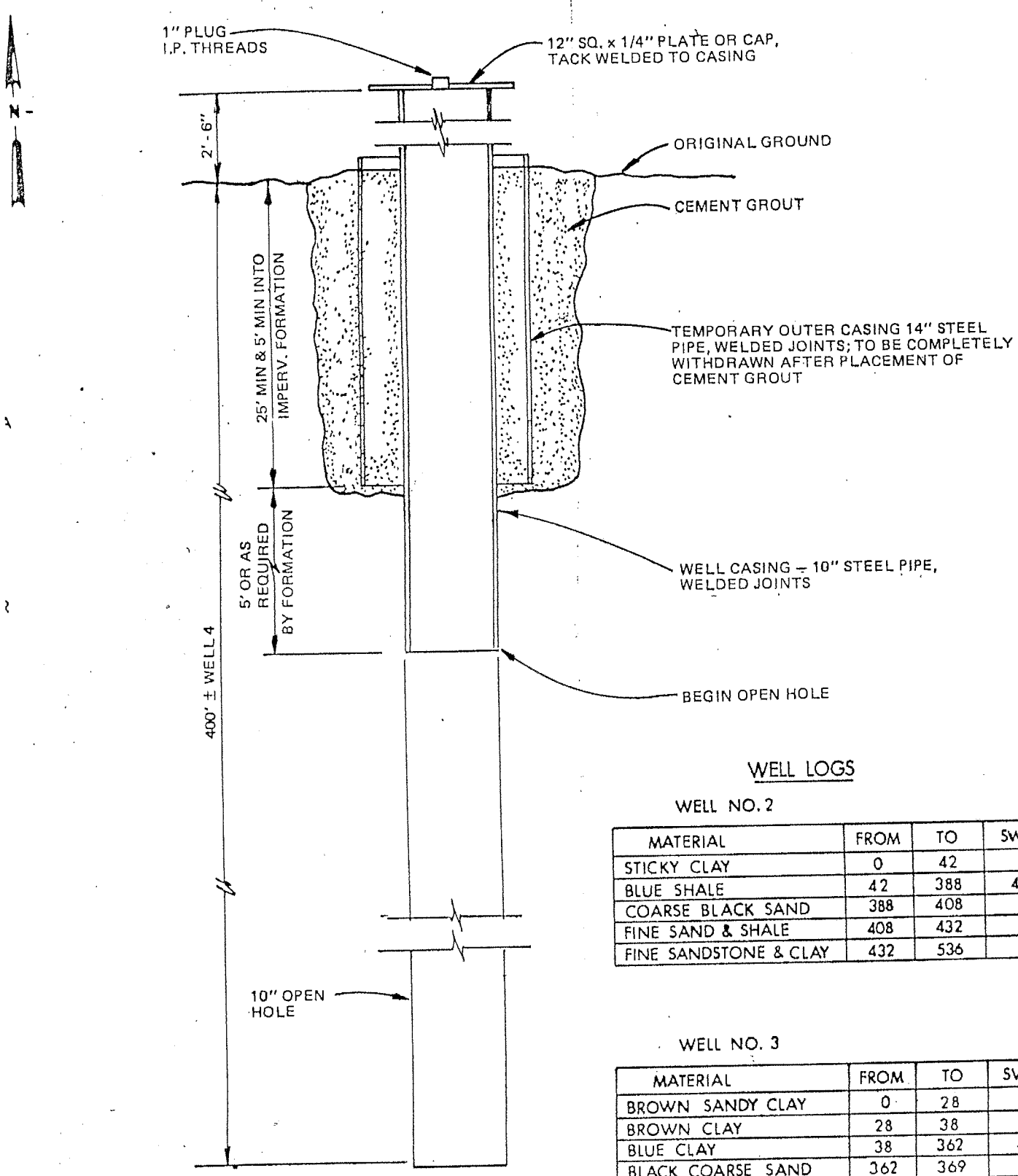
Work started 2/02/82 19 Completed 2/05/32 19
Date well drilling machine moved off of well 2/05/82 19

Drilling Machine Operator's Certification:
This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.
[Signed] Winfield Page (Drilling Machine Operator) Date 2/10/19.82
Drilling Machine Operator's License No. 65

Water Well Contractor's Certification:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Name PAGE BROTHERS DRILLING (Person, firm or corporation) (Type or print)
Address RT 2 BOX 4045 VALE, OREGON 97918
[Signed] Winfield Page (Water Well Contractor)
Contractor's License No. 564 Date 2/10/..., 19.82

NOTICE TO WATER WELL CONTRACTOR
The original and first copy of this report are to be filed with the WATER RESOURCES DEPARTMENT, SALEM, OREGON 97310 within 30 days from the date of well completion.

SP*12658-690



WELL LOGS

WELL NO. 2

MATERIAL	FROM	TO	SWL
STICKY CLAY	0	42	
BLUE SHALE	42	388	4
COARSE BLACK SAND	388	408	
FINE SAND & SHALE	408	432	
FINE SANDSTONE & CLAY	432	536	

WELL NO. 3

MATERIAL	FROM	TO	SWL*
BROWN SANDY CLAY	0	28	
BROWN CLAY	28	38	
BLUE CLAY	38	362	4
BLACK COARSE SAND	362	369	
SILT STONE	369	401	

* STANDING WATER LEVEL

△
.1 WAS DRILLED &
NED DUE TO
QUALITY.

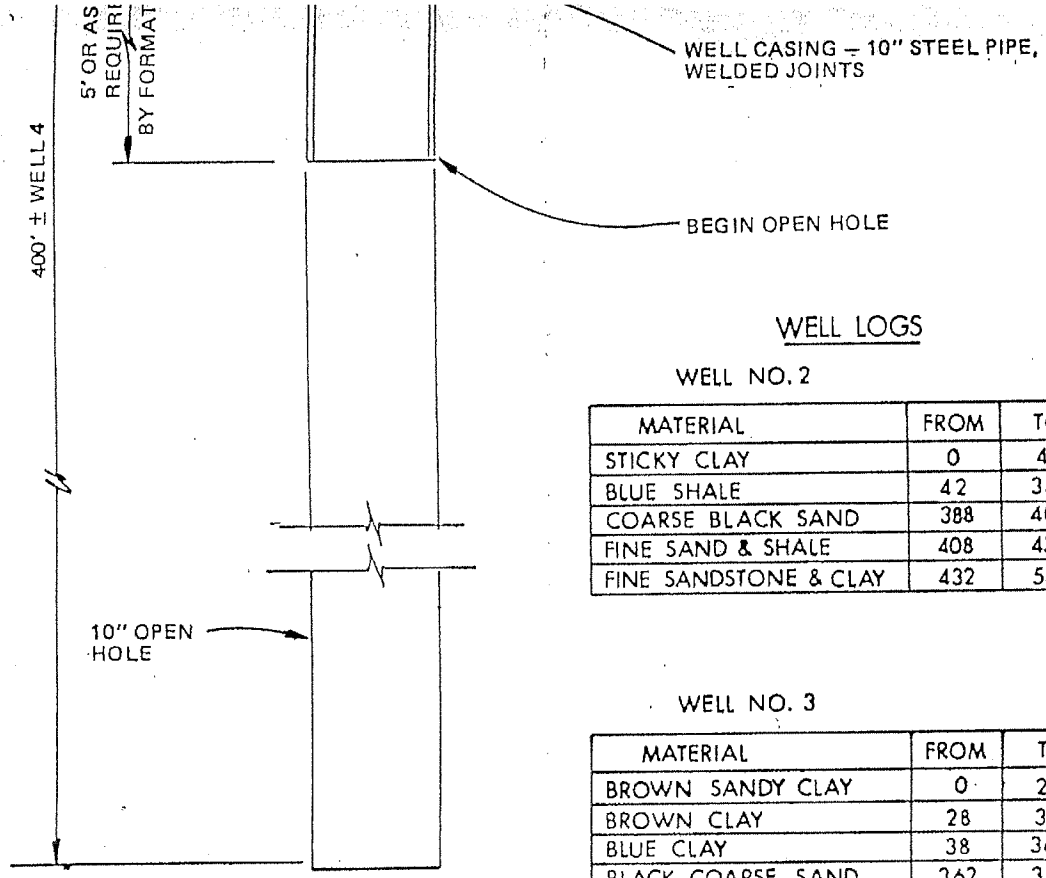
WELL DETAILS

NTS

HUD PROJECT NO. B-81-DN-410016

	WELL AND PUMP STATION NO. 4 ADRIAN, OREGON	SCHEDULE D VICINITY MAP WELL DETAILS	SHEET 5 PROJ. NO. B14793.A2 DATE NOV 81 DWG NO. B14793.A2

R



WELL LOGS

WELL NO. 2

MATERIAL	FROM	TO	SWL
STICKY CLAY	0	42	
BLUE SHALE	42	388	4
COARSE BLACK SAND	388	408	
FINE SAND & SHALE	408	432	
FINE SANDSTONE & CLAY	432	536	

WELL NO. 3

MATERIAL	FROM	TO	SWL*
BROWN SANDY CLAY	0	28	
BROWN CLAY	28	38	
BLUE CLAY	38	362	4
BLACK COARSE SAND	362	369	
SILT STONE	369	401	

* STANDING WATER LEVEL

△
.1 WAS DRILLED & INED DUE TO QUALITY.

WELL DETAILS

NTS

HUD PROJECT NO. B-81-DN-410016

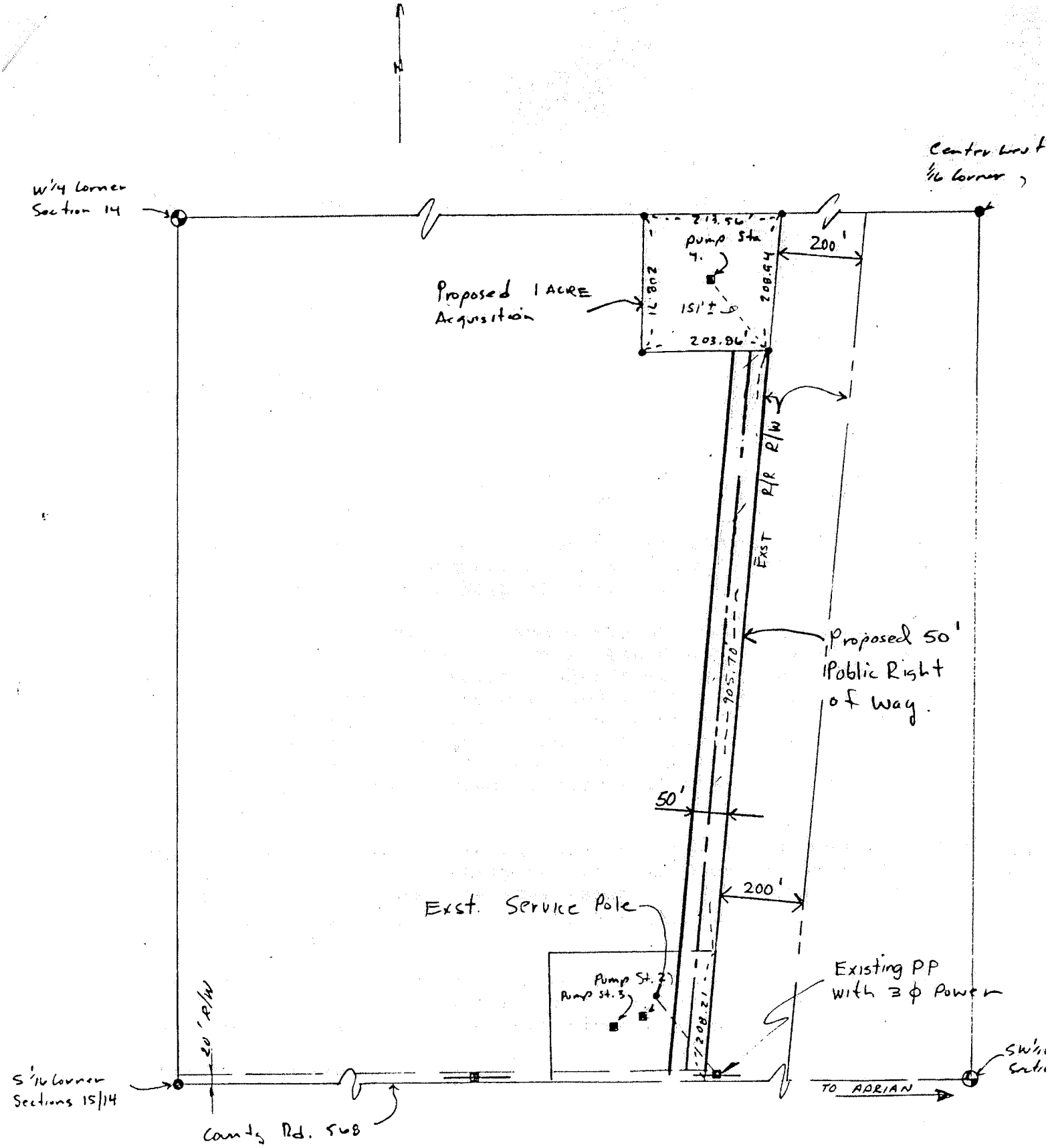
	WELL AND PUMP STATION NO. 4 ADRIAN, OREGON	SCHEDULE D VICINITY MAP WELL DETAILS	SHEET 5 / PROJ. NO. B14793.A2 / DATE NOV 81 / DWG NO. B14793.A2

well No. 4

Material	From	To	SWL
Top Soil	0	2	
Brown Sandy clay	2	35	
Sandy blue clay	35	152	
Blue Clay (Fine)	152	155	
Blue Clay	155	240	

Material	From	To	S
Sandy blue clay	240	320	
Blue Sand Stone (Fine)	320	340	
Blue Sand (Med)	340	375	
38'-14" Casing OD.	Surface	Casi	
40'-10" Casing			

Casing 250
Air Test at 250 G.P.M. with drill stem at 350'
First water 340'
Completed well 355'
Temp. 75°F



Adrian City Well Lot Property

INDEX TO DRAWINGS

SHEET NO.	TITLE	SCHEDULE
1	VICINITY MAP & INDEX TO DRAWINGS TEST HOLE DATA	R,P,T
2	RESERVOIR PLOT PLAN, RESERVOIR SECTION	R,P,T
3	RESERVOIR PLAN & SECTIONS	R
4	RESERVOIR STRUCTURE DETAILS	R
5	RESERVOIR MISCELLANEOUS DETAILS	R
6	PUMP STATION, PLOT PLAN & ARCHITECTURAL	P
7	PUMP STATION, MECHANICAL & ELECTRICAL	P
8	PUMP STATION, ELECTRICAL	P
9	SUPPLY MAIN, PLAN & PROFILE STA. 0+00 TO 12+25	P
10	TRANSMISSION MAIN, PLAN & PROFILE STA. 0+00 TO 12+00	R,T
11	TRANSMISSION MAIN, PLAN & PROFILE STA. 12+00 TO 25+00	T
12	TRANSMISSION MAIN, PLAN & PROFILE STA. 25+00 TO 36+00	T
13	TRANSMISSION MAIN, PLAN & PROFILE STA. 36+00 TO 46+65	T
14	TRANSMISSION MAIN, PLAN & PROFILE STA. 46+65 TO 52+65	T
15	TRANSMISSION MAIN DETAILS	T

LETTER SYMBOLS

PIPING

A.C.	ASBESTOS CEMENT
ARV.	AIR RELEASE VALVE
BO.	BLOWOFF
CI	CAST IRON
CMP	CORRUGATED METAL PIPE
CONC.	CONCRETE
CORP.	CORPORATION STOP
CULV.	CULVERT
DI	DUCTILE IRON
F	FLANGE
FCA	FLANGE COUPLING ADAPTER
FH	FIRE HYDRANT
GI	GALV. STEEL OR GALV. IRON
GV	GATE VALVE
MC	MECHANICAL COUPLING
MJ	MECHANICAL JOINT
P	PLASTIC (OF TYPE DESIGNATED)
PE	PLAIN END
PO	PUSH-ON JOINT
PRV	PRESSURE REDUCING VALVE
RG	RETAINER GLAND
SCR	SCREWED JOINT
SOL	SOLVENT WELD JOINT
TC	TRANSITION COUPLING
TT	THRUST TIE

SURFACING

A.C.	ASPHALTIC CONCRETE
CONC.	PORTLAND CEMENT CONCRETE
GR	GRAVEL
PVMT.	PAVEMENT

MISCELLANEOUS

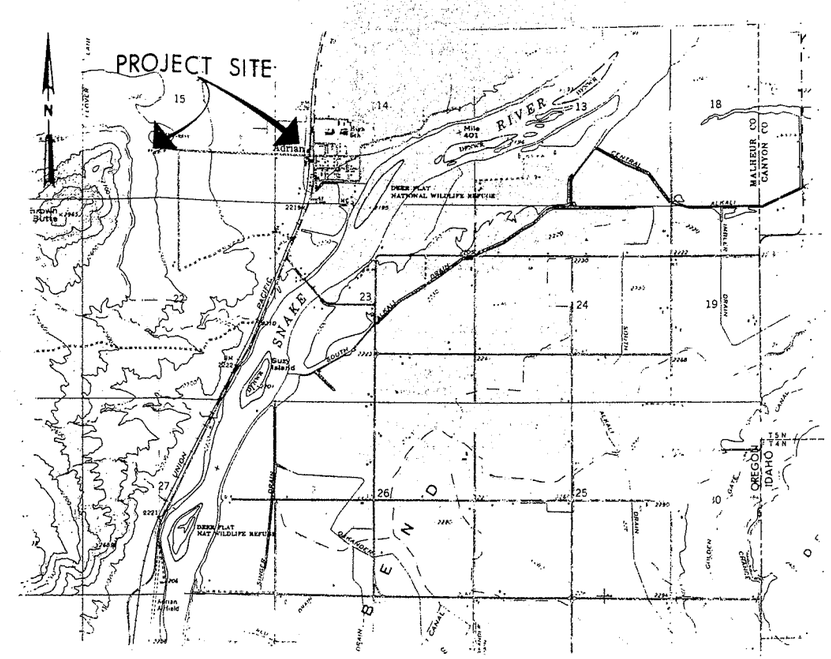
A.B.	ANCHOR BOLT
BM	BENCH MARK
EL	ELEVATION
EP	EDGE OF PAVEMENT
EX	EXISTING
FL	FLOW LINE
GD.	GROUND
HOR.	HORIZONTAL
INV.	INVERT
NA	NOT APPLICABLE
NTS	NOT TO SCALE
OC	ON CENTERS
TB	THRUST BLOCK
TBM	TEMPORARY BENCH MARK
VERT.	VERTICAL
W/	WITH
W/O	WITHOUT
X-ING	CROSSING: RAILROAD, HIGHWAY, ETC.

GENERAL SYMBOLS

- PROPOSED UTILITY (THIS PROJECT)
- STATIONING ALONG PROPOSED UTILITY
- EXISTING IMPROVEMENTS OR UTILITIES
- P/L: PROPERTY LINES; R/W: RIGHTS-OF-WAY LINES; E/L: EASEMENT LINE
- EXISTING FENCE
- EXISTING WATER LINE AND VALVE
- EXISTING SANITARY SEWER AND MANHOLE
- EXISTING STORM SEWER AND CATCH BASIN
- DITCH
- CENTERLINE (ALSO NOTED ℄)
- BOUNDARY LINES (CITY LIMITS, PARKS, CEMETERIES, ETC.)
- SECTION LINES, DLC LINES, ETC.
- PROPOSED VALVE IN NEW LINE
- PROPOSED FIRE HYDRANT ON NEW LINE
- AIR RELEASE VALVE, SIZE; COMBINATION AIR RELEASE VALVE, SIZE
- BLOWOFF, SIZE
- POWER OR TELEPHONE POLE, GUY ANCHOR (LINE INDICATES THE LOCATION OF THE FACE OF THE POLE NEAREST THE PROPOSED UTILITY LINE LOCATION)
- LAND MONUMENT (IRON ROD, IRON PIPE, BRASS CAP SET IN CONCRETE, ETC.)
- PAVEMENT REPLACEMENT
- TOPSOIL REPLACEMENT
- BACKFILL CLASSIFICATION
- TH #3 TEST HOLE LOCATION ON PLAN
- BENCH MARK LOCATION ON PLAN

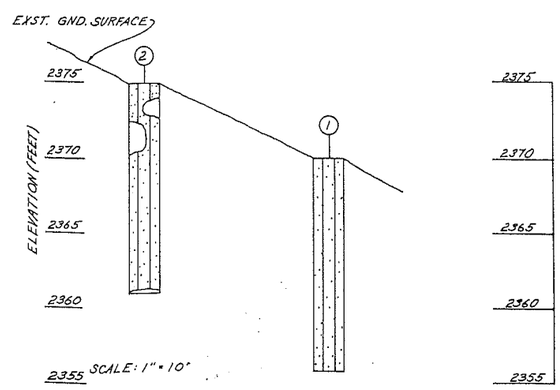
BENCH MARKS

BM AW-1	SET R/R SPIKE IN POWER POLE AT SW CORNER OF ROAD INT "X", ELEVATION 2347.42
BM AW-2	HIGH POINT ON 3' DIA. BOULDER, PAINTED YELLOW, 100'± NORTHEAST ℄ WELL NO. 1, ELEVATION 2377.71



VICINITY MAP

0 1/4 1/2 1
SCALE IN MILES



TEST HOLE DATA

SANDY SILT (LOESS)

LARGE CONGLOMERATE BOULDER

TEST HOLE SYMBOLS

SECTION OR DETAIL DESIGNATION

SHEET WHERE SECTION OR DETAIL IS SHOWN

SHEET WHERE SECTION OR DETAIL IS TAKEN

SECTION DESIGNATION

THIS PRINT IS REDUCED TO ONE-HALF OF THE ORIGINAL SCALE
IF THE SCALE READS:
1" = 1'-0" USE ½" = 1'-0" OR 1" = 10' USE 1" = 20'

REGISTERED PROFESSIONAL ENGINEER 6292 OREGON JULY 12, 1968 LEROY R. TAYLOR

CH2M HILL

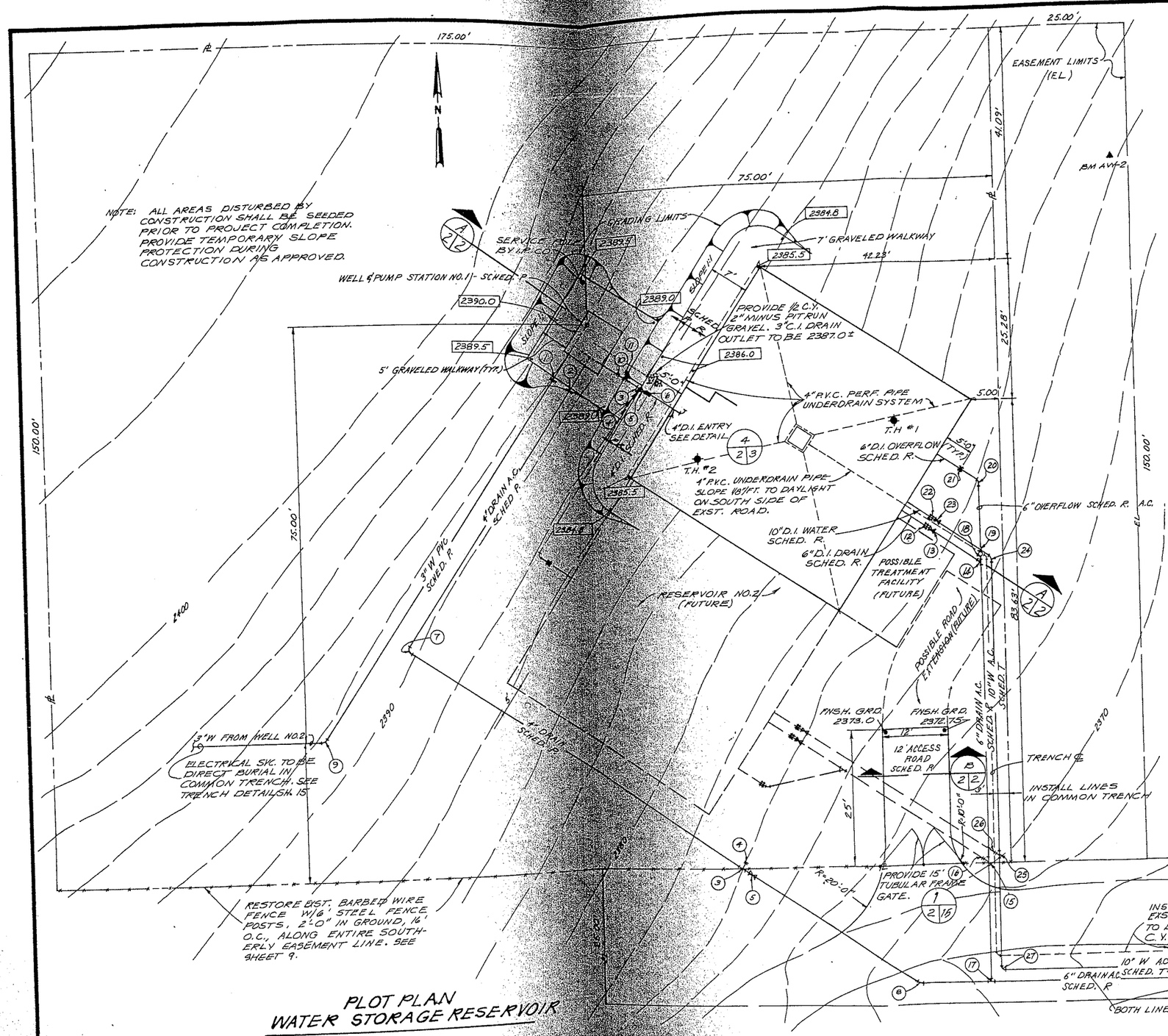
DES. JSC					
DR. MPL					
CHK. LRT					
APPD. LRT	NO.	DATE	REVISION	BY	APPD.

WATER SYSTEM
CITY OF ADRIAN, OREGON

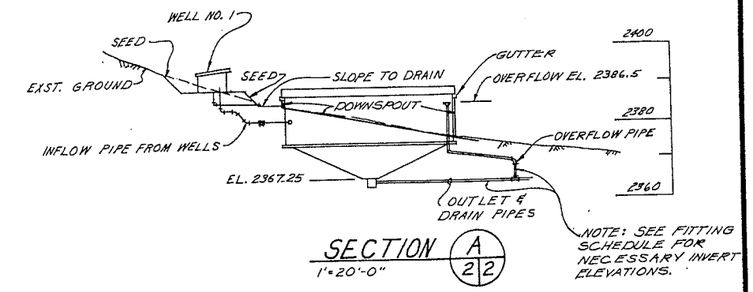
SCHEDULES R, P & T

VICINITY MAP AND INDEX TO DRAWINGS TEST HOLE DATA

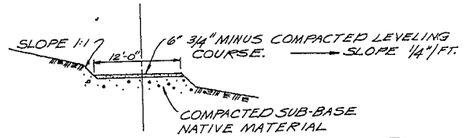
SHEET 1 OF 15
DATE FEB. 77
DWG. NO. C10537-1



PLOT PLAN
WATER STORAGE RESERVOIR
1"=10'



SECTION A 2/2
1"=20'-0"



ACCESS ROAD SECTION B 2/2
N.T.S.

FITTING SCHEDULE

KEY FOR VALVES & FITTINGS

SCHEDULE P

SYMBOL	KEY FOR FITTINGS
1	3" D1 X PVC COUPLING ADAPTER
2	4" D1 X AC COUPLING ADAPTER
3	4" TEE, BELL X F X F, W/1.0 SQ. FT. THRUST BLOCK (SFTB)
4	4" BLIND FLANGE
5	4" GATE VALVE, F X F, & VALVE BOX
6	4" FLANGED COUPLING ADAPTER
7	4" 90° BEND, ALL BELL, W/1.4 SFTB
8	4" 45° BEND, ALL BELL, W/1.0 SFTB
9	3" 45° BEND, ALL BELL, W/1.0 SFTB
10	4" 45° VERT. BEND, ALL BELL W/0.75 CUBIC YARD THRUST BLOCK (CYTB)
11	4" 45° VERT. BEND, ALL BELL, W/1.0 SFTB

SCHEDULE R

12	6" FLANGED COUPLING ADAPTER
13	6" GATE VALVE, F X BELL W/VALVE BOX
14	6" WYE, F X BELL X BELL W/2.1 SFTB, INVERT ELEVATION 2364.0
15	6" WYE, ALL BELL W/2.1 SFTB, INVERT EL. 2363.3
16	6" PLUG
17	4" X 6" X 6" TEE, ALL BELL W/2.1 SFTB, INVERT ELEVATION 2363.0
18	6" 90° VERT. BEND, F X BELL W/3.0 SFTB
19	6" 90° VERT. BEND, ALL BELL, W/1.3 CYTB, TOP INVERT ELEVATION 2371.4
20	6" 45° BEND, ALL BELL W/1.6 SFTB, INVERT ELEVATION 2371.6
21	6" D1 X AC ADAPTER COUPLING

SCHEDULE T

22	10" FLANGED COUPLING ADAPTER
23	10" GATE VALVE, F X BELL, W/ VALVE BOX
24	10" 45° BEND, ALL BELL, W/4.6 SFTB, INVERT ELEVATION 2364.25
25	10" WYE, ALL BELL, W/5.9 SFTB, INVERT ELEVATION 2364.00
26	10" PLUG
27	10" 90° BEND, ALL BELL, W/8.4 SFTB

THIS PRINT IS REDUCED TO ONE-HALF OF THE ORIGINAL SCALE
IF THE SCALE READS:
1"= 1'-0" USE 1/2"= 1'-0" OR 1"= 10' USE 1"= 20'

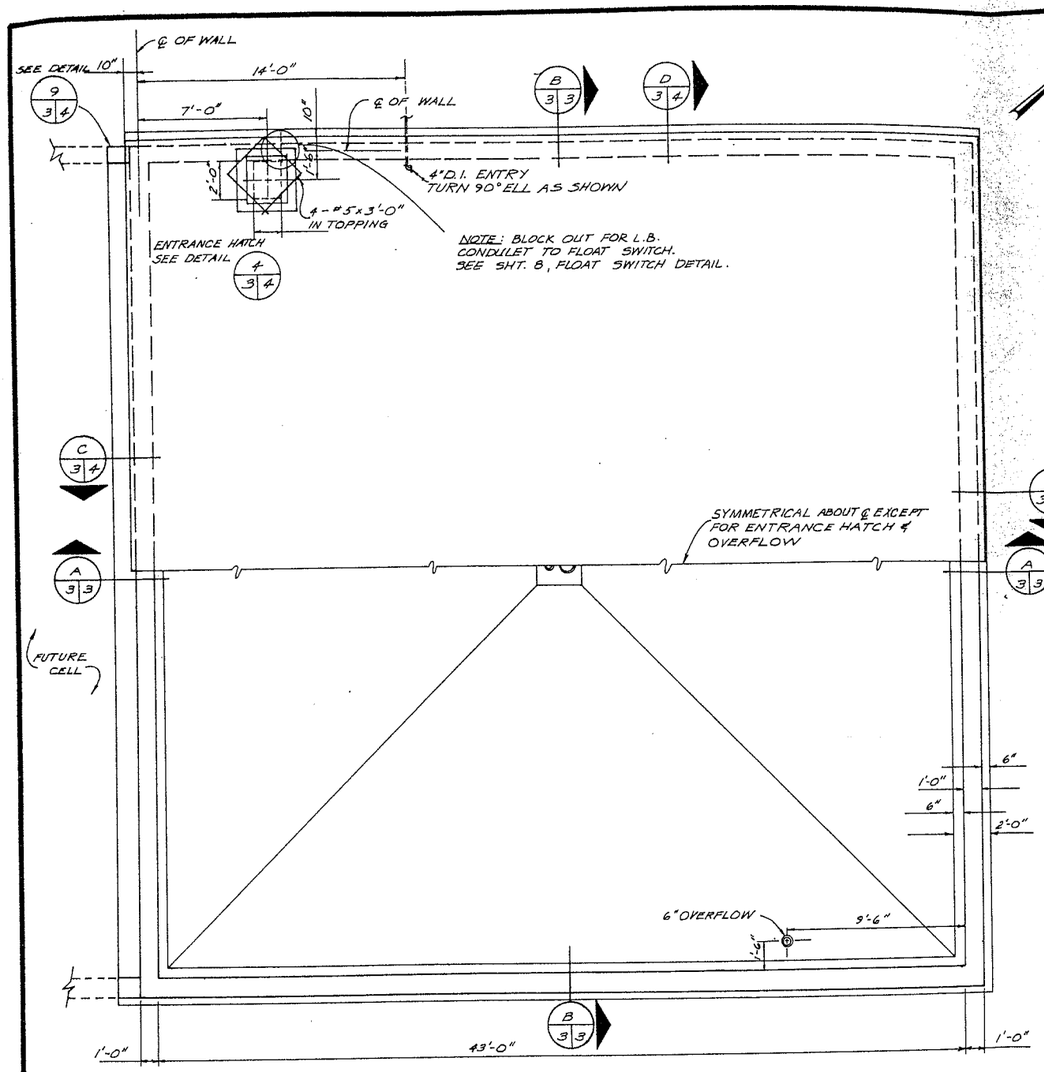
REGISTERED PROFESSIONAL ENGINEER 6292 OREGON JULY 12, 1978 LEROY R. TAYLOR

CH2M HILL	DES. JSC DR. MPL CHK. LRT APPD. LRT	NO.	DATE	REVISION	BY / APPD.

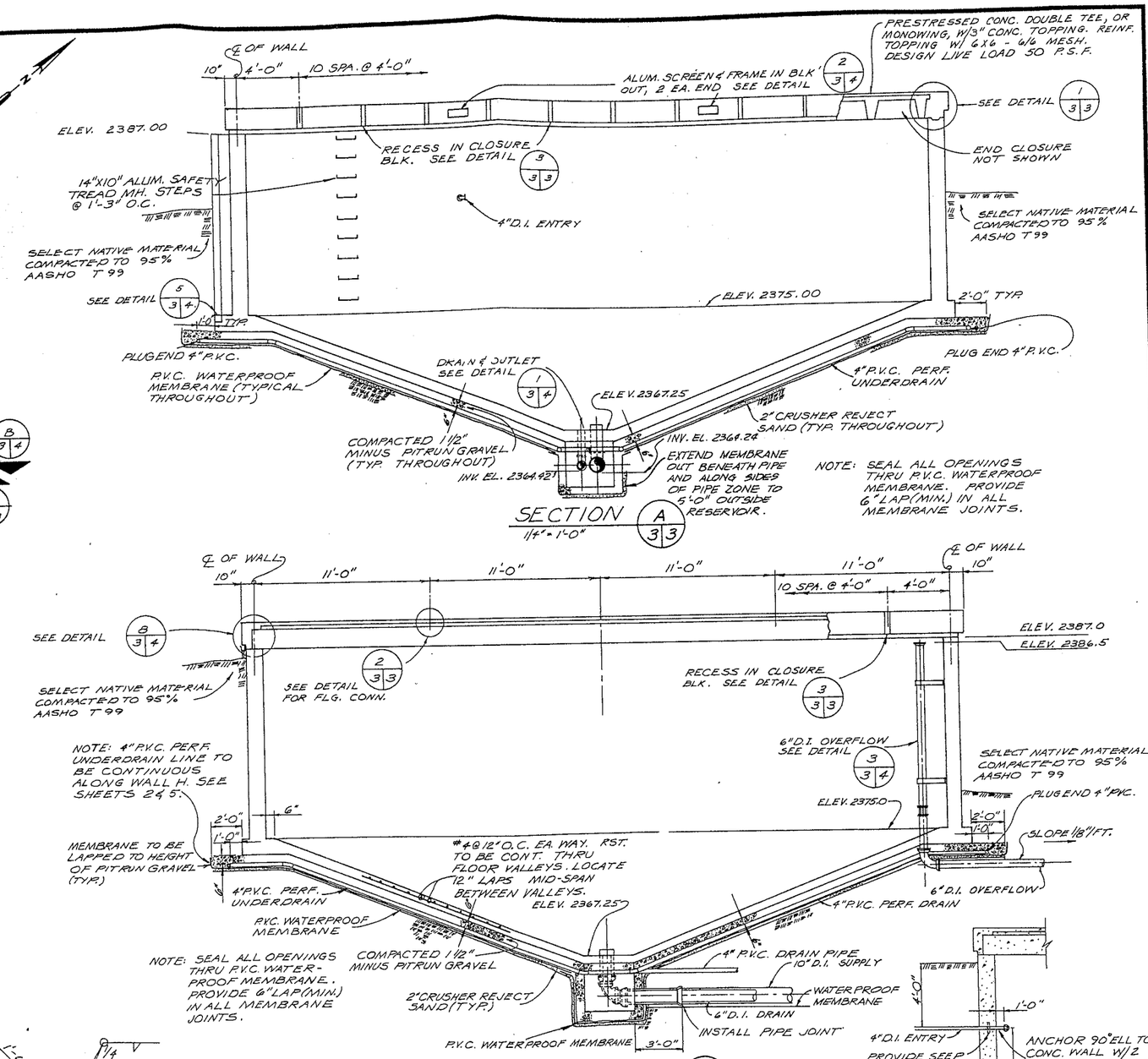
WATER SYSTEM
CITY OF ADRIAN, OREGON

SCHEDULE R.P.T
RESERVOIR PLOT PLAN
RESERVOIR SECTION

SHEET 2 OF 15
DATE FEB. 77
DWG. NO. C10537-1

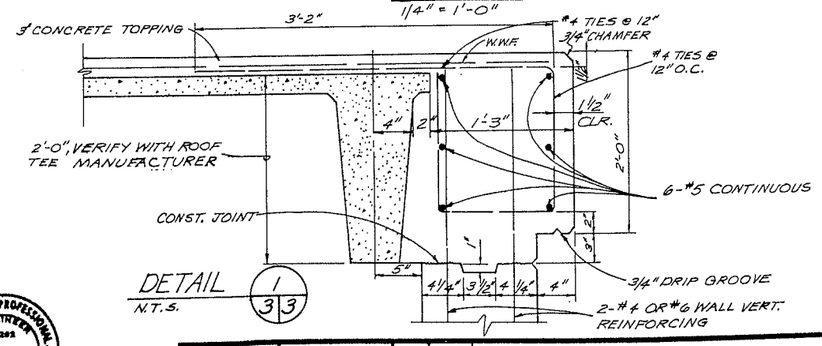


PLAN
1/4" = 1'-0"

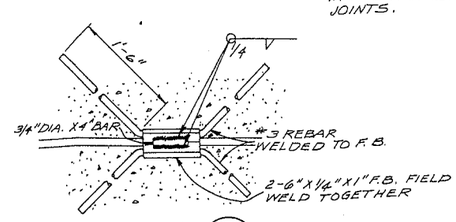


SECTION A
1/4" = 1'-0"

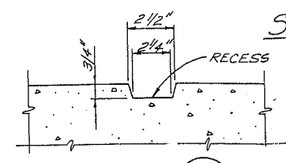
SECTION B
1/4" = 1'-0"



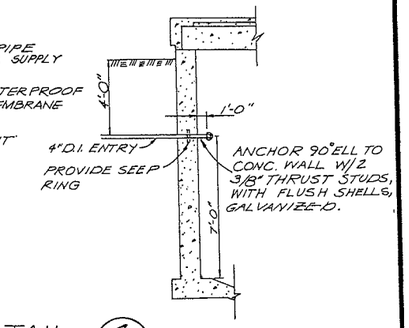
DETAIL 1
N.T.S.



DETAIL 2
N.T.S.



DETAIL 3
3" = 1'-0"



DETAIL 4
N.T.S.

THIS PRINT IS REDUCED TO ONE-HALF OF THE ORIGINAL SCALE
IF THE SCALE READS:
1" = 1'-0" USE 1/2" = 1'-0" OR 1" = 10' USE 1" = 20'

CH2M HILL

DES.	JSC
DR.	MPL
CHK.	LRT
APPD.	LRT

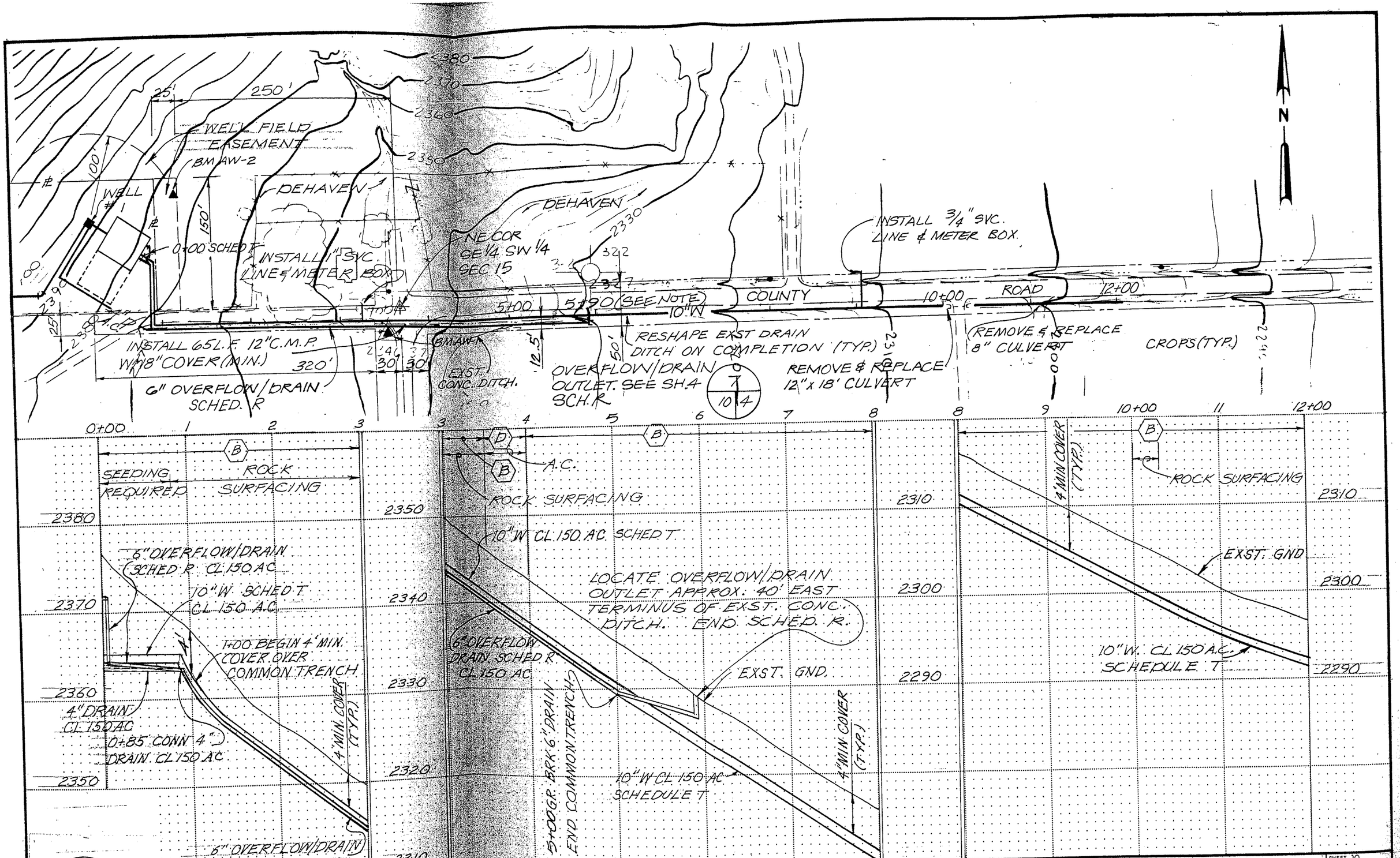
NO.	DATE	REVISION	BY	APPD.

WATER SYSTEM
CITY OF ADRIAN, OREGON

SCHEDULE R

RESERVOIR PLAN AND SECTIONS

SHEET 3 OF 15
DATE FEB. 77
DWG. NO. C 10537-1



REGISTERED PROFESSIONAL ENGINEER 1253 STATE OF IDAHO LEROY R. TAYLOR

CH2M HILL

DES.	JSC
DR.	MPL
CHK.	LRT
APPD.	LRT

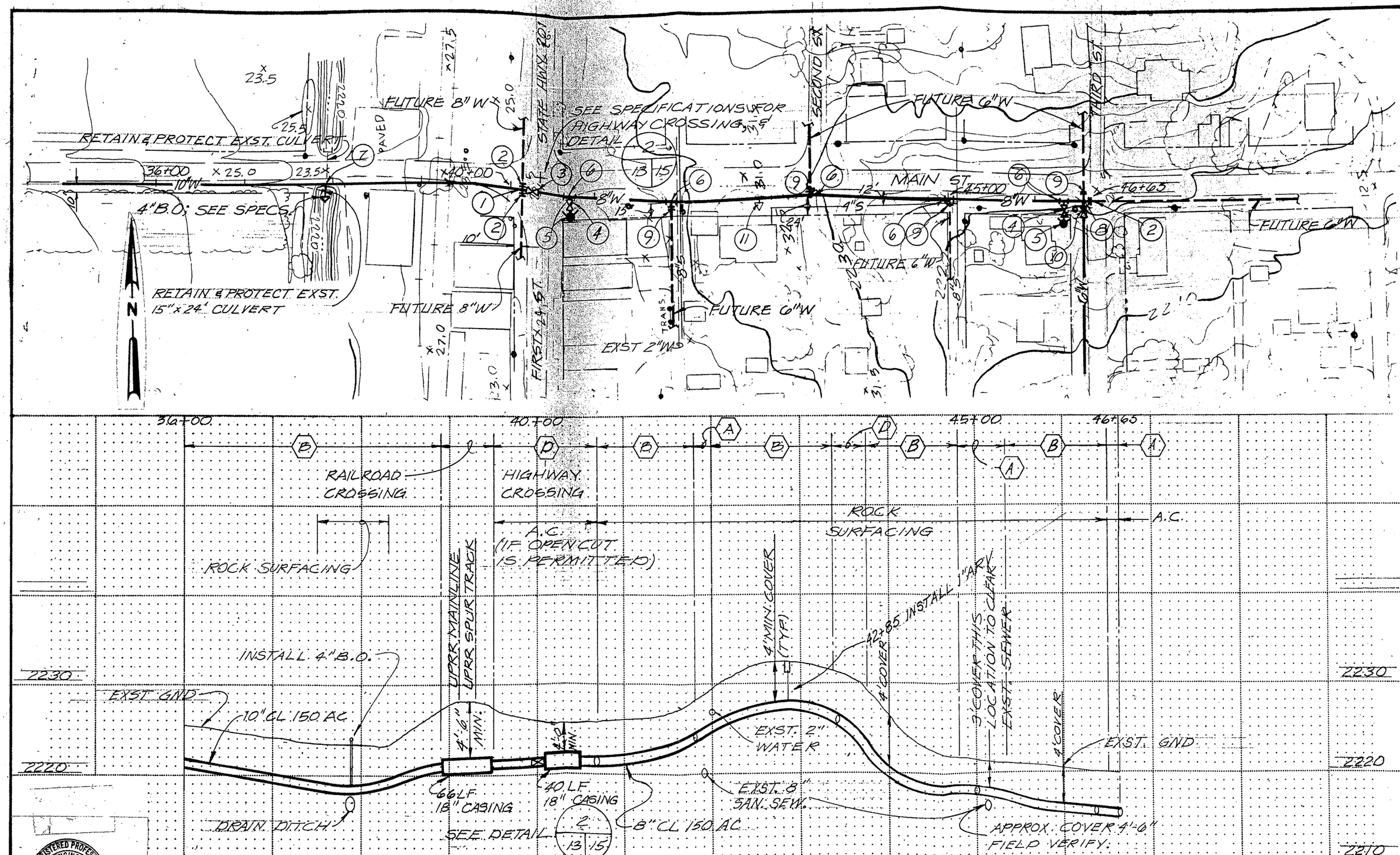
NO.	DATE	REVISION	BY	APP'D

SCALE:
VERT. 1" = 10'
HORIZ. 1" = 100'

WATER SYSTEM
CITY OF ADRIAN, OREGON

SCHEDULE T & R
TRANSMISSION MAIN
PLAN AND PROFILE
STA. 0+00 TO STA. 12+00

SHEET 10 OF 15
DATE FEB. 77
DWG. NO. E10537-1



REGISTERED PROFESSIONAL ENGINEER 1253 STATE OF IDAHO LEROY R. TAYLOR

CH2M HILL

DES.	JSC
DR.	MPL
CHK.	LRT
APPD.	LRT

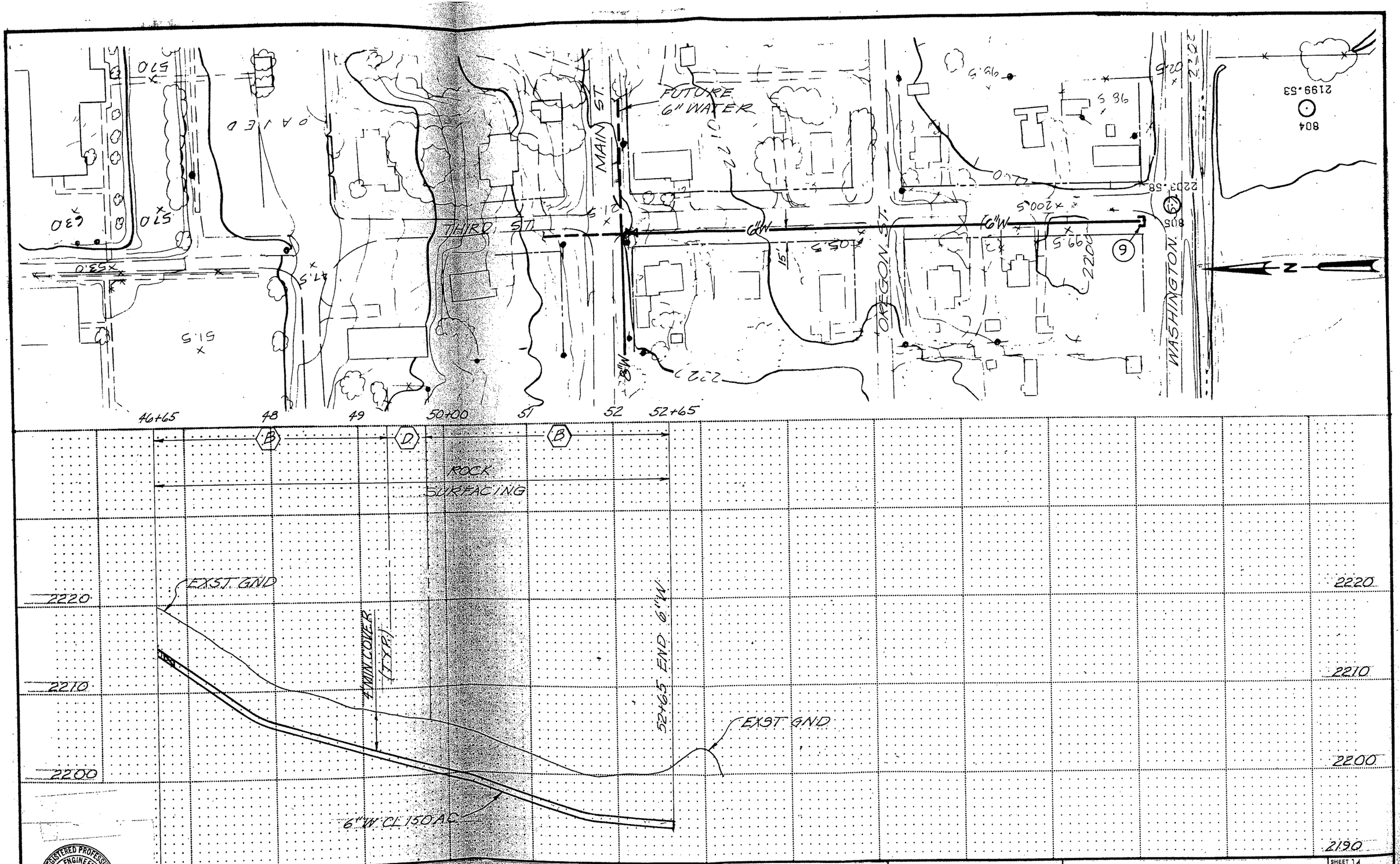
NO.	DATE	REVISION	BY	APPD.

SCALE:
VERT. 1" = 10'
HORIZ. 1" = 100'

WATER SYSTEM
CITY OF ADRIAN, OREGON

SCHEDULE T
TRANSMISSION MAIN
PLAN AND PROFILE
STA. 36+00 TO STA. 46+65

SHEET 13 OF 15
DATE FEB. 77
DWG. NO. E10537-1



REGISTERED PROFESSIONAL ENGINEER 1253 STATE OF IDAHO LEROY R. TAYLOR

L. R. Taylor

CH2M HILL

DES. JSC
DR. MPL
CHK. LRT
APPD. LRT

NO.	DATE	REVISION	BY	APPD.

SCALE:
VERT. 1" = 10'
HORIZ. 1" = 100'

WATER SYSTEM
CITY OF ADRIAN, OREGON

SCHEDULE T
TRANSMISSION MAIN
PLAN AND PROFILE
STA. 46+65 TO STA. 52+65

SHEET 14 OF 15
DATE FEB. 77
DWG. NO. E10537-1

STATE OF OREGON

County of MALHEUR

PERMIT TO APPROPRIATE THE PUBLIC WATERS

This is to certify that I have examined APPLICATION G-10619 and do hereby grant the same SUBJECT TO EXISTING RIGHTS and the following limitations and conditions:

This permit is issued to George Amstutz, Mayor for the City of Adrian, Oregon 97901, for use of the waters of Wells 1, 2, 3 and 4, being 0.22 cubic foot per second from Well 1, 0.12 cfs from each of Wells 2 and 3, and 0.45 cfs from Well 4

for the PURPOSE of municipal

that the PRIORITY OF THE RIGHT dates from December 31, 1981

and is limited to the amount of water which can be applied to beneficial use and shall not exceed 0.91 cfs

measured at the point of diversion from the wells, or its equivalent in case of rotation with other water users.

The well is to be LOCATED: Well 1 - 75 feet North and 300 feet West from the Center of SE 1/4 of Section 15, being within the NW 1/4 SE 1/4 of Section 15; Well 2 - 1,418 feet North and 659 feet East from the Southwest Corner of Section 14; Well 3 - 1,403 feet North and 609 feet East from the Southwest Corner of Section 14; Well 4 - 2,536 feet North and 712 feet East *

A description of the PLACE OF USE under the permit, and to which such right is appurtenant, is as follows:

* from the Southwest Corner of Section 14, all within Township 21 South, Range 46 East, WM, in the County of Malheur.

Township 21 South, Range 46 East, WM Section 14 municipal use

The well shall be constructed in accordance with the General Standards for the Construction and Maintenance of Water Wells in Oregon. The works constructed shall include an air line and pressure gauge or an access port for measuring line, adequate to determine water level elevation in the well at all times. The permittee shall install and maintain a weir, meter, or other suitable measuring device, and shall keep a complete record of the amount of ground water withdrawn.

Actual construction work shall begin on or before November 23, 1983, and shall thereafter be prosecuted with reasonable diligence and be completed on or before October 1, 19 84. Extended to October 1, 1990

Complete application of the water to the proposed use shall be made on or before October 1, 19 85. Extended to October 1, 1990

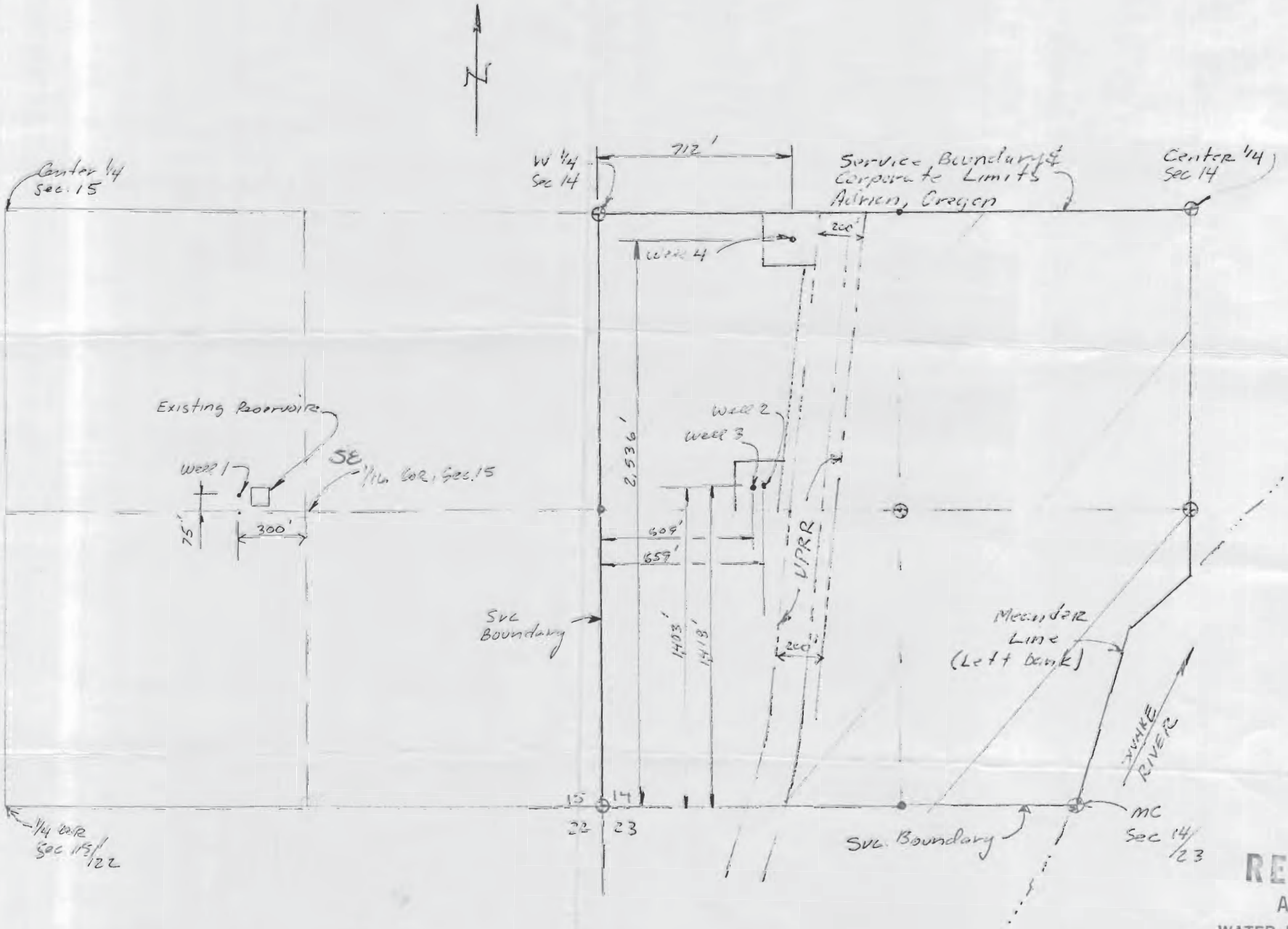
Witness my hand this 23rd day of November, 19 82.

/s/ JAMES E. SEXSON
WATER RESOURCES DIRECTOR

This permit is for the beneficial use of water. By law, the land use associated with this water use must be in compliance with statewide land-use goals and any local acknowledged land-use plan. It is possible that the land use you propose may not be allowed if it is not in keeping with the goals and the acknowledged plan. Your city or county planning agency can advise you about the land-use plan in your area.

APPLICATION G-10619 PERMIT G 9912

N
WALKER
UNDORF
SUTTON
MILLER
DAUGHERTY
FIELD
SNAKE RIVER
6" UNDERDRAIN
FIFTH STREET
WEIR
FREEL
SHADLEY
MISHLER
WILSON
ADRIAN SCHOOL DISTRICT NO. 61
MACKEY
DAUGHERTY
MORSE
SCHAFER
NIXON
DENNIS
FOURTH STREET
STEPHENS
LONG
LOONEY
THOMAS
GALE
HIGH SCHOOL
RADFORD
BOWERS
VAN DEWATER
PRESBYTERIAN CHURCH
ROSENBAUM
RICE
WEBB
THIRD STREET
DOCKTER
GRADE SCHOOL
LINVILLE
BROWN
HAY
CARTWRIGHT
MAUSLING
AMSTUTZ
BARNEY
HOLLY
BALDWIN
McFADDEN
SLYKE
JONES
REMINGTON
SECOND STREET
MARTIN
CATHOLIC CHURCH
KNOSP
DIETZE
POUNDS
PARKER
WHITE
HARRINGTON
HARTLEY
HAY
WEBSTER
CITY OF ADRIAN
CALLAHON
POST OFFICE
CORN
ROBB
BRANNIAN
SMITH
LOVETT
DUTTON
TO NYSSA
VINSONHALER
STATE HIGHWAY
GOODMAN OIL CO
VANDEWATER
FIRE STATION
UNION PACIFIC RAILROAD RIGHT-OF-WAY
TO PARMA/JORDAN VALLEY
EDMUNDSON
RAMOS
HIGH STREET
MAIN STREET
OREGON STREET
WASHINGTON STREET
OWYHEE STREET
6"W
8"W
200'
LEGEND
WATERLINE WITH VALVE
FIRE HYDRANT
SCALE:
0 50 100 200 300 400 500 FT
CH2M HILL
RECEIVED
JUN 28 1982
WATER RESOURCES DEPT
SALEM, OREGON
Application No. G-10619
Permit No. G 9912
WATER SYSTEM EXTENSION
ADRIAN, OREGON



RECEIVED
AUG 5 1982
WATER RESOURCES DEPT.
SALEM, OREGON

Application No. G-10619
Permit No. G 9912

CITY OF ADRIAN
SW 1/4 Sec. 14 T.21S., R.4E., WM
1" = 500'

STATE OF OREGON

COUNTY OF MALHEUR

PERMIT TO APPROPRIATE THE PUBLIC WATERS

THIS PERMIT IS HEREBY ISSUED TO

CITY OF ADRIAN
PO BOX 226
ADRIAN, OR 97901

The specific limits and conditions of the use are listed below.

APPLICATION FILE NUMBER: G-16386

SOURCE OF WATER: A WELL IN SNAKE RIVER BASIN

PURPOSE OR USE: MUNICIPAL USE

MAXIMUM RATE: 1.0 CUBIC FOOT PER SECOND

PERIOD OF USE: YEAR ROUND

DATE OF PRIORITY: FEBRUARY 10, 2005

WELL LOCATION: SE ¼ NE ¼, SECTION 16, T21S, R46E, W.M.; 2590 FEET SOUTH & 50 FEET WEST FROM NE CORNER, SECTION 16

THE PLACE OF USE IS THE SERVICE AREA OF THE CITY OF ADRIAN.

Measurement, recording and reporting conditions:

A. Before water use may begin under this permit, the water user shall install a meter or other suitable measuring device as approved by the Director. The water user shall maintain the meter or measuring device in good working order, shall keep a complete record of the amount of water used each month and shall submit a report which includes the recorded water use measurements to the Department annually or more frequently as may be required by the Director. Further, the Director may require the water user to report general water use information, including the place and nature of use of water under the permit.

B. The water user shall allow the watermaster access to the meter or measuring device; provided however, where the meter or measuring device is located within a private structure, the watermaster shall request access upon reasonable notice.

STANDARD CONDITIONS

If the number, location, source, or construction of any well deviates from that proposed in the permit application or required by permit conditions, this permit may not be valid.

If substantial interference with a senior water right occurs due to withdrawal of water from any well listed on this permit, then use of water from the well(s) shall be discontinued or reduced and/or the schedule of withdrawal shall be regulated until or unless the Department approves or implements an alternative administrative action to mitigate the interference. The Department encourages junior and senior appropriators to jointly develop plans to mitigate interferences.

The wells shall be constructed in accordance with the General Standards for the Construction and Maintenance of Water Wells in Oregon. The works shall be equipped with a usable access port, and may also include an air line and pressure gauge adequate to determine water level elevation in the well at all times.

Where two or more water users agree among themselves as to the manner of rotation in the use of water and such agreement is placed in writing and filed by such water users with the watermaster, and such rotation system does not infringe upon such prior rights of any water user not a party to such rotation plan, the watermaster shall distribute the water according to such agreement.

Prior to receiving a certificate of water right, the permit holder shall submit the results of a pump test meeting the department's standards, to the Water Resources Department. The Director may require water level or pump test results every ten years thereafter.

Failure to comply with any of the provisions of this permit may result in action including, but not limited to, restrictions on the use, civil penalties, or cancellation of the permit.

This permit is for the beneficial use of water without waste. The water user is advised that new regulations may require the use of best practical technologies or conservation practices to achieve this end.

By law, the land use associated with this water use must be in compliance with statewide land-use goals and any local acknowledged land-use plan.

The use of water shall be limited when it interferes with any prior surface or ground water rights.

The permit holder shall commence and complete the construction of any proposed works within five years from the date of permit issuance. The Department may order and allow an extension of time to complete construction or to perfect a water right beyond five years from the date of permit issuance.

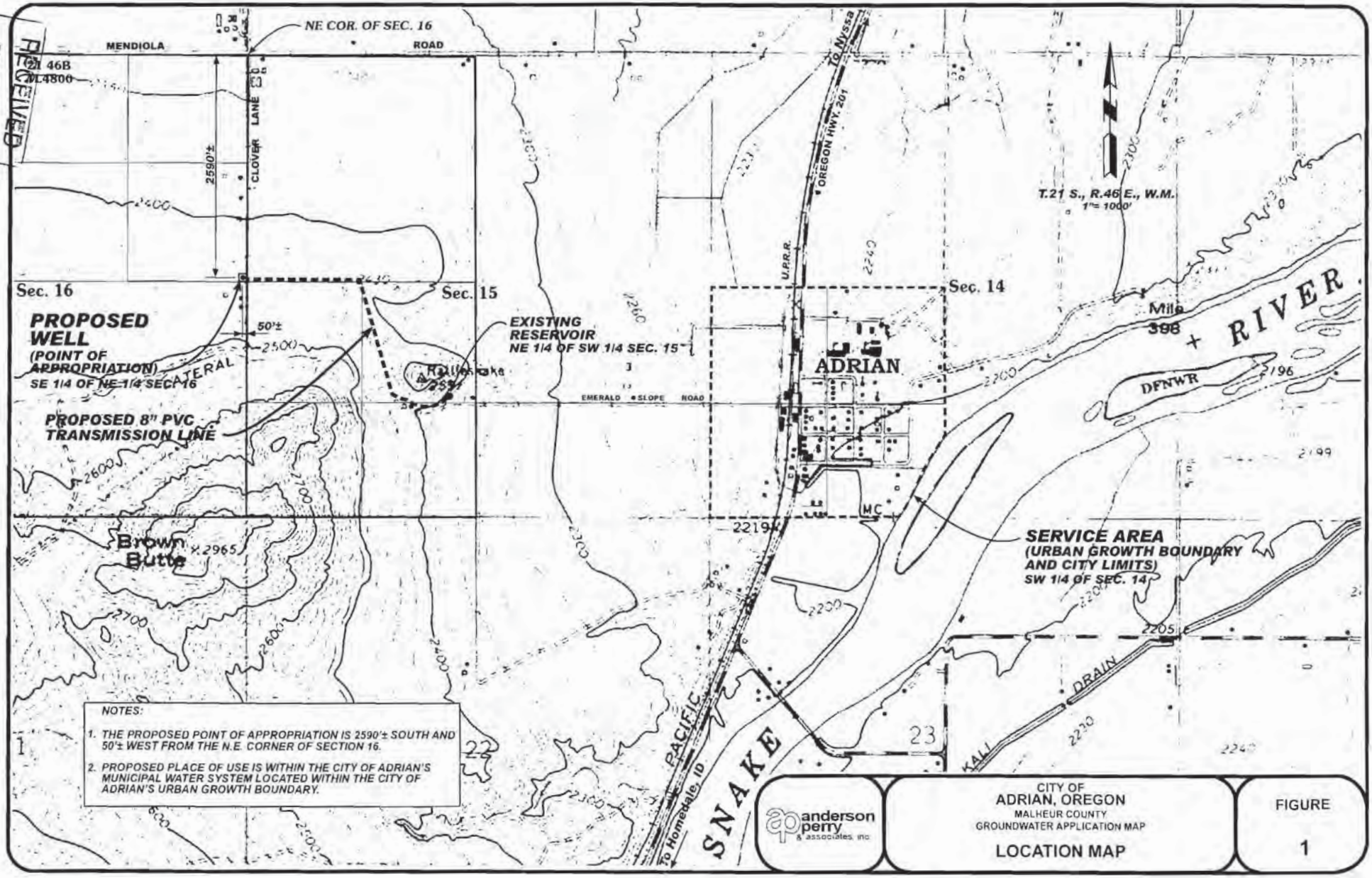
Within one year after complete application of water to the proposed use, the water user shall submit a claim of beneficial use, which includes a map and report, prepared by a Certified Water Rights Examiner (CWRE).

Issued July 20, 2006

E. Timothy Walker

Phillip C. Ward, Director for
Water Resources Department

RECEIVED
FEB 10 2005
WATER RESOURCES DEPT
SALEM, OREGON



NOTES:

1. THE PROPOSED POINT OF APPROPRIATION IS 2590'± SOUTH AND 50'± WEST FROM THE N.E. CORNER OF SECTION 16.
2. PROPOSED PLACE OF USE IS WITHIN THE CITY OF ADRIAN'S MUNICIPAL WATER SYSTEM LOCATED WITHIN THE CITY OF ADRIAN'S URBAN GROWTH BOUNDARY.

anderson perry & associates, inc

CITY OF
ADRIAN, OREGON
MALHEUR COUNTY
GROUNDWATER APPLICATION MAP

LOCATION MAP

FIGURE
1

anderson perry & associates, inc.
engineering · surveying · materials testing

March 22, 2004
Job No. 641-19

Mayor Jim Greene and City Council
City of Adrian
P.O. Box 226
Adrian, Oregon 97901

RE: Water System Department of Human Services
Circuit Rider Services Technical Assistance

Dear Mayor Greene and City Council:

On March 12, 2004, I met with Dick Davis, your water system operator, to perform a review of your supply sources. The purpose of the field visit was to provide an initial analysis of the City's water quality problems as requested by the Oregon Department of Human Services - Drinking Water Program (DWP) (formerly the Oregon Health Division).

During the field review, I inspected the facilities at Well No. 2, Well No. 4, and the reservoir. We discussed operation of each facility in detail and the problems with the quality of the City's current supply wells. The main issue is that the City's water contains iron, manganese, hydrogen sulfide, ammonia, and, reportedly, methylene gas, all of which can contribute to poor quality water with taste and odor problems.

I have discussed the chlorination problems the City has been having with both Dick and Gary Burnett from the DWP. Currently, the City has a small chemical metering pump installed at Well No. 4. This pump doses a 12.5 percent solution of sodium hypochlorite into the discharge pipe from Well Pump No. 4. There is a direct transmission line from Well No. 4 up to the reservoir. There is a separate outlet line from the reservoir that leads into town and the distribution system. Since the chlorination system was installed, the City has experienced numerous problems in providing a proper free chlorine residual, which indicates proper disinfection of the water. Additionally, the City indicated they have been using a lot of chlorine for the volume of water being pumped.

It appears there are several problems associated with using chlorine to disinfect the water containing the existing chemicals. First, iron and manganese become oxidized with chlorine and, thus, increase the chlorine demand. Also, a precipitate is formed when the metals are oxidized. Chlorine will oxidize hydrogen sulfide, which is an additional chlorine demand. With the addition of chlorine to the water, the presence of ammonia causes the formation of mono-, di-, and tri-

CONSULTING ENGINEERING • SURVEYING • MATERIALS TESTING

☒ LA GRANDE, OR 97850-0939
1901 N. FIR ST.
P.O. BOX 1107
(541) 963-8309
FAX: (541) 963-5456

☐ WALLA WALLA, WA 99362-0032
214 E. BIRCH
P.O. BOX 1687
(509) 529-9260
FAX: (509) 529-8102

☐ BAKER CITY, OR 97814-2621
BASCHE-SAGE PLACE
2101 MAIN, Suite 207
(541) 523-5211
FAX: (541) 523-9275

chloramines. When the operator adds enough chlorine to get a free chlorine residual, a large volume of chlorine is necessary to reach breakpoint chlorination. When this happens, di- and tri-chloramines are formed. The di- and tri-chloramines produce a very distinctive and foul odor. Therefore, by trying to achieve a free chlorine residual, the addition of the chlorine is adding to the smell of the water.

As you know, we will begin to design improvements to the City's water system in the coming months. However, in the interim, we recommend the City pursue the following course of action in an effort to improve the quality of the drinking water and reduce the amount of chlorine used for disinfection. We recommend the City install a small polyphosphate metering pump at Well No. 4. Discharge from the polyphosphate metering pump can be installed at the location of the present chlorine injector. A new chlorine injection point should be tapped into the pipe just downstream of the flowmeter in the manhole outside the Well No. 4 structure. We recommend a 30-gallon chemical tank be provided for the polyphosphate solution. There is currently a receptacle in the concrete structure around Well No. 4 that both the polyphosphate pump and chlorine pump can be plugged into. This receptacle becomes active only when the pump is started and running. Therefore, both the polyphosphate and chlorine would be injected only when the pump is running.

The purpose of injecting the polyphosphate first is to sequester or "tie up" the iron and manganese. By sequestering the iron and manganese it will not be oxidized by the chlorine and it will not form a precipitant. After the iron and manganese are sequestered, the polyphosphate also helps reduce formation of hydrogen sulfide, which adds to the odor of the water. The chlorine solution needs to be added to the Well No. 4 discharge at a point downstream from where the polyphosphate has been injected.

We recommend the chlorine metering pump be moved from its existing location in the concrete structure to the wooden structure adjacent to the wellhead. Both chemical metering pumps should be housed in the wooden structure. A small trench will need to be dug from the wooden structure to the flowmeter manhole. We recommend a 1- to 1-1/2-inch PVC conduit be laid from the wooden structure to the metering manhole. A new chlorine solution line can then be inserted in the conduit, and a new tap made on the PVC pipe just downstream of the flowmeter can be utilized for the chlorine injection point.

I have attached information for the City's review concerning a peristaltic metering pump and a solution tank that are preassembled into one unit. The polyethylene tank is suitable for the application. Additionally, the polyphosphate or "Aqua Mag" comes in 30-gallon containers. The Aqua Mag solution and the peristaltic metering pump mounted on a polyethylene tank are available from Gregg Fisher at Filtration Technology, Inc., of Boise, Idaho, at 208-336-6611. I have discussed this proposed installation with Gregg, so he is familiar with it. It is estimated the price for the pump and tank assembly would be approximately $550, and a 30-gallon barrel of Aqua Mag costs $450.

I believe Gregg Fisher would be able to deliver this equipment to the City. The Aqua Mag solution, although somewhat expensive, is only injected in small quantities.

Although the recommended measures will not solve all of the quality problems with the City's water, we believe they should help. Sequestering of the iron and manganese with the polyphosphate will greatly reduce any potential iron bacteria formation in the City's distribution system. The Aqua Mag will also greatly reduce the hydrogen sulfide in the water. Additionally, we recommend the City not test for free chlorine residual but instead test for total chlorine. This means the City will be using less chlorine and not be bringing the water toward a breakpoint chlorination where the di- and tri-chloramines form in the solution. The City will still be able to adequately disinfect the water; however, by not bringing the water all the way to breakpoint chlorination and looking for a free chlorine residual, the City will be reducing the potential of forming the di- and tri-chloramines that produce an odor. We would also recommend the City flush all deadend lines once the new system is in operation.

We hope these interim measures will help to increase the quality and reduce the odor of the City's drinking water. If you have any questions, please feel free to call me.

Very truly yours,

ANDERSON·PERRY & ASSOCIATES, INC.

By Jess Holt
Jess Holt, P.E.

JH/dl
Enclosure
cc: Dick Davis, City of Adrian
Shawn Snyder, City Recorder
Gary Burnett, DWP
Don Mogstad, Poage Engineering
File No. 651-19-02 (w/encl.)

G:\Clients\Adrian\641-19\Correspondence\WaterSysEval.wpd

Gary V.

anderson perry & associates, inc.
engineering • surveying • materials testing

March 22, 2006

Gary Viehdorfer
Oregon Economic and Community Development Department
775 Summer Street NE
Salem, Oregon 97301-1280

RECEIVED
MAR 24 2006
ECONOMIC & COMMUNITY DEVELOPMENT

RE: City of Adrian, Oregon - Water System Improvements

Dear Gary:

During our recent conference call, I indicated that I would provide you a brief historical summary of the actions to date on the City of Adrian water system improvements project. Attached to this letter is that summary.

The original project funding was coordinated between Keller Associates, the City of Adrian, and OECDD. This funding was based on a brief "opinion of interim solution cost" that was an attachment at the end of the Master Plan. There was no discussion narrative in the Plan on the "interim solution." When the City of Adrian hired Anderson·Perry & Associates to provide engineering services for their water system improvements project, we reviewed the estimated costs for the work the City anticipated. At that time we indicated to the City that the project was under-funded, but we would try to work within their budget to get them a reasonable and reliable water supply. The "interim solution" involved utilizing their existing Well No. 4 and using either existing Well No. 1 or a new well, all of which would require highly expensive filtration facilities and would result in high operation and maintenance cost. During our preliminary investigation and evaluation of the City's water supply situation, an aquifer was located that appeared to have water of much higher quality than the City's existing wells. Consequently, the scope of the project was geared toward drilling a new well that would not require filtration with media, an air stripping column tower, re-pumping of water, treatment of iron and manganese, etc. Obviously, this well did not draw water from the same aquifer as Well No. 4 as suggested in the Plan. In July 2004, a revised preliminary budget was submitted to the City and was discussed at a City council meeting. This budget included a new well, pump station and transmission line, controls and telemetry, and distribution system work if funds allowed. You have a copy of this revised July 2004 preliminary budget summary.

This approach was discussed with Gary Burnett of the Drinking Water Program. His office was fully supportive of trying to get an additional supply well that did not have all of the bad chemical constituents that the City's existing supply has.

☒ La Grande, Oregon 97850-0939 / 1901 N. Fir, P.O. Box 1107 / (541) 963-8309, Fax (541) 963-5456
☐ Walla Walla, Washington 99362-0032 / 214 E. Birch, P.O. Box 1687 / (509) 529-9260, Fax (509) 529-8102

The City proceeded toward the goal of drilling a new well that would not have iron, manganese, ammonia, hydrogen sulfide, methane gas, etc. A test well was drilled first to determine yield and initial water quality. Well No. 5 was then designed and constructed. Well No. 5, in conjunction with utilizing the test well, will provide the City's water demands for the next 20 years. Additionally, the water is of much higher quality than the City's existing wells. Unfortunately, the well water does contain an amount of arsenic that exceeds the EPA's maximum contaminant level (MCL). Therefore, a system will need to be installed to remove or reduce the arsenic contained in the water to below the current MCL.

Under the City's present budget, because of the cost of the transmission line requirement to treat the water for arsenic removal and other factors, it will be necessary for the City to seek additional funds in order to complete the project. At this time, we would like OECDD to assist the City in producing a revised budget for the water system improvements project. Anderson·Perry is currently investigating different options in order to recommend an arsenic treatment technology that would best suit the City's needs for treatment and operation and maintenance costs. Once the initial cost is identified, it will have to be factored into the budget.

I hope this letter and the attached summary of historical actions provides a better picture of what has transpired during the course of the project. If you have any questions, please feel free to call me.

Sincerely,

ANDERSON·PERRY & ASSOCIATES, INC.

By Jess Holt
Jess Holt, P.E.

JH/cd

Enclosure

cc: Mayor Keith Baldwin and Council, City of Adrian (w/encl.)
Shawn Snider, Recorder, City of Adrian (w/encl.)
File No. 515-01-02 (w/encl.)

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City of Adrian, Oregon
Water System Improvements
Brief Historical Summary of Actions to Date

Dates	Brief Narrative
March 25, 2004	An Engineering Services Agreement was signed between City and AP for water system improvements. The City had previously arranged for $500,000 financing for the improvements. The basic water supply options identified in the Water Study Evaluation (Master Plan) prepared by Keller Associates identified three main options. These options consisted of trying to get water rights and developing a spring that was 2.5 miles away from the City and needed treatment for high nitrates; going across the Snake River and drilling a well in Idaho and running a 5-mile pipeline plus river crossing to the City; and drilling a new well in the City and treating the existing and new well to remove iron, manganese, ammonia, hydrogen sulfide, methane gas, and other chemical constituents. The financing obtained by the City was not adequate to fund any of the three main options, so the City and Keller Associates developed what was called an interim solution. The interim solution consisted of upgrading the City's existing Well No. 4; upgrading the City's existing Well No. 1, which had never been put into service, and providing treatment for it; or drilling a new well within a short distance from the existing Well No. 4 and having a central treatment plant and some distribution system improvements. In reviewing the costs estimates included with the Master Plan, it was very apparent that the $500,000 budgeted was not adequate to make the interim solution improvements.
April 1, 2004	The City authorized AP to work with Filtration Technologies to provide a temporary interim method of treating water from Well No. 4.
April 4, 2004	AP provided a field review of the water system facilities.
April - May 2004	Preparation of the Environmental Information Document (EID) was in progress. Work on water quality of existing wells and gathering information on Well No. 1 and why it was never used was performed. Further information on the water from Well No. 1 indicated it contained iron, manganese, high amounts of ammonia, hydrogen sulfide, and methane gas. Comments from people who were present at the time Well No. 1 was drilled indicate the well was never put into service because it contained high amounts of iron and manganese, and when it was pump tested, the water came out black.

June 2004	Installed the polyphosphate unit on Well No. 4 to sequester iron and manganese. Due to the high amounts of ammonia, the water required very high amounts of chlorine in order to obtain a residual in the water. Due to the presence of ammonia in the water and the addition of chlorine, unless breakpoint chlorination was achieved very carefully, large amounts of di- and trichloramines would be produced. These contribute very severely to a terrible taste and odor problem with the water that has plagued the City's water for years. During this period of evaluation of water sources, AP had requested a quote from a driller to pump test Well No. 1 and his quote was received.
July 2004	After much investigation of area wells, existing wells, the different options available to the City, etc., AP found a water source that had the potential to provide high quality water to the City. During this period, a revised improvement plan was developed to include a new well and phase the City's existing well into emergency backup. The City decided not to spend money on pump testing their existing Well No. 1.
August 2004	A pump test was done on a newly drilled domestic well and water samples from this well were taken. The results of the tests done on this water indicated that it had no iron, extremely low manganese, no ammonia, and no hydrogen sulfide, and was of a much higher quality than the City's existing Well No. 4 supply. A full series of chemical tests were not run on the well since the main concern was to check for iron, manganese, and ammonia. Additionally, this well had no taste or odor associated with hydrogen sulfide or methane gas. Negotiations were instigated with the landowner who had drilled the domestic well to see if he would donate a permanent easement for the City to drill a new well. Negotiations for transmission line right-of-way with several affected landowners were also instigated.
September, October, November 2004	Negotiations continued with property owners. The two property owners were not responding. Oppedyk gave permission to drill a test well on his property. The draft EID was completed except for some agency responses that were not received. A groundwater permit application was prepared and submitted to the OWRD for the final well, and a test well was drilled. Amendment No. 1 authorized AP to design Phase I, Well No. 5.
December 2004	The test well was pump tested and it showed that there appeared to be sufficient quantities of water available to meet the City's needs. The responses from agencies were finally received on the EID. The EID was sent to the Drinking Water Program (Health Division) for review.
January 2005	OWRD permit was filed.
February 2005	FONSI ad in the newspapers on the EID was filed; 30-day comment period required. Design of the Phase I new well was completed.

Water System
System Improvements

City of Adrian
Malheur County, Oregon

April 2011

Provided by the Oregon Department of Human Services, Drinking Water Section as part of the Ground Water Circuit Rider Technical Assistance Program

DRAFT

Prepared By:

HBH
Consulting Engineers

20055 SW Pacific Hwy
Suite 201
Sherwood, Oregon
97140
503.625.8065

PWS ID: 41-00002
HBH Staff: Brad Carr, EIT
System Staff: Shawn Snyder

BACKGROUND

The City of Adrian owns and operates 5 wells, three of the wells are currently in use to supply the City with water. Water is chlorinated at the wells and sent up to a 200,000 gallon concrete reservoir. From here the system is gravity fed to the city, developing 84 psi in downtown. The system serves 185 people through 90 connections.

SYSTEM DEFICIENCIES

The City wells are pulling water from an aquifer that has elevated levels of iron, manganese, ammonia, methane and hydrogen sulfide. Since the levels of iron, manganese and ammonia fluctuate throughout the year, this causes the chlorine residual to fluctuate as well. This is very difficult to achieve without a PLC to monitor the levels of iron, manganese and ammonia and make adjustments to the chlorine feed rate. The chlorine system must be dynamic and respond to changes in the water chemistry to give consistent chlorine residual.

Chlorine is currently used to bond with ammonia by reaching what is referred to as the breakpoint. To achieve the breakpoint, the chlorine must be used at a minimum rate of 4:1 mass ratio. The amount of chlorine consumed to produce this break point is very high and requires constant monitoring of the ammonia levels so that system does not over chlorinate. Once the ammonia level drops, the chlorine residual jumps up causing the system operators to make adjustments to the chlorine feed pump.

Iron and manganese also consume chlorine in an oxidation process that causes the iron and manganese to precipitate. The precipitation of the iron and manganese allows them to settle out in the bottom of the reservoir. Orthophosphate was used in the past to bond with the iron and manganese. This does not cause the iron or manganese to precipitate, but rather sequesters it by holding iron and manganese in suspension. The drawback to orthophosphate is that when the water is heated, the orthophosphate breaks down, releasing the iron and manganese. Typically, water heaters tend to heat the water to this level causing the iron to rust out the water heater.

Methane is a major concern for safety reasons. The wells likely have low levels of methane but accidents have occurred at the well sites. Ventilation improvements should be made around all electrical controls. Ideally, any electrical components within contact of the methane gas should be explosion proof.

RECOMMENDATIONS FOR SYSTEM IMPROVEMENTS

Ammonia can be difficult to remove from drinking water, but there are a few processes that work biologically, chlorination, ozone and ion exchange.

Biologically

Ammonia is often a byproduct that forms when organic material breaks down. This is common in nature and very commonly found in waste water treatment plants. Typically EPA puts limits on how much ammonia and nitrates that can be discharged from a waste water treatment plant. Ammonia levels are often reduced by using bacteria that break down the ammonia. The bacteria use ammonia as fuel to grow. In this case we do not have enough time for the bacteria to work in the water to break down the ammonia. These processes often take hours to days to complete, if this case we only have minutes for the reaction to take place. Biological treatment would not be a good option for the City of Adrian.

Chlorine

Breakpoint is when chlorine has reacted with all the available reducing agents. At this point any additional chlorine will be free for chlorine residual. Chlorine will react with iron and manganese in addition to the ammonia. The mass ratio of chlorine used to achieve this breakpoint is rather high with the ammonia absorbing 4x it is mass in chlorine. Chlorine used to oxidize the iron and manganese in addition to the breakpoint chlorine for the ammonia. Currently Adrian is consuming on average 3.7 gallons of 12.5% chlorine each day. They currently feed the chlorine to the system just after the well, approximately ¼ mile from the reservoir. Since ammonia levels vary over time as do the iron and manganese levels, the chlorine system would have to be sensitive to these changes and adjust the chlorine feed rate accordingly. This would require addition of chlorine residual monitor at the reservoir (which requires power). A telemetry system would be needed to relay readings back to a controller which would regualate the feed pump. This would require additional equipment and a PLC that the City staff would prefer not to maintain.

Figure 1. Chlorine Feed Pump

Another drawback to this configuration is that it does not solve that bad taste of the water of help remove the oxidized iron or manganese. The iron and manganese will still continue to build up in the bottom of the reservoir and show up in homes from time to time.

Ozone & Ion Exchanger

Ozone can be used to oxidize iron and manganese causing them to precipitate. In order to achieve enough contact time for the ozone to break down these other agents, the injection point will need to be as close to the well source as possible. All the wells feed into a common fill line to the reservoir that is 6" PVC and close to 1000 LF. With the maximum flow rate of the larger well (well #3) of 175 gpm, close to 8 minutes of contact time will be achieved. A small building will have to be built near the reservoir to house the treatment

equipment. Also a small utility vault will have to be installed around the ozone injection manifold. Filters would have to be installed in the new building to remove the oxidized iron and manganese. Following these filters would be ion exchanger. This would be used to remove ammonia. Both the filters and ion exchanger would have backwash systems that will be on a timer.

Ion exchange (water softener) can remove ammonia due to its affinity to sodium. The configuration of the ion exchanger system is critical to its success of operation. If the ion exchangers are installed in parallel the ion exchanger can becomes exhausted due to the waters hardness (calcium) and more ammonia could be released into the system. Calcium takes precedence over the ammonia. When the resin is exhausted more calcium can bump the ammonia from the resin causing an increase ammonia level. Installing ion exchangers in sequence and allowing the first ion exchanger to remove calcium (hardness) and the second (polishing) to remove ammonia would work as a better configuration. A resin such as zeolite would work well for this application.

Chlorine would then be injected after the ion exchanger to allow for contact time in the reservoir. With the majority of the reducing agents removed from the water, the chlorine dosage could be reduced allowing for the chlorine injected producing free chlorine. A flow meter would need to be installed prior to the filtration system, the chlorine feed rate would need to be flow based since each well has a slightly different output and the loading of the filters. See system improvement costs below.

Table 1: Estimated Costs Ozone and Ion Exchange (City to Install Equipment)

City of Adrian System Improvements

Item	Quantity	Costs
Building 10'x20'	1	$12,000
Ozone System	1	$15,000
Macorlite Filters	1	$18,000
Ion Exchanger	1	$12,000
Flow Meter	1	$1,250
Flow Pace Chlorine Feed Pump	1	$1,500
Backwashing Piping	1	$4,500
System Piping	1	$2,300
Misc	1	$4,500
Sub Total		$71,050
Admin and Legal		$2,885
Engineering		$14,210
Total		**$88,145**

Note:

*Prior to stalling any treatment system, each well should be tested for iron, manganese, ammonia, methane and calcium levels. These results will be used to fine tune the treatment system.

Table 2: Estimated Costs Ozone and Ion Exchange (State Revolving Loan Fund or Other Public Funds)

City of Adrian System Improvements		
Item	Quantity	Costs
Building 10'x20'	1	$18,000
Ozone System	1	$19,000
Macorlite Filters	1	$23,000
Ion Exchanger	1	$15,000
Flow Meter	1	$2,500
Flow Pace Chlorine Feed Pump	1	$1,900
Backwashing Piping	1	$6,500
System Piping	1	$4,200
Misc	1	$7,000
Sub Total		$97,100
Admin and Legal		$3,942
Engineering		$19,420
Total		**$120,462**

From: "Brad" <BCarr@hbh-consulting.com>
Subject: City of Adrian Drinking Water
Date: Mon, April 18, 2011 2:18 pm
To: VBingham@FMTC.com,CityofAdrian@FMTC.com

Vincent,

Please see attached my preliminary findings for the City of Adrian. Water quality from the existing wells is poor but can be treated. This could be an option when compared to acquiring the property and treating the arsenic from the new well.

The system outlined in the preliminary findings will remove arsenic also, but the loading rates of the media along with iron levels will have to be closely reviewed. The EPA has a selection guideline for removing arsenic that could be followed. Water testing should be completed on the City's new well before they try and purchase the land. This testing would be used to outline possible treatment techniques. Also from what we have been told, DEQ will not allow any discharge of arsenic from a water treatment plant. This means that some sort of absorption media such as activated alumina would have to be used, or a containment system (such as the one Vale uses) would be needed to catch the backwash or regenerant waste.

Treating the existing wells could prove to be more cost beneficial then acquiring the new well and treating this water.

Brad Carr

HBH Consulting Engineers

503-625-8065-Phone

503-625-1531-Fax

Attachments:

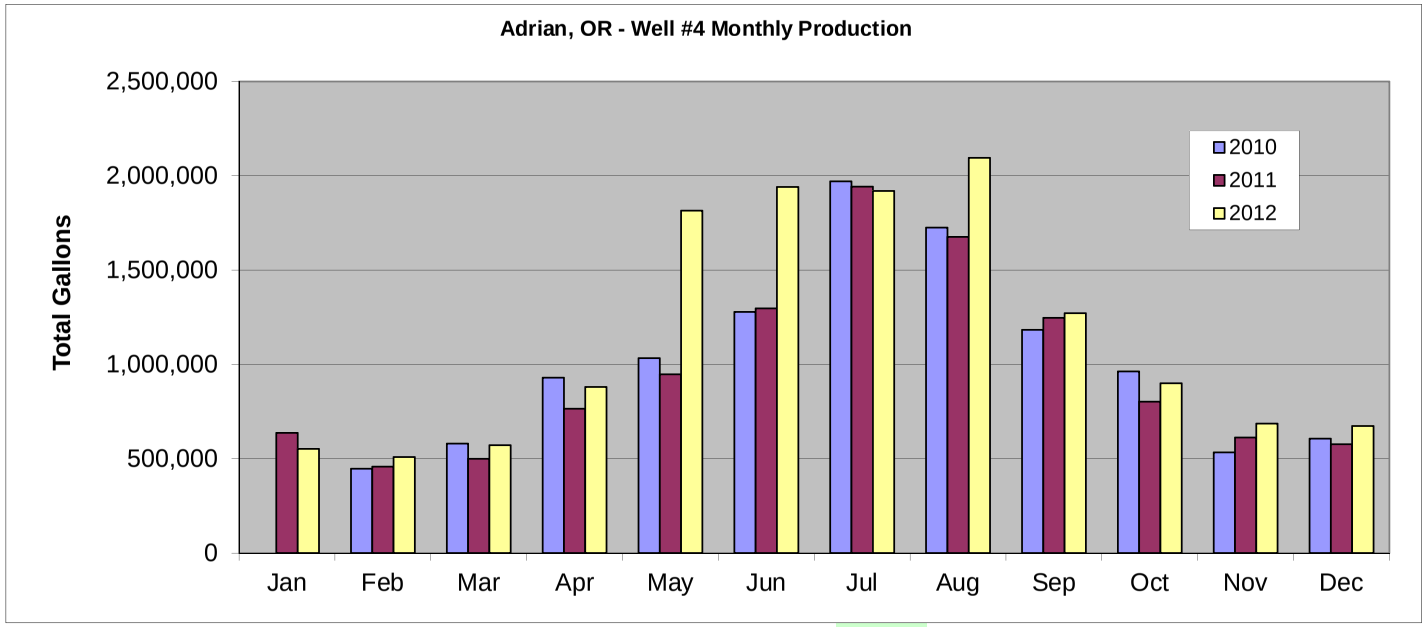
untitled-1.2	
Size:	3.7 k
Type:	text/html

Water Treatment.pdf	
Size:	2.6 M
Type:	application/pdf

Adrian, OR
Well (#4) Production Data Summary

Monthly Production Summary

Total GAL	2010	2011	2012	Avg		gpd
Jan	ND	637,300	552,400	594,850		
Feb	447,400	458,600	509,200	471,733	MIN	15,979
Mar	580,200	500,200	571,600	550,667		
Apr	930,100	765,400	880,900	858,800		
May	1,033,200	947,800	1,815,500	1,265,500		
Jun	1,278,800	1,296,800	1,941,200	1,505,600		
Jul	1,970,600	1,942,500	1,919,200	1,944,100	MAX	63,568
Aug	1,725,100	1,676,300	2,095,200	1,832,200	MAX	67,587
Sep	1,183,100	1,247,000	1,271,500	1,233,867		
Oct	963,000	802,300	900,500	888,600		
Nov	533,500	612,800	686,600	610,967		
Dec	606,600	576,600	674,100	619,100		
Total	11,251,600	11,463,600	13,817,900	12,177,700		33,364
Max	1,970,600	1,942,500	2,095,200	2,095,200		67,587
Avg	1,022,873	955,300	1,151,492	1,043,221		34,774
Min	447,400	458,600	509,200	447,400		15,979
Avg Summer	1,658,167	1,638,533	1,985,200	1,760,633		56,795
Avg Winter	447,400	458,600	509,200	471,733		16,848
Avg Irr. Demand	1,210,767	1,179,933	1,476,000	1,288,900		39,947
Irr.%	73.0%	72.0%	74.4%	73.2%		



Adrian, OR
Well Production Data (Raw) - Well 4

DEC 2012						NOV 2012						OCT 2012					
DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED
1	42,692,100	161	21 1/2	0.05	20,500	1	41,812,100	83	20	1.66	-172,900	1	41,122,900	94	27 1/2	0.00	38,400
2	42,713,100	145	2.5 GALS	0.13	21,000	2	41,846,400	141	12	0.17	34,300	2	41,163,100	66	20	0.00	40,200
3	42,733,600	169	16	1.99	20,500	3	42,075,100	131	9	0.00	228,700	3	41,207,400	76	18	0.01	44,300
4	42,734,900	141	16	0.10	1,300	4	42,089,900	128	12	0.00	14,800	4	41,287,900	48	16 1/2	0.00	80,500
5	42,786,900	132	16	0.10	52,000	5	42,115,400	132	11	0.00	25,500	5	41,317,400	67	14	0.00	29,500
6	42,821,600	138	16	0.23	34,700	6	42,156,400	113	33 1/2	0.09	41,000	6	41,337,600	0	9	0.00	20,200
7	42,828,400	142	16	0.25	6,800	7	42,175,400	146	32	1.47	19,000	7	41,365,900	102	8 1/4	0.06	28,300
8	42,839,200	150	2 GALS	0.11	10,800	8	42,204,600	144	30 1/2	0.01	29,200	8	41,392,200	92	8	0.02	26,300
9	42,860,900	154	0	2.20	21,700	9	42,231,700	134	30	0.36	27,100	9	41,422,000	94	32 3/4	0.00	29,800
10	42,892,400	126	16	0.09	31,500	10	42,246,200	137	24	2.20	14,500	10	41,449,900	100	32 3/4	0.00	27,900
11	42,911,400	116	10 1/2	0.12	19,000	11	42,273,700	138	24	0.00	27,500	11	41,477,700	107	31	0.05	27,800
12	42,939,400	126	6	2.20	28,000	12	42,300,900	134	24	0.00	27,200	12	41,522,300	105	29	0.00	44,600
13	42,960,300	134	6	0.65	20,900	13	42,329,700	126	21	0.08	28,800	13	41,534,900	88	30	0.01	12,600
14	42,983,000	126	33	2.20	22,700	14	42,358,800	67	18	1.63	29,100	14	41,563,300	112	28 1/2	0.11	28,400
15	43,004,200	132	32	0.02	21,200	15	42,373,300	135	18	0.88	14,500	15	41,580,300	110	26	0.00	17,000
16	43,025,700	137	32	0.32	21,500	16	42,401,600	145	18	0.06	28,300	16	41,613,800	90	21 1/2	0.00	33,500
17	43,047,400	146	31 1/2	0.32	21,700	17	42,430,200	135	18	0.10	28,600	17	41,633,000	114	19 1/2	0.11	19,200
18	43,062,200	119	30	0.63	14,800	18	42,457,800	152	0	2.20	27,600	18	41,669,700	86	19	0.06	36,700
19	43,092,000	132	25	0.28	29,800	19	42,486,700	128	11 1/2	0.00	28,900	19	41,690,800	114	9 1/2	2.20	21,100
20	43,111,800	145	24 1/2	1.11	19,800	20	42,516,400	132	6 1/2	2.20	29,700	20	41,717,100	118	11	0.03	26,300
21	43,123,100	163	24	0.00	11,300	21	42,531,400	147	6 1/2	0.50	15,000	21	41,740,000	101	10 1/2	0.08	22,900
22	43,144,500	135	23 1/2	0.04	21,400	22	42,561,200	148	7	0.12	29,800	22	41,761,700	110	10	0.00	21,700
23	43,176,300	145	19 1/2	0.01	31,800	23	42,561,400	150	7	0.08	200	23	41,785,700	130	6	1.20	24,000
24	43,198,300	159	18 1/2	0.06	22,000	24	42,561,900	144	7	0.02	500	24	41,812,300	120	4	0.00	26,600
25	43,219,300	138	19	0.04	21,000	25	42,562,400	169	6 3/4	0.34	500	25	41,840,900	128	32	0.04	28,600
26	43,230,400	133	13	0.01	11,100	26	42,585,400	151	32	0.03	23,000	26	41,859,600	112	32	0.00	18,700
27	43,255,100	144	12	0.07	24,700	27	42,607,000	141	26 1/2	0.93	21,600	27	41,882,100	131	31 1/2	0.03	22,500
28	43,274,800	146	12	0.01	19,700	28	42,628,100	157	26 1/2	0.10	21,100	28	41,908,700	132	31	0.04	26,600
29	43,296,200	135	12	0.11	21,400	29	42,650,600	145	26 1/2	0.12	22,500	29	41,943,000	87	27	0.00	34,300
30	43,321,700	119	11	1.20	25,500	30	42,671,600	149	22	1.02	21,000	30	41,956,900	145	21	2.20	13,900
31	43,345,700	116	5	0.12	24,000	31						31	41,985,000	144	20	0.16	28,100
	674,100				674,100		686,600				686,600		900,500				900,500

Color Key:

City of Adrian highlight of monthly total	
Keller Adjustment - see equation or notes:	calc'd monthly total, corrected beginning day equations, entered meter reading instead of zeros & corrected gallons equation
Data Anomaly/Entry Error?	

Max	169	169	Max	145
Avg	138.839	136.067	Avg	104.1
Min	116	67	Min	48

Adrian, OR
Well Production Data (Raw) - Well 4

SEPT 2012						AUG 2012						JUL 2012					
DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED
1	39,813,000	51	0		0	1	37,781,100	47	21	0.22	63,300	1	35,878,900	52	21 1/2	0.17	80,300
2	39,886,600	72	33	0.30	73,600	2	37,849,200	46	27	0.14	68,100	2	35,926,500	50	19 1/2	0.25	47,600
3	39,972,900	42	31 1/2	0.21	86,300	3	37,913,800	48	26	0.12	64,600	3	35,959,800	71	16	0.20	33,300
4	40,012,700	43	31	0.18	39,800	4	37,978,300	50	26	0.05	64,500	4	35,745,400	70	16	0.22	-214,400
5	40,073,400	41	28	0.02	60,700	5	38,044,700	47	20 1/2	0.05	66,400	5	36,186,600	57	16	0.27	441,200
6	40,104,900	0	26	0.15	31,500	6	38,127,700	47	14 1/2	0.04	83,000	6	36,170,300	56	15	0.17	-16,300
7	40,104,900	0	24 1/2	0.05	0	7	38,180,300	49	9	0.06	52,600	7	36,228,000	44	13 1/2	0.14	57,700
8	40,104,900	0	12 1/2	0.00	0	8	38,235,200	62	7	0.09	54,900	8	36,292,500	46	12 1/2	0.12	64,500
9	40,147,700	70	21	0.07	42,800	9	38,306,100	51	5	0.15	70,900	9	36,368,800	48	11 1/2	0.18	76,300
10	40,206,800	46	17 1/2	0.04	59,100	10	38,436,600	46	0	0.45	130,500	10	36,420,300	42	9 3/4	0.06	51,500
11	40,258,300	52	15 1/2	0.05	51,500	11	38,504,300	45	33	0.23	67,700	11	36,478,400	48	9	0.08	58,100
12	40,319,300	46	12	0.06	61,000	12	38,574,400	52	30 1/2	0.15	70,100	12	36,525,500	0	7	0.01	47,100
13	40,355,300	75	5	0.08	36,000	13	38,638,400	61	29	0.03	64,000	13	36,581,800	57	5	0.06	56,300
14	40,390,700	94	33	0.00	35,400	14	38,784,500	47	27 1/2	0.13	146,100	14	36,618,300	71	31	0.34	36,500
15	40,461,200	49	26	0.03	70,500	15	38,769,800	51	26	0.03	-14,700	15	36,658,300	99	30	0.06	40,000
16	40,504,900	66	23	0.00	43,700	16	38,836,800	49	23 1/2	0.14	67,000	16	36,684,500	111	30	0.08	26,200
17	40,552,600	69	21	0.03	47,700	17	38,898,000	40	22 1/2	0.34	61,200	17	36,740,300	83	29	0.05	55,800
18	40,600,900	54	19	0.00	48,300	18	38,964,700	43	22 1/2	0.66	66,700	18	36,818,600	60	26 1/2	0.02	78,300
19	40,640,100	69	17 3/4	0.00	39,200	19	39,836,700	51	21 1/2	0.03	872,000	19	36,984,500	56	26 1/2	0.03	165,900
20	40,707,400	65	15 1/4	0.00	67,300	20	39,103,100	51	20 3/4	0.13	-733,600	20	36,970,000	47	20	0.00	-14,500
21	40,741,300	54	14	0.05	33,900	21	39,169,200	53	19 1/4	0.03	66,100	21	37,032,700	101	23 1/2	0.04	62,700
22	40,779,900	68	13	0.00	38,600	22	39,233,400	52	17 1/4	0.05	64,200	22	37,095,900	52	20	0.07	63,200
23	40,810,700	87	12	0.17	30,800	23	39,308,200	48	14	0.05	74,800	23	37,133,100	52	16	0.01	37,200
24	40,841,500	80	12	0.01	30,800	24	39,364,900	51	13	0.04	56,700	24	37,243,900	49	9 1/2	0.14	110,800
25	40,875,100	87	6	0.00	33,600	25	39,430,300	48	12	0.04	65,400	25	37,319,300	54	6 1/2	0.05	75,400
26	40,948,000	49	33	0.04	72,900	26	39,500,200	49	10	0.00	69,900	26	37,380,300	49	5	0.16	61,000
27	40,970,800	74	31	0.02	22,800	27	39,562,600	44	9	0.10	62,400	27	37,448,900	50	33	0.30	68,600
28	41,018,700	77	30 1/2	0.04	47,900	28	39,631,700	47	6	0.06	69,100	28	37,505,900	49	37 1/2	0.21	57,000
29	41,047,600	94	29 1/2	0.04	28,900	29	39,696,900	49	0	0.30	65,200	29	37,575,600	47	29 1/2	0.94	69,700
30	41,084,500	99	29 1/2	0.04	36,900	30	39,761,400	51	0	0.93	64,500	30	37,647,200	52	26	0.28	71,600
31						31	39,813,000	72	0	0.00	51,600	31	37,717,800	47	23	0.13	70,600
	1,271,500				1,271,500		2,095,200				2,095,200		1,919,200				1,919,200

99	Max	72		111
59.1	Avg	49.9032		57.0968
0	Min	40		0

Adrian, OR
Well Production Data (Raw) - Well 4

JUN 2012						MAY 2012						APR 2012					
DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED
1	33,931,900	53	33 3/4	0.00	74,500	1	32,054,200	113		0.08	12,300	1	31,192,000	154	1 GAL	0.13	31,000
2	34,008,700	50	27 1/2	0.07	76,800	2	32,095,600	141	9 1/2	0.23	41,400	2	31,212,700	152	1 GAL	0.12	20,700
3	34,083,500	49	21	0.35	74,800	3	32,137,800	137	8 1/2	0.02	42,200	3	31,233,300	175	1 GAL	0.09	20,600
4	34,164,500	49	20	0.10	81,000	4	32,173,400	127	7 1/2	0.12	35,600	4	31,254,800	157	1 GAL	0.04	21,500
5	34,222,400	74	19	0.10	57,900	5	32,208,100	136	6 1/2	0.12	34,700	5	31,288,600	156	1 GAL	0.07	33,800
6	34,254,800	75	18 1/2	0.00	32,400	6	32,243,000	150	5 1/2	0.13	34,900	6	31,307,300	160	32	0.01	18,700
7	34,283,100	72	18	0.04	28,300	7	32,281,100	116	5	0.08	38,100	7	31,329,300	166	32	0.00	22,000
8	34,371,000	56	18	0.00	87,900	8	32,399,500	97	7 1/2	0.00	118,400	8	31,351,600	145	32	0.18	22,300
9	34,382,600	71	18	0.20	11,600	9	32,444,300	111	5 1/2	0.05	44,800	9	31,375,800	161	30 3/4	0.22	24,200
10	34,407,700	103	17 1/2	0.06	25,100	10	32,494,600	115	3 1/2	0.05	50,300	10	31,419,200	110	29 1/2	0.18	43,400
11	34,474,700	92	17	0.00	67,000	11	32,443,200	118	0	0.05	-51,400	11	31,448,300	142	29	0.06	29,100
12	34,537,600	86	12	0.02	62,900	12	32,546,100	153	28 1/2	0.09	102,900	12	31,470,700	158	28 1/4	0.18	22,400
13	34,621,800	58	9 3/4	0.11	84,200	13	32,613,000	103	22 1/4	0.42	66,900	13	31,492,100	151	27	0.06	21,400
14	34,692,500	69	8 1/2	0.09	70,700	14	32,712,700	61	15 1/2	0.13	99,700	14	31,509,800	139	28	0.06	17,700
15	34,766,600	53	6	0.04	74,100	15	32,883,000	62	9	0.05	170,300	15	31,551,000	136	27	0.06	41,200
16	34,848,700	47	5	0.00	82,100	16	32,869,300	71	4 1/2	0.08	-13,700	16	31,571,700	147	26	0.01	20,700
17	34,919,100	49	31 1/2	0.03	70,400	17	32,963,000	64	2	0.00	93,700	17	31,582,600	162	25 1/2	0.09	10,900
18	34,984,900	53	29 1/2	0.00	65,800	18	33,035,700	59	33	0.13	72,700	18	31,603,800	165	25	0.05	21,200
19	35,045,300	63	23	0.05	60,400	19	33,112,600	60	22 1/2	0.33	76,900	19	31,624,400	155	24 3/4	0.14	20,600
20	35,188,200	71	22 1/4	0.00	142,900	20	33,189,100	59	16 1/2	0.72	76,500	20	31,660,400	149	24	0.09	36,000
21	35,187,000	51	19 1/4	0.05	-1,200	21	33,238,200	68	16	0.29	49,100	21	31,721,700	131	21 1/2	0.04	61,300
22	35,257,200	50	16 1/4	0.09	70,200	22	33,317,200	57	16	0.00	79,000	22	31,777,800	129	19	0.08	56,100
23	35,327,700	53	13 1/4	0.14	70,500	23	33,388,100	84	14	0.07	70,900	23	31,809,100	123	18 3/4	0.08	31,300
24	35,441,200	51	12 1/4	0.09	113,500	24	33,444,600	86	13 1/2	0.13	56,500	24	31,860,600	112	15 3/4	0.03	51,500
25	35,469,300	47	9 1/2	0.06	28,100	25	33,495,500	75	12 3/4	0.00	50,900	25	31,873,900	133	15 1/2	0.09	13,300
26	35,525,300	46	6 1/2	0.07	56,000	26	33,528,700	86	19 1/2	0.01	33,200	26	31,896,000	131	15 1/2	0.09	22,100
27	35,596,200	47	5	0.11	70,900	27	33,562,800	95	19	0.00	34,100	27	31,930,600	142	14 1/4	0.12	34,600
28	35,660,500	51	28 1/2	0.06	64,300	28	33,622,200	78	12	0.01	59,400	28	31,965,500	160	13 1/2	0.08	34,900
29	35,735,600	52	26	0.13	75,100	29	33,701,900	66	6 1/4	0.07	79,700	29	32,013,800	127	12 1/2	0.08	48,300
30	35,798,600	49	26	0.17	63,000	30	33,783,400	53	3 1/2	0.01	81,500	30	32,041,900	142	12	0.04	28,100
31						31	33,857,400	52	1 1/2	0.03	74,000	31					
	1,941,200				1,941,200		1,815,500				1,815,500		880,900				880,900

Max	103	153	Max	175	
Avg	59.6667	92.0323	Avg	145.667	
Min	46	52	Min	110	

Adrian, OR
Well Production Data (Raw) - Well 4

MAR 2012						Feb-12						Jan-12					
DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED
1	30,611,000	161	22 1/2	0.00	21,600	1	30,108,600	128	23 1/2	0.03	28,400	1	29569800	167	31 1/4	0.08	42,000
2	30,633,200	148	21 1/2	0.07	22,200	2	30,119,500	145	22 3/4	0.07	10,900	2	29605600	145	24	0.12	35,800
3	30,642,900	158	22	0.07	9,700	3	30,139,800	153	22	0.12	20,300	3	29618100	139	24	0.03	12,500
4	30,654,100	168	20	0.17	11,200	4	30,153,600	166	19 1/2	0.00	13,800	4	29639800	157	23 1/2	0.19	21,700
5	30,685,400	157	20	0.23	31,300	5	30,174,500	150	19 1/2	0.08	20,900	5	29760300	159	19 1/2	0.40	120,500
6	30,706,900	142	20	0.19	21,500	6	30,195,300	149	18 1/2	0.27	20,800	6	29760900	79	20	0.19	600
7	30,717,300	158	20	0.15	10,400	7	30,216,400	154	18 1/4	0.08	21,100	7	29760900	0	0	0.10	0
8	30,737,100	164	19 3/4	0.09	19,800	8	30,237,900	153	18 1/4	0.06	21,500	8	29761200	175	20	0.08	300
9	30,757,600	166	19 1/2	0.08	20,500	9	30,248,500	163	18 1/4	0.10	10,600	9	29764200	154	19 1/4	0.08	3,000
10	30,778,700	147	19	0.06	21,100	10	30,271,200	157	17 1/2	0.05	22,700	10	29764800	171	18 3/4	0.11	600
11	30,799,200	147	19	0.06	20,500	11	30,291,100	134	17 1/2	0.02	19,900	11	29765600	162	11	0.19	800
12	30,820,100	163		0.06	20,900	12	30,301,800	185	15 1/2	0.00	10,700	12	29786900	165	18 1/2	0.07	21,300
13	30,833,900	148	17	0.10	13,800	13	30,322,600	162	14	0.08	20,800	13	29796900	157	11	0.10	10,000
14	30,851,100	167		0.06	17,200	14	30,343,300	171	13	0.00	20,700	14	29806900	175	18 1/2	0.10	10,000
15	30,871,400	172		0.20	20,300	15	30,353,500	163	0	0.00	10,200	15	29826500	161	18	0.10	19,600
16	30,892,000	171	16	0.04	20,600	16	30,374,700	154	12	0.12	21,200	16	29836900	164	17 1/2	0.08	10,400
17	30,902,200	160	16 1/2	0.07	10,200	17	30,390,200	146	33	0.07	15,500	17	29857100	163	10 1/2	0.05	20,200
18	30,922,800	149	16	0.10	20,600	18	30,406,300	171	33	0.00	16,100	18	29867700	171	10	0.03	10,600
19	30,943,900	169	15	0.06	21,100	19	30,416,400	159	32 1/2	0.03	10,100	19	29888400	168	9 1/2	0.17	20,700
20	30,964,300	160	15	0.16	20,400	20	30,437,500	141	31 1/2	0.00	21,100	20	29988800	167	9 1/2	0.08	100,400
21	30,984,300	167		0.02	20,000	21	30,459,500	157	30 1/2	0.13	22,000	21	29919000	170	10	0.12	-69,800
22	31,005,900	148	14 1/2	0.16	21,600	22	30,470,600	158	30 1/4	0.00	11,100	22	29938800	167	9	0.35	19,800
23	31,026,800	138	13 1/4	0.15	20,900	23	30,496,400	142	30 3/4	0.00	25,800	23	29965100	129	9	0.02	26,300
24	31,037,100	177	14	0.09	10,300	24	30,506,700	162	24 1/2	0.00	10,300	24	29972300	137	31 1/4	0.00	7,200
25	31,054,600	129	13 1/2	0.13	17,500	25	30,521,700	144	24 1/4	0.05	15,000	25	29984900	174	30 1/2	0.22	12,600
26	31,077,500	158	12	0.06	22,900	26	30,537,700	155	23	0.04	16,000	26	30885000	157	30	0.06	900,100
27	31,097,300	168	12	0.08	19,800	27	30,558,400	167	23	0.04	20,700	27	30015500	176	25	0.05	-869,500
28	31,118,100	145	12	0.02	20,800	28	30,569,400	171	23	0.14	11,000	28	30035100	162	25	0.43	19,600
29	31,129,000	162	11 1/4	0.07	10,900	29	30,589,400	154	0	0.12	20,000	29	30045400	167	24 1/2	0.13	10,300
30	31,139,500	166	11 1/8	0.03	10,500	30						30	30057800	157	24	0.07	12,400
31	31,161,000	146	11	0.10	21,500	31						31	30080200	144	23 1/2	0.04	22,400
	571,600				571,600		509,200				509,200		552,400				552,400

177		Max	185	176		Max	185
157.387		Avg	155.655	152.871		Avg	109.032
129		Min	128	0		Min	0

Adrian, OR
Water Production Data (Raw) - Well 4

DEC 2011						NOV 2011						OCT 2011					
DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED
1					-28,993,200	1	28,402,600	157	6 3/4	0.10	22,200	1	27,641,800	97	26 1/2	0.02	63,700
2					0	2	28,442,200	118	26 3/8	0.07	39,600	2	27,651,400	112	24	0.02	9,600
3					0	3	28,444,000	157	32	0.15	1,800	3	27,681,300	103	23 3/4	0.16	29,900
4					0	4	28,465,900	145	32	0.15	21,900	4	27,705,900	0	22 1/2	0.03	24,600
5					0	5	28,476,700	151	31	0.00	10,800	5	27,705,900	0	20 1/2	0.00	0
6					0	6	28,498,300	155	31	0.00	21,600	6	27,705,900	0	20	0.00	0
7					0	7	28,520,400	144	30 1/2	0.07	22,100	7	27,733,200	123	19 1/2	0.07	27,300
8					0	8	28,535,800	137	29 3/4	0.04	15,400	8	27,761,900	115	19	0.00	28,700
9					0	9	28,553,900	152	29 1/2	0.11	18,100	9	27,806,000	95	17 1/2	0.10	44,100
10					0	10	28,575,700	163	28 1/2	0.09	21,800	10	27,866,000	113	16 3/4	0.13	60,000
11					0	11	28,597,400	155	27 3/4	0.10	21,700	11	27,881,900	97	15 3/4	0.08	15,900
12					0	12	28,608,000	134	28	0.03	10,600	12	27,918,600	96	14 3/4	0.00	36,700
13					0	13	28,629,100	143	27 1/2	0.00	21,100	13	27,942,700	101	14 3/4	0.00	24,100
14					0	14	28,645,500	133	27	0.00	16,400	14	27,974,900	128	13	0.00	32,200
15					0	15	28,663,300	169	27	0.00	17,800	15	28,021,100	105	12	0.03	46,200
16					0	16	28,688,700	147	26 1/4	0.01	25,400	16	28,047,300	133	11 1/2	0.00	26,200
17					0	17	28,710,800	146	25 3/8	0.00	22,100	17	28,050,000	135	11	0.02	2,700
18					0	18	28,732,800	144	25	0.00	22,000	18	28,077,300	114	11	0.00	27,300
19					0	19	28,744,200	156	24 1/2	0.02	11,400	19	28,092,500	119	11	0.05	15,200
20					0	20	28,765,400	162	24	0.11	21,200	20	28,109,700	145	9 1/2	0.04	17,200
21					0	21	28,776,800	157	24	0.10	11,400	21	28,132,800	149	10	0.06	23,100
22					0	22	28,797,200	143	23	0.05	20,400	22	28,250,600	70	7	0.03	117,800
23					0	23	28,945,600	75	22	0.10	148,400	23	28,251,800	92	0	0.02	1,200
24					0	24	28,947,200	152	22	0.03	1,600	24	28,251,800	0	11	0.05	0
25					0	25	28,945,800	162	23 1/2	0.00	-1,400	25	28,251,800	0	0	0.03	0
26					0	26	28,947,100	152	23 1/2	0.03	1,300	26	28,251,800	0	11	0.02	0
27					0	27	28,948,200	145	23	0.09	1,100	27	28,283,100	0	10	0.05	31,300
28					0	28	28,948,800	153	23	0.03	600	28	28,307,100	128	9	0.05	24,000
29					0	29	28,974,600	157		0.07	25,800	29	28,335,300	138	8 1/2	0.06	28,200
30					0	30	28,993,200	120		0.10	18,600	30	28,357,100	146	8	0.00	21,800
31	29569800				29,569,800	31						31	28,380,400	135	7	0.07	23,300
	576,600				576,600		612,800				612,800		802,300				802,300

Color Key:

City of Adrian highlight of monthly total	
Keller Adjustment - see equation or notes:	calc'd monthly total, corrected beginning day equations, entered meter reading instead of zeros & corrected gallons equation
Data Anomaly/Entry Error?	

Max	0	169	Max	149
Avg	#DIV/0!	146.133	Avg	92.9667
Min	0	75	Min	0

Adrian, OR
Water Production Data (Raw) - Well 4

SEPT 2011						AUG 2011						JUL 2011					
DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED
1	26,383,400	87	4	0.03	52,300	1	24,721,300	47	5	0.00	66,500	1	22,750,200	80	17 1/2	0.04	37,900
2	26,466,000	44	2	0.13	82,600	2	24,788,600	46	33	0.08	67,300	2	22,814,900	121	14	0.23	64,700
3	26,500,700	67	30 1/2	0.45	34,700	3	24,833,600	31	29 1/2	0.13	45,000	3	22,877,200	118	11 1/4	0.57	62,300
4	26,543,100	94	28 1/2	0.13	42,400	4	24,843,700	0	27 1/2	0.11	10,100	4	22,964,100	102	7 3/4	0.14	86,900
5	26,594,100	84	26 1/2	0.06	51,000	5	24,891,900	55	26 1/4	0.19	48,200	5	23,005,100	74	3 1/2	0.12	41,000
6	26,647,900	74	24 1/2	0.07	53,800	6	24,934,600	86	35 1/2	0.00	42,700	6	23,084,400	57	0	0.27	79,300
7	26,688,500	86	21 1/2	0.00	40,600	7	24,990,500	71	21 1/2	0.00	55,900	7	23,159,800	52	33	0.10	75,400
8	26,750,800	68	19 1/2	0.04	62,300	8	25,055,500	82	18 1/2	0.04	65,000	8	23,245,300	56	28 1/2	0.03	85,500
9	26,792,300	64	16 3/4	0.11	41,500	9	25,119,900	49	14 1/2	0.00	64,400	9	23,275,000	115	25 1/2	0.35	29,700
10	26,834,100	86	14 1/4	0.14	41,800	10	25,122,300	62	12	0.09	2,400	10	23,341,000	102	21 1/2	0.11	66,000
11	26,894,400	74	12	0.00	60,300	11	25,176,900	87	14 1/2	0.13	54,600	11	23,421,000	77	15 3/4	0.27	80,000
12	26,962,600	43	6 1/2	0.00	68,200	12	25,210,900	107	12 1/2	0.06	34,000	12	23,478,900	75	12 3/4	0.32	57,900
13	27,087,100	57	33	0.00	124,500	13	25,270,000	92	8 3/4	0.00	59,100	13	23,545,800	71	7 1/4	0.16	66,900
14	27,056,400	59	28 1/2	0.18	-30,700	14	25,333,700	61	5 1/2	0.03	63,700	14	23,595,900	97	5	0.01	50,100
15	27,097,300	67	26 1/4	0.09	40,900	15	25,418,800	56	1 1/2	0.11	85,100	15	23,658,000	94	29 1/4	0.03	62,100
16	27,126,800	81	24 1/2	0.23	29,500	16	25,479,600	50	27 1/2	0.12	60,800	16	23,736,400	56	23 1/2	0.01	78,400
17	27,148,000	75	23 1/2	0.17	21,200	17	25,542,500	64	23	0.14	62,900	17	23,792,400	91	21 1/2	0.00	56,000
18	27,168,900	81	22	0.13	20,900	18	25,587,900	76	21	0.00	45,400	18	23,859,200	81	21 1/2	0.00	66,800
19	27,198,900	97	24	0.03	30,000	19	25,650,900	81	16 1/4	0.00	63,000	19	23,938,900	69	16 1/2	0.00	79,700
20	27,228,200	89	22 1/2	0.04	29,300	20	25,704,200	73	13 1/2	0.14	53,300	20	23,981,500	82	12	0.10	42,600
21	27,267,500	84	20 1/4	0.06	39,300	21	25,758,900	70	10 1/2	0.16	54,700	21	24,015,500	84	8	0.08	34,000
22	27,385,100	94	18 1/4	0.13	117,600	22	25,821,600	69	6 1/2	0.01	62,700	22	24,082,000	75	4	0.21	66,500
23	27,342,700	77	16 1/4	0.04	-42,400	23	25,873,600	70	4	0.11	52,000	23	24,165,700	75	4 1/2	0.09	83,700
24	27,373,300	75	15	0.35	30,600	24	25,939,700	76	27 1/2	0.11	66,100	24	24,258,500	0	24 3/4	0.06	92,800
25	27,403,900	101	13 1/2	0.24	30,600	25	26,002,200	69	24	0.11	62,500	25	24,258,500	96	28 1/2	0.08	0
26	27,447,500	92	11 1/2	0.00	43,600	26	26,059,400	73	19	0.11	57,200	26	24,346,500	58	23	0.08	88,000
27	27,491,200	84	10	0.04	43,700	27	26,133,500	51	14 3/4	0.22	74,100	27	24,414,000	41	15 1/2	6.00	67,500
28	27,522,000	96	9	0.00	30,800	28	26,178,700	77	13 1/2	0.04	45,200	28	24,469,100	78	12	0.00	55,100
29	27,551,100	82	8	0.00	29,100	29	26,228,500	68	11 1/2	0.09	49,800	29	24,522,100	81	10 1/2	0.07	53,000
30	27,578,100	89	30 1/4	0.16	27,000	30	26,275,000	77	8 1/2	0.03	46,500	30	24,584,400	82	8 3/4	0.01	62,300
31						31	26,331,100	84	6 1/2	0.05	56,100	31	24,654,800	43	6	0.00	70,400
	1,247,000				1,247,000		1,676,300				1,676,300		1,942,500				1,942,500

101	Max	107		121
78.3667	Avg	66.4516		76.871
43	Min	0		0

Adrian, OR
Water Production Data (Raw) - Well 4

JUN 2011						MAY 2011						APR 2011					
DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED
1	21,443,600	149	13 1/4	0.04	28,100	1	20,473,900	63	17 1/2	0.02	6,200	1	19,712,300	156	9	0.20	10,000
2	21,469,800	110	11 1/2	0.08	26,200	2	20,473,900	90	17 1/2	0.04	0	2	19,734,300	162	8	0.14	22,000
3	21,506,100	122	10 1/2	0.08	36,300	3	20,485,200	96	17 1/2	0.01	11,300	3	19,743,900	157	7	0.07	9,600
4	21,530,700	112	11	0.09	24,600	4	20,537,000	127	17	0.08	51,800	4	19,764,900	142	6	0.03	21,000
5	21,568,700	128	9 1/2	0.08	38,000	5	20,551,200	131	13 1/2	0.12	14,200	5	19,785,100	161	5	0.09	20,200
6	21,613,200	163	7	0.03	44,500	6	20,589,200	139	12 1/2	0.04	38,000	6	19,795,300	150		0.08	10,200
7	21,640,500	154	5 3/4	0.17	27,300	7	20,633,600	105	10 1/2	0.19	44,400	7	19,817,600	157	8	0.08	22,300
8	21,669,400	141	6	0.18	28,900	8	20,653,100	145	11	0.14	19,500	8	19,828,600	145	7 1/2	0.06	11,000
9	21,699,100	124	5	0.09	29,700	9	20,687,800	124	9	0.04	34,700	9	19,844,000	154	7	0.00	15,400
10	21,730,000	145	33	0.18	30,900	10	20,716,400	151	7 1/2	0.14	28,600	10	19,864,300	147	7	0.01	20,300
11	21,757,500	161	33	0.10	27,500	11	20,741,000	121	5 1/4	0.19	24,600	11	19,891,600	136	6 1/2	0.09	27,300
12	21,801,100	113	31	0.09	43,600	12	20,782,800	134	31	0.15	41,800	12	19,904,000	158	33 1/2	0.02	12,400
13	21,839,800	137	29	0.15	38,700	13	20,825,700	111	29 1/4	0.16	42,900	13	20,028,500	80	33 1/2	0.05	124,500
14	21,871,700	152	27 3/4	0.15	31,900	14	20,881,600	141	26 1/2	0.31	55,900	14	20,028,500	153	32 3/4	0.01	0
15	21,928,900	94	23	0.15	57,200	15	20,917,600	155	25 3/4	0.15	36,000	15	20,070,200	141	30 3/4	0.00	41,700
16	21,983,700	126	22 1/4	0.08	54,800	16	20,963,100	104	25	0.20	45,500	16	20,075,000	128	31 3/4	0.00	4,800
17	22,015,900	97	22	0.09	32,200	17	20,965,900	145	23 3/4	0.18	2,800	17	20,075,200	156	32	0.09	200
18	22,068,800	126	19	0.14	52,900	18	21,005,700	148	22 1/2	0.14	39,800	18	20,075,800	151	30 3/4	0.00	600
19	22,099,600	133	18	0.19	30,800	19	21,044,000	172	21 1/4	0.19	38,300	19	20,099,200	167	30	0.01	23,400
20	22,130,800	142	16 1/2	0.08	31,200	20	21,058,400	126	20 3/4	0.30	14,400	20	20,120,400	169	29 1/2	0.05	21,200
21	22,181,400	118	14 1/2	0.04	50,600	21	21,128,400	148	19	0.23	70,000	21	20,131,900	162	29 3/4	0.03	11,500
22	22,233,400	86	10 1/2	0.10	52,000	22	21,162,500	155	18	0.17	34,100	22	20,155,200	154	28 1/2	0.08	23,300
23	22,314,400	64	6 1/4	0.08	81,000	23	21,205,200	139	16 1/2	0.11	42,700	23	20,176,100	152	29	0.05	20,900
24	22,362,100	92	7 1/4	0.17	47,700	24	21,219,600	151	15 1/4	0.06	14,400	24	20,198,400	144	28 1/4	0.00	22,300
25	22,423,400	69	4 1/2	0.33	61,300	25	21,274,800	117	14	0.04	55,200	25	20,229,600	154	26 1/4	0.06	31,200
26	22,484,700	123	2	0.16	61,300	26	21,305,100	103	11 3/4	0.20	30,300	26	20,241,100	145	26	0.01	11,500
27	22,540,900	114	29 1/4	0.06	56,200	27	21,318,900	143	11 1/2	0.15	13,800	27	20,255,900	137	25 1/2	0.07	14,800
28	22,606,900	89	26 3/4	0.06	66,000	28	21,346,000	128	11 1/2	0.14	27,100	28	20,295,700	148	24 3/4	0.00	39,800
29	22,667,900	84	22 1/4	0.00	61,000	29	21,359,800	153	15 1/2	0.13	13,800	29	20,306,100	139	24 3/4	0.05	10,400
30	22,712,300	73	20 1/4	0.15	44,400	30	21,387,200	151	14 3/4	0.21	27,400	30	20,467,700	68	20	0.05	161,600
31						31	21,415,500	145	14 1/4	0.18	28,300	31					
	1,296,800				1,296,800		947,800				947,800		765,400				765,400

Max	163	172	Max	169	
Avg	118.033	131	Avg	145.767	
Min	64	63	Min	68	

Adrian, OR
Water Production Data (Raw) - Well 4

MAR 2011						Feb-11						Jan-11					
DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED
1	19,221,600	162	22 1/2	0.16	19,500	1	18,758,900	152	12 1/4	0.17	15,400	1	18153000	149		0.14	46,800
2	19,241,600	176	19 1/4	0.16	20,000	2	18,773,500	157	11 1/4	0.11	14,600	2	18173700	185	32	0.19	20,700
3	19,261,700	154	16 3/4	0.09	20,100	3	18,802,900	149	9	0.12	29,400	3	18194900	167	28 3/4	0.14	21,200
4	19,271,600	149	14 1/2	0.96	9,900	4	18,813,600	154	8	0.14	10,700	4	18276200	148	26 3/8	0.17	81,300
5	19,280,300		12	2.20	8,700	5	18,824,000	173	5	0.31	10,400	5	18229400	153	24 3/4	2.20	-46,800
6	19,291,200	167	0	2.20	10,900	6	18,843,700	132	3	0.14	19,700	6	18264000	140	23 1/2	0.27	34,600
7	19,310,500	163	0	2.20	19,300	7	18,864,400	143	33	1.27	20,700	7	18306600	137	21	0.30	42,600
8	19,457,800	77	0	0.08	147,300	8	18,874,600	148	30 1/2	0.46	10,200	8	18323800	140	21 1/2	0.21	17,200
9	19,457,800		0		0	9	18,895,200	164	28 3/4	0.07	20,600	9	18344500	163	18 1/2	0.22	20,700
10	19,457,900	159	2 GALS	0.03	100	10	18,915,500	148	28	0.16	20,300	10	18365200	142	17	0.23	20,700
11	19,458,500	155	10	0.00	600	11	18,925,600	169	25 1/2	0.16	10,100	11	18385900	148	14 3/4	0.24	20,700
12	19,460,400	144	8	0.15	1,900	12	18,945,300	152	24 1/2	0.19	19,700	12	18396100	155	13 3/4	0.19	10,200
13	19,460,700	168	8	0.03	300	13	18,954,900	172	23	0.16	9,600	13	18417500	162	12	0.24	21,400
14	19,471,800	142	6	0.36	11,100	14	18,974,800	155	20 1/2	0.03	19,900	14	18428200	153	11 1/2	0.29	10,700
15	19,482,300	157	6	0.03	10,500	15	18,994,300	115	16 1/2	0.04	19,500	15	18449300	142	8 1/2	0.19	21,100
16	19,500,100	124	32 1/2	1.11	17,800	16	19,004,600	173	15 1/2	0.14	10,300	16	18460100	149	6	0.28	10,800
17	19,512,800	179	35	0.05	12,700	17	19,025,000	161	13 1/2	0.48	20,400	17	18480600	134	0	1.60	20,500
18	19,533,600	149	27 1/4	0.01	20,800	18	19,035,100	164	12	1.74	10,100	18	18615900	78	0	2.20	135,300
19	19,543,500	164	24 1/2	0.18	9,900	19	19,054,200	162	10 1/2	1.31	19,100	19	18616200	147	0	2.20	300
20	19,563,300	176	21 1/2	0.20	19,800	20	19,064,200	178	8	2.20	10,000	20	18617100	162	0	0.15	900
21	19,574,000	156	19	0.08	10,700	21	19,094,800	138	7 1/2	1.84	30,600	21	18617600	159	33	0.10	500
22	19,512,800	162	15 3/4	1.18	-61,200	22	19,114,900	161	7 1/2	0.14	20,100	22	18617900	164	33 1/2	0.11	300
23	19,612,400	160	15 3/4	2.20	99,600	23	19,125,100	148	5 1/2	0.01	10,200	23	18617900	164	11	0.00	0
24	19,622,400	166	15 3/4	2.15	10,000	24	19,145,600	142	33	0.00	20,500	24	18638700	149	32 1/4	0.00	20,800
25	19,632,200	157	15 3/4	0.05	9,800	25	19,155,600	156	29 3/4	0.14	10,000	25	18670300	152	22 1/4	0.02	31,600
26	19,651,200	181	13	0.02	19,000	26	19,175,100	152	28 1/4	0.22	19,500	26	18682300	161	19 1/2	2.20	12,000
27	19,660,800	140	10 1/4	0.01	9,600	27	19,195,200	157	26	0.20	20,100	27	18693000	153	17 1/4	2.20	10,700
28	19,680,800	167	7 1/4	0.18	20,000	28	19,202,100		24 1/2	0.19	6,900	28	18713700	167	17 1/4	1.92	20,700
29	19,680,500	164	5 1/2	0.28	-300	29						29	18723700	171	14 3/4	2.20	10,000
30	19,690,600	152	3	0.08	10,100	30						30	18714200	144	14	0.05	-9,500
31	19,702,300	157	0	0.76	11,700	31						31	18743500	166	13 1/2	0.07	29,300
	500,200				500,200		458,600				458,600		637,300				637,300

	181	Max	178		185	Max	185
	156.103	Avg	154.63		151.742	Avg	#DIV/0!
	77	Min	115		78	Min	0

Adrian, OR
Water Production Data (Raw) - Well 4

DEC 2010						NOV 2010						OCT 2010					
DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED
1	17,654,700	155	18	2.20	108,500	1	17,012,700	145		0.00	0	1	16,093,300	141	32 1/9	0.00	43,600
2	17,655,700	147	11	2.20	1,000	2	17,012,700	124	28	0.00	0	2	16,131,600		32	0.00	38,300
3	17,656,000	143	8	0.44	300	3	17,012,700	136	26 1/4	0.02	0	3	16,156,100	112	32	0.04	24,500
4	17,656,600	154	4	0.43	600	4	17,014,500	142	26	0.00	1,800	4	16,210,300	119	31	0.00	54,200
5	17,656,900	166	18	0.17	300	5	17,034,900	144	25	0.04	20,400	5	16,233,100	110	31	0.00	22,800
6	17,667,500	161	11	0.08	10,600	6	17,054,300		25 1/4	0.00	19,400	6	16,249,100	133	30 3/4	0.00	16,000
7	17,688,400	144	6	0.08	20,900	7	17,073,400	152	24 1/2	0.05	19,100	7	16,367,100	72	24	0.11	118,000
8	17,699,900	158	4	0.16	11,500	8	17,095,700	149	23 1/4	0.08	22,300	8	16,383,900	125	23	0.00	16,800
9	17,718,800	164	7	0.59	18,900	9	17,108,900	134	23 1/4	0.00	13,200	9	16,420,600	145	22 1/4	0.00	36,700
10	17,725,000	144	5	0.09	6,200	10	17,130,300	124	22 1/4	0.03	21,400	10	16,540,100	78	16 1/4	0.00	119,500
11	17,759,900	160	33	0.05	34,900	11	17,150,400	154	22 1/4	0.00	20,100	11	16,595,000	63	12	0.05	54,900
12	17,779,000	121	28	0.10	19,100	12	17,171,500	147	21 1/4	0.00	21,100	12	16,610,100	123	11 1/2	0.00	15,100
13	17,794,800	142	26 1/4	0.00	15,800	13	17,182,000	174	22	0.00	10,500	13	16,650,900	109	9 1/3	0.10	40,800
14	17,822,400	132	24 3/8	2.20	27,600	14	17,202,400	168	21 1/2	0.00	20,400	14	16,667,700	139	8	0.05	16,800
15	17,833,200	154	22 3/4	0.49	10,800	15	17,227,300	145	20 7/9	0.09	24,900	15	16,684,200	146	7 3/4	0.13	16,500
16	17,852,800	156	21 1/4	0.29	19,600	16	17,230,200	166	20 1/2	0.00	2,900	16	16,701,500	174	7 1/2	0.03	17,300
17	17,874,500	168	19 1/2	0.11	21,700	17	17,259,000	172	20	0.09	28,800	17	16,722,100	162	6 3/4	0.09	20,600
18	17,884,600	171	18	0.34	10,100	18	17,280,200	161	18 3/4	0.09	21,200	18	16,777,400	127	4 1/4	0.04	55,300
19	17,904,400	157	16 3/4	0.23	19,800	19	17,283,100	149	14	0.05	2,900	19	16,794,300	132	3	0.18	16,900
20	17,924,600	144	14 3/4	0.20	20,200	20	17,318,500	149	6 1/2	0.07	35,400	20	16,811,800	156		0.12	17,500
21	18,048,200	79	13 1/4	0.23	123,600	21	17,325,200	145	6	0.09	6,700	21	16,853,200	141	7 1/2	0.13	41,400
22	18,048,400	198	12	0.21	200	22	17,374,300	153	28 1/4	0.20	49,100	22	16,871,300	162	7 1/4	0.11	18,100
23	18,048,700	155	10 1/2	0.19	300	23	17,397,200	142	23 1/4	0.13	22,900	23	16,905,900	162	5 3/4	0.00	34,600
24	18,053,700	176		0.01	5,000	24	17,408,700	153	18 1/4	0.13	11,500	24	16,923,400	130	5 3/4	0.09	17,500
25	18,054,100	172		0.00	400	25	17,429,400	139	13 1/2	0.26	20,700	25	16,939,900	163	4 1/2	0.15	16,500
26	18,054,300	179		0.10	200	26	17,450,100	163	8 3/4	0.84	20,700	26	16,973,200	121	3 1/2	0.06	33,300
27	18,059,700	140		0.07	5,400	27	17,470,900	140	6	1.26	20,800	27	16,989,600	141	33 1/2	0.09	16,400
28	18,095,400	129	10 1/4	0.17	35,700	28	17,481,800	176		2.20	10,900	28	17,012,700	0	28 1/4	0.11	23,100
29	18,106,200	174	8	0.16	10,800	29	17,502,800	151	10	1.25	21,000	29	17,012,700	LOWERED		0.09	0
30	18,117,200	162	6 1/4	0.08	11,000	30	17,546,200	146	8	0.49	43,400	30	17,012,700	ESERVOUR			0
31	18,152,800	127	3 7/8	0.23	35,600	31						31	17,012,700				0
	606,600				606,600		533,500				533,500		963,000				963,000

Color Key:

City of Adrian highlight of monthly total	
Keller Adjustment - see equation or notes:	calc'd monthly total, corrected beginning day equations, entered meter reading instead of zeros & corrected gallons equation
Data Anomaly/Entry Error?	

Max	198	176	Max	174
Avg	152.645	149.759	Avg	125.115
Min	79	124	Min	0

Adrian, OR
Water Production Data (Raw) - Well 4

SEPT 2010						AUG 2010						JUL 2010					
DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED
1	14,918,500	116	32 3/8	0.23	51,900	1	13,202,700	110	10 1/2	0.34	61,200	1	11,214,200	87	5 1/2	0.11	43,300
2	14,958,900	84	30 3/4	0.18	40,400	2	13,262,700	76	9 1/2	0.16	60,000	2	11,279,400	81	32 1/4	0.13	65,200
3	15,025,700	72	29	0.17	66,800	3	13,324,600	98	8	0.14	61,900	3	11,312,700	142	32 3/4	0.11	33,300
4	15,070,200	81	27 1/2	0.15	44,500	4	13,410,800	54	5 1/2	0.11	86,200	4	11,354,000	143	32 1/4	0.11	41,300
5	15,107,100	117	27	0.11	36,900	5	13,467,200	45	0	0.13	56,400	5	11,411,300	81	32 1/2	0.09	57,300
6	15,149,000	143	25 1/4	0.13	41,900	6	13,553,900	47	27 1/2	0.14	86,700	6	11,461,400	122	32 1/4	0.04	50,100
7	15,200,900	93	24 3/4	0.08	51,900	7	13,610,100	136	30 1/2	0.31	56,200	7	11,543,200	92	32 1/4	0.29	81,800
8	15,244,800	124	24 1/4	0.07	43,900	8	13,639,000	118	29 1/2	0.16	28,900	8	11,616,100	95	32 3/4	0.09	72,900
9	15,281,000	130	23	0.09	36,200	9	13,702,500	94	27 1/4	0.20	63,500	9	11,678,100	133	32 1/4	0.15	62,000
10	15,322,200	144	22 1/4	0.09	41,200	10	13,851,300	49	23 1/4	0.04	148,800	10	11,741,000	122	32	0.00	62,900
11	15,360,700	92	22	0.09	38,500	11	13,869,000	126	22 1/2	0.15	17,700	11	11,797,600	110	31 1/2	0.14	56,600
12	15,383,400	125	21 1/4	0.06	22,700	12	13,908,200	85	21 1/4	0.09	39,200	12	11,876,300	115	31 1/4	0.11	78,700
13	15,433,000	153	20 3/4	0.11	49,600	13	13,951,400	125	19 3/4	0.09	43,200	13	11,938,900	106	26	0.07	62,600
14	15,479,700	144	20	0.16	46,700	14	14,021,300	110	16 1/4	0.08	69,900	14	12,012,400	70	26	0.15	73,500
15	15,525,400	135	19 1/4	0.08	45,700	15	14,125,000	105	14 1/4	0.08	103,700	15	12,078,100	119	25 3/8	0.17	65,700
16	15,573,700	159	18 1/4	0.06	48,300	16	14,135,000	94	13 1/2	0.08	10,000	16	12,130,900	126	25 3/8	0.15	52,800
17	15,574,300	154	18	0.11	600	17	14,147,500	84	10 1/4	0.09	12,500	17	12,191,400	82	25 1/4	0.02	60,500
18	15574300	REPLACE	18 1/4		0	18	14,212,700	81	7 1/4	0.00	65,200	18	12,317,400	62	19 1/4	0.18	126,000
19	15574300	PUMP	17 1/2	11.00	0	19	14,275,700	108	5 1/4	0.04	63,000	19	12,371,400	58	17 1/4	0.30	54,000
20	15574300	MOTOR	17 1/4	0.08	0	20	14,335,400	94	30 1/2	0.13	59,700	20	12,424,600	101	13 1/4	0.27	53,200
21	15574300			0.13	0	21	14,398,300	117	29 3/4	0.10	62,900	21	12,516,800	62	8 1/2	0.21	92,200
22	15574300				0	22	14,449,600	83	27 1/4	0.14	51,300	22	12,593,700	57	4	0.19	76,900
23	15,728,600		12 1/4	0.12	154,300	23	14,515,400	104	23 3/4	0.19	65,800	23	12,642,200	40	32 1/2	0.27	48,500
24	15,781,900	121	10	0.17	53,300	24	14,610,900	60	17 3/4	0.24	95,500	24	12,710,800	50	27 1/2	0.51	68,600
25	15,874,600	62	9 1/2	0.15	92,700	25	14,663,300	81	15	0.33	52,400	25	12,711,500	62	27 1/2	0.16	700
26	15,896,000	121	9 1/4	0.23	21,400	26	14,713,500	109	13	0.14	50,200	26	12,813,000	65	24	0.16	101,500
27	15,933,900	105	8 3/4	.09.10	37,900	27	14,717,400	8	8	0.12	3,900	27	12,984,300	47	23 1/4	0.26	171,300
28	15,970,900	134	7 3/4	0.10	37,000	28	14,767,400	9	4	0.07	50,000	28	12,462,400	110	20	0.29	-521,900
29	16,015,100	89	7 3/4	0.01	44,200	29	14,789,200	99	2 1/4	0.34	21,800	29	13,029,200	100	16	0.33	566,800
30	16,049,700	149	7 3/4	0.00	34,600	30	14,831,100	139	5 1/2	0.32	41,900	30	13,082,900	114	15	0.22	53,700
31						31	14,866,600	86	2 1/2	0.12	35,500	31	13,141,500	110	12 1/2	0.14	58,600
	1,183,100				1,183,100		1,725,100				1,725,100		1,970,600				1,970,600

159	Max	139		143
118.625	Avg	88.1935		92.3871
62	Min	8		40

Adrian, OR
Water Production Data (Raw) - Well 4

JUN 2010						MAY 2010						APR 2010					
DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED
1	9,920,000	164	24 5/8	0.02	27,900	1	8,864,400	175		0.06	5,500	1	7,928,800	159	25 3/4	0.10	0
2	9,943,400	128	23 3/8	0.05	23,400	2	8,864,800	146		0.06	400	2	7,950,100	164	25 3/8	0.10	21,300
3	9,944,600	161	22 1/4	0.03	1,200	3	8,891,400	166	31	0.24	26,600	3	7,950,100	0	25 1/4	0.10	0
4	9,976,200	149	21	0.04	31,600	4	8,928,200	148	29 5/8	0.11	36,800	4	7,977,500	160	24 1/2	0.09	27,400
5	9,994,700	134	21	0.34	18,500	5	8,967,600	122	27 1/2	0.08	39,400	5	7,999,600	162	23 5/8	0.00	22,100
6	10,017,600	138	19 3/4	0.09	22,900	6	8,993,400	152	27 1/4	0.30	25,800	6	8,032,900	128	21 5/8	0.08	33,300
7	10,039,600	146	17 3/8	0.06	22,000	7	9,019,400	163	26 3/8	0.15	26,000	7	8,044,000	143	21 1/8	0.19	11,100
8	10,079,300	139	14 1/2	0.09	39,700	8	9,059,800	150	25 3/4	0.00	40,400	8	8,066,900	159	19 1/8	0.10	22,900
9	10,132,600	147	14 1/2	0.00	53,300	9	9,092,000	116	24 5/8	0.00	32,200	9	8,089,700	153	18 3/8	0.10	22,800
10	10,171,800	124	11 7/8	0.05	39,200	10	9,154,000	137	21 7/8	0.08	62,000	10	8,110,300	174	17 1/4	0.94	20,600
11	10,198,900	140	10	0.00	27,100	11	9,177,400	119	20 1/8	0.09	23,400	11	8,131,700	163	16	0.10	21,400
12	10,226,600	144	9	0.15	27,700	12	9,207,200	131	20	0.20	29,800	12	8,166,300	144	13 3/8	0.09	34,600
13	10,277,200	143	5 3/4	0.45	50,600	13	9,249,600	153	18 1/2	0.07	42,400	13	8,186,700	166	13	0.19	20,400
14	10,342,300	126	6 1/2	0.06	65,100	14	9,299,200	113	16 1/2	0.04	49,600	14	8,208,900	161	11	0.09	22,200
15	10,416,500	148	6 1/2	0.00	74,200	15	9,336,300	146	15 3/4	0.04	37,100	15	8,230,800	156	10 1/2	0.14	21,900
16	10,440,900	162	6 1/2	0.00	24,400	16	9,387,100	138	13	0.38	50,800	16	8,290,800	172	6	0.00	60,000
17	10,451,600	147	5 1/2	0.00	10,700	17	9,454,500	86	10 1/4	0.08	67,400	17	8,290,800	0	0	0.24	0
18	10,507,100	112	5 1/2	0.00	55,500	18	9,484,300	152	9	0.11	29,800	18	8,325,000	149	3 3/4	0.20	34,200
19	10,556,900	114	33	0.04	49,800	19	9,524,400	101	7 5/8	0.05	40,100	19	8,378,200	114	3 3/4	0.17	53,200
20	10,611,000	130	29 1/2	0.05	54,100	20	9,557,100	141	7 1/2	0.06	32,700	20	8,496,000	83	33 3/8	0.18	117,800
21	10,651,500	121	27 3/4	0.04	40,500	21	9,602,200	145	6 1/4	0.11	45,100	21	8,496,300	179	31 5/8	0.10	300
22	10,675,500	153	27 1/4	0.05	24,000	22	9,626,500	139	6 1/4	0.03	24,300	22	8,507,600	140	11	0.19	11,300
23	10,768,900	122	24 3/4	0.04	93,400	23	9,638,000	144	6 1/4	0.03	11,500	23	8,529,300	163	11	0.11	21,700
24	10,772,000	137	22 1/2	0.05	3,100	24	9,671,300	141	5 5/8	0.12	33,300	24	8,552,000	160	31 1/2	0.10	22,700
25	10,828,700	148	19 1/2	0.01	56,700	25	9,706,200	165	0	0.00	34,900	25	8,606,500	137	31 1/2	0.00	54,500
26	10,932,700	65	14 3/4	0.34	104,000	26	9,732,000	160	0	0.06	25,800	26	8,668,300	121	31 5/8	0.00	61,800
27	11,008,700	134	11 3/4	0.02	76,000	27	9,757,000	133	32	0.04	25,000	27	8,702,100	119	32 5/8	0.06	33,800
28	11,064,100	123	10 3/4	0.00	55,400	28	9,778,200	142	31 1/8	0.03	21,200	28	8,735,600	151	11	0.07	33,500
29	11,116,400	139	9	0.02	52,300	29	9,801,100	157	31	0.06	22,900	29	8,857,100	146	30 7/8	0.06	121,500
30	11,170,900	127	7	0.02	54,500	30	9,827,600	143	30	0.70	26,500	30	8,858,900	134	11	0.20	1,800
31						31	9,892,100	114	26 1/4	0.17	64,500	31					
	1,278,800				1,278,800		1,033,200				1,033,200		930,100				930,100

Max	164	175	Max	179	
Avg	135.5	139.935	Avg	138.667	
Min	65	86	Min	0	

Adrian, OR
Water Production Data (Raw) - Well 4

MAR 2010						Feb-10						Jan-10					
DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	METER READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED	DATE	READING	GPM	CHLORINE PER IN	CHLORINE RESIDUAL	GALLONS PUMPED
1	7,359,600	146	9 1/2	0.00	11,000	1	6,912,200	161	29	0.09	11,000	1					
2	7,380,400	175	10	0.11	20,800	2	6,933,200	169	28	0.08	21,000	2					0
3	7,398,100	147	9 1/2	0.13	17,700	3	6,949,500	144	27 1/4	0.65	16,300	3					0
4	7,419,000	160	9 1/2	0.10	20,900	4	6,963,800	162	26	0.40	14,300	4					0
5	7,423,700	143	9	0.10	4,700	5	6,984,000	167	23 1/2		20,200	5					0
6	7,452,600	163		0.00	28,900	6	6,994,200	164	22	0.94	10,200	6					0
7	7,477,700	141	32 1/2	0.54	25,100	7	7,006,900	161	22 1/2	0.14	12,700	7					0
8	7,488,600	159	32 3/4	0.10	10,900	8	7,023,700	173	22	0.14	16,800	8					0
9	7,511,000	154	32 3/4	0.00	22,400	9	7,043,300	149	21	0.10	19,600	9					0
10	7,511,700	162	31 3/4	0.06	700	10	7,055,500	141	20	0.11	12,200	10					0
11	7,541,300	149	31 1/2	0.06	29,600	11	7,073,200	151	19	0.14	17,700	11					0
12	7,551,600	0	31 1/2	0.44	10,300	12	7,093,700	169	18	0.16	20,500	12					0
13	7,571,800	152	31 1/4	0.23	20,200	13	7,104,300	177	17 1/2	0.14	10,600	13					0
14	7,593,500	147	30 3/4	0.81	21,700	14	7,124,300	174	17 1/2	0.00	20,000	14					0
15	7,609,900	130	31 1/8	0.02	16,400	15	7,135,700	160	17	0.09	11,400	15					0
16	7,638,300	164	19 1/2	0.11	28,400	16	7,146,000	169	16 1/5	0.16	10,300	16					0
17	7,661,500	157	29 1/2	0.11	23,200	17	7,166,100	142	16	0.14	20,100	17					0
18	7,672,300	169	30	0.08	10,800	18	7,185,900	162	14 3/4	0.00	19,800	18					0
19	7,698,200	156	29 3/4	0.27	25,900	19	7,206,900	146	13 1/2	0.12	21,000	19					0
20	7,720,000	148	29 3/8	0.45	21,800	20	7,217,100	179	14	0.19	10,200	20					0
21	7,730,900	170	28 1/2	0.04	10,900	21	7,227,700	168	13 1/2	0.00	10,600	21					0
22	7,742,100	157	28 1/4	0.02	11,200	22	7,247,600	163	12 1/2	0.09	19,900	22					0
23	7,763,500	163	28 5/8	0.06	21,400	23	7,267,200	170	11 2/3	0.14	19,600	23					0
24	7,785,200	161	28 3/8	0.15	21,700	24	7,287,500	161	10 1/5	0.33	20,300	24					0
25	7,797,600	155	28 1/8	0.06	12,400	25	7,297,800	166	11 1/4	0.08	10,300	25					0
26	7,812,600	144	27 1/4	0.06	15,000	26	7,318,300	145	11 1/4	0.01	20,500	26					0
27	7,830,600	151	26 1/4	0.34	18,000	27	7,328,700	184	10	0.13	10,400	27					0
28	7,846,500	157	27 1/8	0.08	15,900	28	7,348,600	161	10		19,900	28					0
29	7,874,300	169	25 7/8	0.08	27,800	29						29					0
30	7,883,400	144	26 1/4	0.10	9,100	30						30					0
31	7,928,800	159	25 3/4	0.10	45,400	31						31					0
	580,200				580,200		447,400				447,400		0				0

175		Max	184	0		Max	198
150.065		Avg	162.071	#DIV/0!		Avg	#DIV/0!
0		Min	141	0		Min	0

Adrian, OR
Well 4 Production Data - Processed

	DATE	READING	KA Calc Gallons Pumped	Check Eqns	Keller Corrected Data: ADJUSTED METER READING	Keller Corrected Data: INTERPOLATED GALLONS PUMPED	Option 2 Meter Reading (Transposed)	Option 2 Gallons Pumped
Jan-10	1	0			0			
	2	0			0	0		
	3	0			0	0		
	4	0			0	0		
	5	0			0	0		
	6	0			0	0		
	7	0			0	0		
	8	0			0	0		
	9	0			0	0		
	10	0			0	0		
	11	0			0	0		
	12	0			0	0		
	13	0			0	0		
	14	0			0	0		
	15	0			0	0		
	16	0			0	0		
	17	0			0	0		
	18	0			0	0		
	19	0			0	0		
	20	0			0	0		
	21	0			0	0		
	22	0			0	0		
	23	0			0	0		
	24	0			0	0		
	25	0			0	0		
	26	0			0	0		
	27	0			0	0		
	28	0			0	0		
	29	0			0	0		
	30	0			0	0		
	31	0			0	0		
Feb-10	1	6,912,200		ERROR	6,912,200	0		
	2	6,933,200	21,000		6,933,200	21,000		
	3	6,949,500	16,300		6,949,500	16,300		
	4	6,963,800	14,300		6,963,800	14,300		
	5	6,984,000	20,200		6,984,000	20,200		
	6	6,994,200	10,200		6,994,200	10,200		
	7	7,006,900	12,700		7,006,900	12,700		
	8	7,023,700	16,800		7,023,700	16,800		
	9	7,043,300	19,600		7,043,300	19,600		
	10	7,055,500	12,200		7,055,500	12,200		
	11	7,073,200	17,700		7,073,200	17,700		
	12	7,093,700	20,500		7,093,700	20,500		
	13	7,104,300	10,600		7,104,300	10,600		
	14	7,124,300	20,000		7,124,300	20,000		
	15	7,135,700	11,400		7,135,700	11,400		
	16	7,146,000	10,300		7,146,000	10,300		
	17	7,166,100	20,100		7,166,100	20,100		
	18	7,185,900	19,800		7,185,900	19,800		
	19	7,206,900	21,000		7,206,900	21,000		
	20	7,217,100	10,200		7,217,100	10,200		
	21	7,227,700	10,600		7,227,700	10,600		
	22	7,247,600	19,900		7,247,600	19,900		
	23	7,267,200	19,600		7,267,200	19,600		
	24	7,287,500	20,300		7,287,500	20,300		
	25	7,297,800	10,300		7,297,800	10,300		
	26	7,318,300	20,500		7,318,300	20,500		
	27	7,328,700	10,400		7,328,700	10,400		
	28	7,348,600	19,900		7,348,600	19,900		
Mar-10	1	7,359,600	11,000		7,359,600	11,000		

Adrian, OR
Well 4 Production Data - Processed

	DATE	READING	KA Calc Gallons Pumped	Check Eqns	Keller Corrected Data: ADJUSTED METER READING	Keller Corrected Data: INTERPOLATED GALLONS PUMPED	Option 2 Meter Reading (Transposed)	Option 2 Gallons Pumped
	2	7,380,400	20,800		7,380,400	20,800		
	3	7,398,100	17,700		7,398,100	17,700		
	4	7,419,000	20,900		7,419,000	20,900		
	5	7,423,700	4,700		7,423,700	4,700		
	6	7,452,600	28,900		7,452,600	28,900		
	7	7,477,700	25,100		7,477,700	25,100		
	8	7,488,600	10,900		7,488,600	10,900		
	9	7,511,000	22,400		7,511,000	22,400		
	10	7,511,700	700		7,511,700	700		
	11	7,541,300	29,600		7,541,300	29,600		
	12	7,551,600	10,300		7,551,600	10,300		
	13	7,571,800	20,200		7,571,800	20,200		
	14	7,593,500	21,700		7,593,500	21,700		
	15	7,609,900	16,400		7,609,900	16,400		
	16	7,638,300	28,400		7,638,300	28,400		
	17	7,661,500	23,200		7,661,500	23,200		
	18	7,672,300	10,800		7,672,300	10,800		
	19	7,698,200	25,900		7,698,200	25,900		
	20	7,720,000	21,800		7,720,000	21,800		
	21	7,730,900	10,900		7,730,900	10,900		
	22	7,742,100	11,200		7,742,100	11,200		
	23	7,763,500	21,400		7,763,500	21,400		
	24	7,785,200	21,700		7,785,200	21,700		
	25	7,797,600	12,400		7,797,600	12,400		
	26	7,812,600	15,000		7,812,600	15,000		
	27	7,830,600	18,000		7,830,600	18,000		
	28	7,846,500	15,900		7,846,500	15,900		
	29	7,874,300	27,800		7,874,300	27,800		
	30	7,883,400	9,100		7,883,400	9,100		
	31	7,928,800	45,400		7,928,800	45,400		
Apr-10	1	7,928,800	0		7,928,800	0		
	2	7,950,100	21,300		7,950,100	21,300		
	3	7,950,100	0		7,950,100	0		
	4	7,977,500	27,400		7,977,500	27,400		
	5	7,999,600	22,100		7,999,600	22,100		
	6	8,032,900	33,300		8,032,900	33,300		
	7	8,044,000	11,100		8,044,000	11,100		
	8	8,066,900	22,900		8,066,900	22,900		
	9	8,089,700	22,800		8,089,700	22,800		
	10	8,110,300	20,600		8,110,300	20,600		
	11	8,131,700	21,400		8,131,700	21,400		
	12	8,166,300	34,600		8,166,300	34,600		
	13	8,186,700	20,400		8,186,700	20,400		
	14	8,208,900	22,200		8,208,900	22,200		
	15	8,230,800	21,900		8,230,800	21,900		
	16	8,290,800	60,000		8,290,800	60,000		
	17	8,290,800	0		8,290,800	0		
	18	8,325,000	34,200		8,325,000	34,200		
	19	8,378,200	53,200		8,378,200	53,200		
	20	8,496,000	**117,800**		8,496,000	**117,800**		
	21	8,496,300	300		8,496,300	300		
	22	8,507,600	11,300		8,507,600	11,300		
	23	8,529,300	21,700		8,529,300	21,700		
	24	8,552,000	22,700		8,552,000	22,700		
	25	8,606,500	54,500		8,606,500	54,500		
	26	8,668,300	61,800		8,668,300	61,800		
	27	8,702,100	33,800		8,702,100	33,800		
	28	8,735,600	33,500		8,735,600	33,500		
	29	8,857,100	**121,500**		8,857,100	**121,500**		
	30	8,858,900	1,800		8,858,900	1,800		

Adrian, OR
Well 4 Production Data - Processed

	DATE	READING	KA Calc Gallons Pumped	Check Eqns	Keller Corrected Data: ADJUSTED METER READING	INTERPOLATED GALLONS PUMPED	Option 2 Meter Reading (Transposed)	Option 2 Gallons Pumped
May-10	1	8,864,400	5,500		8,864,400	5,500		
	2	8,864,800	400		8,864,800	400		
	3	8,891,400	26,600		8,891,400	26,600		
	4	8,928,200	36,800		8,928,200	36,800		
	5	8,967,600	39,400		8,967,600	39,400		
	6	8,993,400	25,800		8,993,400	25,800		
	7	9,019,400	26,000		9,019,400	26,000		
	8	9,059,800	40,400		9,059,800	40,400		
	9	9,092,000	32,200		9,092,000	32,200		
	10	9,154,000	62,000		9,154,000	62,000		
	11	9,177,400	23,400		9,177,400	23,400		
	12	9,207,200	29,800		9,207,200	29,800		
	13	9,249,600	42,400		9,249,600	42,400		
	14	9,299,200	49,600		9,299,200	49,600		
	15	9,336,300	37,100		9,336,300	37,100		
	16	9,387,100	50,800		9,387,100	50,800		
	17	9,454,500	67,400		9,454,500	67,400		
	18	9,484,300	29,800		9,484,300	29,800		
	19	9,524,400	40,100		9,524,400	40,100		
	20	9,557,100	32,700		9,557,100	32,700		
	21	9,602,200	45,100		9,602,200	45,100		
	22	9,626,500	24,300		9,626,500	24,300		
	23	9,638,000	11,500		9,638,000	11,500		
	24	9,671,300	33,300		9,671,300	33,300		
	25	9,706,200	34,900		9,706,200	34,900		
	26	9,732,000	25,800		9,732,000	25,800		
	27	9,757,000	25,000		9,757,000	25,000		
	28	9,778,200	21,200		9,778,200	21,200		
	29	9,801,100	22,900		9,801,100	22,900		
	30	9,827,600	26,500		9,827,600	26,500		
	31	9,892,100	64,500		9,892,100	64,500		
Jun-10	1	9,920,000	27,900		9,920,000	27,900		
	2	9,943,400	23,400		9,943,400	23,400		
	3	9,944,600	1,200		9,944,600	1,200		
	4	9,976,200	31,600		9,976,200	31,600		
	5	9,994,700	18,500		9,994,700	18,500		
	6	10,017,600	22,900		10,017,600	22,900		
	7	10,039,600	22,000		10,039,600	22,000		
	8	10,079,300	39,700		10,079,300	39,700		
	9	10,132,600	53,300		10,132,600	53,300		
	10	10,171,800	39,200		10,171,800	39,200		
	11	10,198,900	27,100		10,198,900	27,100		
	12	10,226,600	27,700		10,226,600	27,700		
	13	10,277,200	50,600		10,277,200	50,600		
	14	10,342,300	65,100		10,342,300	65,100		
	15	10,416,500	74,200		10,416,500	74,200		
	16	10,440,900	24,400		10,440,900	24,400		
	17	10,451,600	10,700		10,451,600	10,700		
	18	10,507,100	55,500		10,507,100	55,500		
	19	10,556,900	49,800		10,556,900	49,800		
	20	10,611,000	54,100		10,611,000	54,100		
	21	10,651,500	40,500		10,651,500	40,500		
	22	10,675,500	24,000		10,675,500	24,000		
	23	10,768,900	93,400		10,768,900	93,400		
	24	10,772,000	3,100		10,772,000	3,100		
	25	10,828,700	56,700		10,828,700	56,700		
	26	10,932,700	**104,000**		10,932,700	**104,000**		
	27	11,008,700	76,000		11,008,700	76,000		
	28	11,064,100	55,400		11,064,100	55,400		
	29	11,116,400	52,300		11,116,400	52,300		

Adrian, OR
Well 4 Production Data - Processed

	DATE	READING	KA Calc Gallons Pumped	Check Eqns	Keller Corrected Data: ADJUSTED METER READING	INTERPOLATED GALLONS PUMPED	Option 2 Meter Reading (Transposed)	Option 2 Gallons Pumped
	30	11,170,900	54,500		11,170,900	54,500		
Jul-10	1	11,214,200	43,300		11,214,200	43,300		
	2	11,279,400	65,200		11,279,400	65,200		
	3	11,312,700	33,300		11,312,700	33,300		
	4	11,354,000	41,300		11,354,000	41,300		
	5	11,411,300	57,300		11,411,300	57,300		
	6	11,461,400	50,100		11,461,400	50,100		
	7	11,543,200	81,800		11,543,200	81,800		
	8	11,616,100	72,900		11,616,100	72,900		
	9	11,678,100	62,000		11,678,100	62,000		
	10	11,741,000	62,900		11,741,000	62,900		
	11	11,797,600	56,600		11,797,600	56,600		
	12	11,876,300	78,700		11,876,300	78,700		
	13	11,938,900	62,600		11,938,900	62,600		
	14	12,012,400	73,500		12,012,400	73,500		
	15	12,078,100	65,700		12,078,100	65,700		
	16	12,130,900	52,800		12,130,900	52,800		
	17	12,191,400	60,500		12,191,400	60,500		
	18	12,317,400	**126,000**		12,317,400	**126,000**		
	19	12,371,400	54,000		12,371,400	54,000		
	20	12,424,600	53,200		12,424,600	53,200		
	21	12,516,800	92,200		12,516,800	92,200		
	22	12,593,700	76,900		12,593,700	76,900		
	23	12,642,200	48,500		12,642,200	48,500		
	24	12,710,800	68,600		12,710,800	68,600		
	25	12,711,500	700		12,711,500	700		
	26	12,813,000	**101,500**		12,813,000	**101,500**	12,813,000	
	27	12,984,300	**171,300**		?	74,700	12,934,300	**121,300**
	28	12,462,400	**-521,900**		12,962,400	74,700	12,962,400	28,100
	29	13,029,200	**566,800**		13,029,200	66,800	13,029,200	66,800
	30	13,082,900	53,700		13,082,900	53,700		
	31	13,141,500	58,600		13,141,500	58,600		
Aug-10	1	13,202,700	61,200		13,202,700	61,200		
	2	13,262,700	60,000		13,262,700	60,000		
	3	13,324,600	61,900		13,324,600	61,900		
	4	13,410,800	86,200		13,410,800	86,200		
	5	13,467,200	56,400		13,467,200	56,400		
	6	13,553,900	86,700		13,553,900	86,700		
	7	13,610,100	56,200		13,610,100	56,200		
	8	13,639,000	28,900		13,639,000	28,900		
	9	13,702,500	63,500		13,702,500	63,500		
	10	13,851,300	**148,800**		13,851,300	**148,800**		
	11	13,869,000	17,700		13,869,000	17,700		
	12	13,908,200	39,200		13,908,200	39,200		
	13	13,951,400	43,200		13,951,400	43,200		
	14	14,021,300	69,900		14,021,300	69,900		
	15	14,125,000	**103,700**		14,125,000	**103,700**		
	16	14,135,000	10,000		14,135,000	10,000		
	17	14,147,500	12,500		14,147,500	12,500		
	18	14,212,700	65,200		14,212,700	65,200		
	19	14,275,700	63,000		14,275,700	63,000		
	20	14,335,400	59,700		14,335,400	59,700		
	21	14,398,300	62,900		14,398,300	62,900		
	22	14,449,600	51,300		14,449,600	51,300		
	23	14,515,400	65,800		14,515,400	65,800		
	24	14,610,900	95,500		14,610,900	95,500		
	25	14,663,300	52,400		14,663,300	52,400		
	26	14,713,500	50,200		14,713,500	50,200		
	27	14,717,400	3,900		14,717,400	3,900		
	28	14,767,400	50,000		14,767,400	50,000		

Adrian, OR
Well 4 Production Data - Processed

	DATE	READING	KA Calc Gallons Pumped	Check Eqns	Keller Corrected Data: ADJUSTED METER READING	INTERPOLATED GALLONS PUMPED	Option 2 Meter Reading (Transposed)	Option 2 Gallons Pumped
	29	14,789,200	21,800		14,789,200	21,800		
	30	14,831,100	41,900		14,831,100	41,900		
	31	14,866,600	35,500		14,866,600	35,500		
Sep-10	1	14,918,500	51,900		14,918,500	51,900		
	2	14,958,900	40,400		14,958,900	40,400		
	3	15,025,700	66,800		15,025,700	66,800		
	4	15,070,200	44,500		15,070,200	44,500		
	5	15,107,100	36,900		15,107,100	36,900		
	6	15,149,000	41,900		15,149,000	41,900		
	7	15,200,900	51,900		15,200,900	51,900		
	8	15,244,800	43,900		15,244,800	43,900		
	9	15,281,000	36,200		15,281,000	36,200		
	10	15,322,200	41,200		15,322,200	41,200		
	11	15,360,700	38,500		15,360,700	38,500		
	12	15,383,400	22,700		15,383,400	22,700		
	13	15,433,000	49,600		15,433,000	49,600		
	14	15,479,700	46,700		15,479,700	46,700		
	15	15,525,400	45,700		15,525,400	45,700		
	16	15,573,700	48,300		15,573,700	48,300		
	17	15,574,300	600		15,574,300	600		
	18	15,574,300	0		15,574,300	0		
	19	15,574,300	0		15,574,300	0		
	20	15,574,300	0		15,574,300	0		
	21	15,574,300	0		15,574,300	0		
	22	15,574,300	0		15,574,300	0		
	23	15,728,600	**154,300**		15,728,600	**154,300**		
	24	15,781,900	53,300		15,781,900	53,300		
	25	15,874,600	92,700		15,874,600	92,700		
	26	15,896,000	21,400		15,896,000	21,400		
	27	15,933,900	37,900		15,933,900	37,900		
	28	15,970,900	37,000		15,970,900	37,000		
	29	16,015,100	44,200		16,015,100	44,200		
	30	16,049,700	34,600		16,049,700	34,600		
Oct-10	1	16,093,300	43,600		16,093,300	43,600		
	2	16,131,600	38,300		16,131,600	38,300		
	3	16,156,100	24,500		16,156,100	24,500		
	4	16,210,300	54,200		16,210,300	54,200		
	5	16,233,100	22,800		16,233,100	22,800		
	6	16,249,100	16,000		16,249,100	16,000		
	7	16,367,100	**118,000**		16,367,100	**118,000**		
	8	16,383,900	16,800		16,383,900	16,800		
	9	16,420,600	36,700		16,420,600	36,700		
	10	16,540,100	**119,500**		16,540,100	**119,500**		
	11	16,595,000	54,900		16,595,000	54,900		
	12	16,610,100	15,100		16,610,100	15,100		
	13	16,650,900	40,800		16,650,900	40,800		
	14	16,667,700	16,800		16,667,700	16,800		
	15	16,684,200	16,500		16,684,200	16,500		
	16	16,701,500	17,300		16,701,500	17,300		
	17	16,722,100	20,600		16,722,100	20,600		
	18	16,777,400	55,300		16,777,400	55,300		
	19	16,794,300	16,900		16,794,300	16,900		
	20	16,811,800	17,500		16,811,800	17,500		
	21	16,853,200	41,400		16,853,200	41,400		
	22	16,871,300	18,100		16,871,300	18,100		
	23	16,905,900	34,600		16,905,900	34,600		
	24	16,923,400	17,500		16,923,400	17,500		
	25	16,939,900	16,500		16,939,900	16,500		
	26	16,973,200	33,300		16,973,200	33,300		
	27	16,989,600	16,400		16,989,600	16,400		

Adrian, OR
Well 4 Production Data - Processed

	DATE	READING	KA Calc Gallons Pumped	Check Eqns	Keller Corrected Data: ADJUSTED METER READING	INTERPOLATED GALLONS PUMPED	Option 2 Meter Reading (Transposed)	Option 2 Gallons Pumped
	28	17,012,700	23,100		17,012,700	23,100		
	29	17,012,700	0		17,012,700	0		
	30	17,012,700	0		17,012,700	0		
	31	17,012,700	0		17,012,700	0		
Nov-10	1	17,012,700	0		17,012,700	0		
	2	17,012,700	0		17,012,700	0		
	3	17,012,700	0		17,012,700	0		
	4	17,014,500	1,800		17,014,500	1,800		
	5	17,034,900	20,400		17,034,900	20,400		
	6	17,054,300	19,400		17,054,300	19,400		
	7	17,073,400	19,100		17,073,400	19,100		
	8	17,095,700	22,300		17,095,700	22,300		
	9	17,108,900	13,200		17,108,900	13,200		
	10	17,130,300	21,400		17,130,300	21,400		
	11	17,150,400	20,100		17,150,400	20,100		
	12	17,171,500	21,100		17,171,500	21,100		
	13	17,182,000	10,500		17,182,000	10,500		
	14	17,202,400	20,400		17,202,400	20,400		
	15	17,227,300	24,900		17,227,300	24,900		
	16	17,230,200	2,900		17,230,200	2,900		
	17	17,259,000	28,800		17,259,000	28,800		
	18	17,280,200	21,200		17,280,200	21,200		
	19	17,283,100	2,900		17,283,100	2,900		
	20	17,318,500	35,400		17,318,500	35,400		
	21	17,325,200	6,700		17,325,200	6,700		
	22	17,374,300	49,100		17,374,300	49,100		
	23	17,397,200	22,900		17,397,200	22,900		
	24	17,408,700	11,500		17,408,700	11,500		
	25	17,429,400	20,700		17,429,400	20,700		
	26	17,450,100	20,700		17,450,100	20,700		
	27	17,470,900	20,800		17,470,900	20,800		
	28	17,481,800	10,900		17,481,800	10,900		
	29	17,502,800	21,000		17,502,800	21,000		
	30	17,546,200	43,400		17,546,200	43,400		
Dec-10	1	17,654,700	**108,500**		17,654,700	**108,500**		
	2	17,655,700	1,000		17,655,700	1,000		
	3	17,656,000	300		17,656,000	300		
	4	17,656,600	600		17,656,600	600		
	5	17,656,900	300		17,656,900	300		
	6	17,667,500	10,600		17,667,500	10,600		
	7	17,688,400	20,900		17,688,400	20,900		
	8	17,699,900	11,500		17,699,900	11,500		
	9	17,718,800	18,900		17,718,800	18,900		
	10	17,725,000	6,200		17,725,000	6,200		
	11	17,759,900	34,900		17,759,900	34,900		
	12	17,779,000	19,100		17,779,000	19,100		
	13	17,794,800	15,800		17,794,800	15,800		
	14	17,822,400	27,600		17,822,400	27,600		
	15	17,833,200	10,800		17,833,200	10,800		
	16	17,852,800	19,600		17,852,800	19,600		
	17	17,874,500	21,700		17,874,500	21,700		
	18	17,884,600	10,100		17,884,600	10,100		
	19	17,904,400	19,800		17,904,400	19,800		
	20	17,924,600	20,200		17,924,600	20,200		
	21	18,048,200	**123,600**		18,048,200	**123,600**		
	22	18,048,400	200		18,048,400	200		
	23	18,048,700	300		18,048,700	300		
	24	18,053,700	5,000		18,053,700	5,000		
	25	18,054,100	400		18,054,100	400		
	26	18,054,300	200		18,054,300	200		

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Well 4 Production Data - Processed

	DATE	READING	KA Calc Gallons Pumped	Check Eqns	Keller Corrected Data: ADJUSTED METER READING	INTERPOLATED GALLONS PUMPED	Option 2 Meter Reading (Transposed)	Option 2 Gallons Pumped
	27	18,059,700	5,400		18,059,700	5,400		
	28	18,095,400	35,700		18,095,400	35,700		
	29	18,106,200	10,800		18,106,200	10,800		
	30	18,117,200	11,000		18,117,200	11,000		
	31	18,152,800	35,600		18,152,800	35,600		
Jan-11	1	18,153,000	200	ERROR	18,153,000	200		
	2	18,173,700	20,700		18,173,700	20,700		
	3	18,194,900	21,200		18,194,900	21,200		
	4	18,276,200	81,300		18,226,200	31,300		
	5	18,229,400	-46,800		18,229,400	3,200		
	6	18,264,000	34,600		18,264,000	34,600		
	7	18,306,600	42,600		18,306,600	42,600		
	8	18,323,800	17,200		18,323,800	17,200		
	9	18,344,500	20,700		18,344,500	20,700		
	10	18,365,200	20,700		18,365,200	20,700		
	11	18,385,900	20,700		18,385,900	20,700		
	12	18,396,100	10,200		18,396,100	10,200		
	13	18,417,500	21,400		18,417,500	21,400		
	14	18,428,200	10,700		18,428,200	10,700		
	15	18,449,300	21,100		18,449,300	21,100		
	16	18,460,100	10,800		18,460,100	10,800		
	17	18,480,600	20,500		18,480,600	20,500		
	18	18,615,900	135,300		18,615,900	135,300		
	19	18,616,200	300		18,616,200	300		
	20	18,617,100	900		18,617,100	900		
	21	18,617,600	500		18,617,600	500		
	22	18,617,900	300		18,617,900	300		
	23	18,617,900	0		18,617,900	0		
	24	18,638,700	20,800		18,638,700	20,800		
	25	18,670,300	31,600		18,670,300	31,600		
	26	18,682,300	12,000		18,682,300	12,000		
	27	18,693,000	10,700		18,693,000	10,700		
	28	18,713,700	20,700		18,713,700	20,700		
	29	18,723,700	10,000		18,714,200	500		
	30	18,714,200	-9,500		18,723,700	9,500		
	31	18,743,500	29,300		18,743,500	19,800		
Feb-11	1	18,758,900	15,400		18,758,900	15,400		
	2	18,773,500	14,600		18,773,500	14,600		
	3	18,802,900	29,400		18,802,900	29,400		
	4	18,813,600	10,700		18,813,600	10,700		
	5	18,824,000	10,400		18,824,000	10,400		
	6	18,843,700	19,700		18,843,700	19,700		
	7	18,864,400	20,700		18,864,400	20,700		
	8	18,874,600	10,200		18,874,600	10,200		
	9	18,895,200	20,600		18,895,200	20,600		
	10	18,915,500	20,300		18,915,500	20,300		
	11	18,925,600	10,100		18,925,600	10,100		
	12	18,945,300	19,700		18,945,300	19,700		
	13	18,954,900	9,600		18,954,900	9,600		
	14	18,974,800	19,900		18,974,800	19,900		
	15	18,994,300	19,500		18,994,300	19,500		
	16	19,004,600	10,300		19,004,600	10,300		
	17	19,025,000	20,400		19,025,000	20,400		
	18	19,035,100	10,100		19,035,100	10,100		
	19	19,054,200	19,100		19,054,200	19,100		
	20	19,064,200	10,000		19,064,200	10,000		
	21	19,094,800	30,600		19,094,800	30,600		
	22	19,114,900	20,100		19,114,900	20,100		
	23	19,125,100	10,200		19,125,100	10,200		
	24	19,145,600	20,500		19,145,600	20,500		

Adrian, OR
Well 4 Production Data - Processed

	DATE	READING	KA Calc Gallons Pumped	Check Eqns	Keller Corrected Data: ADJUSTED METER READING	INTERPOLATED GALLONS PUMPED	Option 2 Meter Reading (Transposed)	Option 2 Gallons Pumped
	25	19,155,600	10,000		19,155,600	10,000		
	26	19,175,100	19,500		19,175,100	19,500		
	27	19,195,200	20,100		19,195,200	20,100		
	28	19,202,100	6,900		19,202,100	6,900		
Mar-11	1	19,221,600	19,500		19,221,600	19,500		
	2	19,241,600	20,000		19,241,600	20,000		
	3	19,261,700	20,100		19,261,700	20,100		
	4	19,271,600	9,900		19,271,600	9,900		
	5	19,280,300	8,700		19,280,300	8,700		
	6	19,291,200	10,900		19,291,200	10,900		
	7	19,310,500	19,300		19,310,500	19,300		
	8	19,457,800	147,300		19,457,800	147,300		
	9	19,457,800	0		19,457,800	0		
	10	19,457,900	100		19,457,900	100		
	11	19,458,500	600		19,458,500	600		
	12	19,460,400	1,900		19,460,400	1,900		
	13	19,460,700	300		19,460,700	300		
	14	19,471,800	11,100		19,471,800	11,100		
	15	19,482,300	10,500		19,482,300	10,500		
	16	19,500,100	17,800		19,500,100	17,800		
	17	19,512,800	12,700		19,512,800	12,700		
	18	19,533,600	20,800		19,533,600	20,800		
	19	19,543,500	9,900		19,543,500	9,900		
	20	19,563,300	19,800		19,563,300	19,800		
	21	19,574,000	10,700		19,574,000	10,700		
	22	19,512,800	-61,200		?	19,200		
	23	19,612,400	99,600		19,612,400	19,200		
	24	19,622,400	10,000		19,622,400	10,000		
	25	19,632,200	9,800		19,632,200	9,800		
	26	19,651,200	19,000		19,651,200	19,000		
	27	19,660,800	9,600		19,660,800	9,600		
	28	19,680,800	20,000		19,680,500	19,700		
	29	19,680,500	-300		19,680,800	300		
	30	19,690,600	10,100		19,690,600	9,800		
	31	19,702,300	11,700		19,702,300	11,700		
Apr-11	1	19,712,300	10,000		19,712,300	10,000		
	2	19,734,300	22,000		19,734,300	22,000		
	3	19,743,900	9,600		19,743,900	9,600		
	4	19,764,900	21,000		19,764,900	21,000		
	5	19,785,100	20,200		19,785,100	20,200		
	6	19,795,300	10,200		19,795,300	10,200		
	7	19,817,600	22,300		19,817,600	22,300		
	8	19,828,600	11,000		19,828,600	11,000		
	9	19,844,000	15,400		19,844,000	15,400		
	10	19,864,300	20,300		19,864,300	20,300		
	11	19,891,600	27,300		19,891,600	27,300		
	12	19,904,000	12,400		19,904,000	12,400		
	13	20,028,500	124,500		20,028,500	124,500		
	14	20,028,500	0		20,028,500	0		
	15	20,070,200	41,700		20,070,200	41,700		
	16	20,075,000	4,800		20,075,000	4,800		
	17	20,075,200	200		20,075,200	200		
	18	20,075,800	600		20,075,800	600		
	19	20,099,200	23,400		20,099,200	23,400		
	20	20,120,400	21,200		20,120,400	21,200		
	21	20,131,900	11,500		20,131,900	11,500		
	22	20,155,200	23,300		20,155,200	23,300		
	23	20,176,100	20,900		20,176,100	20,900		
	24	20,198,400	22,300		20,198,400	22,300		
	25	20,229,600	31,200		20,229,600	31,200		

Adrian, OR
Well 4 Production Data - Processed

	DATE	READING	KA Calc Gallons Pumped	Check Eqns	Keller Corrected Data: ADJUSTED METER READING	INTERPOLATED GALLONS PUMPED		Option 2 Meter Reading (Transposed)	Option 2 Gallons Pumped
	26	20,241,100	11,500		20,241,100	11,500			
	27	20,255,900	14,800		20,255,900	14,800			
	28	20,295,700	39,800		20,295,700	39,800			
	29	20,306,100	10,400		20,306,100	10,400			
	30	20,467,700	**161,600**		20,467,700	**161,600**	MAX		
May-11	1	20,473,900	6,200		20,473,900	6,200			
	2	20,473,900	0		20,473,900	0			
	3	20,485,200	11,300		20,485,200	11,300			
	4	20,537,000	51,800		20,537,000	51,800			
	5	20,551,200	14,200		20,551,200	14,200			
	6	20,589,200	38,000		20,589,200	38,000			
	7	20,633,600	44,400		20,633,600	44,400			
	8	20,653,100	19,500		20,653,100	19,500			
	9	20,687,800	34,700		20,687,800	34,700			
	10	20,716,400	28,600		20,716,400	28,600			
	11	20,741,000	24,600		20,741,000	24,600			
	12	20,782,800	41,800		20,782,800	41,800			
	13	20,825,700	42,900		20,825,700	42,900			
	14	20,881,600	55,900		20,881,600	55,900			
	15	20,917,600	36,000		20,917,600	36,000			
	16	20,963,100	45,500		20,963,100	45,500			
	17	20,965,900	2,800		20,965,900	2,800			
	18	21,005,700	39,800		21,005,700	39,800			
	19	21,044,000	38,300		21,044,000	38,300			
	20	21,058,400	14,400		21,058,400	14,400			
	21	21,128,400	70,000		21,128,400	70,000			
	22	21,162,500	34,100		21,162,500	34,100			
	23	21,205,200	42,700		21,205,200	42,700			
	24	21,219,600	14,400		21,219,600	14,400			
	25	21,274,800	55,200		21,274,800	55,200			
	26	21,305,100	30,300		21,305,100	30,300			
	27	21,318,900	13,800		21,318,900	13,800			
	28	21,346,000	27,100		21,346,000	27,100			
	29	21,359,800	13,800		21,359,800	13,800			
	30	21,387,200	27,400		21,387,200	27,400			
	31	21,415,500	28,300		21,415,500	28,300			
Jun-11	1	21,443,600	28,100		21,443,600	28,100			
	2	21,469,800	26,200		21,469,800	26,200			
	3	21,506,100	36,300		21,506,100	36,300			
	4	21,530,700	24,600		21,530,700	24,600			
	5	21,568,700	38,000		21,568,700	38,000			
	6	21,613,200	44,500		21,613,200	44,500			
	7	21,640,500	27,300		21,640,500	27,300			
	8	21,669,400	28,900		21,669,400	28,900			
	9	21,699,100	29,700		21,699,100	29,700			
	10	21,730,000	30,900		21,730,000	30,900			
	11	21,757,500	27,500		21,757,500	27,500			
	12	21,801,100	43,600		21,801,100	43,600			
	13	21,839,800	38,700		21,839,800	38,700			
	14	21,871,700	31,900		21,871,700	31,900			
	15	21,928,900	57,200		21,928,900	57,200			
	16	21,983,700	54,800		21,983,700	54,800			
	17	22,015,900	32,200		22,015,900	32,200			
	18	22,068,800	52,900		22,068,800	52,900			
	19	22,099,600	30,800		22,099,600	30,800			
	20	22,130,800	31,200		22,130,800	31,200			
	21	22,181,400	50,600		22,181,400	50,600			
	22	22,233,400	52,000		22,233,400	52,000			
	23	22,314,400	81,000		22,314,400	81,000			
	24	22,362,100	47,700		22,362,100	47,700			

Adrian, OR
Well 4 Production Data - Processed

	DATE	READING	KA Calc Gallons Pumped	Check Eqns	Keller Corrected Data: ADJUSTED METER READING	INTERPOLATED GALLONS PUMPED	Option 2 Meter Reading (Transposed)	Option 2 Gallons Pumped
	25	22,423,400	61,300		22,423,400	61,300		
	26	22,484,700	61,300		22,484,700	61,300		
	27	22,540,900	56,200		22,540,900	56,200		
	28	22,606,900	66,000		22,606,900	66,000		
	29	22,667,900	61,000		22,667,900	61,000		
	30	22,712,300	44,400		22,712,300	44,400		
Jul-11	1	22,750,200	37,900		22,750,200	37,900		
	2	22,814,900	64,700		22,814,900	64,700		
	3	22,877,200	62,300		22,877,200	62,300		
	4	22,964,100	86,900		22,964,100	86,900		
	5	23,005,100	41,000		23,005,100	41,000		
	6	23,084,400	79,300		23,084,400	79,300		
	7	23,159,800	75,400		23,159,800	75,400		
	8	23,245,300	85,500		23,245,300	85,500		
	9	23,275,000	29,700		23,275,000	29,700		
	10	23,341,000	66,000		23,341,000	66,000		
	11	23,421,000	80,000		23,421,000	80,000		
	12	23,478,900	57,900		23,478,900	57,900		
	13	23,545,800	66,900		23,545,800	66,900		
	14	23,595,900	50,100		23,595,900	50,100		
	15	23,658,000	62,100		23,658,000	62,100		
	16	23,736,400	78,400		23,736,400	78,400		
	17	23,792,400	56,000		23,792,400	56,000		
	18	23,859,200	66,800		23,859,200	66,800		
	19	23,938,900	79,700		23,938,900	79,700		
	20	23,981,500	42,600		23,981,500	42,600		
	21	24,015,500	34,000		24,015,500	34,000		
	22	24,082,000	66,500		24,082,000	66,500		
	23	24,165,700	83,700		24,165,700	83,700		
	24	24,258,500	92,800		24,258,500	92,800		
	25	24,258,500	0		24,258,500	0		
	26	24,346,500	88,000		24,346,500	88,000		
	27	24,414,000	67,500		24,414,000	67,500		
	28	24,469,100	55,100		24,469,100	55,100		
	29	24,522,100	53,000		24,522,100	53,000		
	30	24,584,400	62,300		24,584,400	62,300		
	31	24,654,800	70,400		24,654,800	70,400		
Aug-11	1	24,721,300	66,500		24,721,300	66,500		
	2	24,788,600	67,300		24,788,600	67,300		
	3	24,833,600	45,000		24,833,600	45,000		
	4	24,843,700	10,100		24,843,700	10,100		
	5	24,891,900	48,200		24,891,900	48,200		
	6	24,934,600	42,700		24,934,600	42,700		
	7	24,990,500	55,900		24,990,500	55,900		
	8	25,055,500	65,000		25,055,500	65,000		
	9	25,119,900	64,400		25,119,900	64,400		
	10	25,122,300	2,400		25,122,300	2,400		
	11	25,176,900	54,600		25,176,900	54,600		
	12	25,210,900	34,000		25,210,900	34,000		
	13	25,270,000	59,100		25,270,000	59,100		
	14	25,333,700	63,700		25,333,700	63,700		
	15	25,418,800	85,100		25,418,800	85,100		
	16	25,479,600	60,800		25,479,600	60,800		
	17	25,542,500	62,900		25,542,500	62,900		
	18	25,587,900	45,400		25,587,900	45,400		
	19	25,650,900	63,000		25,650,900	63,000		
	20	25,704,200	53,300		25,704,200	53,300		
	21	25,758,900	54,700		25,758,900	54,700		
	22	25,821,600	62,700		25,821,600	62,700		
	23	25,873,600	52,000		25,873,600	52,000		

Adrian, OR
Well 4 Production Data - Processed

	DATE	READING	KA Calc Gallons Pumped	Check Eqns	Keller Corrected Data: ADJUSTED METER READING	INTERPOLATED GALLONS PUMPED	Option 2 Meter Reading (Transposed)	Option 2 Gallons Pumped
	24	25,939,700	66,100		25,939,700	66,100		
	25	26,002,200	62,500		26,002,200	62,500		
	26	26,059,400	57,200		26,059,400	57,200		
	27	26,133,500	74,100		26,133,500	74,100		
	28	26,178,700	45,200		26,178,700	45,200		
	29	26,228,500	49,800		26,228,500	49,800		
	30	26,275,000	46,500		26,275,000	46,500		
	31	26,331,100	56,100		26,331,100	56,100		
Sep-11	1	26,383,400	52,300		26,383,400	52,300		
	2	26,466,000	82,600		26,466,000	82,600		
	3	26,500,700	34,700		26,500,700	34,700		
	4	26,543,100	42,400		26,543,100	42,400		
	5	26,594,100	51,000		26,594,100	51,000		
	6	26,647,900	53,800		26,647,900	53,800		
	7	26,688,500	40,600		26,688,500	40,600		
	8	26,750,800	62,300		26,750,800	62,300		
	9	26,792,300	41,500		26,792,300	41,500		
	10	26,834,100	41,800		26,834,100	41,800		
	11	26,894,400	60,300		26,894,400	60,300		
	12	26,962,600	68,200		26,962,600	68,200	26,962,600	
	13	27,087,100	**124,500**		27,037,100	74,500	27,056,400	93,800
	14	27,056,400	**-30,700**		27,056,400	19,300	27,087,100	30,700
	15	27,097,300	40,900		27,097,300	40,900	27,097,300	10,200
	16	27,126,800	29,500		27,126,800	29,500		
	17	27,148,000	21,200		27,148,000	21,200		
	18	27,168,900	20,900		27,168,900	20,900		
	19	27,198,900	30,000		27,198,900	30,000		
	20	27,228,200	29,300		27,228,200	29,300		
	21	27,267,500	39,300		27,267,500	39,300		
	22	27,385,100	**117,600**		?	37,600		
	23	27,342,700	**-42,400**		27,342,700	37,600		
	24	27,373,300	30,600		27,373,300	30,600		
	25	27,403,900	30,600		27,403,900	30,600		
	26	27,447,500	43,600		27,447,500	43,600		
	27	27,491,200	43,700		27,491,200	43,700		
	28	27,522,000	30,800		27,522,000	30,800		
	29	27,551,100	29,100		27,551,100	29,100		
	30	27,578,100	27,000		27,578,100	27,000		
Oct-11	1	27,641,800	63,700		27,641,800	63,700		
	2	27,651,400	9,600		27,651,400	9,600		
	3	27,681,300	29,900		27,681,300	29,900		
	4	27,705,900	24,600		27,705,900	24,600		
	5	27,705,900	0		27,705,900	0		
	6	27,705,900	0		27,705,900	0		
	7	27,733,200	27,300		27,733,200	27,300		
	8	27,761,900	28,700		27,761,900	28,700		
	9	27,806,000	44,100		27,806,000	44,100		
	10	27,866,000	60,000		27,866,000	60,000		
	11	27,881,900	15,900		27,881,900	15,900		
	12	27,918,600	36,700		27,918,600	36,700		
	13	27,942,700	24,100		27,942,700	24,100		
	14	27,974,900	32,200		27,974,900	32,200		
	15	28,021,100	46,200		28,021,100	46,200		
	16	28,047,300	26,200		28,047,300	26,200		
	17	28,050,000	2,700		28,050,000	2,700		
	18	28,077,300	27,300		28,077,300	27,300		
	19	28,092,500	15,200		28,092,500	15,200		
	20	28,109,700	17,200		28,109,700	17,200		
	21	28,132,800	23,100		28,132,800	23,100		
	22	28,250,600	**117,800**		28,250,600	**117,800**		

Adrian, OR
Well 4 Production Data - Processed

	DATE	READING	KA Calc Gallons Pumped	Check Eqns	Keller Corrected Data: ADJUSTED METER READING	INTERPOLATED GALLONS PUMPED	Option 2 Meter Reading (Transposed)	Option 2 Gallons Pumped
	23	28,251,800	1,200		28,251,800	1,200		
	24	28,251,800	0		28,251,800	0		
	25	28,251,800	0		28,251,800	0		
	26	28,251,800	0		28,251,800	0		
	27	28,283,100	31,300		28,283,100	31,300		
	28	28,307,100	24,000		28,307,100	24,000		
	29	28,335,300	28,200		28,335,300	28,200		
	30	28,357,100	21,800		28,357,100	21,800		
	31	28,380,400	23,300		28,380,400	23,300		
Nov-11	1	28,402,600	22,200		28,402,600	22,200		
	2	28,442,200	39,600		28,442,200	39,600		
	3	28,444,000	1,800		28,444,000	1,800		
	4	28,465,900	21,900		28,465,900	21,900		
	5	28,476,700	10,800		28,476,700	10,800		
	6	28,498,300	21,600		28,498,300	21,600		
	7	28,520,400	22,100		28,520,400	22,100		
	8	28,535,800	15,400		28,535,800	15,400		
	9	28,553,900	18,100		28,553,900	18,100		
	10	28,575,700	21,800		28,575,700	21,800		
	11	28,597,400	21,700		28,597,400	21,700		
	12	28,608,000	10,600		28,608,000	10,600		
	13	28,629,100	21,100		28,629,100	21,100		
	14	28,645,500	16,400		28,645,500	16,400		
	15	28,663,300	17,800		28,663,300	17,800		
	16	28,688,700	25,400		28,688,700	25,400		
	17	28,710,800	22,100		28,710,800	22,100		
	18	28,732,800	22,000		28,732,800	22,000		
	19	28,744,200	11,400		28,744,200	11,400		
	20	28,765,400	21,200		28,765,400	21,200		
	21	28,776,800	11,400		28,776,800	11,400		
	22	28,797,200	20,400		28,797,200	20,400		
	23	28,945,600	**148,400**		28,945,600	**148,400**		
	24	28,947,200	1,600		?	500		
	25	28,945,800	**-1,400**		?	500		
	26	28,947,100	1,300		28,947,100	500		
	27	28,948,200	1,100		28,948,200	1,100		
	28	28,948,800	600		28,948,800	600		
	29	28,974,600	25,800		28,974,600	25,800		
	30	28,993,200	18,600		28,993,200	18,600		
Dec-11	1	0	0	ERROR	0	18,600		
	2	0	0		0	18,600		
	3	0	0		0	18,600		
	4	0	0		0	18,600		
	5	0	0		0	18,600		
	6	0	0		0	18,600		
	7	0	0		0	18,600		
	8	0	0		0	18,600		
	9	0	0		0	18,600		
	10	0	0		0	18,600		
	11	0	0		0	18,600		
	12	0	0		0	18,600		
	13	0	0		0	18,600		
	14	0	0		0	18,600		
	15	0	0		0	18,600		
	16	0	0		0	18,600		
	17	0	0		0	18,600		
	18	0	0		0	18,600		
	19	0	0		0	18,600		
	20	0	0		0	18,600		
	21	0	0		0	18,600		

Adrian, OR
Well 4 Production Data - Processed

	DATE	READING		KA Calc Gallons Pumped	Check Eqns	Keller Corrected Data: ADJUSTED METER READING	INTERPOLATED GALLONS PUMPED	Option 2 Meter Reading (Transposed)	Option 2 Gallons Pumped
	22	0		0		0	18,600		
	23	0		0		0	18,600		
	24	0		0		0	18,600		
	25	0		0		0	18,600		
	26	0		0		0	18,600		
	27	0		0		0	18,600		
	28	0		0		0	18,600		
	29	0		0		0	18,600		
	30	0		0		0	18,600		
	31	29,569,800	576,600	29,569,800		29,569,800	18,600		
Jan-12	1	29,569,800		18,600	ERROR	29,569,800	18,600		
	2	29,605,600		35,800		29,605,600	35,800		
	3	29,618,100		12,500		29,618,100	12,500		
	4	29,639,800		21,700		29,639,800	21,700		
	5	29,760,300		120,500		29,760,300	120,500		
	6	29,760,900		600		29,760,900	600		
	7	29,760,900		0		29,760,900	0		
	8	29,761,200		300		29,761,200	300		
	9	29,764,200		3,000		29,764,200	3,000		
	10	29,764,800		600		29,764,800	600		
	11	29,765,600		800		29,765,600	800		
	12	29,786,900		21,300		29,786,900	21,300		
	13	29,796,900		10,000		29,796,900	10,000		
	14	29,806,900		10,000		29,806,900	10,000		
	15	29,826,500		19,600		29,826,500	19,600		
	16	29,836,900		10,400		29,836,900	10,400		
	17	29,857,100		20,200		29,857,100	20,200		
	18	29,867,700		10,600		29,867,700	10,600		
	19	29,888,400		20,700		29,888,400	20,700		
	20	29,988,800		100,400		?	16,800		
	21	29,919,000		-69,800		?	16,800		
	22	29,938,800		19,800		29,938,800	16,800		
	23	29,965,100		26,300		29,965,100	26,300		
	24	29,972,300		7,200		29,972,300	7,200		
	25	29,984,900		12,600		29,984,900	12,600		
	26	30,885,000		900,100		?	15,300		
	27	30,015,500		-869,500		30,015,500	15,300		
	28	30,035,100		19,600		30,035,100	19,600		
	29	30,045,400		10,300		30,045,400	10,300		
	30	30,057,800		12,400		30,057,800	12,400		
	31	30,080,200		22,400		30,080,200	22,400		
Feb-12	1	30,108,600		28,400		30,108,600	28,400		
	2	30,119,500		10,900		30,119,500	10,900		
	3	30,139,800		20,300		30,139,800	20,300		
	4	30,153,600		13,800		30,153,600	13,800		
	5	30,174,500		20,900		30,174,500	20,900		
	6	30,195,300		20,800		30,195,300	20,800		
	7	30,216,400		21,100		30,216,400	21,100		
	8	30,237,900		21,500		30,237,900	21,500		
	9	30,248,500		10,600		30,248,500	10,600		
	10	30,271,200		22,700		30,271,200	22,700		
	11	30,291,100		19,900		30,291,100	19,900		
	12	30,301,800		10,700		30,301,800	10,700		
	13	30,322,600		20,800		30,322,600	20,800		
	14	30,343,300		20,700		30,343,300	20,700		
	15	30,353,500		10,200		30,353,500	10,200		
	16	30,374,700		21,200		30,374,700	21,200		
	17	30,390,200		15,500		30,390,200	15,500		
	18	30,406,300		16,100		30,406,300	16,100		
	19	30,416,400		10,100		30,416,400	10,100		

Adrian, OR
Well 4 Production Data - Processed

	DATE	READING	KA Calc Gallons Pumped	Check Eqns	Keller Corrected Data: ADJUSTED METER READING	INTERPOLATED GALLONS PUMPED	Option 2 Meter Reading (Transposed)	Option 2 Gallons Pumped
	20	30,437,500	21,100		30,437,500	21,100		
	21	30,459,500	22,000		30,459,500	22,000		
	22	30,470,600	11,100		30,470,600	11,100		
	23	30,496,400	25,800		30,496,400	25,800		
	24	30,506,700	10,300		30,506,700	10,300		
	25	30,521,700	15,000		30,521,700	15,000		
	26	30,537,700	16,000		30,537,700	16,000		
	27	30,558,400	20,700		30,558,400	20,700		
	28	30,569,400	11,000		30,569,400	11,000		
	29	30,589,400	20,000		30,589,400	20,000		
Mar-12	1	30,611,000	21,600		30,611,000	21,600		
	2	30,633,200	22,200		30,633,200	22,200		
	3	30,642,900	9,700		30,642,900	9,700		
	4	30,654,100	11,200		30,654,100	11,200		
	5	30,685,400	31,300		30,685,400	31,300		
	6	30,706,900	21,500		30,706,900	21,500		
	7	30,717,300	10,400		30,717,300	10,400		
	8	30,737,100	19,800		30,737,100	19,800		
	9	30,757,600	20,500		30,757,600	20,500		
	10	30,778,700	21,100		30,778,700	21,100		
	11	30,799,200	20,500		30,799,200	20,500		
	12	30,820,100	20,900		30,820,100	20,900		
	13	30,833,900	13,800		30,833,900	13,800		
	14	30,851,100	17,200		30,851,100	17,200		
	15	30,871,400	20,300		30,871,400	20,300		
	16	30,892,000	20,600		30,892,000	20,600		
	17	30,902,200	10,200		30,902,200	10,200		
	18	30,922,800	20,600		30,922,800	20,600		
	19	30,943,900	21,100		30,943,900	21,100		
	20	30,964,300	20,400		30,964,300	20,400		
	21	30,984,300	20,000		30,984,300	20,000		
	22	31,005,900	21,600		31,005,900	21,600		
	23	31,026,800	20,900		31,026,800	20,900		
	24	31,037,100	10,300		31,037,100	10,300		
	25	31,054,600	17,500		31,054,600	17,500		
	26	31,077,500	22,900		31,077,500	22,900		
	27	31,097,300	19,800		31,097,300	19,800		
	28	31,118,100	20,800		31,118,100	20,800		
	29	31,129,000	10,900		31,129,000	10,900		
	30	31,139,500	10,500		31,139,500	10,500		
	31	31,161,000	21,500		31,161,000	21,500		
Apr-12	1	31,192,000	31,000		31,192,000	31,000		
	2	31,212,700	20,700		31,212,700	20,700		
	3	31,233,300	20,600		31,233,300	20,600		
	4	31,254,800	21,500		31,254,800	21,500		
	5	31,288,600	33,800		31,288,600	33,800		
	6	31,307,300	18,700		31,307,300	18,700		
	7	31,329,300	22,000		31,329,300	22,000		
	8	31,351,600	22,300		31,351,600	22,300		
	9	31,375,800	24,200		31,375,800	24,200		
	10	31,419,200	43,400		31,419,200	43,400		
	11	31,448,300	29,100		31,448,300	29,100		
	12	31,470,700	22,400		31,470,700	22,400		
	13	31,492,100	21,400		31,492,100	21,400		
	14	31,509,800	17,700		31,509,800	17,700		
	15	31,551,000	41,200		31,551,000	41,200		
	16	31,571,700	20,700		31,571,700	20,700		
	17	31,582,600	10,900		31,582,600	10,900		
	18	31,603,800	21,200		31,603,800	21,200		
	19	31,624,400	20,600		31,624,400	20,600		

Adrian, OR
Well 4 Production Data - Processed

	DATE	READING	KA Calc Gallons Pumped	Check Eqns		Keller Corrected Data: ADJUSTED METER READING	INTERPOLATED GALLONS PUMPED	Option 2 Meter Reading (Transposed)	Option 2 Gallons Pumped
	20	31,660,400	36,000			31,660,400	36,000		
	21	31,721,700	61,300			31,721,700	61,300		
	22	31,777,800	56,100			31,777,800	56,100		
	23	31,809,100	31,300			31,809,100	31,300		
	24	31,860,600	51,500			31,860,600	51,500		
	25	31,873,900	13,300			31,873,900	13,300		
	26	31,896,000	22,100			31,896,000	22,100		
	27	31,930,600	34,600			31,930,600	34,600		
	28	31,965,500	34,900			31,965,500	34,900		
	29	32,013,800	48,300			32,013,800	48,300		
	30	32,041,900	28,100			32,041,900	28,100		
May-12	1	32,054,200	12,300			32,054,200	12,300		
	2	32,095,600	41,400			32,095,600	41,400		
	3	32,137,800	42,200			32,137,800	42,200		
	4	32,173,400	35,600			32,173,400	35,600		
	5	32,208,100	34,700			32,208,100	34,700		
	6	32,243,000	34,900			32,243,000	34,900		
	7	32,281,100	38,100			32,281,100	38,100		
	8	32,399,500	118,400			32,399,500	118,400	32,399,500	
	9	32,444,300	44,800			32,444,300	44,800	32,443,200	43,700
	10	32,494,600	50,300			?	33,933	32,444,300	1,100
	11	32,443,200	-51,400			?	33,933	32,494,600	50,300
	12	32,546,100	102,900			32,546,100	33,933	32,546,100	51,500
	13	32,613,000	66,900			32,613,000	66,900		
	14	32,712,700	99,700			32,712,700	99,700	32,712,700	
	15	32,883,000	170,300		MAX?	?	83,433	32,869,300	156,600
	16	32,869,300	-13,700			?	83,433	32,883,000	13,700
	17	32,963,000	93,700			32,963,000	83,433	32,963,000	80,000
	18	33,035,700	72,700			33,035,700	72,700		
	19	33,112,600	76,900			33,112,600	76,900		
	20	33,189,100	76,500			33,189,100	76,500		
	21	33,238,200	49,100			33,238,200	49,100		
	22	33,317,200	79,000			33,317,200	79,000		
	23	33,388,100	70,900			33,388,100	70,900		
	24	33,444,600	56,500			33,444,600	56,500		
	25	33,495,500	50,900			33,495,500	50,900		
	26	33,528,700	33,200			33,528,700	33,200		
	27	33,562,800	34,100			33,562,800	34,100		
	28	33,622,200	59,400			33,622,200	59,400		
	29	33,701,900	79,700			33,701,900	79,700		
	30	33,783,400	81,500			33,783,400	81,500		
	31	33,857,400	74,000			33,857,400	74,000		
Jun-12	1	33,931,900	74,500			33,931,900	74,500		
	2	34,008,700	76,800			34,008,700	76,800		
	3	34,083,500	74,800			34,083,500	74,800		
	4	34,164,500	81,000			34,164,500	81,000		
	5	34,222,400	57,900			34,222,400	57,900		
	6	34,254,800	32,400			34,254,800	32,400		
	7	34,283,100	28,300			34,283,100	28,300		
	8	34,371,000	87,900			34,371,000	87,900		
	9	34,382,600	11,600			34,382,600	11,600		
	10	34,407,700	25,100			34,407,700	25,100		
	11	34,474,700	67,000			34,474,700	67,000		
	12	34,537,600	62,900			34,537,600	62,900		
	13	34,621,800	84,200			34,621,800	84,200		
	14	34,692,500	70,700			34,692,500	70,700		
	15	34,766,600	74,100			34,766,600	74,100		
	16	34,848,700	82,100			34,848,700	82,100		
	17	34,919,100	70,400			34,919,100	70,400		
	18	34,984,900	65,800			34,984,900	65,800		

Adrian, OR
Well 4 Production Data - Processed

	DATE	READING	KA Calc Gallons Pumped	Check Eqns		Keller Corrected Data: ADJUSTED METER READING	INTERPOLATED GALLONS PUMPED	Option 2 Meter Reading (Transposed)	Option 2 Gallons Pumped
	19	35,045,300	60,400			35,045,300	60,400		
	20	35,188,200	142,900			?	70,850		
	21	35,187,000	-1,200			35,187,000	70,850		
	22	35,257,200	70,200			35,257,200	70,200		
	23	35,327,700	70,500			35,327,700	70,500		
	24	35,441,200	113,500			35,441,200	113,500		
	25	35,469,300	28,100			35,469,300	28,100		
	26	35,525,300	56,000			35,525,300	56,000		
	27	35,596,200	70,900			35,596,200	70,900		
	28	35,660,500	64,300			35,660,500	64,300		
	29	35,735,600	75,100			35,735,600	75,100		
	30	35,798,600	63,000			35,798,600	63,000		
Jul-12	1	35,878,900	80,300			35,878,900	80,300		
	2	35,926,500	47,600			35,926,500	47,600		
	3	35,959,800	33,300			35,959,800	33,300		
	4	35,745,400	-214,400			?	70,167	35,745,400	
	5	36,186,600	441,200			?	70,167	36,170,300	424,900
	6	36,170,300	-16,300			36,170,300	70,167	36,186,600	16,300
	7	36,228,000	57,700			36,228,000	57,700	36,228,000	41,400
	8	36,292,500	64,500			36,292,500	64,500		
	9	36,368,800	76,300			36,368,800	76,300		
	10	36,420,300	51,500			36,420,300	51,500		
	11	36,478,400	58,100			36,478,400	58,100		
	12	36,525,500	47,100			36,525,500	47,100		
	13	36,581,800	56,300			36,581,800	56,300		
	14	36,618,300	36,500			36,618,300	36,500		
	15	36,658,300	40,000			36,658,300	40,000		
	16	36,684,500	26,200			36,684,500	26,200		
	17	36,740,300	55,800			36,740,300	55,800		
	18	36,818,600	78,300			36,818,600	78,300	36,818,600	
	19	36,984,500	165,900		MAX?	36,894,500	75,900	36,970,000	151,400
	20	36,970,000	-14,500			36,970,000	75,500	36,984,500	14,500
	21	37,032,700	62,700			37,032,700	62,700	37,032,700	48,200
	22	37,095,900	63,200			37,095,900	63,200		
	23	37,133,100	37,200			37,133,100	37,200		
	24	37,243,900	110,800			37,243,900	110,800		
	25	37,319,300	75,400			37,319,300	75,400		
	26	37,380,300	61,000			37,380,300	61,000		
	27	37,448,900	68,600			37,448,900	68,600		
	28	37,505,900	57,000			37,505,900	57,000		
	29	37,575,600	69,700			37,575,600	69,700		
	30	37,647,200	71,600			37,647,200	71,600		
	31	37,717,800	70,600			37,717,800	70,600		
Aug-12	1	37,781,100	63,300			37,781,100	63,300		
	2	37,849,200	68,100			37,849,200	68,100		
	3	37,913,800	64,600			37,913,800	64,600		
	4	37,978,300	64,500			37,978,300	64,500		
	5	38,044,700	66,400			38,044,700	66,400		
	6	38,127,700	83,000			38,127,700	83,000		
	7	38,180,300	52,600			38,180,300	52,600		
	8	38,235,200	54,900			38,235,200	54,900		
	9	38,306,100	70,900			38,306,100	70,900		
	10	38,436,600	130,500			38,436,600	130,500		
	11	38,504,300	67,700			38,504,300	67,700		
	12	38,574,400	70,100			38,574,400	70,100		
	13	38,638,400	64,000			38,638,400	64,000	38,638,400	
	14	38,784,500	146,100			?	65,700	38,769,800	131,400
	15	38,769,800	-14,700			38,769,800	65,700	38,784,500	14,700
	16	38,836,800	67,000			38,836,800	67,000	38,836,800	52,300
	17	38,898,000	61,200			38,898,000	61,200		

Adrian, OR
Well 4 Production Data - Processed

	DATE	READING	KA Calc Gallons Pumped	Check Eqns	Keller Corrected Data: ADJUSTED METER READING	INTERPOLATED GALLONS PUMPED	Option 2 Meter Reading (Transposed)	Option 2 Gallons Pumped
	18	38,964,700	66,700		38,964,700	66,700		
	19	39,836,700	872,000		?	69,200		
	20	39,103,100	-733,600		39,103,100	69,200		
	21	39,169,200	66,100		39,169,200	66,100		
	22	39,233,400	64,200		39,233,400	64,200		
	23	39,308,200	74,800		39,308,200	74,800		
	24	39,364,900	56,700		39,364,900	56,700		
	25	39,430,300	65,400		39,430,300	65,400		
	26	39,500,200	69,900		39,500,200	69,900		
	27	39,562,600	62,400		39,562,600	62,400		
	28	39,631,700	69,100		39,631,700	69,100		
	29	39,696,900	65,200		39,696,900	65,200		
	30	39,761,400	64,500		39,761,400	64,500		
	31	39,813,000	51,600		39,813,000	51,600		
Sep-12	1	39,813,000	0		39,813,000	0		
	2	39,886,600	73,600		39,886,600	73,600		
	3	39,972,900	86,300		39,972,900	86,300		
	4	40,012,700	39,800		40,012,700	39,800		
	5	40,073,400	60,700		40,073,400	60,700		
	6	40,104,900	31,500		40,104,900	31,500		
	7	40,104,900	0		40,104,900	0		
	8	40,104,900	0		40,104,900	0		
	9	40,147,700	42,800		40,147,700	42,800		
	10	40,206,800	59,100		40,206,800	59,100		
	11	40,258,300	51,500		40,258,300	51,500		
	12	40,319,300	61,000		40,319,300	61,000		
	13	40,355,300	36,000		40,355,300	36,000		
	14	40,390,700	35,400		40,390,700	35,400		
	15	40,461,200	70,500		40,461,200	70,500		
	16	40,504,900	43,700		40,504,900	43,700		
	17	40,552,600	47,700		40,552,600	47,700		
	18	40,600,900	48,300		40,600,900	48,300		
	19	40,640,100	39,200		40,640,100	39,200		
	20	40,707,400	67,300		40,707,400	67,300		
	21	40,741,300	33,900		40,741,300	33,900		
	22	40,779,900	38,600		40,779,900	38,600		
	23	40,810,700	30,800		40,810,700	30,800		
	24	40,841,500	30,800		40,841,500	30,800		
	25	40,875,100	33,600		40,875,100	33,600		
	26	40,948,000	72,900		40,948,000	72,900		
	27	40,970,800	22,800		40,970,800	22,800		
	28	41,018,700	47,900		41,018,700	47,900		
	29	41,047,600	28,900		41,047,600	28,900		
	30	41,084,500	36,900		41,084,500	36,900		
Oct-12	1	41,122,900	38,400		41,122,900	38,400		
	2	41,163,100	40,200		41,163,100	40,200		
	3	41,207,400	44,300		41,207,400	44,300		
	4	41,287,900	80,500		41,287,900	80,500		
	5	41,317,400	29,500		41,317,400	29,500		
	6	41,337,600	20,200		41,337,600	20,200		
	7	41,365,900	28,300		41,365,900	28,300		
	8	41,392,200	26,300		41,392,200	26,300		
	9	41,422,000	29,800		41,422,000	29,800		
	10	41,449,900	27,900		41,449,900	27,900		
	11	41,477,700	27,800		41,477,700	27,800		
	12	41,522,300	44,600		41,522,300	44,600		
	13	41,534,900	12,600		41,534,900	12,600		
	14	41,563,300	28,400		41,563,300	28,400		
	15	41,580,300	17,000		41,580,300	17,000		
	16	41,613,800	33,500		41,613,800	33,500		

Adrian, OR
Well 4 Production Data - Processed

	DATE	READING	KA Calc Gallons Pumped	Check Eqns	Keller Corrected Data: ADJUSTED METER READING	INTERPOLATED GALLONS PUMPED	Option 2 Meter Reading (Transposed)	Option 2 Gallons Pumped
	17	41,633,000	19,200		41,633,000	19,200		
	18	41,669,700	36,700		41,669,700	36,700		
	19	41,690,800	21,100		41,690,800	21,100		
	20	41,717,100	26,300		41,717,100	26,300		
	21	41,740,000	22,900		41,740,000	22,900		
	22	41,761,700	21,700		41,761,700	21,700		
	23	41,785,700	24,000		41,785,700	24,000		
	24	41,812,300	26,600		41,812,300	26,600		
	25	41,840,900	28,600		41,840,900	28,600		
	26	41,859,600	18,700		41,859,600	18,700		
	27	41,882,100	22,500		41,882,100	22,500		
	28	41,908,700	26,600		41,908,700	26,600		
	29	41,943,000	34,300		41,943,000	34,300		
	30	41,956,900	13,900		41,956,900	13,900		
	31	41,985,000	28,100		41,985,000	28,100		
Nov-12	1	41,812,100	-172,900		?	30,033		
	2	41,846,400	34,300		?	30,033		
	3	42,075,100	228,700		42,075,100	30,033		
	4	42,089,900	14,800		42,089,900	14,800		
	5	42,115,400	25,500		42,115,400	25,500		
	6	42,156,400	41,000		42,156,400	41,000		
	7	42,175,400	19,000		42,175,400	19,000		
	8	42,204,600	29,200		42,204,600	29,200		
	9	42,231,700	27,100		42,231,700	27,100		
	10	42,246,200	14,500		42,246,200	14,500		
	11	42,273,700	27,500		42,273,700	27,500		
	12	42,300,900	27,200		42,300,900	27,200		
	13	42,329,700	28,800		42,329,700	28,800		
	14	42,358,800	29,100		42,358,800	29,100		
	15	42,373,300	14,500		42,373,300	14,500		
	16	42,401,600	28,300		42,401,600	28,300		
	17	42,430,200	28,600		42,430,200	28,600		
	18	42,457,800	27,600		42,457,800	27,600		
	19	42,486,700	28,900		42,486,700	28,900		
	20	42,516,400	29,700		42,516,400	29,700		
	21	42,531,400	15,000		42,531,400	15,000		
	22	42,561,200	29,800		42,561,200	29,800		
	23	42,561,400	200		42,561,400	200		
	24	42,561,900	500		42,561,900	500		
	25	42,562,400	500		42,562,400	500		
	26	42,585,400	23,000		42,585,400	23,000		
	27	42,607,000	21,600		42,607,000	21,600		
	28	42,628,100	21,100		42,628,100	21,100		
	29	42,650,600	22,500		42,650,600	22,500		
	30	42,671,600	21,000		42,671,600	21,000		
Dec-12	1	42,692,100	20,500		42,692,100	20,500		
	2	42,713,100	21,000		42,713,100	21,000		
	3	42,733,600	20,500		42,733,600	20,500		
	4	42,734,900	1,300		42,734,900	1,300		
	5	42,786,900	52,000		42,786,900	52,000		
	6	42,821,600	34,700		42,821,600	34,700		
	7	42,828,400	6,800		42,828,400	6,800		
	8	42,839,200	10,800		42,839,200	10,800		
	9	42,860,900	21,700		42,860,900	21,700		
	10	42,892,400	31,500		42,892,400	31,500		
	11	42,911,400	19,000		42,911,400	19,000		
	12	42,939,400	28,000		42,939,400	28,000		
	13	42,960,300	20,900		42,960,300	20,900		
	14	42,983,000	22,700		42,983,000	22,700		
	15	43,004,200	21,200		43,004,200	21,200		

Adrian, OR
Well 4 Production Data - Processed

DATE	READING	KA Calc Gallons Pumped	Check Eqns	Keller Corrected Data: ADJUSTED METER READING	INTERPOLATED GALLONS PUMPED		Option 2 Meter Reading (Transposed)	Option 2 Gallons Pumped
16	43,025,700	21,500		43,025,700	21,500			
17	43,047,400	21,700		43,047,400	21,700			
18	43,062,200	14,800		43,062,200	14,800			
19	43,092,000	29,800		43,092,000	29,800			
20	43,111,800	19,800		43,111,800	19,800			
21	43,123,100	11,300		43,123,100	11,300			
22	43,144,500	21,400		43,144,500	21,400			
23	43,176,300	31,800		43,176,300	31,800			
24	43,198,300	22,000		43,198,300	22,000			
25	43,219,300	21,000		43,219,300	21,000			
26	43,230,400	11,100		43,230,400	11,100			
27	43,255,100	24,700		43,255,100	24,700			
28	43,274,800	19,700		43,274,800	19,700			
29	43,296,200	21,400		43,296,200	21,400			
30	43,321,700	25,500		43,321,700	25,500			
31	43,345,700	24,000		43,345,700	24,000			
	MAX	29,569,800			161,600			
	AVG	61,509			33,290			
	MIN	-869,500			0	59		
	MIN2				100	60		
	MAX 2							
	2009-10 Winter Avg (Feb only)				16,163			
	2010 MAX				154,300			
	2010 AVG				33,756			
	2010 MIN				0	14		
	2010 MIN2				200	15		
	2010 Summer Avg				54,071			
	2010-11 Winter Avg				18,399			
	2011 MAX				161,600			
	2011 AVG				31,279			
	2011 MIN				0	10		
	2011 MIN2				100	11		
	2011 Summer Avg				53,430			
	2011-12 Winter Avg				17,745			
	2012 MAX				130,500			
	2012 AVG				37,690			
	2012 MIN				0	4		
	2012 MIN2				800	11		
	2012 Summer Avg				64,735			
	2012-13 Winter Avg (Dec only)				21,745			

Monthly Demand Summary

Total CF	2010	2011	2012	Avg
Jan	80,516	84,702	78,021	81,080
Feb	67,043	63,423	74,462	68,309
Mar	61,515	62,761	70,177	64,818
Apr	120,446	91,007	102,991	104,815
May	130,570	124,476	163,162	139,403
Jun	165,797	141,023	259,557	188,792
Jul	262,410	292,207	303,900	286,172
Aug	259,316	298,195	304,256	287,256
Sep	187,291	225,542	239,152	217,328
Oct	108,676	108,783	119,343	112,267
Nov	80,316	80,228	79,671	80,072
Dec	84,702	69,044		76,873
Total	1,608,598	1,641,391	1,794,692	1,681,560
Max Mo	262,410	298,195	304,256	304,256
Avg Mo	134,050	136,783	163,154	144,662
Min Mo	61,515	62,761	70,177	61,515
Avg Summer	229,174	243,808	289,238	254,073
Avg Winter	67,043	63,423	74,462	68,309
Avg Irr. Demand	162,131	180,385	214,776	185,764
Irr.%	70.7%	74.0%	74.3%	73.1%

Total GAL	2010	2011	2012	Avg
Jan	602,385	633,699	583,719	606,601
Feb	501,586	474,503	557,092	511,060
Mar	460,228	469,550	525,033	484,937
Apr	901,124	680,874	770,533	784,177
May	976,867	931,275	1,220,706	1,042,949
Jun	1,240,420	1,055,072	1,941,891	1,412,461
Jul	1,963,236	2,186,164	2,273,646	2,141,015
Aug	1,940,088	2,230,964	2,276,310	2,149,121
Sep	1,401,229	1,687,406	1,789,230	1,625,955
Oct	813,066	813,867	892,872	839,935
Nov	600,889	600,231	596,063	599,061
Dec	633,699	516,557	0	383,419
Total	12,034,819	12,280,162	13,427,096	12,580,692
Max Mo	1,963,236	2,230,964	2,276,310	2,276,310
Avg Mo	1,002,902	1,023,347	1,118,925	1,048,391
Min Mo	460,228	469,550	0	0
Avg Summer	1,714,582	1,824,067	2,163,949	1,900,866
Avg Winter	501,586	474,503	557,092	511,060
Avg Irr. Demand	1,212,995	1,349,564	1,606,857	1,389,805
Irr.%	70.7%	74.0%	74.3%	73.1%

Adrian, OR Metered Usage Summary

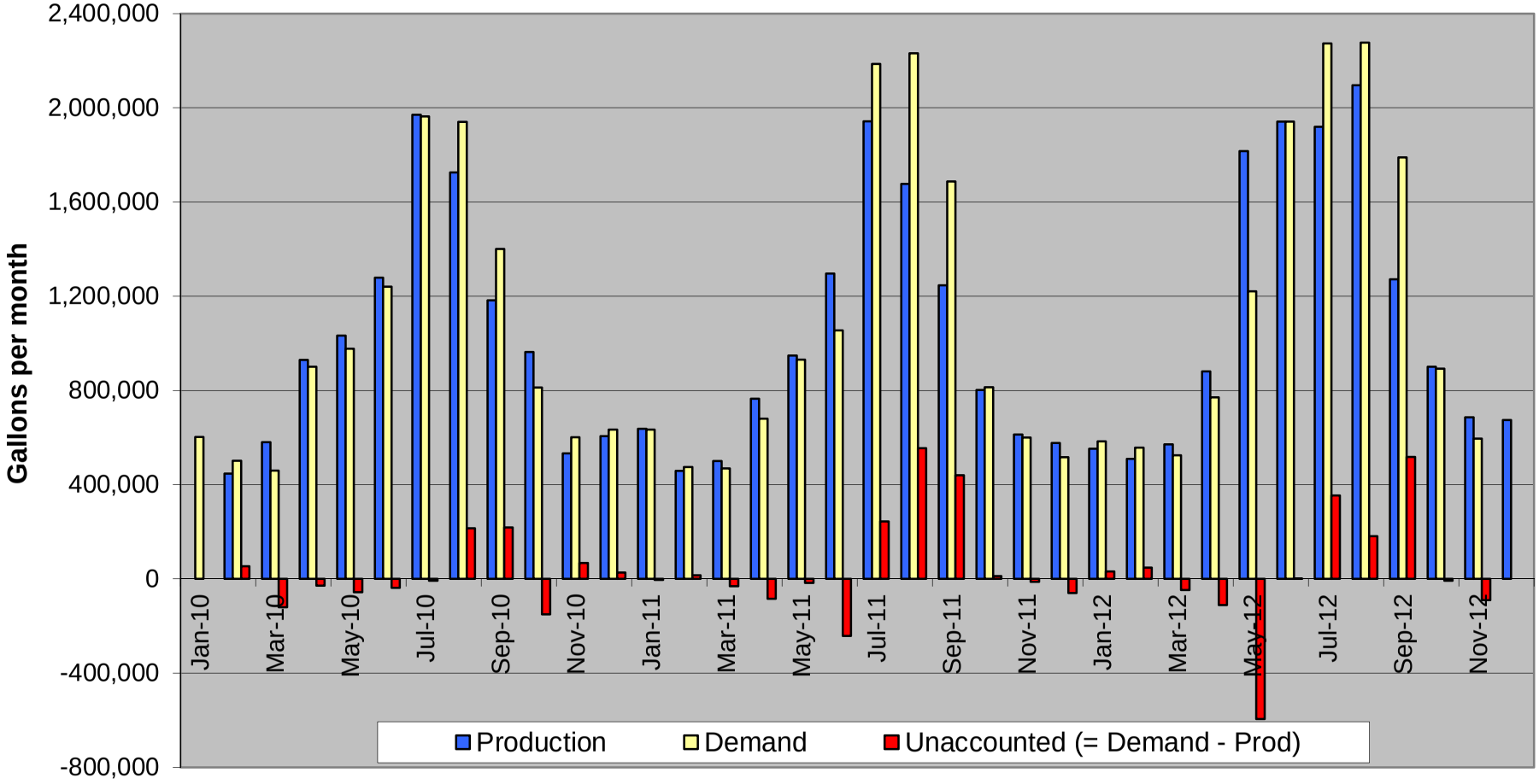
GPD		2010	2011	2012	Avg
Jan	31	19,432	20,442	18,830	19,568
Feb	28	17,914	16,947	19,896	18,252
Mar	31	14,846	15,147	16,937	15,643
Apr	30	30,037	22,696	25,684	26,139
May	31	31,512	30,041	39,378	33,644
Jun	30	41,347	35,169	64,730	47,082
Jul	31	63,330	70,521	73,343	69,065
Aug	31	62,583	71,967	73,429	69,326
Sep	30	46,708	56,247	59,641	54,198
Oct	31	26,228	26,254	28,802	27,095
Nov	30	20,030	20,008	19,869	19,969
Dec	31	20,442	16,663	0	12,368
Max Mo		63,330	71,967	73,429	73,429
Avg		32,867	33,508	36,712	34,362
Min Mo		14,846	15,147	0	0
Avg Summer		55,754	59,219	70,501	61,825
Avg Winter		17,914	16,947	19,896	18,252
Avg Irr. Demand		37,840	42,272	50,605	43,572
Irr.%		67.9%	71.4%	71.8%	70.5%

GPM	2010	2011	2012	Avg
Jan	13	14	13	14
Feb	12	12	14	13
Mar	10	11	12	11
Apr	21	16	18	18
May	22	21	27	23
Jun	29	24	45	33
Jul	44	49	51	48
Aug	43	50	51	48
Sep	32	39	41	38
Oct	18	18	20	19
Nov	14	14	14	14
Dec	14	12	0	9
Max Mo	44	50	51	51
Avg	23	23	25	24
Min Mo	10	11	0	0
Avg Summer	39	41	49	43
Avg Winter	12	12	14	13
Avg Irr. Demand	26	29	35	30
Irr.%	67.9%	71.4%	71.8%	70.5%

Adrian, OR Metered Usage Summary

GPCD	2010	2011	2012	Avg
Population	175	178	180	
Jan	111	115	105	110
Feb	102	95	111	103
Mar	85	85	94	88
Apr	172	128	143	147
May	180	169	219	189
Jun	236	198	360	264
Jul	362	396	407	389
Aug	358	404	408	390
Sep	267	316	331	305
Oct	150	147	160	152
Nov	114	112	110	112
Dec	117	94	0	70
Max Mo	362	404	408	408
Avg	188	188	204	193
Min Mo	85	85	0	0
Avg Summer	319	333	392	348
Avg Winter	102	95	111	103
Avg Irr. Demand	216	237	281	245
Irr.%	67.9%	71.4%	71.8%	70.5%

Adrian, OR Water Production vs Demand



APPENDIX D

MODEL CALIBRATION & OUTPUTS

KELLER associates

Prepared for: CITY of ADRIAN, OREGON

Project : 2013 WATER SYSTEM MASTER PLAN

Title: Flow Test Hydrants

Figure: D.1

Date: 3/6/2013
Flow hydrant: Justin Walker & Dick Davis (City Op.)
Pressure Hydrant A: Chuck Mickelson
Pressure Hydrant B: Kye Kreusel
Pump Station: (none)
Reservoir levels: Pat Corn (City)

Gage Calibration			
Gage	beginning/base reading (psi)		ending value (psi)
A	72		78
B	62		62
Flow	0		0

Note: taken at different locations before and after, so this only shows gage pressures relative to each other

	Pressure Hydrant A							
Group	Hydrant ID#	Time of static reading	Static Gauge Reading (psi)	Static Pressure (psi)	Time of Residual Reading	Residual Gauge Reading (psi)	Residual Pressure (psi)	Pressure drop (static minus residual) (psi)
Mutliple trial runs between 2:30p and 3:30 trying to get flow gauge to work								
4	P4A		?	54	3:23	?	44	10
3	P3A	3:56	145	73	3:58	128	56	17
1	P1A	4:13	135	63	4:19	124	52	11
2	P2A	4:27	135	63	4:33	124	52	11

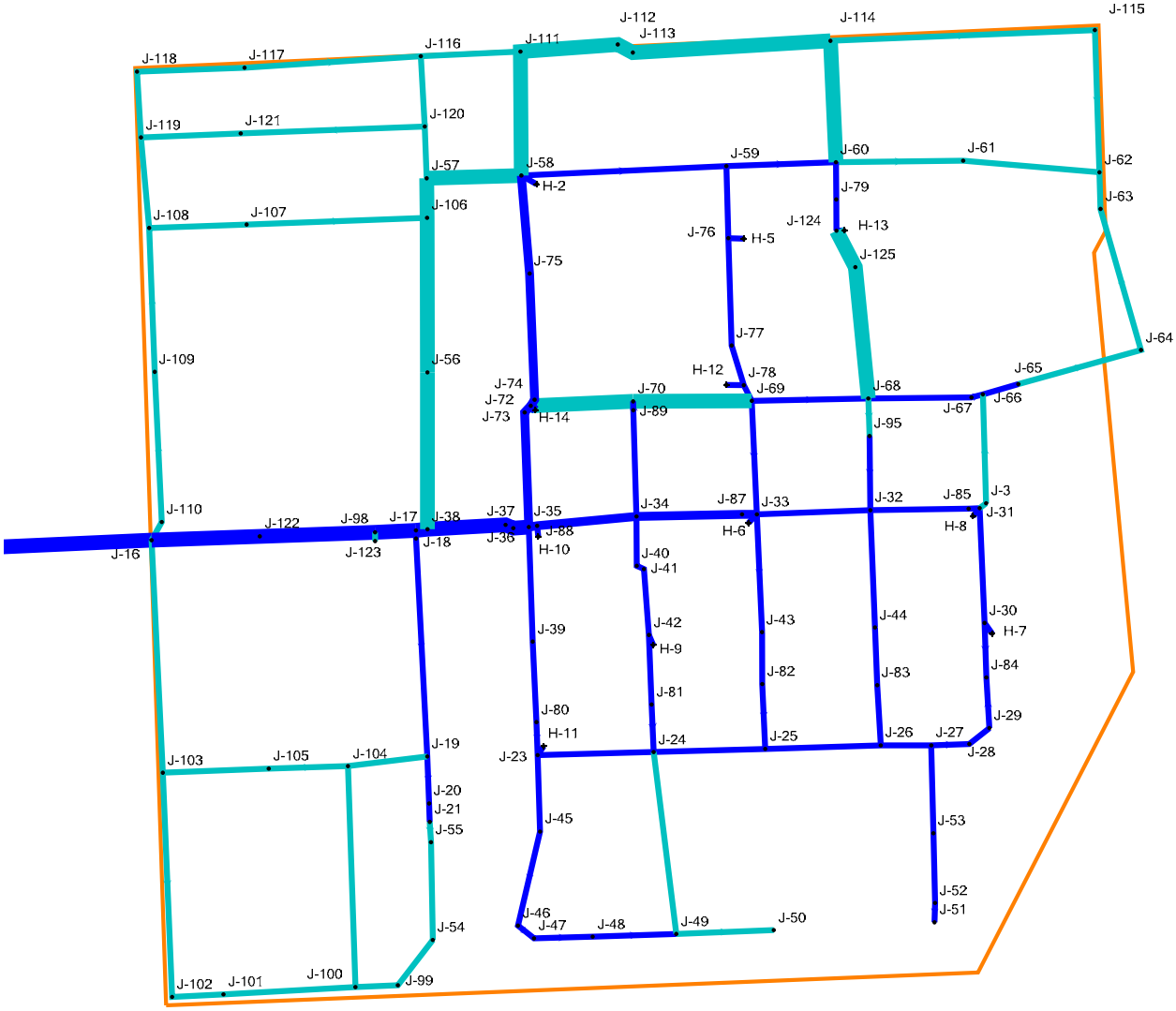
Pressure Hydrant B							
Hydrant ID#	Time of static reading	Static Gauge Reading (psi)	Static Pressure (psi)	Time of Residual Reading	Residual Gauge Reading (psi)	Residual Pressure (psi)	Pressure drop (static minus residual) (psi)
P4B	3:03	124	62	3:05	116	54	8
P3B	3:55	128	66	3:58	118	56	10
P1B	4:16	130	68	4:19	120	58	10
P2B	4:32	130	68	4:35	119	57	11

Flow Hydrant						
Hydrant ID	Flow times	Time of Flow reading	Port 1 Pitot Pressure (psi)	Port 1 Pitot Flow (gpm)	Port 2 Pitot Pressure (psi)	Port 2 Pitot Flow (gpm)
F4			21	775		
F3			40-50	1060-1190		
F1			42	1090		
F2			26	860		

Project: Adrian, OR Water Distribution System
Proj No.: 213013
Cal Run Date: 3/27/2013

Test Group No.	Est. Flow	Flow Hydrant				Site A				Site B			
4	(gpm)		Field	Model			Field	Model	vs.		Field	Model	vs.
	0	Static:		48.3		Static:	54	54.3		Static:	62	61.7	
	775	Residual:	21	30.2		Residual:	44	44.7		Residual:	54	53.8	
		Drop:		18.1		Drop:	10	9.6	0.4	Drop:	8	7.9	0.1
Test Group No.	Flow (gpm)	Flow Hydrant				Site A				Site B			
3			Field	Model			Field	Model			Field	Model	
	0	Static:		75.1		Static:	73	76.0		Static:	66	66.9	
	1130	Residual:	40-50	53.0		Residual:	56	56.3		Residual:	56	53.0	
		Drop:		22.1		Drop:	17	19.7	-2.7	Drop:	10	13.9	-3.9
Test Group No.	Flow (gpm)	Flow Hydrant				Site A				Site B			
1			Field	Model			Field	Model			Field	Model	
	0	Static:		64.7		Static:	63	64.3		Static:	68	67.3	
	1090	Residual:	42	47.9		Residual:	52	53.0		Residual:	58	54.9	
		Drop:		16.8		Drop:	11	11.3	-0.3	Drop:	10	12.4	-2.4
Test Group No.	Flow (gpm)	Flow Hydrant				Site A				Site B			
2			Field	Model			Field	Model			Field	Model	
	0	Static:		54.3		Static:	63	64.3		Static:	68	66.9	
	860	Residual:	26	42.1		Residual:	52	57.0		Residual:	57	58.8	
		Drop:		12.2		Drop:	11	7.3	3.7	Drop:	11	8.1	2.9

Scenario: PD - Exist + Bldout Growt



Adrian_WaterModel-2013.wtg
8/29/2013

Bentley Systems, Inc. Haestad Methods Solution Center
27 Siemon Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666

Peak Day Analysis: Existing System

FlexTable: Junction Table (Adrian_WaterModel-2013.wtg)

Current Time: 0.000 hours

Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Needed) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Junction w/ Minimum Pressure (Zone @ Total Flow Needed)	Satisfies Fire Flow Constraints?	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Pressure (Residual Lower Limit) (psi)
J-3	2,207.94	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
Well 4	2,230.58	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-6	2,231.00	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-7	2,230.11	Transmission Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-8	2,230.60	Transmission Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-9	2,245.09	Transmission Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-10	2,290.00	Transmission Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-11	2,350.00	Transmission Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-12	2,390.00	Transmission Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-13	2,378.00	Transmission Zone	0.00	2,382.00	1.7	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-14	2,352.00	Transmission Zone	0.00	2,381.98	13.0	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-15	2,288.00	Transmission Zone	0.00	2,381.94	40.6	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-16	2,245.95	Main Zone	0.00	2,381.89	58.8	1,000.00	1,000.00	1,600.00	J-124	True	50.9	25.0
J-17	2,230.48	Main Zone	1.09	2,381.86	65.5	1,000.00	1,001.09	1,601.09	J-124	True	55.7	25.0
J-18	2,231.01	Main Zone	1.09	2,381.86	65.3	1,000.00	1,001.09	1,601.09	J-124	True	54.9	25.0
J-19	2,223.16	Main Zone	1.09	2,381.86	68.7	1,000.00	1,001.09	1,316.35	J-124	True	43.2	25.0
J-20	2,224.89	Main Zone	1.09	2,381.86	67.9	1,000.00	1,001.09	1,231.37	J-21	True	39.2	25.0
J-21	2,227.27	Main Zone	1.09	2,381.86	66.9	1,000.00	1,001.09	1,202.56	J-20	True	36.9	25.0
J-23	2,230.00	Main Zone	1.09	2,381.84	65.7	1,000.00	1,001.09	1,575.10	J-124	True	50.9	25.0
J-24	2,211.93	Main Zone	1.09	2,381.84	73.5	1,000.00	1,001.09	1,562.17	J-124	True	60.0	25.0
J-25	2,207.74	Main Zone	1.09	2,381.84	75.3	1,000.00	1,001.09	1,546.53	J-124	True	61.5	25.0
J-26	2,207.92	Main Zone	1.09	2,381.84	75.2	1,000.00	1,001.09	1,539.57	J-124	True	59.7	25.0
J-27	2,206.99	Main Zone	1.09	2,381.84	75.6	1,000.00	1,001.09	1,538.61	J-124	True	58.6	25.0
J-28	2,206.11	Main Zone	1.09	2,381.84	76.0	1,000.00	1,001.09	1,538.17	J-124	True	58.2	25.0
J-29	2,205.64	Main Zone	1.09	2,381.84	76.2	1,000.00	1,001.09	1,537.92	J-124	True	58.0	25.0

Peak Day Analysis: Existing System

FlexTable: Junction Table (Adrian_WaterModel-2013.wtg)

Current Time: 0.000 hours

Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Needed) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Junction w/ Minimum Pressure (Zone @ Total Flow Needed)	Satisfies Fire Flow Constraints?	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Pressure (Residual Lower Limit) (psi)
J-30	2,205.24	Main Zone	1.09	2,381.84	76.4	1,500.00	1,501.09	1,537.31	J-124	True	37.1	25.0
J-31	2,207.80	Main Zone	1.09	2,381.84	75.3	1,000.00	1,001.09	1,536.97	J-124	True	57.2	25.0
J-32	2,216.85	Main Zone	1.09	2,381.84	71.4	1,000.00	1,001.09	1,535.59	J-124	True	56.1	25.0
J-33	2,227.03	Main Zone	1.09	2,381.84	67.0	1,000.00	1,001.09	1,529.78	J-124	True	54.6	25.0
J-34	2,235.32	Main Zone	1.09	2,381.85	63.4	1,000.00	1,001.09	1,558.70	J-124	True	51.7	25.0
J-35	2,232.21	Main Zone	1.09	2,381.85	64.7	1,000.00	1,001.09	1,596.15	J-124	True	54.1	25.0
J-36	2,231.76	Main Zone	1.09	2,381.85	64.9	1,000.00	1,001.09	1,601.09	J-124	True	54.4	25.0
J-37	2,231.50	Main Zone	1.09	2,381.85	65.1	1,000.00	1,001.09	1,601.09	J-124	True	54.6	25.0
J-38	2,230.56	Main Zone	1.09	2,381.86	65.5	1,000.00	1,001.09	1,601.09	J-124	True	55.6	25.0
J-39	2,229.62	Main Zone	1.09	2,381.85	65.9	1,000.00	1,001.09	1,584.57	J-124	True	51.8	25.0
J-40	2,235.28	Main Zone	1.09	2,381.84	63.4	1,000.00	1,001.09	1,558.66	J-124	True	50.1	25.0
J-41	2,234.94	Main Zone	1.09	2,381.84	63.6	1,000.00	1,001.09	1,558.97	J-124	True	50.1	25.0
J-42	2,225.87	Main Zone	1.09	2,381.84	67.5	1,000.00	1,001.09	1,560.74	J-124	True	53.2	25.0
J-43	2,210.10	Main Zone	1.09	2,381.84	74.3	1,000.00	1,001.09	1,538.05	J-124	True	59.5	25.0
J-44	2,206.00	Main Zone	1.09	2,381.84	76.1	1,000.00	1,001.09	1,537.34	J-124	True	59.1	25.0
J-45	2,227.26	Main Zone	1.09	2,381.84	66.9	1,000.00	1,001.09	1,505.92	J-124	True	46.8	25.0
J-46	2,223.86	Main Zone	1.09	2,381.84	68.4	1,000.00	1,001.09	1,306.26	J-124	True	41.6	25.0
J-47	2,219.97	Main Zone	1.09	2,381.84	70.0	1,000.00	1,001.09	1,296.22	J-124	True	41.8	25.0
J-48	2,214.98	Main Zone	1.09	2,381.84	72.2	1,000.00	1,001.09	1,234.46	J-124	True	39.9	25.0
J-49	2,211.02	Main Zone	1.09	2,381.84	73.9	1,000.00	1,001.09	1,149.48	J-124	True	35.9	25.0
J-50	2,206.41	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-51	2,204.33	Main Zone	1.09	2,381.84	76.8	1,500.00	1,501.09	1,370.16	J-52	False	15.6	25.0
J-52	2,205.25	Main Zone	1.09	2,381.84	76.4	1,000.00	1,001.09	1,400.29	J-124	True	48.4	25.0
J-53	2,205.00	Main Zone	1.09	2,381.84	76.5	1,000.00	1,001.09	1,538.62	J-124	True	53.3	25.0
J-54	2,230.62	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-55	2,230.89	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-56	2,228.34	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-57	2,230.38	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-58	2,236.86	Main Zone	1.09	2,381.85	62.7	1,000.00	1,001.09	1,425.44	J-124	True	48.6	25.0
J-59	2,250.85	Main Zone	1.09	2,381.84	56.7	1,500.00	2,501.09	1,215.82	J-124	False	-32.7	25.0
J-60	2,265.61	Main Zone	1.09	2,381.84	50.3	1,500.00	2,251.09	990.59	J-124	False	-57.4	25.0
J-61	2,270.16	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-62	2,272.83	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0

Peak Day Analysis: Existing System

FlexTable: Junction Table (Adrian_WaterModel-2013.wtg)

Current Time: 0.000 hours

Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Needed) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Junction w/ Minimum Pressure (Zone @ Total Flow Needed)	Satisfies Fire Flow Constraints?	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Pressure (Residual Lower Limit) (psi)
J-63	2,269.55	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-64	2,228.61	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-65	2,230.55	Main Zone	1.09	2,381.84	65.5	1,000.00	1,001.09	1,098.74	J-66	True	31.3	25.0
J-66	2,233.61	Main Zone	1.09	2,381.84	64.1	1,000.00	1,001.09	1,126.06	J-67	True	32.5	25.0
J-67	2,233.87	Main Zone	1.09	2,381.84	64.0	1,000.00	1,001.09	1,140.71	J-66	True	33.2	25.0
J-68	2,244.83	Main Zone	1.09	2,381.84	59.3	1,000.00	1,001.09	1,229.77	J-124	True	35.6	25.0
J-69	2,251.04	Main Zone	1.09	2,381.84	56.6	1,000.00	1,001.09	1,399.37	J-124	True	41.0	25.0
J-70	2,247.70	Main Zone	1.09	2,381.85	58.0	1,000.00	1,001.09	1,336.38	J-124	True	38.4	25.0
J-72	2,234.89	Main Zone	1.09	2,381.85	63.6	1,000.00	1,001.09	1,519.82	J-124	True	51.4	25.0
J-73	2,234.18	Main Zone	1.09	2,381.85	63.9	1,000.00	1,001.09	1,524.36	J-124	True	51.8	25.0
J-74	2,235.48	Main Zone	1.09	2,381.85	63.3	1,000.00	1,001.09	1,516.24	J-124	True	51.1	25.0
J-75	2,238.31	Main Zone	1.09	2,381.85	62.1	1,000.00	1,001.09	1,461.32	J-124	True	48.7	25.0
J-76	2,254.30	Main Zone	1.09	2,381.84	55.2	1,500.00	2,501.09	1,267.23	J-124	False	-34.6	25.0
J-77	2,258.55	Main Zone	1.09	2,381.84	53.3	1,500.00	2,751.09	1,348.20	J-78	False	-48.6	25.0
J-78	2,254.15	Main Zone	1.09	2,381.84	55.2	1,500.00	2,751.09	1,383.59	J-77	False	-42.8	25.0
J-79	2,267.82	Main Zone	1.09	2,381.84	49.3	1,500.00	2,251.09	937.44	J-124	False	-69.9	25.0
J-80	2,229.70	Main Zone	1.09	2,381.84	65.8	1,000.00	1,001.09	1,577.96	J-124	True	51.1	25.0
J-81	2,215.17	Main Zone	1.09	2,381.84	72.1	1,000.00	1,001.09	1,561.79	J-124	True	58.0	25.0
J-82	2,206.00	Main Zone	1.09	2,381.84	76.1	1,000.00	1,001.09	1,541.46	J-124	True	61.4	25.0
J-83	2,206.00	Main Zone	1.09	2,381.84	76.1	1,000.00	1,001.09	1,538.11	J-124	True	59.4	25.0
J-84	2,206.00	Main Zone	1.09	2,381.84	76.1	1,000.00	1,001.09	1,537.57	J-124	True	57.3	25.0
J-85	2,208.26	Main Zone	1.09	2,381.84	75.1	1,000.00	1,001.09	1,536.90	J-124	True	57.1	25.0
J-87	2,227.78	Main Zone	1.09	2,381.84	66.7	1,000.00	1,001.09	1,532.99	J-124	True	54.3	25.0
J-88	2,232.36	Main Zone	1.09	2,381.85	64.7	1,000.00	1,001.09	1,591.56	J-124	True	53.9	25.0
J-89	2,245.35	Main Zone	1.09	2,381.85	59.1	1,000.00	1,001.09	1,360.40	J-124	True	40.0	25.0
Well 2	2,229.80	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
Well 3	2,230.52	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-92	2,229.86	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
Well 5	0.00	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-94	0.00	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-95	2,236.29	Main Zone	1.09	2,381.84	63.0	1,000.00	1,001.09	1,414.15	J-124	True	42.6	25.0
J-97	2,231.24	Transmission Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0

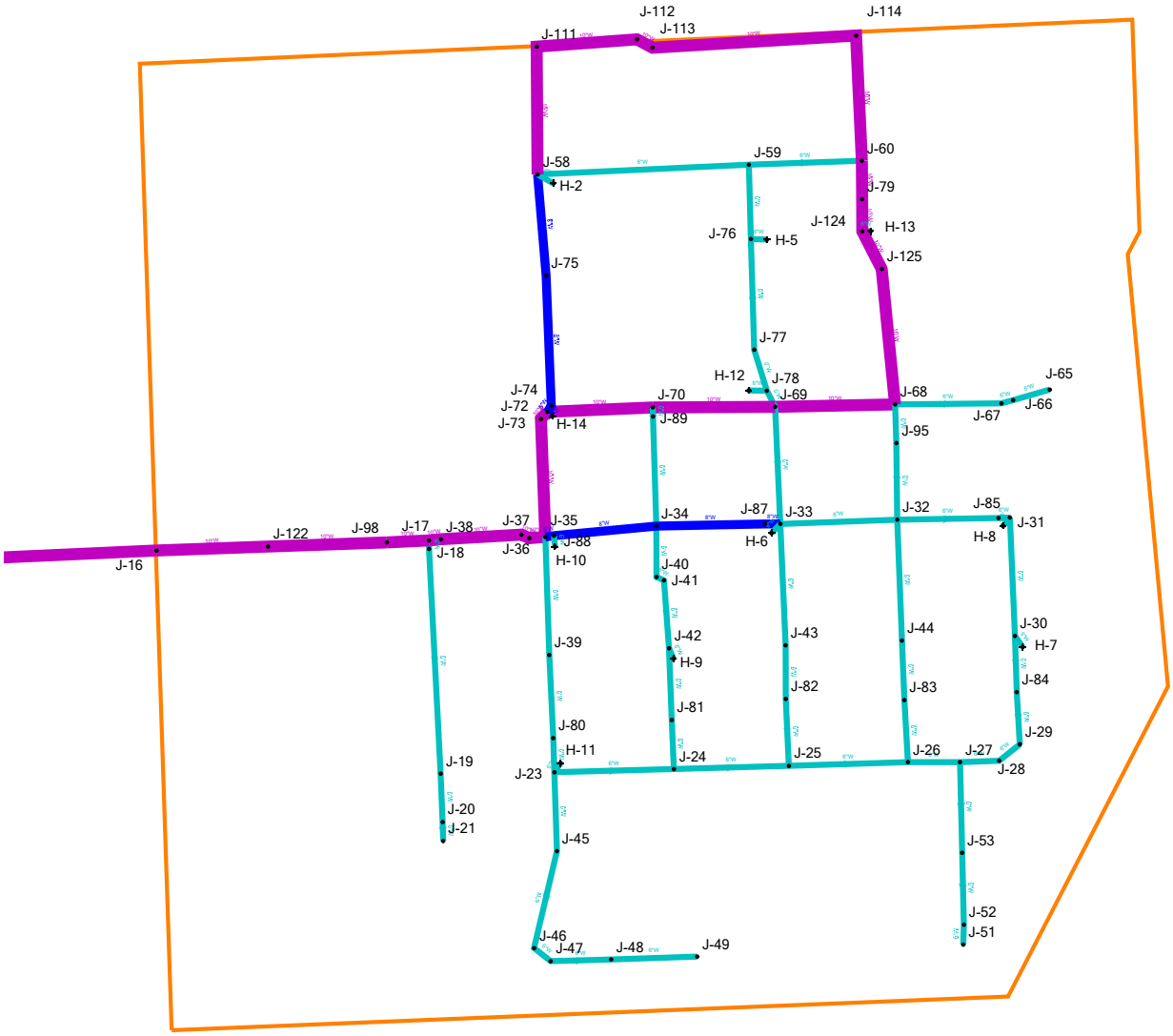
Peak Day Analysis: Existing System

FlexTable: Junction Table (Adrian_WaterModel-2013.wtg)

Current Time: 0.000 hours

Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Needed) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Junction w/ Minimum Pressure (Zone @ Total Flow Needed)	Satisfies Fire Flow Constraints?	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Pressure (Residual Lower Limit) (psi)
J-98	2,231.53	Main Zone	0.00	2,381.87	65.0	1,000.00	1,000.00	1,600.00	J-124	True	55.5	25.0
J-99	2,227.92	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-100	2,233.39	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-101	2,245.69	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-102	2,254.98	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-103	2,257.93	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-104	2,232.53	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-105	2,243.36	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-106	2,229.83	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-107	2,229.65	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-108	2,233.35	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-109	2,236.39	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-110	2,242.22	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-111	2,237.37	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-112	2,241.61	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-113	2,242.39	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-114	2,257.65	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-115	2,270.25	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-116	2,235.59	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-117	2,224.96	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-118	2,231.70	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-119	2,232.42	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-120	2,230.94	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-121	2,227.20	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-122	2,236.14	Main Zone	0.00	2,381.88	63.1	1,000.00	1,000.00	1,600.00	J-124	True	54.4	25.0
J-123	0.00	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-124	2,268.02	Main Zone	0.00	2,381.84	49.2	1,500.00	2,250.00	898.08	J-79	False	-79.7	25.0
J-125	2,265.90	Main Zone	(N/A)	(N/A)	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-126	0.00	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-127	0.00	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0

Scenario: PD - CIP Alt C



Adrian_WaterModel-2013.wtg
8/29/2013

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Peak Day Analysis: Existing System + CIPs

FlexTable: Junction Table (Adrian_WaterModel-2013.wtg)

Current Time: 0.000 hours

Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Needed) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Junction w/ Minimum Pressure (Zone @ Total Flow Needed)	Satisfies Fire Flow Constraints?	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Pressure (Residual Lower Limit) (psi)
J-3	2,207.94	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
Well 4	2,230.58	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-6	2,231.00	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-7	2,230.11	Transmission Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-8	2,230.60	Transmission Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-9	2,245.09	Transmission Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-10	2,290.00	Transmission Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-11	2,350.00	Transmission Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-12	2,390.00	Transmission Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-13	2,378.00	Transmission Zone	0.00	2,382.00	1.7	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-14	2,352.00	Transmission Zone	0.00	2,381.98	13.0	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-15	2,288.00	Transmission Zone	0.00	2,381.92	40.6	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-16	2,245.95	Main Zone	0.00	2,381.85	58.8	1,000.00	1,000.00	1,600.00	J-124	True	50.8	25.0
J-17	2,230.48	Main Zone	1.09	2,381.82	65.5	1,000.00	1,001.09	1,601.09	J-124	True	55.5	25.0
J-18	2,231.01	Main Zone	1.09	2,381.82	65.2	1,000.00	1,001.09	1,601.09	J-124	True	54.7	25.0
J-19	2,223.16	Main Zone	1.09	2,381.82	68.6	1,000.00	1,001.09	1,312.31	J-124	True	43.0	25.0
J-20	2,224.89	Main Zone	1.09	2,381.82	67.9	1,000.00	1,001.09	1,227.83	J-21	True	39.0	25.0
J-21	2,227.27	Main Zone	1.09	2,381.82	66.9	1,000.00	1,001.09	1,199.13	J-20	True	36.7	25.0
J-23	2,230.00	Main Zone	1.09	2,381.80	65.7	1,000.00	1,001.09	1,575.75	J-124	True	50.9	25.0
J-24	2,211.93	Main Zone	1.09	2,381.80	73.5	1,000.00	1,001.09	1,569.32	J-124	True	60.2	25.0
J-25	2,207.74	Main Zone	1.09	2,381.80	75.3	1,000.00	1,001.09	1,561.64	J-124	True	62.1	25.0
J-26	2,207.92	Main Zone	1.09	2,381.80	75.2	1,000.00	1,001.09	1,555.14	J-124	True	61.1	25.0
J-27	2,206.99	Main Zone	1.09	2,381.80	75.6	1,000.00	1,001.09	1,554.02	J-124	True	60.2	25.0
J-28	2,206.11	Main Zone	1.09	2,381.80	76.0	1,000.00	1,001.09	1,553.39	J-124	True	59.9	25.0
J-29	2,205.64	Main Zone	1.09	2,381.80	76.2	1,000.00	1,001.09	1,553.02	J-124	True	59.8	25.0

Peak Day Analysis: Existing System + CIPs

FlexTable: Junction Table (Adrian_WaterModel-2013.wtg)

Current Time: 0.000 hours

Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Needed) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Junction w/ Minimum Pressure (Zone @ Total Flow Needed)	Satisfies Fire Flow Constraints?	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Pressure (Residual Lower Limit) (psi)
J-30	2,205.24	Main Zone	1.09	2,381.80	76.4	1,500.00	1,501.09	1,551.75	J-124	True	41.4	25.0
J-31	2,207.80	Main Zone	1.09	2,381.80	75.3	1,000.00	1,001.09	1,550.79	J-124	True	59.3	25.0
J-32	2,216.85	Main Zone	1.09	2,381.80	71.4	1,000.00	1,001.09	1,549.42	J-124	True	58.6	25.0
J-33	2,227.03	Main Zone	1.09	2,381.80	67.0	1,000.00	1,001.09	1,557.12	J-124	True	55.2	25.0
J-34	2,235.32	Main Zone	1.09	2,381.80	63.4	1,000.00	1,001.09	1,566.67	J-124	True	52.0	25.0
J-35	2,232.21	Main Zone	1.09	2,381.80	64.7	1,000.00	1,001.09	1,585.87	J-124	True	53.9	25.0
J-36	2,231.76	Main Zone	1.09	2,381.81	64.9	1,000.00	1,001.09	1,594.86	J-124	True	54.2	25.0
J-37	2,231.50	Main Zone	1.09	2,381.81	65.0	1,000.00	1,001.09	1,599.88	J-124	True	54.4	25.0
J-38	2,230.56	Main Zone	1.09	2,381.82	65.4	1,000.00	1,001.09	1,601.09	J-124	True	55.4	25.0
J-39	2,229.62	Main Zone	1.09	2,381.80	65.8	1,000.00	1,001.09	1,580.21	J-124	True	51.7	25.0
J-40	2,235.28	Main Zone	1.09	2,381.80	63.4	1,000.00	1,001.09	1,566.42	J-124	True	50.4	25.0
J-41	2,234.94	Main Zone	1.09	2,381.80	63.5	1,000.00	1,001.09	1,566.54	J-124	True	50.3	25.0
J-42	2,225.87	Main Zone	1.09	2,381.80	67.5	1,000.00	1,001.09	1,567.89	J-124	True	53.5	25.0
J-43	2,210.10	Main Zone	1.09	2,381.80	74.3	1,000.00	1,001.09	1,559.31	J-124	True	60.2	25.0
J-44	2,206.00	Main Zone	1.09	2,381.80	76.1	1,000.00	1,001.09	1,552.05	J-124	True	61.1	25.0
J-45	2,227.26	Main Zone	1.09	2,381.80	66.9	1,000.00	1,001.09	1,508.06	J-124	True	46.8	25.0
J-46	2,223.86	Main Zone	1.09	2,381.80	68.3	1,000.00	1,001.09	1,307.13	J-124	True	41.6	25.0
J-47	2,219.97	Main Zone	1.09	2,381.80	70.0	1,000.00	1,001.09	1,297.01	J-124	True	41.8	25.0
J-48	2,214.98	Main Zone	1.09	2,381.80	72.2	1,000.00	1,001.09	1,234.96	J-124	True	39.9	25.0
J-49	2,211.02	Main Zone	1.09	2,381.80	73.9	1,000.00	1,001.09	1,149.69	J-124	True	35.9	25.0
J-50	2,206.41	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-51	2,204.33	Main Zone	1.09	2,381.80	76.8	1,500.00	1,501.09	1,415.65	J-52	False	19.2	25.0
J-52	2,205.25	Main Zone	1.09	2,381.80	76.4	1,000.00	1,001.09	1,449.25	J-124	True	50.0	25.0
J-53	2,205.00	Main Zone	1.09	2,381.80	76.5	1,000.00	1,001.09	1,554.02	J-124	True	55.0	25.0
J-54	2,230.62	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-55	2,230.89	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-56	2,228.34	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-57	2,230.38	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-58	2,236.86	Main Zone	1.09	2,381.80	62.7	1,000.00	1,001.09	1,531.62	J-124	True	50.5	25.0
J-59	2,250.85	Main Zone	1.09	2,381.80	56.7	1,500.00	1,501.09	1,524.85	J-124	True	29.9	25.0
J-60	2,265.61	Main Zone	1.09	2,381.80	50.3	1,500.00	1,501.09	1,501.93	J-79	True	25.8	25.0
J-61	2,270.16	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-62	2,272.83	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0

Peak Day Analysis: Existing System + CIPs

FlexTable: Junction Table (Adrian_WaterModel-2013.wtg)

Current Time: 0.000 hours

Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Needed) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Junction w/ Minimum Pressure (Zone @ Total Flow Needed)	Satisfies Fire Flow Constraints?	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Pressure (Residual Lower Limit) (psi)
J-63	2,269.55	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-64	2,228.61	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-65	2,230.55	Main Zone	1.09	2,381.80	65.4	1,000.00	1,001.09	1,398.72	J-124	True	43.3	25.0
J-66	2,233.61	Main Zone	1.09	2,381.80	64.1	1,000.00	1,001.09	1,471.40	J-124	True	44.5	25.0
J-67	2,233.87	Main Zone	1.09	2,381.80	64.0	1,000.00	1,001.09	1,505.02	J-124	True	45.2	25.0
J-68	2,244.83	Main Zone	1.09	2,381.80	59.3	1,000.00	1,001.09	1,525.22	J-124	True	47.6	25.0
J-69	2,251.04	Main Zone	1.09	2,381.80	56.6	1,000.00	1,001.09	1,538.68	J-124	True	45.1	25.0
J-70	2,247.70	Main Zone	1.09	2,381.80	58.0	1,000.00	1,001.09	1,551.62	J-124	True	46.7	25.0
J-72	2,234.89	Main Zone	1.09	2,381.80	63.6	1,000.00	1,001.09	1,558.08	J-124	True	52.4	25.0
J-73	2,234.18	Main Zone	1.09	2,381.80	63.9	1,000.00	1,001.09	1,559.68	J-124	True	52.7	25.0
J-74	2,235.48	Main Zone	1.09	2,381.80	63.3	1,000.00	1,001.09	1,556.36	J-124	True	52.0	25.0
J-75	2,238.31	Main Zone	1.09	2,381.80	62.1	1,000.00	1,001.09	1,542.25	J-124	True	50.0	25.0
J-76	2,254.30	Main Zone	1.09	2,381.80	55.2	1,500.00	1,501.09	1,530.81	J-124	True	26.4	25.0
J-77	2,258.55	Main Zone	1.09	2,381.80	53.3	1,500.00	1,501.09	1,530.77	J-124	True	26.0	25.0
J-78	2,254.15	Main Zone	1.09	2,381.80	55.2	1,500.00	1,501.09	1,536.45	J-124	True	30.2	25.0
J-79	2,267.82	Main Zone	1.09	2,381.80	49.3	1,500.00	1,501.09	1,497.82	J-124	False	24.9	25.0
J-80	2,229.70	Main Zone	1.09	2,381.80	65.8	1,000.00	1,001.09	1,577.12	J-124	True	51.0	25.0
J-81	2,215.17	Main Zone	1.09	2,381.80	72.1	1,000.00	1,001.09	1,568.86	J-124	True	58.2	25.0
J-82	2,206.00	Main Zone	1.09	2,381.80	76.1	1,000.00	1,001.09	1,560.36	J-124	True	62.0	25.0
J-83	2,206.00	Main Zone	1.09	2,381.80	76.1	1,000.00	1,001.09	1,553.38	J-124	True	61.2	25.0
J-84	2,206.00	Main Zone	1.09	2,381.80	76.1	1,000.00	1,001.09	1,552.39	J-124	True	59.2	25.0
J-85	2,208.26	Main Zone	1.09	2,381.80	75.1	1,000.00	1,001.09	1,550.73	J-124	True	59.3	25.0
J-87	2,227.78	Main Zone	1.09	2,381.80	66.6	1,000.00	1,001.09	1,558.22	J-124	True	54.9	25.0
J-88	2,232.36	Main Zone	1.09	2,381.80	64.7	1,000.00	1,001.09	1,583.23	J-124	True	53.7	25.0
J-89	2,245.35	Main Zone	1.09	2,381.80	59.0	1,000.00	1,001.09	1,554.31	J-124	True	47.4	25.0
Well 2	2,229.80	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
Well 3	2,230.52	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-92	2,229.86	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
Well 5	0.00	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-94	0.00	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-95	2,236.29	Main Zone	1.09	2,381.80	63.0	1,000.00	1,001.09	1,540.16	J-124	True	49.9	25.0
J-97	2,231.24	Transmission Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0

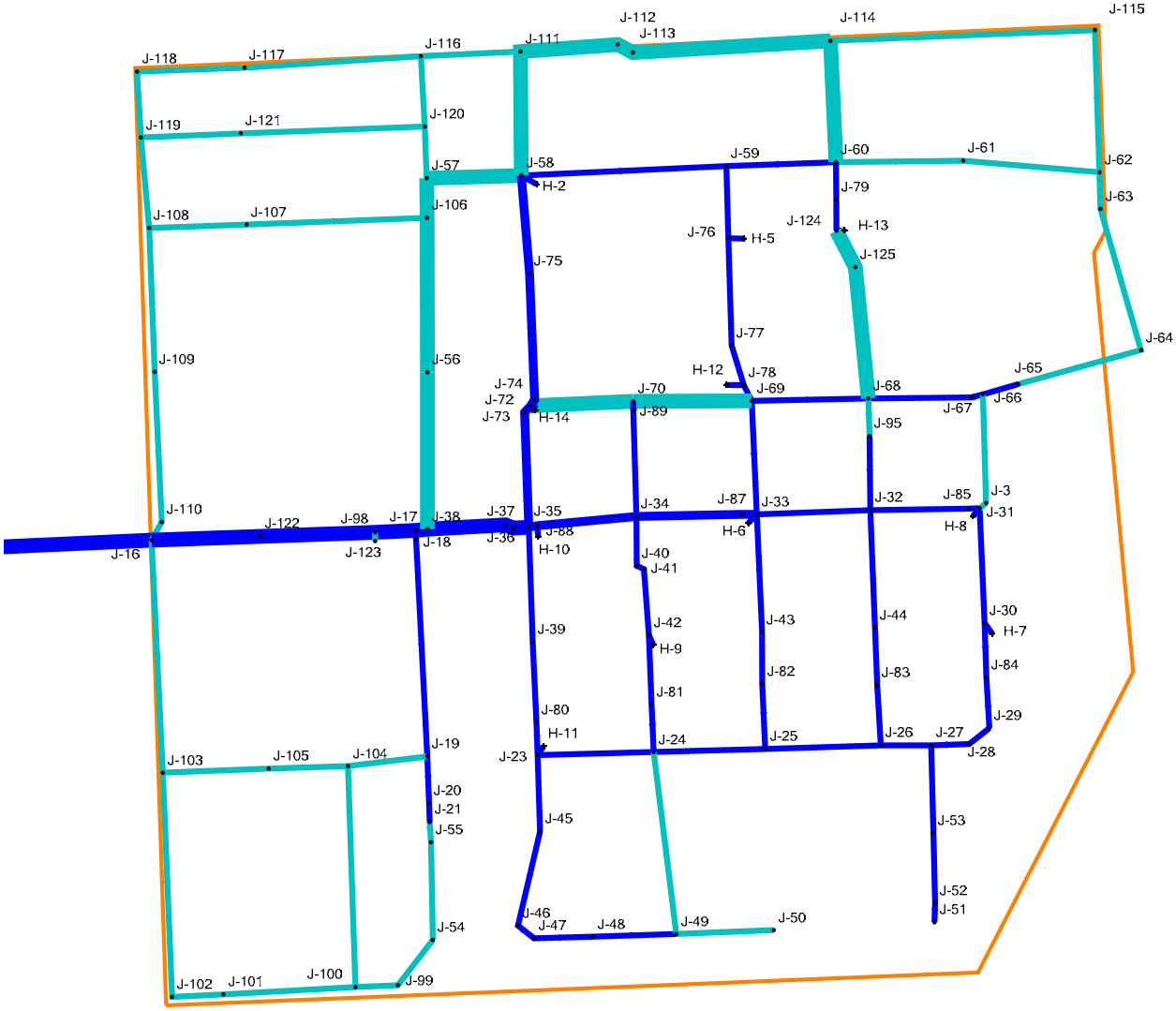
Peak Day Analysis: Existing System + CIPs

FlexTable: Junction Table (Adrian_WaterModel-2013.wtg)

Current Time: 0.000 hours

Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Needed) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Junction w/ Minimum Pressure (Zone @ Total Flow Needed)	Satisfies Fire Flow Constraints?	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Pressure (Residual Lower Limit) (psi)
J-98	2,231.53	Main Zone	0.00	2,381.82	65.0	1,000.00	1,000.00	1,600.00	J-124	True	55.4	25.0
J-99	2,227.92	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-100	2,233.39	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-101	2,245.69	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-102	2,254.98	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-103	2,257.93	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-104	2,232.53	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-105	2,243.36	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-106	2,229.83	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-107	2,229.65	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-108	2,233.35	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-109	2,236.39	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-110	2,242.22	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-111	2,237.37	Main Zone	2.74	2,381.80	62.5	1,000.00	1,002.74	1,527.35	J-124	True	50.0	25.0
J-112	2,241.61	Main Zone	2.74	2,381.80	60.7	1,000.00	1,002.74	1,523.24	J-124	True	48.1	25.0
J-113	2,242.39	Main Zone	2.74	2,381.80	60.3	1,000.00	1,002.74	1,522.50	J-124	True	47.7	25.0
J-114	2,257.65	Main Zone	2.74	2,381.80	53.7	1,000.00	1,002.74	1,512.89	J-124	True	41.3	25.0
J-115	2,270.25	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-116	2,235.59	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-117	2,224.96	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-118	2,231.70	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-119	2,232.42	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-120	2,230.94	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-121	2,227.20	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-122	2,236.14	Main Zone	0.00	2,381.84	63.0	1,000.00	1,000.00	1,600.00	J-124	True	54.2	25.0
J-123	0.00	Main Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-124	2,268.02	Main Zone	0.00	2,381.80	49.2	1,500.00	1,500.00	1,496.01	J-79	False	24.9	25.0
J-125	2,265.90	Main Zone	0.00	2,381.80	50.1	1,500.00	1,500.00	1,502.80	J-124	True	25.9	25.0
J-126	2,203.00	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-127	2,205.00	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0

Scenario: PD - Exist + Bldout Growt



Adrian_WaterModel-2013.wtg
8/29/2013

Bentley Systems, Inc. Haestad Methods Solution Center
27 Siemon Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666

Peak Day Analysis: Existing System + Buildout Growth w/ CIPs

FlexTable: Junction Table (Adrian_WaterModel-2013.wtg)

Current Time: 0.000 hours

Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Needed) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Junction w/ Minimum Pressure (Zone @ Total Flow Needed)	Satisfies Fire Flow Constraints?	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Pressure (Residual Lower Limit) (psi)
J-3	2,207.94	Main Zone	0.00	2,381.37	75.0	1,000.00	1,000.00	1,465.83	J-62	True	61.6	25.0
Well 4	2,230.58	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-6	2,231.00	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-7	2,230.11	Transmission Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-8	2,230.60	Transmission Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-9	2,245.09	Transmission Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-10	2,290.00	Transmission Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-11	2,350.00	Transmission Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-12	2,390.00	Transmission Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-13	2,378.00	Transmission Zone	0.00	2,381.98	1.7	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-14	2,352.00	Transmission Zone	0.00	2,381.93	12.9	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-15	2,288.00	Transmission Zone	0.00	2,381.70	40.5	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-16	2,245.95	Main Zone	0.00	2,381.47	58.6	1,000.00	1,000.00	1,600.00	J-62	True	49.6	25.0
J-17	2,230.48	Main Zone	1.09	2,381.40	65.3	1,000.00	1,001.09	1,575.87	J-62	True	55.0	25.0
J-18	2,231.01	Main Zone	1.09	2,381.40	65.1	1,000.00	1,001.09	1,580.51	J-62	True	54.4	25.0
J-19	2,223.16	Main Zone	1.09	2,381.40	68.5	1,000.00	1,001.09	1,489.00	J-62	True	52.1	25.0
J-20	2,224.89	Main Zone	1.09	2,381.40	67.7	1,000.00	1,001.09	1,464.24	J-62	True	49.7	25.0
J-21	2,227.27	Main Zone	1.09	2,381.40	66.7	1,000.00	1,001.09	1,456.29	J-62	True	48.2	25.0
J-23	2,230.00	Main Zone	1.09	2,381.38	65.5	1,000.00	1,001.09	1,529.02	J-62	True	50.8	25.0
J-24	2,211.93	Main Zone	1.09	2,381.38	73.3	1,000.00	1,001.09	1,521.76	J-62	True	60.2	25.0
J-25	2,207.74	Main Zone	1.09	2,381.38	75.1	1,000.00	1,001.09	1,510.51	J-62	True	62.1	25.0
J-26	2,207.92	Main Zone	1.09	2,381.37	75.0	1,000.00	1,001.09	1,495.57	J-62	True	61.4	25.0
J-27	2,206.99	Main Zone	1.09	2,381.37	75.4	1,000.00	1,001.09	1,491.21	J-62	True	60.7	25.0
J-28	2,206.11	Main Zone	1.09	2,381.37	75.8	1,000.00	1,001.09	1,488.40	J-62	True	60.5	25.0
J-29	2,205.64	Main Zone	1.09	2,381.37	76.0	1,000.00	1,001.09	1,486.62	J-62	True	60.5	25.0

Peak Day Analysis: Existing System + Buildout Growth w/ CIPs

FlexTable: Junction Table (Adrian_WaterModel-2013.wtg)

Current Time: 0.000 hours

Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Needed) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Junction w/ Minimum Pressure (Zone @ Total Flow Needed)	Satisfies Fire Flow Constraints?	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Pressure (Residual Lower Limit) (psi)
J-30	2,205.24	Main Zone	1.09	2,381.37	76.2	1,500.00	1,501.09	1,479.01	J-62	False	45.1	25.0
J-31	2,207.80	Main Zone	1.09	2,381.37	75.1	1,000.00	1,001.09	1,469.17	J-62	True	61.7	25.0
J-32	2,216.85	Main Zone	1.09	2,381.38	71.2	1,000.00	1,001.09	1,484.96	J-62	True	58.8	25.0
J-33	2,227.03	Main Zone	1.09	2,381.38	66.8	1,000.00	1,001.09	1,509.01	J-62	True	55.2	25.0
J-34	2,235.32	Main Zone	1.09	2,381.38	63.2	1,000.00	1,001.09	1,521.38	J-62	True	52.0	25.0
J-35	2,232.21	Main Zone	1.09	2,381.39	64.5	1,000.00	1,001.09	1,538.83	J-62	True	53.8	25.0
J-36	2,231.76	Main Zone	1.09	2,381.39	64.7	1,000.00	1,001.09	1,542.92	J-62	True	54.0	25.0
J-37	2,231.50	Main Zone	1.09	2,381.39	64.9	1,000.00	1,001.09	1,545.20	J-62	True	54.2	25.0
J-38	2,230.56	Main Zone	1.09	2,381.40	65.3	1,000.00	1,001.09	1,570.22	J-62	True	54.9	25.0
J-39	2,229.62	Main Zone	1.09	2,381.38	65.7	1,000.00	1,001.09	1,533.37	J-62	True	51.6	25.0
J-40	2,235.28	Main Zone	1.09	2,381.38	63.2	1,000.00	1,001.09	1,519.97	J-62	True	50.3	25.0
J-41	2,234.94	Main Zone	1.09	2,381.38	63.4	1,000.00	1,001.09	1,519.95	J-62	True	50.3	25.0
J-42	2,225.87	Main Zone	1.09	2,381.38	67.3	1,000.00	1,001.09	1,520.40	J-62	True	53.4	25.0
J-43	2,210.10	Main Zone	1.09	2,381.38	74.1	1,000.00	1,001.09	1,508.28	J-62	True	60.2	25.0
J-44	2,206.00	Main Zone	1.09	2,381.38	75.9	1,000.00	1,001.09	1,488.85	J-62	True	61.3	25.0
J-45	2,227.26	Main Zone	1.09	2,381.38	66.7	1,000.00	1,001.09	1,521.71	J-62	True	46.7	25.0
J-46	2,223.86	Main Zone	1.09	2,381.37	68.1	1,000.00	1,001.09	1,311.61	J-62	True	41.4	25.0
J-47	2,219.97	Main Zone	1.09	2,381.37	69.8	1,000.00	1,001.09	1,300.87	J-62	True	41.7	25.0
J-48	2,214.98	Main Zone	1.09	2,381.37	72.0	1,000.00	1,001.09	1,236.72	J-62	True	39.7	25.0
J-49	2,211.02	Main Zone	1.09	2,381.37	73.7	1,000.00	1,001.09	1,149.30	J-62	True	35.7	25.0
J-50	2,206.41	Main Zone	2.74	2,381.37	75.7	1,000.00	1,002.74	1,074.24	J-49	True	30.9	25.0
J-51	2,204.33	Main Zone	1.09	2,381.37	76.6	1,500.00	1,501.09	1,440.92	J-52	False	21.1	25.0
J-52	2,205.25	Main Zone	1.09	2,381.37	76.2	1,000.00	1,001.09	1,477.10	J-62	True	50.5	25.0
J-53	2,205.00	Main Zone	1.09	2,381.37	76.3	1,000.00	1,001.09	1,491.21	J-62	True	55.5	25.0
J-54	2,230.62	Main Zone	2.74	2,381.40	65.2	1,000.00	1,002.74	1,412.59	J-62	True	44.8	25.0
J-55	2,230.89	Main Zone	2.74	2,381.40	65.1	1,000.00	1,002.74	1,444.07	J-62	True	45.8	25.0
J-56	2,228.34	Main Zone	2.74	2,381.39	66.2	1,000.00	1,002.74	1,557.81	J-62	True	54.9	25.0
J-57	2,230.38	Main Zone	2.74	2,381.38	65.3	1,000.00	1,002.74	1,536.66	J-62	True	54.0	25.0
J-58	2,236.86	Main Zone	1.09	2,381.38	62.5	1,000.00	1,001.09	1,519.03	J-62	True	51.3	25.0
J-59	2,250.85	Main Zone	1.09	2,381.38	56.5	1,500.00	2,501.09	1,486.10	J-62	False	-5.3	25.0
J-60	2,265.61	Main Zone	1.09	2,381.38	50.1	1,500.00	2,251.09	1,435.95	J-62	False	0.7	25.0
J-61	2,270.16	Main Zone	2.74	2,381.37	48.1	1,000.00	1,002.74	1,273.15	J-62	True	32.8	25.0
J-62	2,272.83	Main Zone	2.74	2,381.37	47.0	1,000.00	1,002.74	1,234.59	J-63	True	31.6	25.0

Peak Day Analysis: Existing System + Buildout Growth w/ CIPs

FlexTable: Junction Table (Adrian_WaterModel-2013.wtg)

Current Time: 0.000 hours

Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Needed) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Junction w/ Minimum Pressure (Zone @ Total Flow Needed)	Satisfies Fire Flow Constraints?	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Pressure (Residual Lower Limit) (psi)
J-63	2,269.55	Main Zone	2.74	2,381.37	48.4	1,000.00	1,002.74	1,255.37	J-62	True	32.5	25.0
J-64	2,228.61	Main Zone	2.74	2,381.37	66.1	1,000.00	1,002.74	1,339.12	J-62	True	49.8	25.0
J-65	2,230.55	Main Zone	1.09	2,381.37	65.3	1,000.00	1,001.09	1,409.69	J-62	True	50.8	25.0
J-66	2,233.61	Main Zone	1.09	2,381.37	63.9	1,000.00	1,001.09	1,437.13	J-62	True	50.6	25.0
J-67	2,233.87	Main Zone	1.09	2,381.37	63.8	1,000.00	1,001.09	1,440.86	J-62	True	50.4	25.0
J-68	2,244.83	Main Zone	1.09	2,381.38	59.1	1,000.00	1,001.09	1,469.27	J-62	True	46.9	25.0
J-69	2,251.04	Main Zone	1.09	2,381.38	56.4	1,000.00	1,001.09	1,502.62	J-62	True	44.8	25.0
J-70	2,247.70	Main Zone	1.09	2,381.38	57.8	1,000.00	1,001.09	1,517.09	J-62	True	46.5	25.0
J-72	2,234.89	Main Zone	1.09	2,381.38	63.4	1,000.00	1,001.09	1,526.85	J-62	True	52.2	25.0
J-73	2,234.18	Main Zone	1.09	2,381.38	63.7	1,000.00	1,001.09	1,528.04	J-62	True	52.5	25.0
J-74	2,235.48	Main Zone	1.09	2,381.38	63.1	1,000.00	1,001.09	1,526.43	J-62	True	51.9	25.0
J-75	2,238.31	Main Zone	1.09	2,381.38	61.9	1,000.00	1,001.09	1,520.81	J-62	True	50.4	25.0
J-76	2,254.30	Main Zone	1.09	2,381.38	55.0	1,500.00	2,501.09	1,491.58	J-62	False	-12.5	25.0
J-77	2,258.55	Main Zone	1.09	2,381.38	53.1	1,500.00	2,751.09	1,495.73	J-62	False	-23.2	25.0
J-78	2,254.15	Main Zone	1.09	2,381.38	55.0	1,500.00	2,751.09	1,498.49	J-62	False	-14.9	25.0
J-79	2,267.82	Main Zone	1.09	2,381.38	49.1	1,500.00	2,251.09	1,450.65	J-124	False	-2.5	25.0
J-80	2,229.70	Main Zone	1.09	2,381.38	65.6	1,000.00	1,001.09	1,530.41	J-62	True	50.9	25.0
J-81	2,215.17	Main Zone	1.09	2,381.38	71.9	1,000.00	1,001.09	1,521.56	J-62	True	58.2	25.0
J-82	2,206.00	Main Zone	1.09	2,381.38	75.9	1,000.00	1,001.09	1,509.73	J-62	True	62.0	25.0
J-83	2,206.00	Main Zone	1.09	2,381.37	75.9	1,000.00	1,001.09	1,491.97	J-62	True	61.4	25.0
J-84	2,206.00	Main Zone	1.09	2,381.37	75.9	1,000.00	1,001.09	1,483.16	J-62	True	60.2	25.0
J-85	2,208.26	Main Zone	1.09	2,381.37	74.9	1,000.00	1,001.09	1,470.99	J-62	True	61.5	25.0
J-87	2,227.78	Main Zone	1.09	2,381.38	66.5	1,000.00	1,001.09	1,510.47	J-62	True	54.9	25.0
J-88	2,232.36	Main Zone	1.09	2,381.39	64.5	1,000.00	1,001.09	1,536.69	J-62	True	53.6	25.0
J-89	2,245.35	Main Zone	1.09	2,381.38	58.9	1,000.00	1,001.09	1,517.32	J-62	True	47.2	25.0
Well 2	2,229.80	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
Well 3	2,230.52	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-92	2,229.86	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
Well 5	0.00	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-94	0.00	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-95	2,236.29	Main Zone	1.09	2,381.38	62.8	1,000.00	1,001.09	1,474.98	J-62	True	49.6	25.0
J-97	2,231.24	Transmission Zone	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0

Peak Day Analysis: Existing System + Buildout Growth w/ CIPs

FlexTable: Junction Table (Adrian_WaterModel-2013.wtg)

Current Time: 0.000 hours

Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Needed) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Junction w/ Minimum Pressure (Zone @ Total Flow Needed)	Satisfies Fire Flow Constraints?	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Pressure (Residual Lower Limit) (psi)
J-98	2,231.53	Main Zone	0.00	2,381.41	64.8	1,000.00	1,000.00	1,589.75	J-62	True	54.7	25.0
J-99	2,227.92	Main Zone	2.74	2,381.40	66.4	1,000.00	1,002.74	1,377.45	J-62	True	45.9	25.0
J-100	2,233.39	Main Zone	2.74	2,381.40	64.0	1,000.00	1,002.74	1,346.89	J-102	True	44.2	25.0
J-101	2,245.69	Main Zone	2.74	2,381.40	58.7	1,000.00	1,002.74	1,189.63	J-102	True	35.3	25.0
J-102	2,254.98	Main Zone	2.74	2,381.40	54.7	1,000.00	1,002.74	1,140.82	J-101	True	31.0	25.0
J-103	2,257.93	Main Zone	2.74	2,381.41	53.4	1,000.00	1,002.74	1,327.25	J-62	True	36.0	25.0
J-104	2,232.53	Main Zone	2.74	2,381.40	64.4	1,000.00	1,002.74	1,444.56	J-62	True	46.6	25.0
J-105	2,243.36	Main Zone	2.74	2,381.40	59.7	1,000.00	1,002.74	1,398.66	J-62	True	40.3	25.0
J-106	2,229.83	Main Zone	2.74	2,381.39	65.6	1,000.00	1,002.74	1,541.98	J-62	True	54.3	25.0
J-107	2,229.65	Main Zone	2.74	2,381.39	65.7	1,000.00	1,002.74	1,563.29	J-62	True	49.4	25.0
J-108	2,233.35	Main Zone	2.74	2,381.39	64.0	1,000.00	1,002.74	1,578.90	J-62	True	49.8	25.0
J-109	2,236.39	Main Zone	2.74	2,381.42	62.7	1,000.00	1,002.74	1,602.74	J-62	True	46.9	25.0
J-110	2,242.22	Main Zone	2.74	2,381.46	60.2	1,000.00	1,002.74	1,602.74	J-62	True	49.4	25.0
J-111	2,237.37	Main Zone	2.74	2,381.38	62.3	1,000.00	1,002.74	1,503.17	J-62	True	49.9	25.0
J-112	2,241.61	Main Zone	2.74	2,381.38	60.5	1,000.00	1,002.74	1,487.20	J-62	True	47.4	25.0
J-113	2,242.39	Main Zone	2.74	2,381.38	60.1	1,000.00	1,002.74	1,484.21	J-62	True	47.0	25.0
J-114	2,257.65	Main Zone	2.74	2,381.38	53.5	1,000.00	1,002.74	1,444.08	J-62	True	40.6	25.0
J-115	2,270.25	Main Zone	2.74	2,381.37	48.1	1,000.00	1,002.74	1,105.25	J-62	True	28.6	25.0
J-116	2,235.59	Main Zone	2.74	2,381.38	63.1	1,000.00	1,002.74	1,518.91	J-62	True	45.6	25.0
J-117	2,224.96	Main Zone	2.74	2,381.38	67.7	1,000.00	1,002.74	1,535.20	J-62	True	48.1	25.0
J-118	2,231.70	Main Zone	2.74	2,381.38	64.8	1,000.00	1,002.74	1,545.99	J-62	True	47.1	25.0
J-119	2,232.42	Main Zone	2.74	2,381.38	64.5	1,000.00	1,002.74	1,555.53	J-62	True	49.4	25.0
J-120	2,230.94	Main Zone	2.74	2,381.38	65.1	1,000.00	1,002.74	1,539.07	J-62	True	50.4	25.0
J-121	2,227.20	Main Zone	2.74	2,381.38	66.7	1,000.00	1,002.74	1,547.64	J-62	True	49.2	25.0
J-122	2,236.14	Main Zone	0.00	2,381.44	62.9	1,000.00	1,000.00	1,600.00	J-62	True	53.2	25.0
J-123	0.00	Main Zone	2.74	2,381.41	1,030.3	1,000.00	1,002.74	1,592.50	J-62	True	1,019.1	25.0
J-124	2,268.02	Main Zone	0.00	2,381.38	49.0	1,500.00	2,250.00	1,450.46	J-125	False	-2.6	25.0
J-125	2,265.90	Main Zone	0.00	2,381.38	50.0	1,500.00	2,250.00	1,456.98	J-124	False	-1.3	25.0
J-126	0.00	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0
J-127	0.00	<None>	(N/A)	(N/A)	(N/A)	1,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	25.0

APPENDIX E

WATER QUALITY REPORTS

IOCs	**Units**	MCL/SMCL	Well #4	Well #5
Acidity				
Alkalinity	mg/L		298	184
Chloride	mg/L	250 (SMCL)	76	8
Color	C.U.	15 (SMCL)	<5	20
Conductivity	µmhos		907	444
Corrosivity		Non-Corosive (SMCL)	+0.17	+0.14
Cyanide-Total	mg/L	0.2	<0.005	<0.005
Fluoride	mg/L	4	1.01	1.05
Hardness	mg/L		90.4	123
Ca Hardness	mg/L		74.7	82.3
Nitrate	mg/L	10	<0.2	2.3
Nitrite	mg/L	1	<0.01	<0.01
Odor	T.O.N.		N.O.D.	N.O.D.
pH	S.U.		7.9	8
Sulfate	mg/L	250 (SMCL)	61	37
Sulfide (H_2S)	mg/L		0.51	<0.05
Turbidity	NTU		1.9	12.2
Total Dissolved Solids	mg/L	500 (SMCL)	504	232
Ammonia	mg/L		2.38	<0.04
Methane	mg/L		3.97	0.00055
TOC	mg/L		1.36	0.39
Carbonate	mg/L		0	0.0
Bicarbonate	mg/L		298	184
Metals				
Aluminum	mg/L	0.05-0.2 (SMCL)	<0.10	<0.10
Antimony	mg/L	0.006	<0.005	<0.005
Arsenic	mg/L	0.01	<0.003	0.051
Barium	mg/L	2	0.16	0.06
Beryllium	mg/L	0.004	<0.0005	<0.0005
Cadmium	mg/L	0.005	<0.0005	<0.0005
Calcium	mg/L		29.9	33
Chromium	mg/L	0.1	0.003	0.003
Copper	mg/L	1.3	<0.01	<0.01
Lead	mg/L	0.015	<0.005	<0.005
Magnesium	mg/L		3.98	10
Manganese (total)	mg/L	0.05 (SMCL)	0.09	<0.05
Manganese (dissolved)	mg/L		0.09	<0.05
Mercury	mg/L	0.002	<0.0002	<0.0002
Molybdenum	mg/L		<0.05	<0.05
Nickel	mg/L		<0.02	<0.02
Potassium	mg/L		22.69	8.6
Selenium	mg/L	0.05	<0.005	<0.005
Silver	mg/L		<0.010	<0.010
Sodium	mg/L		137	39.7
Thallium	mg/L	0.002	<0.001	<0.001
Uranium	µg/L	30	<1	7
Zinc	mg/L	5	<0.01	<0.01
Iron (total)	mg/L	0.3 (SMCL)	0.06	1.9
Iron (dissolved)	mg/L		<0.05	<0.05

Below is a summary of water quality testing I conduced at Adrian's Well's #4 and #5. In general, sampling went very well. Below is a summary of field parameters and general notes from sampling at each well.

Well #4

- Removed approximately 3,729 gallons at a rate of 13 gpm prior to sampling
- pH = 7.91
- Specific Conductance (µS/cm) = 754
- ORP (mV) = -47.4
- Dissolved Oxygen (mg/L) = 0.17
- Temperature (C°) = 19.76
- Notes: Very strong hydrogen sulfide odor. Noted black particulates at well startup. Potential dissolved gas noticed at startup in fluid flow-through cell.

Well #5

- Removed approximately540 gallons at a rate of 3 gpm prior to sampling. Discharged water to Canal at the south side of the property
- pH = 7.39
- Specific Conductance (µS/cm) = 368
- ORP (mV) = 52.7
- Dissolved Oxygen (mg/L) = 6.14
- Temperature (C°) = 15.65
- Notes: No odor noted. Slight turbidity (pumping @ 2-3 GPM)

In talking with Dick Davis he notes a few things regarding the existing system.

- Well #4 is their main well however it has lost productivity since it's installation (I don't have a quantitative idea of what that means). During peak they have to supplement their supply with other wells. I doesn't sound like Well #4 has ever been rehabbed.
- Dick said that they are nearing the upper limit of their reservoir capacity and may need to expand the 0.5 MG reservoir in the future.
- Dick pointed out an area NW of the existing reservoir and due E of Well #5 as a potentially desirable location based on location proximity to the above ground reservoir. The property is also in an area that is unsuitable for farming at this point and likely will stay that way. Dick also has a good relationship with the owner.

A local resident stopped by while we were sampling Well #5, he indicated that from what he knows about the area, the "pea gravels" that Well 5 draw from run east to west along the northern base of the hills. We'd need to do some more digging around to evaluate how laterally continuous that unit may be. He also indicated arsenic is a problem

Oregon
John A. Kitzhaber, M.D., Governor

Department of Human Services
Health Division
800 NE Oregon Street #21
Portland, OR 97232-2162
(503) 731-4030 Emergency
(503) 731-4381
FAX (503) 731-4077
TTY-Nonvoice (503) 731-4031

PWS 01-29-01

January 22, 2001

ADRIAN MUNICIPAL WATER SYSTEM
DICK DAVIS, WATER SUPT.,
PO BOX 226
ADRIAN OR 97901

PWS Id # 4100002

Dear Water System Operator

The coliform test of water for December exceeded the maximum contaminant level (MCL) for Fecal Coliform or E.Coli.

When sampling indicates that a MCL has been exceeded, you must:

1. Investigate and correct the problem or contact your local health department for assistance; and

2. Notify all users that a violation has occurred. The notice must include the date the positive sample(s) were taken, what corrective action has been taken, and the name and phone number of a contact person to call for further information, and

3. There is an EPA required statement on the health affects of fecal coliform that must be included in the notice.

Enclosed you will find a sample public notice with the required EPA statement and information on how to issue the notice.

A copy of the notice and a statement of how and when it was issued must be submitted to the Health Division, P.O. Box 14350, Portland, OR 97214 within 10 days. If you have already done the Public Notice please send in a copy of the notice that was given to the residents.

You can visit the program's data on your system on the web at www.ohd.hr.state.us/dwp. Just type this in your web browser's address or location line. Select Online Data and follow the instructions that appear.

Sincerely,

Monitoring and Compliance
Drinking Water Section

cc Pendleton Office Co. HD

City of Adrian
P.O. Box 226
Adrian, OR 97901-0226

November 8, 2000

Oregon Health Division
Drinking Water Section
P.O. Box 14350
Portland, OR 97214

To Whom It May Concern:

Enclosed is a copy of the coliform notice that was sent to each water customer in the City of Adrian. This notice was sent with the October sewer and water billing on the third of November.

A copy of this notice was placed in the window of the city office on first street and a copy was also placed on the bulletin board at the Adrian Post Office on the third of November.

Sincerely,

M. Adele Dockter

M. Adele Dockter
City Recorder

cc file
enclosure - one

October 31, 2000

TO THE USERS OF

ADRIAN CITY WATER

During October a routine sample and follow-up samples for microbiological contaminants tested positive for Total Coliform.

The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that the presence of total coliform is a possible health concern. Total coliform are common in the environment and are generally not harmful themselves. The presence of these bacteria in drinking water, however, generally is a result of a problem with water treatment or the pipes which distribute the water, and indicates that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possible jaundice, and any associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water, but also may be caused by a number of factors other than your drinking water. EPA has set an enforceable drinking water standard for total coliform to reduce the risk of these adverse health effects. Under this standard, no more than 5.0 percent of the samples collected during a month can contain these bacteria, except those systems collecting fewer than 40 samples/month that have one total coliform positive sample per month are not violating the standard. Drinking water which meets this standard is usually not associated with a health risk from disease-causing bacteria and should be considered safe.

We have taken the following steps to fix the problem:

(1) Cleaned the Reservoir
(2) Chlorinated the system
(3) Flushed water lines

If you have further questions please call: Dick Davis at (541) 372-5415

No other instructions other than those being done through advice from Gary Burnett of the Dept.

Oregon
John A. Kitzhaber, M.D., Governor

Department of Human Services
Health Division
800 NE Oregon Street #21
Portland, OR 97232-2162
(503) 731-4030 Emergency
(503) 731-4381
FAX (503) 731-4077
TTY-Nonvoice (503) 731-4031

December 15, 2000

Adrian Municipal Water System
Dick Davis, Water Supt.
P O Box 226
Adrian, OR 97901

PWS 4100002

During the month of October, your water system exceeded the maximum contaminant level (MCL) for Total Coliform. We have received a copy of the Public Notice you issued to users of the system.

If the problem has not been identified and resolved, please contact Gary Burnett at our Pendleton Office for assistance (541) 276-8006.

You may review your water system's compliance status at our website by selecting Online data on the Home Page located at **www.ohd.hr.state.or.us/dwp**

We encourage you to monitor our receipt of the water testing you submit by checking this site occasionally.

If you have any questions please call me.

Sincerely

Mary Alvey, R.S.
Monitoring & Compliance Unit Manager

Dick
California
Letter

cc Gary Burnett, Pendleton Office

Opinion of
Interim Solution Cost

A. Upgrade Well No. 4

Item	Estimate Cost
New Building	$25,000
On-site Chlorination	25,000
Polyphosphate addition	5,000
Well Control Upgrades	15,000
Portable Generator Connection	2,000
Power Supply Upgrades	2,000
Sub-Total	**$74,000**
Site Acquisition	0
Engineering and Contingencies @ 25%	18,500
Total Project Cost	**$92,500**
Estimated Annual O&M Cost	**$5,400**

B. DISTRIBUTION SYSTEM UPGRADE	**$149,500**

C. WELL NO. 1 WORK

Item	Estimate Cost
Filtration with Pyrolucite Media	$90,000
Power Supply Upgrades	15,000
Backwash Facilities	10,000
Pilot Plant Testing, Pyrolucite	4,000
Sub-Total	**$119,000**
Site Acquisition	10,000
Engineering and Contingencies @ 25%	29,750
Total Project Cost	**$158,750**
Estimated Annual O&M Cost	**$4,000**

D. NEW CITY WELL

Item	Estimate Cost
Drill Test Well	25,000
Test Well Develop, Smple and Test	5,000
Drill Production Well	$50,000
Pump Facilities/Building	70,000
On-site Chlorination	25,000
Polyphosphate addition	5,000
Sub-Total	**$180,000**
Site Acquisition	10,000
Engineering and Contingencies @ 25%	45,000
Total Project Cost	**$235,000**
Estimated Annual O&M Cost	**$5,400**

Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 [illegible]

PWS Name: [illegible]

City, County: [illegible]

Phone: [illegible] Fax: [illegible]

Return address for report

Name: [illegible]

Address: [illegible]

City, State, Zip: [illegible]

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: YHC21

☐ Results do not [illegible] See page 2

Lab Sample ID#: 3011127331

Sample Collected Date/Time: 12 / 3 / 12 (MM / DD / YYYY) 7 : 50 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .42 mg/L

Collected By: Dick Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: ___

Address: [illegible]

Sampled at (ex. "SINK"): out side

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: ___

Source ID: SRC- ___

Source name (ex. "WELL #1"): ___

LAB USE ONLY

Sample Received Date/Time: 12 / 04 / 2012 (MM / DD / YYYY) 8 : 30 (Hour : Min) ☒ AM ☐ PM

Initials: [illegible] Temp: 17 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 12 / 04 / 2012 (MM / DD / YYYY) 10 : 00 (Hour : Min) ☒ AM ☐ PM

Initials: [illegible]

ORELAP Method(s): (Check all that apply) ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other: ___

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 12 / 05 / 2012 (MM / DD / YYYY) 12 : 00 (Hour : Min) ☒ AM ☐ PM

Analyst: [illegible]

Review by: [illegible] 12 / 05 / 2012 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 12 / 09 / 2012 (MM / DD / YYYY)

Sample Invalidation:
- ☐ Over 30 hours
- ☐ Leak
- ☐ Heavy non-coliform growth
- ☐ Other ___

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

For technical support and information, please call Data Management Coordinator at 503-731-4015 M-F 8am-5pm PT or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

State of Oregon Drinking Water Program

Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 [illegible]

PWS Name: [illegible]

City, County: [illegible]

Phone: [illegible] Fax: [illegible]

Return address for report

Name: [illegible]

Address: [illegible]

City, State, Zip: [illegible]

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: FH021

☐ Results do not me[illegible]

Page 2

Lab Sample ID#: 3011127341

Sample Collected Date/Time: 12 / 03 / 2012 (MM DD YYYY) 11:05 (Hour Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .31 mg/L

Collected By: Dick Davis

per phone call to Dick 12/04/12 @ 4:47pm TED

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: 12 / 7 / 12 (MM / DD / YYYY)

*Original Positive ID#:

Address: 106 Wyhee ST.

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 12 / 04 / 2012 (MM / DD / YYYY) 8:30 (Hour Min) ☒ AM ☐ PM

Initials: JD

Temp: 17 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 12 / 04 / 2012 (MM / DD / YYYY) 10:00 (Hour Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): (Check all that apply) ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 12 / 05 / 2012 (MM / DD / YYYY) 10:00 (Hour Min) ☒ AM ☐ PM

Analyst: J DeKuiper

Review by: [illegible] 12 / 05 / 2012 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 12 / 05 / 2012 (MM / DD / YYYY)

Sample Invalidation:

☐ Over 30 hours

Leak

Heavy non-coliform growth

Other

DHS USE ONLY

Test results relate only to the parameters tested and to the sample as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send [illegible] to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

For technical support and information, please call Data Management Coordinator (1-877-[illegible]-0465 M-F 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

State of Oregon Drinking Water Program

Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 [illegible]

PWS Name: [illegible]

City, County: [illegible]

Phone: [illegible] Fax: [illegible]

Return address for report

Name: [illegible]

Address: [illegible]

City, State, Zip: [illegible]

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: FH021

☐ Results do not [illegible] See page 2

Lab Sample ID#: 3011127351

Sample Collected Date/Time: ~~11~~ 12 / ~~7~~ 04 / ~~12~~ 2012 (MM DD YYYY) / 4:40 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .2 mg/L

Collected By: Dick Davis

Per Phone call to Dick 12/04/12 @ 4.47pm, JP

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM DD YYYY)

*Original Positive ID#: ___

Address: 505 ~~[illegible]~~ 4th St

Sampled at (ex. "SINK"): ___

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: ___

Source ID: SRC- ___

Source name (ex. "WELL #1"): ___

LAB USE ONLY

Sample Received Date/Time: 12 / 04 / 2012 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 17 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 12 / 04 / 2012 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): (Check all that apply) ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other: ___

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 12 / 05 / 2012 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: [illegible] 12/05/2012 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 12 / 05 / 2012 (MM / DD / YYYY)

Sample Invalidation:
- ☐ Over 30 hours
- ☐ Leak
- ☐ Heavy non-coliform growth
- ☐ Other ___

DHS USE ONLY

Test results relate only to the parameters tested and to the sample as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

For technical support and information, please call: Data Management Coordinator (503) 731-4010, M-F 8am-5pm PT, or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

Oregon Drinking Water Program

Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 [illegible]

PWS Name: [illegible] OF ADRIAN

City, County: [illegible]

Phone: [illegible] Fax:

Return address for report

Name: [illegible] ADRIAN

Address: P.O. Box [illegible]

City, State, Zip: [illegible]

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: FH021

per phone call to Dick 12/04/12 @ 4:47 PM

☐ Results do not [illegible] page 2

Lab Sample ID#: 3011127321

Sample Collected Date/Time: 12/03/12 (MM DD YYYY) 4:30 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By: Dick Davis

Free Chlorine: .22 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: 403 Main St.

Sampled at (ex. "SINK"): OUTSIDE

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 12 / 04 / 2012 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: JH

Temp: 17 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 12 / 04 / 2012 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): (Check all that apply) ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☒ Present ☐ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 12 / 05 / 2012 (MM / DD / YYYY) 3:00 (Hour: Min) ☐ AM ☒ PM

Analyst: J. DeRuiter

Review by: [illegible] 12 / 05 / 2012 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 12 / 05 / 2012 (MM / DD / YYYY)

Sample Invalidation:

☐ Over 30 hours

☐ Leak

☐ Heavy non-coliform growth

☐ Other

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

For technical support and information, please call Data Management Coordinator at 503-731-4031 M-F, 8am-5pm PST or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: PO Box 226

City, State, Zip: ADRIAN OR 97911

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: FH091

☐ Results do not

3011127311

:e page 2

Lab Sample ID#:

Sample Collected Date/Time: 12 / 03 / 12 (MM / DD / YYYY) 9:30 (Hour : Min) ☐ AM ☑ PM

Chlorinated: ☐ No ☑ Yes

Collected By: Dick Davis

Free Chlorine: .54 mg/L

DISTRIBUTION Sample Type: ☑ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: Bill Elsworth
E Main & Slade

Sampled at (ex. "SINK"): out side

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 12 / 04 / 2012 (MM / DD / YYYY) 8:30 (Hour: Min) ☑ AM ☐ PM

Initials: JD

Temp: 17 °C

Evidence of cooling? ☐ Yes ☑ No

Analysis Start Date/Time: 12 / 04 / 2012 (MM / DD / YYYY) 10:00 (Hour: Min) ☑ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply ☑ SM 9223 ☑ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☑ Present ☐ Absent

E. Coli: ☐ Present ☑ Absent

Analysis Complete Date/Time: 12 / 05 / 2012 (MM / DD / YYYY) 3:00 (Hour: Min) ☐ AM ☑ PM

Analyst: J DeRuyter

Review by: [signature] 12/05/2012 (MM / DD / YYYY)

Reported By: [signature]

Report Date 12/05/2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

ADHS

State of Oregon - Drinking Water Program

Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

OCT 29 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-272-2174 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: FH021

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 3011119501

Sample Collected Date/Time: 10 / 22 / 12 (MM / DD / YYYY) 4 : 15 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Collected By: DICK DAVIS

Free Chlorine: _____ mg/L

DISTRIBUTION Sample Type: ☐ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: Well #4

Sampled at (ex. "SINK"): Well Head / Before chlorinator

per call w/ Dick 10/23/12 @ 1010 am

SOURCE Sample Type: ☒ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 10 / 23 / 2012 (MM / DD / YYYY) 08 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: MJW

Temp: 17.8 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 10 / 23 / 2012 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: MJW

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 10 / 24 / 2012 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRyler

Review by: [signature] 10 / 24 / 2012 (MM / DD / YYYY)

Reported By: [signature]

Report Date 10 / 24 / 2012 (MM / DD / YYYY) 10/24/12

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

OCT 22 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: FHD21

☐ Results do not m

3011118551

page 2

Lab Sample ID#:

Sample Collected Date/Time: 10 / 17 / 12 (MM / DD / YYYY) 3 : 49 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .65 mg/L

Collected By: DICK DAVIS

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: KIETH BALDWIN 2nd / MAIN

Sampled at (ex. "SINK"): OUTSIDE

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 10 / 18 / 2012 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials:

Temp: 18 °C

Evidence of cooling? ☐ Yes ☐ No

Analysis Start Date/Time: 10 / 18 / 2012 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials:

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 10 / 19 / 2012 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: 10 / 19 / 2012 (MM / DD / YYYY)

Reported By:

Report Date 10 / 19 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

OCT 2 2 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: FH021

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 3011118561

Sample Collected Date/Time: 10 / 17 / 12 (MM / DD / YYYY) 3 : 23 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By: Dick Davis

Free Chlorine: 1.10 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: Bill Elsworth

Sampled at (ex. "SINK"): out side

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 10 / 18 / 2012 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 18 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 10 / 18 / 2012 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☐ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 10 / 19 / 2012 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuyter

Review by: [signature] 10 / 19 / 2012 (MM / DD / YYYY)

Reported By: [signature]

Report Date 10 / 19 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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ADHS

State of Oregon - Drinking Water Program

Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

OCT 2 2 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: FH021

☐ Results do not ... 3011118571 ...ee page 2

Lab Sample ID#:

Sample Collected Date/Time: 10 / 17 / 12 (MM / DD / YYYY) 4 : 26 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By: Dick Davis

Free Chlorine: .62 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: 4th / Ore. Heller

Sampled at (ex. "SINK"): Sink

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 10 / 18 / 2012 (MM / DD / YYYY) 8 30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 18 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 10 / 18 / 2012 (MM / DD / YYYY) 9 00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☒ Present ☐ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 10 / 19 / 2012 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: [illegible] 10 / 19 / 2012 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 10 / 19 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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ADHS

State of Oregon - Drinking Water Program

Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

OCT 22 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: FH021

☐ Results do not ee page 2

3011118581

Lab Sample ID#:

Sample Collected Date/Time: 10 / 17 / 12 (MM / DD / YYYY) 4:07 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By: Dick Davis

Free Chlorine: .99 mg/L

DISTRIBUTION Sample Type: ☐ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: MAIN 2nd ST ARTie

Sampled at (ex. "SINK"): outside

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 10 / 18 / 2012 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 18 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 10 / 18 / 2012 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 10 / 19 / 2012 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: [signature] 10 / 19 / 2012 (MM / DD / YYYY)

Reported By: [signature]

Report Date 10 / 19 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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ADHS

State of Oregon - Drinking Water Program

Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

OCT 2 2 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: FH021

☐ Results do not m

3011118591

page 2

Lab Sample ID#:

Sample Collected Date/Time: 10 / 17 / 12 (MM / DD / YYYY) 4 : 17 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By: DICK DAVIS

Free Chlorine: .65 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: ~~APTS~~ Woody 403 ~~[illegible]~~ MAIN

Sampled at (ex. "SINK"): outside

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 10 / 18 / 2012 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 18 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 10 / 18 / 2012 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☒ Present ☐ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 10 / 19 / 2012 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: ___ / ___ / ___ (MM / DD / YYYY)

Reported By:

Report Date ___ / ___ / ___ (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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DHS

State of Oregon - Drinking Water Program

Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

OCT 1 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: FH021

☐ Results do not me ... page 2

Lab Sample ID#: 3011116841

Sample Collected Date/Time: 10 / 9 / 12 (MM / DD / YYYY) 2 : 30 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .02 mg/L

Collected By: Woody Wegerman / per shawn snyder by phone 10/10/12 @ 11:40AM TO

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: 10 / 9 / 12 (MM / DD / YYYY)

*Original Positive ID#:

Address: 784 Everett Stop

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 10 / 10 / 2012 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

Temp: 19 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 10 / 10 / 2012 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

FAXED By: [illegible] Date: 10/11/12

Test Results:

Total Coliforms: ☒ Present ☐ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 10 / 11 / 2012 (MM / DD / YYYY) 11 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: [illegible] 10 / 11 / 2012 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 10 / 11 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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DHS

State of Oregon - Drinking Water Program

Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

OCT 1 2012

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. BOX 226

City, State, Zip: ADRIAN OR 97901

Bottle#: FH021

☐ Results do not me page 2

Lab Sample ID#: 3011116851

Sample Collected Date/Time: 10 / 9 / 12 (MM / DD / YYYY) 2:45 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .08 mg/L

Collected By: Cody Wegerman

DISTRIBUTION Sample Type: ☐ Routine ☒ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: 10 / 9 / 12 (MM / DD / YYYY)

*Original Positive ID#:

Address: 509 4th St

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: / / (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 10 / 10 / 2012 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: JR

Temp: 19 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 10 / 10 / 2012 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Initials: JR

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 10 / 11 / 2012 (MM / DD / YYYY) 11:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. Dobsiler

Review by: [illegible] 10 / 11 / 2012 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 10 / 11 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

OCT 1 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: FH021

☐ Results do not r ... page 2

Lab Sample ID#: 3011116861

Sample Collected Date/Time: 10 / 9 / 12 (MM / DD / YYYY) 2 : 15 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .06 mg/L

Collected By: Woody Wagenman

DISTRIBUTION Sample Type: ☐ Routine ☒ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: 403 Main St per info on bottle JD 10/10/12

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 10 / 10 / 2012 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 18 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 10 / 10 / 2012 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® JD 10/11/12 ☐ Other:

REVIEWED By: Date: 10/11/12

Test Results:

Total Coliforms: ☒ Present ☐ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: ~~11~~ 10 / ~~10~~ 11 / 2012 (MM / DD / YYYY) 11:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: [illegible] 10 / 11 / 2012 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 10 / 11 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS

Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v5.2) OCT 1 0 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: FH021

☐ Results do not ... e page 2

Lab Sample ID#: 3011116871

Sample Collected Date/Time: 10 / 9 / 12 (MM / DD / YYYY) 1 : 45 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .00 mg/L

Collected By: Woody Wagenman

DISTRIBUTION Sample Type: ☐ Routine ☒ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: 10 / 9 / 12 (MM / DD / YYYY)

*Original Positive ID#:

ST.4 NCP

Address: 403 Main ST

Sampled at (ex. "SINK"): out side

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: 10 / 9 / 12 (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 10 / 10 / 2012 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 18 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 10 / 10 / 2012 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

FAXED By: JK Date: 10/11/12

Analysis Complete Date/Time: 10 / 11 / 2012 (MM / DD / YYYY) 11 : 00 (Hour: Min) ☒ AM ☐ PM

Test Results:

Total Coliforms: ☒ Present ☐ Absent

E. Coli: ☐ Present ☒ Absent

Analyst: J. DeKinder

Review by: [illegible]

10 / 11 / 2012 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 10 / 11 / 2012 (MM / DD / YYYY)

Sample Invalidation:
- ☐ Over 30 hours
- ☐ Leak
- ☐ Heavy non-coliform growth
- ☐ Other

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

OCT 1 2012

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

Bottle#: FH021

☐ Results do not ee page 2

3011116881

Lab Sample ID#:

Sample Collected Date/Time: 10 / 9 / 12 (MM / DD / YYYY) 2:00 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By: Woody Weyerman

Free Chlorine: .14 mg/L

DISTRIBUTION Sample Type: ☐ Routine ☒ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: 10 / 9 / 12 (MM / DD / YYYY)

*Original Positive ID#:

Address: 201 Main St

Sampled at (ex "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 10 / 10 / 2012 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: JC

Temp: 18 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 10 / 10 / 2012 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Initials: JC

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

FAXED By: JC Date: 10/11/12

Test Results:

Total Coliforms: ☒ Present ☐ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 10 / 11 / 2012 (MM / DD / YYYY) 11:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: [illegible] ___ / ___ / ___ (MM / DD / YYYY)

Reported By:

Report Date ___ / ___ / ___ (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

SEP 10 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-3179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. BOX 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: HG002

☐ Results do not [illegible] See page 2

Lab Sample ID#: 3011106851

Sample Collected Date/Time: 9 / 4 / 12 (MM / DD / YYYY) 4:05 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By: DICK DAVIS

Free Chlorine: .10 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: 2ND + MAIN ST.

Sampled at (ex. "SINK"): outside

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 09 / 05 / 2012 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 21 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 09 / 05 / 2012 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☒ Present ☐ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 09 / 06 / 2012 (MM / DD / YYYY) 11:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: D Brown 09 / 06 / 2012 (MM / DD / YYYY)

Reported By: D Brown

Report Date 09 / 06 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

SEP 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: HG00Z

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 3011109131

Sample Collected Date/Time: 9 / 12 / 12 (MM / DD / YYYY) 3 : 40 (Hour : Min) ☐ AM ☑ PM

Chlorinated: ☐ No ☑ Yes

Free Chlorine: .15 mg/L

Collected By: Dick Davis

DISTRIBUTION Sample Type: ☐ Routine ☑ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: P.D. Bill Esmonth

Sampled at (ex. "SINK"): out side

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 09 / 13 / 2012 (MM / DD / YYYY) 08 : 30 (Hour: Min) ☑ AM ☐ PM

Initials: MFW

Temp: 20.6 °C

Evidence of cooling? ☐ Yes ☑ No

Analysis Start Date/Time: 09 / 13 / 2012 (MM / DD / YYYY) 09 : 00 (Hour: Min) ☑ AM ☐ PM

Initials: TB

ORELAP Method(s): Check all that apply. ☑ SM 9223 ☑ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☑ Absent

E. Coli: ☐ Present ☑ Absent

Analysis Complete Date/Time: 09 / 14 / 2012 (MM / DD / YYYY) 10 : 30 (Hour: Min) ☑ AM ☐ PM

Analyst: J. DeRuiter

Review by: [illegible] 09 / 14 / 2012 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 09 / 14 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: HG002

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 3011109141

Sample Collected Date/Time: 9 / 12 / 12 (MM / DD / YYYY) 4 : 29 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐No ☒Yes

Collected By: DICK DAVIS

Free Chlorine: .16 mg/L

DISTRIBUTION Sample Type: ☐ Routine ☒ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: 9 / 12 / 12 (MM / DD / YYYY)

*Original Positive ID#:

Address: 403 MAIN ST.

Sampled at (ex. "SINK"): out side

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 09 / 13 / 2012 (MM / DD / YYYY) 08 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

Temp: 20.6 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 09 / 13 / 2012 (MM / DD / YYYY) 09 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: DB

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 09 / 14 / 2012 (MM / DD / YYYY) 10 : 30 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: [illegible] 09 / 14 / 2012 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 09 / 14 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: HG002

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 3011109151

Sample Collected Date/Time: 9 / 12 / 12 (MM / DD / YYYY) 4:21 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ NO ☒ YES

Free Chlorine: .23 mg/L

Collected By: DICK DAVIS

DISTRIBUTION Sample Type: ☐ Routine ☒ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: Adrian E. 2nd MAIN

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 09 / 13 / 2012 (MM / DD / YYYY) 08:30 (Hour: Min) ☒ AM ☐ PM

Initials: MJW

Temp: 20.6°C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 09 / 13 / 2012 (MM / DD / YYYY) 09:00 (Hour: Min) ☒ AM ☐ PM

Initials: BB

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 09 / 14 / 2012 (MM / DD / YYYY) 10:30 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: [signature] 09 / 14 / 2012 (MM / DD / YYYY)

Reported By: [signature]

Report Date 09 / 14 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

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DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. BOX 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: KG009

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 3011109161

Sample Collected Date/Time: 9 / 17 / 12 (MM / DD / YYYY) 4 : 40 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Free Chlorine: _____ mg/L

Collected By: DICK DAVIS

DISTRIBUTION Sample Type: ☐ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: WOH WELL

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☒ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 09 / 13 / 2012 (MM / DD / YYYY) 08 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible] Temp: 20.6 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 09 / 13 / 2012 (MM / DD / YYYY) 09 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: RB

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 09 / 14 / 2012 (MM / DD / YYYY) 10 : 30 (Hour: Min) ☒ AM ☐ PM

Analyst: J DeRuyter

Review by: [illegible] 09 / 14 / 2012 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 09 / 14 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. BOX 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: H6002

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 3011109171

Sample Collected Date/Time: 9 / 12 / 12 (MM / DD / YYYY) 4:08 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By: DICK DAVIS

Free Chlorine: .25 mg/L

DISTRIBUTION Sample Type: ☐ Routine ☒ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: Kieth Baldwin 2nd / MAIN ST West

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 09 / 13 / 2012 (MM / DD / YYYY) 08:30 (Hour: Min) ☒ AM ☐ PM

Initials: MJW

Temp: 20.6 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 09 / 13 / 2012 (MM / DD / YYYY) 09:00 (Hour: Min) ☒ AM ☐ PM

Initials: DB

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 09 / 14 / 2012 (MM / DD / YYYY) 1030 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuyter

Review by: [signature] 09 / 14 / 2012 (MM / DD / YYYY)

Reported By: [signature]

Report Date 09 / 14 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

AUG 13 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: KG009

☐ Results do not r e page 2

3011100581

Lab Sample ID#:

Sample Collected Date/Time: 8 / 8 / 12 (MM / DD / YYYY) 4 : 18 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .12 mg/L

Collected By: DICK DAVIS

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: MAIN & 2nd ST

Sampled at (ex. "SINK"): OUTSIDE FAUCET

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 08 / 09 / 2012 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: RH

Temp: 22 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 08 / 09 / 2012 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials: RH

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 08 / 10 / 2012 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J DeRuiter

Review by: BRAUN 08 / 10 / 2012 (MM / DD / YYYY)

Reported By: BRAUN

Report Date 08 / 10 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

AUG 07 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: HG002

☐ Results do nc See page 2

3011099391

Lab Sample ID#

Sample Collected Date/Time: 8 / 1 / 12 (MM / DD / YYYY) 4 : 15 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .87 mg/L

Collected By: DICK DAVIS

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: MAIN ST / 2ND

Sampled at (ex. "SINK"): OUTSIDE FAUSET

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 08 / 03 / 2012 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 21.4 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: ___ / ___ / ___ (MM / DD / YYYY) ___ : ___ (Hour: Min) ☐ AM ☐ PM

Initials:

ORELAP Method(s): Check all that apply. ☐ SM 9223 ☐ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☐ Absent

E. Coli: ☐ Present ☐ Absent

Analysis Complete Date/Time: ___ / ___ / ___ (MM / DD / YYYY) ___ : ___ (Hour: Min) ☐ AM ☐ PM

Analyst:

Review by: BBrown 08 / 06 / 2012 (MM / DD / YYYY)

Reported By: BBrown

Report Date 08 / 06 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☒ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: GG024

☐ Results do not ... e page 2

Lab Sample ID#: 3011093141

Sample Collected Date/Time: 7 / 9 / 12 (MM / DD / YYYY) 4 : 15 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By: Dick DAVIS

Free Chlorine: .18 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: MAIN & 2ND ST

Sampled at (ex. "SINK"): out Side

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 07 / 10 / 2012 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 22 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 07 / 10 / 2012 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 07 / 11 / 2012 (MM / DD / YYYY) 10:30 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: DBrown 07 / 11 / 2012 (MM / DD / YYYY)

Reported By: DBrown

Report Date 07 / 11 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

JUN 18 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 220

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: HG002

☐ Results do not meet NELAC Standards See page 2

Lab Sample ID: 3011087681

Sample Collected Date/Time: 6 / 13 / 12 (MM / DD / YYYY) 2 : 15 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .22 mg/L

Collected By: DICK DAVIS

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: 2nd + MAINE ST.

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 06 / 14 / 2012 (MM / DD / YYYY) 8 30 (Hour: Min) ☒ AM ☐ PM

Initials: DD

Temp: 21 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 06 / 14 / 2012 (MM / DD / YYYY) 9 00 (Hour: Min) ☒ AM ☐ PM

Initials: DD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 06 / 15 / 2012 (MM / DD / YYYY) 10 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J DeRuiter

Review by: B Brown 06 / 15 / 2012 (MM / DD / YYYY)

Reported By: B Brown

Report Date 06 / 15 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

MAY 10 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: HG002

☐ Results do n ... Standards-See page 2

Lab Sample ID 3011078161

Sample Collected Date/Time: 5 / 1 / 12 (MM / DD / YYYY) 4 : 02 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By: Dick Davis

Free Chlorine: .08 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: 2nd / MAIN

Sampled at (ex. "SINK"): Spill Hydrant

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 05 / 02 / 2012 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 19 °C

Evidence of cooling? ☐ Yes ☐ No

Analysis Start Date/Time: 05 / 02 / 2012 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 05 / 03 / 2012 (MM / DD / YYYY) 10 : 30 (Hour: Min) ☒ AM ☐ PM

Analyst: [illegible]

Review by: [illegible] 05/03/2012 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 05/03/2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

APR 11 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: K6D09

☐ Results do not me page 2

3011072751

Lab Sample ID#:

Sample Collected Date/Time: 4 / 4 / 12 (MM / DD / YYYY) 3 : 45 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐No ☒Yes

Free Chlorine: .07 mg/L

Collected By: Dick Davis

per phone call from Sandra 04/10/12 @ 12:24pm TO

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: 2nd + Main St.

Sampled at (ex. "SINK"): outside

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 04 / 05 / 2012 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: DH

Temp: 20 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 04 / 05 / 2012 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials: DH

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 04 / 06 / 2012 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: Brown 04 / 06 / 2012 (MM / DD / YYYY)

Reported By: Brown

Report Date 04 / 06 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.

MAR 1 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: HG002

☐ Results do not me

age 2

Lab Sample ID#: 3011068581

Sample Collected Date/Time: 3 / 13 / 12 (MM / DD / YYYY) 4 : 05 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By: Dick Davis

Free Chlorine: .09 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: 2nd + MAIN ST.

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 03 / 14 / 2012 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: DH

Temp: 18 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 03 / 14 / 2012 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: DH

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 03 / 15 / 2012 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: DBrown 03 / 15 / 2012 (MM / DD / YYYY)

Reported By: DBrown

Report Date 03 / 15 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

FEB 06 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: HG002

☐ Results do not meet NELAC Standards page 2

Lab Sample ID#: 3011059991

Sample Collected Date/Time: 2 / 1 / 12 (MM / DD / YYYY) 2 : 50 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By: DICK DAVIS

Free Chlorine: .15 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: MAIN - 2nd Ave

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 02 / 02 / 2012 (MM / DD / YYYY) 8 : 15 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 17 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 02 / 12 / 2012 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 02 / 03 / 2012 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: DBrown 02 / 03 / 2012 (MM / DD / YYYY)

Reported By: DBrown

Report Date 02 / 03 / 2012 (MM / DD / YYYY)

Sample Invalidation:
- ☐ Over 30 hours
- ☐ Leak
- ☐ Heavy non-coliform growth
- ☐ Other

DHS USE ONLY

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DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

FEB 0 6 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: HG002

☐ Results do not ee page 2

Lab Sample ID#: 3011060001

Sample Collected Date/Time: 2 / 1 / 12 (MM / DD / YYYY) 2 : 30 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By: Dick Davis

Free Chlorine: .08 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: Bill Elsworth Emerald Slope Rd.

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 02 / 02 / 2012 (MM / DD / YYYY) 8 : 15 (Hour: Min) ☒ AM ☐ PM

Initials: Pd

Temp: 17 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 02 / 02 / 2012 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: PH

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 02 / 03 / 2012 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: [illegible] 02 / 03 / 2012 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 02 / 03 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

FEB 0 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. BOX 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: HG002

☐ Results do not meet NELAC Standards. See page 2

Lab Sample ID#: 3011060011

Sample Collected Date/Time: 2 / 1 / 12 (MM / DD / YYYY) 3 : 20 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .11 mg/L

Collected By: DICK DAVIS

DISTRIBUTION Sample Type: ☐ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: A. DAVIS 4TH - ORA.

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 02 / 02 / 2012 (MM / DD / YYYY) 8 : 15 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 17 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 02 / 02 / 2012 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 02 / 03 / 2012 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: [illegible]

02 / 03 / 2012 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 02 / 03 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

FEB 09 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

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Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: HG002

☐ Results do not meet

Lab Sample ID#: 3011060021

Sample Collected Date/Time: 2 / 1 / 12 (MM / DD / YYYY) 3 : 10 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By: DICK DAVIS

Free Chlorine: .11 mg/L

DISTRIBUTION Sample Type: ☐ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: WOOD'S 403 MAIN ST.

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 02 / 02 / 2012 (MM / DD / YYYY) 8 : 15 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 17 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 02 / 02 / 2012 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 02 / 03 / 2012 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J DeRider

Review by: DBrown 02 / 03 / 2012 (MM / DD / YYYY)

Reported By: DBrown

Report Date 02 / 03 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

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PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: HG002

☐ Results do not r... e page 2

Lab Sample ID#: 3011060031

Sample Collected Date/Time: 2 / 1 / 12 (MM / DD / YYYY) 2 : 46 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .08 mg/L

Collected By: DICK DAVIS

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: KIETH B. 200 - MAIN

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 02 / 02 / 2012 (MM / DD / YYYY) 8 : 15 (Hour: Min) ☒ AM ☐ PM

Initials: Pd

Temp: 17 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 02 / 02 / 2012 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: Pd

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 02 / 03 / 2012 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: [signature] 02 / 03 / 2012 (MM / DD / YYYY)

Reported By: [signature]

Report Date 02 / 03 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

JAN 0 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. BOX 226

City, State, Zip: ADRIAN OR 97901

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PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: CG010

☐ Results do not meet NELAC ... See page 2

Lab Sample ID 3011053281

Sample Collected Date/Time: 1 / 3 / 12 (MM / DD / YYYY) 4:10 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By: Dick DAVIS

Free Chlorine: .08 mg/L

per phone call from Dick Davis 01/04/12 TD

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: MAIN - 2ND ST.

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 01 / 04 / 2012 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: JJ

Temp: 17 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 01 / 04 / 2012 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Initials: JJ

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☒ Present ☐ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 01 / 05 / 2012 (MM / DD / YYYY) 2:00 (Hour: Min) ☐ AM ☒ PM

Analyst: [signature]

Review by: [signature] 01 / 05 / 2012 (MM / DD / YYYY)

Reported By: [signature]

Report Date 01 / 05 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

JAN 09 2012

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FX 208-734-2539
ID100001

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

Bottle#: CGD10

☐ Results do ... s See page 2

Lab Sample II 3011053261

Sample Collected Date/Time: 1 / 3 / 12 (MM / DD / YYYY) 3 : 45 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Collected By: DICK DAVIS

Free Chlorine: _____ mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: Well RD - Emerald Slope Well 2

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 01 / 04 / 2012 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 17 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 01 / 04 / 2012 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 01 / 05 / 2012 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: DBrown 01 / 05 / 2012 (MM / DD / YYYY)

Reported By: DBrown

Report Date 01 / 05 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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ADHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

JAN 0 5 2012

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

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Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: CG010

☐ Results do r i-See page 2

Lab Sample ID 3011053271

Sample Collected Date/Time: 1 / 3 / 12 (MM / DD / YYYY) 3 : 30 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Collected By: Dick Davis

Free Chlorine: _____ mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: Well RD. No 4 Well

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 01 / 04 / 2012 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 17 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 01 / 04 / 2012 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 01 / 05 / 2012 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J DeRuiter

Review by: DBrown 01 / 05 / 2012 (MM / DD / YYYY)

Reported By: DBrown

Report Date 01 / 05 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. BOX 226

City, State, Zip: ADRIAN OR 97901

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PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: CG010

RECEIVED JAN 17 2012

☐ Results do n

See page 2

Lab Sample ID: 3011055471

Sample Collected Date/Time: 1 / 11 / 12 (MM / DD / YYYY) 3 : 55 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By: DICK DAVIS

Free Chlorine: .09 mg/L

DISTRIBUTION Sample Type: ☐ Routine ☒ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: Ardy MAIN - 2ND ST.

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 01 / 12 / 2012 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: DD

Temp: 16 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 01 / 12 / 2012 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: DD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 01 / 13 / 2012 (MM / DD / YYYY) 9 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuyter

Review by: [signature] 01 / 13 / 2012 (MM / DD / YYYY)

Reported By: [signature]

Report Date 01 / 13 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

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PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: CG018

☐ Results do ... -See page 2

Lab Sample ID#: 3011055481

Sample Collected Date/Time: 1 / 11 / 12 (MM / DD / YYYY) 3 : 55 (Hour : Min) ☐ AM ☑ PM

Chlorinated: ☑ No ☐ Yes

Free Chlorine: .21 mg/L

Collected By: Dick Davis

DISTRIBUTION Sample Type: ☐ Routine ☑ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: 2nd + Main West Kirth Baldwin

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 01 / 12 / 2012 (MM / DD / YYYY) 8:30 (Hour: Min) ☑ AM ☐ PM

Initials: JD

Temp: 16 °C

Evidence of cooling? ☐ Yes ☑ No

Analysis Start Date/Time: 01 / 12 / 2012 (MM / DD / YYYY) 9:00 (Hour: Min) ☑ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☑ SM 9223 ☑ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☑ Absent

E. Coli: ☐ Present ☑ Absent

Analysis Complete Date/Time: 01 / 13 / 2012 (MM / DD / YYYY) 9:00 (Hour: Min) ☑ AM ☐ PM

Analyst: J. DeRuyter

Review by: [signature] 01 / 13 / 2012 (MM / DD / YYYY)

Reported By: [signature]

Report Date 01 / 13 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. BOX 220

City, State, Zip: ADRIAN OR 97901

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Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: CG010

☐ Results do not ... see page 2

Lab Sample ID#: 3011055491

Sample Collected Date/Time: 1 / 11 / 12 (MM / DD / YYYY) 4 : 24 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By: Dick Davis

Free Chlorine: .23 mg/L

DISTRIBUTION Sample Type: ☐ Routine ☒ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: 4TH & ORE, ART DAVIS

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 01 / 12 / 2012 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: DH

Temp: 16 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 01 / 12 / 2012 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials: DH

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 01 / 13 / 2012 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRoche

Review by: [signature] 01 / 13 / 2012 (MM / DD / YYYY)

Reported By: [signature]

Report Date 01 / 13 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: CG010

☐ Results do not meet NELAC ... see page 2

Lab Sample ID#: 3011055501

Sample Collected Date/Time: 1 / 11 / 12 (MM / DD / YYYY) 3 : 35 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .06 mg/L

Collected By: DICK DAVIS

DISTRIBUTION Sample Type: ☐ Routine ☒ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: / / (MM / DD / YYYY) *Original Positive ID#:

Address: Bill Ellsworth Emerald Slope RD.

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: / / (MM / DD / YYYY) *Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 01 / 12 / 2012 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 16 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 01 / 12 / 2012 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 01 / 13 / 2012 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuyter

Review by: [signature] 01 / 13 / 2012 (MM / DD / YYYY)

Reported By: [signature]

Report Date 01 / 13 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. BOX 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

RECEIVED

Bottle#: CG010

☐ Results do not i e page 2

Lab Sample ID#: 3011055511

Sample Collected Date/Time: 1 / 11 / 12 (MM / DD / YYYY) 4 : 15 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐No ☒Yes

Collected By: DICK DAVIS

Free Chlorine: .26 mg/L

DISTRIBUTION Sample Type: ☐ Routine ☒ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: 403 MAIN ST. WOODIE

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 01 / 12 / 2012 (MM / DD / YYYY) 8 30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 16 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 01 / 12 / 2012 (MM / DD / YYYY) 9 00 (Hour: Min) ☒ AM ☐ PM

Initials: DH

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 01 / 13 / 2012 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J DeRyder

Review by: [signature] 01 / 13 / 2012 (MM / DD / YYYY)

Reported By: [signature]

Report Date 01 / 13 / 2012 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

JAN 21 2011

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 0002

PWS Name: City of Adrian

City, County: Adrian, Malheur

Phone: 342-2611 Fax:

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: GFDL3

☐ Results do not See page 2

Lab Sample ID#: 301979091

Sample Collected Date/Time: 01 / 18 / 2011 (MM / DD / YYYY) 3:00 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: 2.30 mg/L

Collected By: Dick Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: 403 Main St.

Sampled at (ex. "SINK"): Woodie W.

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 01 / 19 / 2011 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: DD

Temp: 10 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 01 / 19 / 2011 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Initials: DD

ORELAP Method(s): Check all that apply.
☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure®
☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 01 / 20 / 2011 (MM / DD / YYYY) 1:00 (Hour: Min) ☒ AM ☐ PM

Analyst: [signature]

Review by: [signature] 01 / 20 / 2011 (MM / DD / YYYY)

Reported By: [signature]

Report Date 01 / 20 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

JAN 24 2011

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 0002

PWS Name: City of Adrian

City, County: Adrian, Malheur

Phone: 342-2611 Fax:

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: GFC13

☐ Results do not meet NELAC Standards. See page 2

Lab Sample ID#: 301979081

Sample Collected Date/Time: 01 / 18 / 2011 (MM / DD / YYYY) 2:35 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: 2.50 mg/L

Collected By: Dick Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: 10 Main St.

Sampled at (ex. "SINK"): Kieth Baldwin

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 01 / 19 / 2011 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: DD

Temp: 10 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 01 / 19 / 2011 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Initials: DD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 01 / 20 / 2011 (MM / DD / YYYY) 10:20 (Hour: Min) ☒ AM ☐ PM

Analyst: [signature]

Review by: [signature] 01 / 20 / 2011 (MM / DD / YYYY)

Reported By: [signature]

Report Date 01 / 20 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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JAN 24 2011

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00002

PWS Name: City of Adrian

City, County: Adrian, Malheur

Phone: 592-2611 Fax:

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: GF015

☐ Results do not me

Page 2

Lab Sample ID#: 301979071

Sample Collected Date/Time: 01 / 18 / 2011 (MM DD YYYY) 3 : 45 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: 2.30 mg/L

Collected By: Dick Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: Main St.

Sampled at (ex. "SINK"): Ardie

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 01 / 19 / 2011 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 10 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 01 / 19 / 2011 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply.
☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure®
☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 01 / 20 / 2011 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☐ AM ☐ PM

Analyst: J. DeRuiter

Review by: [signature] 01 / 20 / 2011 (MM / DD / YYYY)

Reported By: [signature]

Report Date 01 / 20 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

JAN 24 2011

PWS# 41 0002

PWS Name: City of Adrian

City, County: Adrian, Malheur

Phone: 572-2611 Fax:

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: GF013

☐ Results do not me page 2

Lab Sample ID#: 301979061

Sample Collected Date/Time: 01 / 18 / 2011 (MM DD YYYY) 3 : 10 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .15 mg/L

Collected By: Dick Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: 203 High St.

Sampled at (ex. "SINK"): School

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 01 / 19 / 2011 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 10 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 01 / 19 / 2011 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply.
☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure®
☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 01 / 20 / 2011 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: [signature] 01 / 20 / 2011 (MM / DD / YYYY)

Reported By: [signature]

Report Date 01 / 20 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

JAN 24 2011

PWS# 41 0002

PWS Name: City of Adrian

City, County: Adrian, Malheur

Phone: 372-2611 Fax:

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: GF013

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 301979051

Sample Collected Date/Time: 01 / 18 / 2011 (MM / DD / YYYY) 2 : 30 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: 2.20 mg/L

Collected By: Dick Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: Emerald Slope

Sampled at (ex. "SINK"): Bill Elsworth

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 01 / 19 / 2011 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: DD

Temp: 10 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 01 / 19 / 2011 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: DD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 01 / 20 / 2011 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: [illegible]

Review by: [illegible] 01 / 20 / 2011 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 01 / 24 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00003

PWS Name: City of Adrian

City, County: Adrian - Malheur

Phone: 541-372-2611 Fax:

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: GFD13

☐ Results do not me page 2

Lab Sample ID#: 301983781

Sample Collected Date/Time: 02/09/2011 4:35 (MM DD YYYY Hour:Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .76 mg/L

Collected By: Dick Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___/___/___ (MM / DD / YYYY)

*Original Positive ID#:

Address: 403 Main St.

Sampled at (ex. "SINK"): Woody Wierman

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___/___/___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 02/10/2011 8:30 (MM / DD / YYYY Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

Temp: 10 °C

Evidence of cooling? ☐ Yes ☐ No

Analysis Start Date/Time: 02/10/2011 9:00 (MM / DD / YYYY Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 02/11/2011 [illegible] (MM / DD / YYYY Hour: Min) ☐ AM ☐ PM

Analyst: [illegible]

Review by: [illegible] 02/11/2011 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 02/11/2011 (MM / DD / YYYY)

Sample Invalidation:
- ☐ Over 30 hours
- ☐ Leak
- ☐ Heavy non-coliform growth
- ☐ Other

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator (ph. 971-673-0405. M-F. 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

RECEIVED MAR 07 2011

PWS# 41 002

PWS Name: City of Adrian

City, County: Adrian - Malheur

Phone: 541-372-2611 Fax:

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: GFD13

☐ Results do not [illegible] See page 2

Lab Sample ID#: 301987881

Sample Collected Date/Time: 03 / 02 / 2011 (MM / DD / YYYY) 3:30 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .16 mg/L

Collected By: Dick Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: 415 Main St.

Sampled at (ex. "SINK"): Woodie W

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 03 / 03 / 2011 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 9 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 03 / 03 / 2011 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☐ Colilert® ☐ Colilert-18® ☒ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 03 / 04 / 2011 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. Dorrinar

Review by: Shelley Wolf 03 / 04 / 2011 (MM / DD / YYYY)

Reported By: Shelley Wolf

Report Date 03 / 04 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

APR 04 2011

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Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

PWS# 41 00002

PWS Name: City of Adrian

City, County: Adrian Malheur

Phone: 541-372-2611 Fax:

Return address for report:

Name: City of Adrian

Address: P.O. Box 226

City, State, Zip: Adrian OR 97901

Bottle#: JFD09

☐ Results do not meet NELAC Standards See page 2

Lab Sample ID#: 301992901

Sample Collected Date/Time: 03 / 29 / 2011 (MM / DD / YYYY) 03:30 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Collected By: Dick Davis

Free Chlorine: _____ mg/L

DISTRIBUTION Sample Type: ☐ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address:

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☒ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"): Well head #4

LAB USE ONLY

Sample Received Date/Time: 03 / 30 / 2011 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: DD

Temp: 15 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 03 / 30 / 2011 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Initials: DD

NELAP Method(s): (Check all that apply.) ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 03 / 31 / 2011 (MM / DD / YYYY) 10:10 (Hour: Min) ☒ AM ☐ PM

Analyst:

Review by: 03/31/2011 (MM / DD / YYYY)

Reported By:

Report Date 03 / 31 / 2011 (MM / DD / YYYY)

Sample Invalidation:
- Over 30 hours
- Leak
- Heavy non-coliform growth
- Other

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DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

APR 04 2011

PWS# 41 00002

PWS Name: City of Adrian

City, County: Adrian Malheur

Phone: 541-372-2611 Fax:

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, OR 97901

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Twin Falls, ID 83303
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FX 208-734-2539
ID100001

Bottle#: JF009

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 301992891

Sample Collected Date/Time: 03 / 29 / 2011 (MM / DD / YYYY) 03 : 45 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Free Chlorine: _____ mg/L

Collected By: Dick Davis

DISTRIBUTION Sample Type: ☐ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address:

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☒ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"): Well head #2

LAB USE ONLY

Sample Received Date/Time: 03 / 30 / 2011 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: RJ

Temp: 15 °C

Evidence of cooling? ☐ Yes ☐ No

Analysis Start Date/Time: 03 / 30 / 2011 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: RJ

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 03 / 31 / 2011 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J DeBruler

Review by: [signature] 03 / 31 / 2011 (MM / DD / YYYY)

Reported By: [signature]

Report Date 03 / 31 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

APR 11 2011

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FX 208-734-2539
ID100001

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

Bottle#: JFOD9

☐ Results do not meet N 301994591 2

Lab Sample ID#:

Sample Collected Date/Time: 4 / 6 / 011 (MM / DD / YYYY) 3 : 30 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Collected By: Dick Davis

Free Chlorine: _____ mg/L

~~DISTRIBUTION~~ Sample Type: ☐ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: 4 / 6 / 011 (MM / DD / YYYY)

*Original Positive ID#:

Address:

Sampled at (ex. "SINK"): Well Head # 4

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☒ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC- Well 4

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 04 / 07 / 2011 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: DD

Temp: 3 °C

Evidence of cooling? ☒ Yes ☐ No

Analysis Start Date/Time: 04 / 07 / 2011 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: DD

ORELAP Method(s): Check all that apply.
☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure®
☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 04 / 08 / 2011 (MM / DD / YYYY) 09:00 (Hour: Min) ☒ AM ☐ PM

Analyst:

Review by: 04 / 08 / 2011 (MM / DD / YYYY)

Reported By:

Report Date 04 / 08 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

APR 11 2011

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

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ID100001

Bottle#: JF009

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 301994581

Sample Collected Date/Time: 4 / 6 / 011 (MM / DD / YYYY) 3 : 15 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐No ☒Yes

Collected By: DICK DAVIS

Free Chlorine: .16 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: 201 MAIN ST.

Sampled at (ex. "SINK"): EXTERIOR TAP

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 04 / 07 / 2011 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 3 °C

Evidence of cooling? ☒ Yes ☐ No

Analysis Start Date/Time: 04 / 07 / 2011 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 04 / 08 / 2011 (MM / DD / YYYY) 09:00 (Hour: Min) ☒ AM ☐ PM

Analyst:

Review by: 04 / 08 / 2011 (MM / DD / YYYY)

Reported By:

Report Date 04 / 08 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

MAY 1 1 2011

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PH 208-733-4250
FX 208-734-2539
ID100001

PWS# 4 100002
PWS Name: City of Adrian
City, County: Adrian - Malheur
Phone: 372-2611 Fax:

Return address for report:
Name: City of Adrian
Address: P.O. Box 226
City, State, Zip: Adrian OR 97901

Bottle#:

☐ Results do not meet NELAC Standards See page 2
Lab Sample ID#: 301999581

Sample Collected Date/Time: 05 / 04 / 2011 (MM DD YYYY) 3 : 45 (Hour : Min) ☐ AM ☒ PM
Chlorinated: ☐ No ☒ Yes
Collected By: Dick Davis
Free Chlorine: .12 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special
*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)
*Original Positive ID#:
Address: 2nd Main St.
Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special
*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)
*Original Positive ID#:
Source ID: SRC-
Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 05 / 05 / 2011 (MM / DD / YYYY) 8 : 15 (Hour: Min) ☒ AM ☐ PM
Initials: JD
Temp: 10 °C
Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 05 / 05 / 2011 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM
Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:
Total Coliforms: ☐ Present ☒ Absent
E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 05 / 06 / 2011 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM
Analyst: J. DeRiller
Review by: [signature] 05 / 06 / 2011 (MM / DD / YYYY)

Reported By: [signature]
Report Date 05 / 06 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

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PH 208-733-4250
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ID100001

PWS# 41 0002
PWS Name: City of Adrian
City, County: Adrian Malheur
Phone: 372-2611 Fax:

Return address for report:
Name: City of Adrian
Address: PO Box 226
City, State, Zip: Adrian, OR 97901

Bottle#: GF013

☐ Results do not meet NELAC Standards-See page 2
Lab Sample ID#: 301999591

Sample Collected Date/Time: 05 / 04 / 2011 (MM / DD / YYYY) 3 : 30 (Hour : Min) ☐ AM ☒ PM
Chlorinated: ☒ No ☐ Yes
Collected By:
Free Chlorine: _____ mg/L

DISTRIBUTION Sample Type: ☐ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special
*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)
*Original Positive ID#:
Address:
Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☒ Assessment ☐ Special
*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)
*Original Positive ID#:
Source ID: SRC- Well Road
Source name (ex. "WELL #1"): No 4 Well head

LAB USE ONLY

Sample Received Date/Time: 05 / 05 / 2011 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM
Initials: JD
Temp: 2 °C
Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 05 / 05 / 2011 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM
Initials: JD

ORELAP Method(s): Check all that apply.
☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure®
☐ Other:

Test Results:
Total Coliforms: ☐ Present ☒ Absent
E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 05 / 06 / 2011 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM
Analyst: J. Detweiler
Review by: [signature] 05 / 06 / 2011 (MM / DD / YYYY)

Reported By: [signature]
Report Date 05 / 06 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

JUN 06 2011

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Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

PWS# 41 00002

PWS Name: City of Adrian

City, County: Adrian / Malheur

Phone: _____ Fax: _____

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Ore. 97901

Bottle#: JF009

☐ Results do not me

Page 2

Lab Sample ID#: 3011005341

Sample Collected Date/Time: 6 / 1 / 11 (MM / DD / YYYY) 4:00 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Collected By: DICK DAVIS

Free Chlorine: _____ mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Address: Well Head #4

Sampled at (ex. "SINK"): _____

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Source ID: SRC- AA

Source name (ex. "WELL #1"): Well #4

LAB USE ONLY

Sample Received Date/Time: 06 / 02 / 2011 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: DD

Temp: 12 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 06 / 02 / 2011 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials: DD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other: _____

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 06 / 03 / 2011 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J DeRuiter

Review by: [signature] 06 / 03 / 2011 (MM / DD / YYYY)

Reported By: [signature]

Report Date 06 / 03 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other _____

DHS USE ONLY

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DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

JUN 06 2011

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN / MALHEUR

Phone: _____ Fax: _____

Return address for report:

Name: CITY OF ADRIAN

Address: PO BOX 226

City, State, Zip: ADRIAN, ORE. 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: JF009

☐ Results do not me ... See page 2

Lab Sample ID#: 3011005321

Sample Collected Date/Time: 6 / 1 / 11 (MM / DD / YYYY) 4:43 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐No ☒Yes

Free Chlorine: .07 mg/L

Collected By: Dick Davis
per phone call 6/1/2011 12:00pm TD

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Address: 2nd / MAIN

Sampled at (ex. "SINK"): _____

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ~~06 / 02 / 2011~~ JD 06/02/11 (MM / DD / YYYY)

*Original Positive ID#: _____

Source ID: SRC- _____

Source name (ex. "WELL #1"): _____

LAB USE ONLY

Sample Received Date/Time: 06 / 02 / 2011 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 12 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 06 / 02 / 2011 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other: _____

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 06 / 03 / 2011 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Analyst: [signature]

Review by: [signature] 06/03/2011 (MM / DD / YYYY)

Reported By: [signature]

Report Date 06 / 03 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other _____

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

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DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

JUN 0 6 2011

PWS# 41 00002

PWS Name: City of Adrian

City, County: Adrian / Malheur

Phone: _____ Fax: _____

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, OR. 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: JF009

☐ Results do not m

page 2

Lab Sample ID#: 3011005331

Sample Collected Date/Time: 6 / 1 / 11 (MM / DD / YYYY) 4 : 53 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Free Chlorine: _____ mg/L

Collected By: Dick Davis

per phone call to Dick 06/03/11 12:00 pm TD

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Address: Well No 1

Sampled at (ex. "SINK"): _____

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Source ID: SRC- AA

Source name (ex. "WELL #1"): Well No 1

LAB USE ONLY

Sample Received Date/Time: 06 / 02 / 2011 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 12 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 06 / 02 / 2011 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply.
☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure®
☐ Other: _____

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 06 / 03 / 2011 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J DeRuiter

Review by: [signature] 06 / 03 / 2011 (MM / DD / YYYY)

Reported By: [signature]

Report Date 06 / 03 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other _____

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

JUL 1 1 2011

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

PWS# 41 00003
PWS Name: CITY OF ADRIAN
City, County: ADRIAN MALHEUR
Phone: 541-372-2179 Fax:

Return address for report:
Name: CITY OF ADRIAN
Address: P.O. Box 226
City, State, Zip: ADRIAN OR 97901

Bottle#: KFD14

☐ Results do not m

page 2

Lab Sample ID#: 3011013001

Sample Collected Date/Time: 7 / 5 / 2011 4:23 (MM / DD / YYYY Hour : Min) ☐ AM ☒ PM
Chlorinated: ☐ No ☒ Yes
Collected By: DICK DAVIS
Free Chlorine: .18 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special
*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)
*Original Positive ID#:
Address: 2nd / MAIN ADRIAN
Sampled at (ex. "SINK"): OUT SIDE

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special
*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)
*Original Positive ID#:
Source ID: SRC-
Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 07 / 06 / 2011 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM
Initials: JD
Temp: 4 °C
Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 07 / 06 / 2011 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM
Initials: JD

ORELAP Method(s): Check all that apply.
☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure®
☐ Other:

Test Results:
Total Coliforms: ☐ Present ☒ Absent
E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 07 / 07 / 2011 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM
Analyst:
Review by: 07 / 07 / 2011 (MM / DD / YYYY)

Reported By:
Report Date 07 / 07 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2) JUL 1 1 2011

PWS# 41 00002

PWS Name: City of Adrian

City, County: Adrian / Malheur

Phone: _____ Fax: _____

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Ore. 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: KF014

☐ Results do not m ... page 2

Lab Sample ID#: 3011013021

Sample Collected Date/Time: 7 / 5 / 2011 (MM / DD / YYYY) 4 : 00 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Free Chlorine: _____ mg/L

Collected By: Dick Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Address: Well 2

Sampled at (ex. "SINK"): _____

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Source ID: SRC- _____

Source name (ex. "WELL #1"): _____

LAB USE ONLY

Sample Received Date/Time: 07 / 06 / 2011 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 14 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time 07 / 06 / 2011 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply.
☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure®
☐ Other: _____

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 07 / 07 / 2011 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: [signature]

Review by: [signature] 07 / 07 / 2011 (MM / DD / YYYY)

Reported By: [signature]

Report Date 07 / 07 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other _____

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

JUL 1 1 2011

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-3179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: KF014

☐ Results do not m page 2

Lab Sample ID#: 3011013011

Sample Collected Date/Time: 7 / 5 / 2011 4 : 04 (MM / DD / YYYY Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Collected By: Dick DAVIS

Free Chlorine: _____ mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: [illegible]

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 07 / 06 / 2011 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 4 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 07 / 06 / 2011 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 07 / 07 / 2011 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Analyst: [signature]

Review by: [signature] 07 / 07 / 2011 (MM / DD / YYYY)

Reported By: [signature]

Report Date 07 / 07 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

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ODHS Oregon Department of Human Services

State of Oregon - Drinking Water Program

Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

AUG 15 2011

PWS# 41 00002

PWS Name: City of Adrian

City, County: Adrian Malheur

Phone: _____ Fax: _____

Return address for report:

Name: City of Adrian

Address: PO Box 326

City, State, Zip: Adrian, OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: _____

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 3011021321

Sample Collected Date/Time: 08 / 08 / 2011 (MM / DD / YYYY) 4 : 14 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Collected By: Dick Davis

Free Chlorine: _____ mg/L

DISTRIBUTION Sample Type: ☐ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Address: _____

Sampled at (ex. "SINK"): _____

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☒ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Source ID: SRC- _____

Source name (ex. "WELL #1"): Well #4

LAB USE ONLY

Sample Received Date/Time: 08 / 09 / 2011 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: RJ

Temp: 20 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 08 / 09 / 2011 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: RJ

ORELAP Method(s): Check all that apply.
☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure®
☐ Other: _____

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 08 / 10 / 2011 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J DeBringe

Review by: [signature] 08 / 10 / 2011 (MM / DD / YYYY)

Reported By: [signature]

Report Date 08 / 10 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other _____

DHS USE ONLY

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DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

AUG 15 2011

PWS# 41 00082

PWS Name: City of Adrian

City, County: " / Malheur

Phone: _____ Fax: _____

Return address for report:

Name: city of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Ore 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: KFO14

☐ Results do not m ... e page 2

Lab Sample ID#: 3011021301

Sample Collected Date/Time: 8 / 8 / 11 (MM / DD / YYYY) 4 : 20 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Collected By: Dick Davis

Free Chlorine: _____ mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: 8 / 8 / 11 (MM / DD / YYYY)

*Original Positive ID#: _____

Address: Well RD

Sampled at (ex. "SINK"): Well 2 Per label on sample bottle JH 08/09/11

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☒ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Source ID: SRC- _____

Source name (ex. "WELL #1"): Well #2 per call w/ Dick 08/09/11 @ 1147am DB

LAB USE ONLY

Sample Received Date/Time: 08 / 09 / 2011 (MM / DD / YYYY) 13 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: JH

Temp 20 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 08 / 09 / 2011 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: JH

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other: _____

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 08 / 10 / 2011 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. Detruite

Review by: [signature] 08 / 10 / 2011 (MM / DD / YYYY)

Reported By: [signature]

Report Date 08 / 10 / 2011 (MM / DD / YYYY)

Sample Invalidation:
- ☐ Over 30 hours
- ☐ Leak
- ☐ Heavy non-coliform growth
- ☐ Other _____

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DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

AUG 15 2011

PWS# 41 00002

PWS Name: City of Adrian

City, County: Adrian, ~~Ore~~ Malheur

Phone: _____ Fax: _____

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Ore, 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: KF014

☐ Results do not m

3011021311

page 2

Lab Sample ID#: _____

Sample Collected Date/Time: 8 / 8 / 11 (MM / DD / YYYY) 4 : 25 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By: Dick Davis per call w/ Dick 08/09/11 @ 1147am DB

Free Chlorine: .09 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Address: MAIN ST. Adr Fire Tag

Sampled at (ex. "SINK"): _____

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Source ID: SRC- _____

Source name (ex. "WELL #1"): _____

LAB USE ONLY

Sample Received Date/Time: 08 / 09 / 2011 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

Temp: 20 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 08 / 09 / 2011 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

ORELAP Method(s): Check all that apply.
☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure®
☐ Other: _____

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 08 / 10 / 2011 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: [illegible]

Review by: [illegible] 08 / 10 / 2011 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 08 / 10 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other _____

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

SEP 14 2011

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

Bottle#: CG010

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 3011028001

Sample Collected Date/Time: 9 / 8 / 11 (MM / DD / YYYY) 3 : 05 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐No ☒Yes

Collected By: DICK DAVIS

Free Chlorine: .09 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: 9 / 8 / 11 (MM / DD / YYYY)

*Original Positive ID#:

Address: 2nd + MAIN ST.

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 09 / 09 / 2011 (MM / DD / YYYY) 08 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: MW

Temp: 21.4 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 09 / 09 / 2011 (MM / DD / YYYY) 09 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: MW

ORELAP Method(s): Check all that apply. ☐ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 09 / 10 / 2011 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: SB

Review by: [signature] 09 / 12 / 2011 (MM / DD / YYYY)

Reported By: [signature]

Report Date 09 / 12 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

SEP 14 2011

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: CG018

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 3011028011

Sample Collected Date/Time: 9 / 8 / 11 (MM / DD / YYYY) 2:50 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Collected By: DICK DAVIS

Free Chlorine: _____ mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / 8 / 11 (MM / DD / YYYY)

*Original Positive ID#:

Address: Well No. 4

Sampled at (ex. "SINK"): Well Head

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 09 / 09 / 2011 (MM / DD / YYYY) 08:30 (Hour: Min) ☒ AM ☐ PM

Initials: MJW

Temp: 21.4°C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 09 / 09 / 2011 (MM / DD / YYYY) 09:00 (Hour: Min) ☒ AM ☐ PM

Initials: MJW

ORELAP Method(s): Check all that apply. ☐ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 09 / 10 / 2011 (MM / DD / YYYY) 09:00 (Hour: Min) ☒ AM ☐ PM

Analyst: SB

Review by: [signature] 09 / 12 / 2011 (MM / DD / YYYY)

Reported By: [signature]

Report Date 09 / 12 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

SEP 14 2011

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2174 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. BOX 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: CG010

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 3011027991

Sample Collected Date/Time: 9 / 8 / 11 (MM / DD / YYYY) 2:41 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ NO ☐ YES

Collected By: DICK DAVIS

Free Chlorine: _____ mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: Well No. 2

Sampled at (ex. "SINK"): AT well Head

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 09 / 09 / 2011 (MM / DD / YYYY) 08:30 (Hour: Min) ☒ AM ☐ PM

Initials: MJW

Temp: 21.4 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 09 / 09 / 2011 (MM / DD / YYYY) 09:00 (Hour: Min) ☒ AM ☐ PM

Initials: MJW

ORELAP Method(s): Check all that apply. ☐ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 09 / 16 / 2011 (MM / DD / YYYY) 09:00 (Hour: Min) ☒ AM ☐ PM

Analyst: SB

Review by: [signature] 09 / 12 / 2011 (MM / DD / YYYY)

Reported By: [signature]

Report Date 09 / 12 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

OCT 10 2011

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

PWS# 41 00037

PWS Name: City of Lowell

City, County: [illegible]

Phone: _____ Fax: _____

Return address for report:

Name: [illegible]

Address: [illegible] 226

City, State, Zip: [illegible]

Bottle#: CB010

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID: 3011035241

Sample Collected Date/Time: 10 / 5 / 11 (MM / DD / YYYY) 4:35 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .03 mg/L

Collected By: [illegible]

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Address: [illegible] Main [illegible]

Sampled at (ex. "SINK"): _____

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Source ID: SRC- _____

Source name (ex. "WELL #1"): _____

LAB USE ONLY

Sample Received Date/Time: 10 / 06 / 2011 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

Temp: 19 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 10 / 06 / 2011 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

ORELAP Method(s): Check all that apply.
☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure®
☐ Other: _____

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 10 / 07 / 2011 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J DeWitt

Review by: [illegible] 10 / 07 / 2011 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 10 / 07 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other _____

DHS USE ONLY

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DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

OCT 10 2011

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

PWS# 41 00002

PWS Name: City of Adrian

City, County: [illegible]

Phone: _____ Fax: _____

Return address for report:

Name: City of Adrian

Address: [illegible]

City, State, Zip: [illegible]

Bottle#: CG01B

☐ Results do not meet NELAC Standards See page 2

Lab Sample ID#: 3011035251

Sample Collected Date/Time: 10 / 5 / 11 (MM / DD / YYYY) 4:10 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Collected By: [illegible]

Free Chlorine: _____ mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Address: [illegible]

Sampled at (ex. "SINK"): _____

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Source ID: SRC- _____

Source name (ex. "WELL #1"): _____

LAB USE ONLY

Sample Received Date/Time: 10 / 06 / 2011 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

Temp: 19 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 10 / 06 / 2011 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other: _____

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 10 / 07 / 2011 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J DeRuiter

Review by: [illegible] 10 / 07 / 2011 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 10 / 07 / 2011 (MM / DD / YYYY)

Sample Invalidation:
- ☐ Over 30 hours
- ☐ Leak
- ☐ Heavy non-coliform growth
- ☐ Other _____

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DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

OCT 10 2011

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

PWS# 41 00002

PWS Name: City of Adrian

City, County: Adrian / Malheur

Phone: _____ Fax: _____

Return address for report:

Name: City of Adrian

Address: [illegible]

City, State, Zip: Adrian, OR 97911

Bottle#: CG010

☐ Results do not [illegible] page 2

Lab Sample ID#: 3011035261

Sample Collected Date/Time: 11 / 5 / 11 (MM / DD / YYYY) 4:21 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Collected By: Dick Davis

Free Chlorine: _____ mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Address: [illegible]

Sampled at (ex. "SINK"): _____

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Source ID: SRC- _____

Source name (ex. "WELL #1"): _____

LAB USE ONLY

Sample Received Date/Time: 10 / 06 / 2011 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

Temp: 19 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 10 / 06 / 2011 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other: _____

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 10 / 07 / 2011 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J DeRivera

Review by: [illegible] 10 / 07 / 2011 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 10 / 07 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other _____

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State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

NOV 07 2011

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: CG018

☐ Results do not m page 2

Lab Sample ID#: 3011041121

Sample Collected Date/Time: 11 / 2 / 011 (MM / DD / YYYY) 4:32 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By: DICK DAVIS

Free Chlorine: .07 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: 2ND & MAIN ST.

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 11 / 03 / 2011 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: RD

Temp: 18 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 11 / 03 / 2011 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials: RD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 11 / 04 / 2011 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: [signature] 11 / 04 / 2011 (MM / DD / YYYY)

Reported By: [signature]

Report Date 11 / 04 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

NOV 07 2011

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2171 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 220

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: CG01B

☐ Results do not [illegible] e page 2

Lab Sample ID#: 3011041131

Sample Collected Date/Time: 11 / 2 / 011 (MM / DD / YYYY) 4 : 04 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Free Chlorine: _____ mg/L

Collected By: Dick Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: W21 / 4

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 11 / 03 / 2011 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 18 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 11 / 03 / 2011 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply.
☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure®
☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 11 / 04 / 2011 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuyter

Review by: [signature] 11 / 04 / 2011 (MM / DD / YYYY)

Reported By: [signature]

Report Date 11 / 04 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

NOV 07 2011

PWS# 41 00003

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: PO Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: CG018

☐ Results do not ... see page 2

Lab Sample ID#: 3011041141

Sample Collected Date/Time: 11 / 2 / 011 (MM / DD / YYYY) 4:16 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Collected By: DICK DAVIS

Free Chlorine: _____ mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address:

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"): Well #2

LAB USE ONLY

Per Info on bottle 11/03/11 TP

Sample Received Date/Time: 11 / 03 / 2011 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: TP

Temp: 18 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 11 / 03 / 2011 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials: TP

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 11 / 04 / 2011 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: [illegible] 11 / 04 / 2011 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 11 / 04 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: CG018 DEC 13 2011

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 3011048191

Sample Collected Date/Time: 12 / 8 / 2011 (MM / DD / YYYY) 2:31 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Collected By: DICK DAVIS

Free Chlorine: _____ mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: Well 2 & Emerald Slope Rd.

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 12 / 09 / 2011 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

Temp: 17 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 12 / 09 / 2011 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 12 / 10 / 2011 (MM / DD / YYYY) 09:00 (Hour: Min) ☒ AM ☐ PM

Analyst: [illegible]

Review by: [illegible] 12 / 12 / 2011 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 12 / 12 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

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State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. BOX 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: CG018 DEC 15 2011

☐ Results do not meet NE... see page 2

Lab Sample ID#: 3011048201

Sample Collected Date/Time: 12 / 8 / 011 (MM / DD / YYYY) 2:45 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐No ☒Yes

Collected By: DICK DAVIS

Free Chlorine: .04 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: MAIN & 2ND ST.

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 12 / 09 / 2011 (MM / DD / YYYY) 2:30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 7 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 12 / 09 / 2011 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 12 / 10 / 2011 (MM / DD / YYYY) 09:00 (Hour: Min) ☒ AM ☐ PM

Analyst:

Review by: 12 / 12 / 2011 (MM / DD / YYYY)

Reported By:

Report Date 12 / 12 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-3179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: C6010 DEC 16 2011

☐ Results do not ... e page 2

Lab Sample ID#: 3011048211

Sample Collected Date/Time: 12 / 8 / 2011 (MM / DD / YYYY) 2 : 12 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Collected By: DICK DAVIS

Free Chlorine: _____ mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: 2nd Well RD.

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 12 / 09 / 2011 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: SH

Temp: 17 °C

Evidence of cooling? ☒ Yes ☐ No

Analysis Start Date/Time: 12 / 09 / 2011 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: SH

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 12 / 10 / 2011 (MM / DD / YYYY) 09 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst:

Review by: 12 / 12 / 2011 (MM / DD / YYYY)

Reported By:

Report Date 12 / 12 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

DEC 20 2011

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: CG016

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 3011048191

Sample Collected Date/Time: 12 / 8 / 11 (MM / DD / YYYY) 2:31 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Collected By: Dick Davis

Free Chlorine: _____ mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: Well 2 & Emerald Slope Rd.

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 12 / 09 / 2011 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: JB

Temp: 17 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 12 / 09 / 2011 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials: JB

ORELAP Method(s): Check all that apply.
☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure®
☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 12 / 10 / 2011 (MM / DD / YYYY) 09:00 (Hour: Min) ☒ AM ☐ PM

Analyst:

Review by: 12 / 12 / 2011 (MM / DD / YYYY)

Reported By:

Report Date 12 / 12 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2) DEC 20 2011

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. Box 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: CG018

☐ Results do not meet NELAC ... see page 2

Lab Sample ID#: 3011048201

Sample Collected Date/Time: 12 / 8 / 011 (MM / DD / YYYY) 2:45 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By: DICK DAVIS

Free Chlorine: .04 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: MAIN & 2ND ST.

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 12 / 09 / 2011 (MM / DD / YYYY) 9:30 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 7 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 12 / 09 / 2011 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 12 / 10 / 2011 (MM / DD / YYYY) 09:00 (Hour: Min) ☒ AM ☐ PM

Analyst:

Review by: 12 / 12 / 2011 (MM / DD / YYYY)

Reported By:

Report Date 12 / 12 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

DEC 20 2011

PWS# 41 00002

PWS Name: CITY OF ADRIAN

City, County: ADRIAN MALHEUR

Phone: 541-372-2179 Fax:

Return address for report:

Name: CITY OF ADRIAN

Address: P.O. BOX 226

City, State, Zip: ADRIAN OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: C6010

☐ Results do not ... e page 2

Lab Sample ID#: 3011048211

Sample Collected Date/Time: 12 / 8 / 2011 (MM / DD / YYYY) 2 : 17 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Free Chlorine: _____ mg/L

Collected By: DICK DAVIS

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: 2nd West RD

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 12 / 09 / 2011 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: SBH

Temp: 17 °C

Evidence of cooling? ☒ Yes ☐ No

Analysis Start Date/Time: 12 / 09 / 2011 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: SBH

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 12 / 10 / 2011 (MM / DD / YYYY) 09 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst:

Review by: 12 / 12 / 2011 (MM / DD / YYYY)

Reported By:

Report Date 12 / 12 / 2011 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

PWS#: 41 0002

Water System: City of Adrian

Address: PO Box 226

City, County Malheur

Phone: Fax:

JAN 12 2009

DHS

MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

MAGIC VALLEY LABS, INC
PO Box 1867
210 Addison Ave
Twin Falls, ID 83303

Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Ore. 97901

Bottle #:

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: **301813361**

Sample Collection Date/Time: 1/6/09 – 3:30 P.M.

Collected By: Dick Davis

Sample Point: on Liner-T.C.L.

Address:

Sample Type: ☒ Routine ☐ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☒ Yes Free Chlorine: .21 mg/L

*If Repeat, Date of Initial Positive: *Original Positive ID#:

Sample Received Date/Time: 1/7/09 8:40 Am Initials: Temp: 7.8 C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: 1/7/09 10:00am Initials:

ORELAP

Methods: ☒ SM 9223 ☐ Colilert ☐ Colilert-18 ☒ Colisure

TEST RESULTS:

Total Coliforms: ☒ **Present** ☐ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: 1/8/9 10:00am

Analyst:

Review by:

Date: 1/8/09

Reported By:

Report Date: 1/8/09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

FAXED By: Date: 1/8/09

Send results to: DHS-DWP P.O. Box 14350, Portland OR 97293-0350 Phone (971) 673-0416

PWS#: 41 00002

Water System: CITY OF ADRIAN

Address: PO Box 226

City, County: Adrian \ Malheur

Phone: 541-372-2611 Fax:

JAN 21 2009

DHS

MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

MAGIC VALLEY LABS, INC
PO Box 1867
210 Addison Ave
Twin Falls, ID 83303

Return Address for Report

Name: CITY OF ADRIAN

Address: PO BO 226

City, State, Zip: ADRIAN, OR. 97901

Bottle #: _____

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: **301816021**

Sample Collection Date/Time: 1/14/09 - 4:15

Collected By: DICK DAVIS

Sample Point: ONLINE - TIM MAZAK

Address: _____

Sample Type: ☐ Routine ☑ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☑ Yes Free Chlorine: .05 mg/L

*If Repeat, Date of Initial Positive: _____ *Original Positive ID#: _____

Sample Received Date/Time: JAN 16 AM 8:22 Initials: ____ Temp: ____C Evidence of Cooling ☐ Yes ☐ No

Analysis Start Date/Time: _____ Initials: ____

ORELAP

Methods: ☐ SM 9223 ☐ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms: ☐ **Present** ☐ **Absent**

E coli: ☐ **Present** ☐ **Absent**

Analysis Complete Date/Time: 1/17/09

Analyst: PB

Review by: DB Date: 1/19/09

Reported By: DB Report Date: 1/19/09

Sample Invalidation:

X Over 30 hours

____ Leak

____ Heavy non-coliform growth

____ Other _____

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Send results to: DHS-DWP P.O. Box 14350, Portland OR 97293-0350 Phone (971) 673-0416

WS#: 41 000 07

Water System: city of Adrian

Address: PO Box 226

City, County: Adrian, Malheur

Phone: 541-372-2411 Fax:

JAN 21 2009

DHS

MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

MAGIC VALLEY LABS, INC
PO Box 1867
210 Addison Ave
Twin Falls, ID 83303

Return Address for Report

Name: city of Adrian

Address: PO Box 226

City, State, Zip: Adrian Ore 97901

Bottle #: _____

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID: **301816031**

Sample Collection Date/Time: 1/14/09/4:53 PM

Collected By: Dick Davis

Sample Point: on Liner Dockter

Address: 504 3rd ST.

Sample Type: ☐ Routine ☑ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☑ Yes Free Chlorine: .03 mg/L

*If Repeat, Date of Initial Positive: _____ *Original Positive ID#: _____

Sample Received Date/Time: JAN 16 AM 8:22 Initials: ____ Temp: ____C Evidence of Cooling ☐ Yes ☐ No

Analysis Start Date/Time: _____ Initials: ____

ORELAP

Methods: ☐ SM 9223 ☐ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms:	☐ **Present**	☐ **Absent**
E coli:	☐ **Present**	☐ **Absent**

Analysis Complete Date/Time: 1/17/09

Analyst: DB

Review by: DB Date: 1/19/09

Reported By: DB Report Date: 1/19/09

Sample Invalidation:

X Over 30 hours

____ Leak

____ Heavy non-coliform growth

____ Other _____

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Send results to: DHS-DWP P.O. Box 14350, Portland OR 97293-0350 Phone (971) 673-0416

PWS#: 41 00002

JAN 21 2009 DHS

MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

Water System: CITY of ADRIAN
Address: PO Box 226
City, County ADRIAN - MALHEUR
Phone: 541-372-2411 Fax:

MAGIC VALLEY LABS, INC
PO Box 1867
210 Addison Ave
Twin Falls, ID 83303

Return Address for Report
Name: CITY of ADRIAN
Address: PO BOX 205
City, State, Zip: ADRIAN

Bottle #: _____
☐ Results do not meet NELAC Standards-see page 2
Lab Sample ID **301816041**

Sample Collection Date/Time: 1/14/09 4:35pm per bottle DB 1/16/09
Collected By: Dick Davis
Sample Point: on line - T.L.C.
Address: _____

Sample Type: ☐ Routine ☑ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water
Chlorinated?: ☐ No ☑ Yes Free Chlorine: .04 mg/L
*If Repeat, Date of Initial Positive: _____ *Original Positive ID#: _____

Sample Received Date/Time: JAN 16 AM 8:22 Initials: ____ Temp: ____C Evidence of Cooling ☐ Yes ☐ No

Analysis Start Date/Time: _____ Initials: ____

ORELAP
Methods: ☐ SM 9223 ☐ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:
Total Coliforms: ☐ **Present** ☐ **Absent**
E coli: ☐ **Present** ☐ **Absent**

Analysis Complete Date/Time: 1/17/09
Analyst: MB
Review by: DB Date: 1/19/09

Reported By: DB Report Date: 1/19/09

Sample Invalidation:
X Over 30 hours
____ Leak
____ Heavy non-coliform growth
____ Other _____

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Send results to: DHS-DWP P.O. Box 14350, Portland OR 97293-0350 Phone (971) 673-0416

PWS#: 41 00002

Water System: City of Adrian

Address: PO Box 226

City, County: Adrian, Malheur

Phone: 541-3732611 Fax:

Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian Ore, 97901

DHS MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

JAN 21 2009

MAGIC VALLEY LABS, INC
PO Box 1867
210 Addison Ave
Twin Falls, ID 83303

Bottle #: _____

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: 301816011

Sample Collection Date/Time: 1/14/09 – 4:26 PM

Collected By: Dick DAVIS

Sample Point: Well #4

Address: _____

Sample Type: ☐ Routine ☑ *Repeat ☐ Special Chlorinated?: ☐ No ☐ Yes Free Chlorine: _____ mg/L
☐ Temporary Routine ☐ Source Water

*If Repeat, Date of Initial Positive: _____ *Original Positive ID#: _____

Sample Received Date/Time: JAN 16 AM 8:22 Initials: _____ Temp: _____ C Evidence of Cooling ☐ Yes ☐ No

Analysis Start Date/Time: _____ Initials: _____

ORELAP

Methods: ☐ SM 9223 ☐ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms:	☐ **Present**	☐ **Absent**
E coli:	☐ **Present**	☐ **Absent**

Analysis Complete Date/Time: 1/17/09

Analyst: [illegible]

Review by: DB Date: 1/19/09

Reported By: DB Report Date: 1/19/09

Sample Invalidation:

X Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

PWS#: 41 00002

Water System: City of Adrian

Address: PO Box 226

City, County: Adrian, — Malheur

Phone: Fax:

JAN 26 2009 DHS

MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

MAGIC VALLEY LABS, INC
PO Box 1867
210 Addison Ave
Twin Falls, ID 83303

Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Ore 97901

Bottle #: _____

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: **301817011**

Sample Collection Date/Time: 1/20/09 - 4:00 pm

Collected By: Dick Davis

Sample Point: Outlet Tank Mazac

Address: _____

Sample Type: ☐ Routine ☑ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☑ Yes Free Chlorine: .19 mg/L

*If Repeat, Date of Initial Positive: 1/8/09 *Original Positive ID#: 301813361

Sample Received Date/Time: JAN 21 AM 8:44 Initials: JD Temp: 80 C Evidence of Cooling ☒ Yes ☐ No

Analysis Start Date/Time: 1/21/09 10:00 am Initials: JD

ORELAP

Methods: ☐ SM 9223 ☐ Colilert ☐ Colilert-18 ☒ Colisure

TEST RESULTS:

Total Coliforms: ☒ **Present** ☐ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: 1/22/09 10:00 am

Analyst: JD

Review by: DB Date: 1/22/09

Reported By: DB Report Date: 1/22/09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

FAXED By: DB Date: 1/27

Send results to: DHS-DWP P.O. Box 14350, Portland OR 97293-0350 Phone (971) 673-0416

PWS#: 4140002

Water System: City of Adrian

Address: PO Box 226

City, County: Adrian, Malheur

Phone: Fax:

JAN 26 2009

MICROBIOLOGICAL ANALYSIS

DHS Public Water Supplies
Drinking Water Program

MAGIC VALLEY LABS, INC
PO Box 1867
210 Addison Ave
Twin Falls, ID 83303

Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Ore. 97901

Bottle #: _____

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: **301817001**

Sample Collection Date/Time: 1/20/09 - 3:48 PM

Collected By: Dick Davis

Sample Point: Online, Don's Lumber

Address: _____

Sample Type: ☐ Routine ☑ *Repeat ☐ Special Chlorinated?: ☑ No ☑ Yes Free Chlorine: .18 mg/L

☐ Temporary Routine ☐ Source Water

*If Repeat, Date of Initial Positive: 1/8/09 *Original Positive ID#: 301813861

Sample Received Date/Time: JAN 21 AM 8:04 Initials: [illegible] Temp: 8 C Evidence of Cooling ☒ Yes ☐ No

Analysis Start Date/Time: 1/21/09 10:00am Initials: [illegible]

ORELAP

Methods: ☐ SM 9223 ☐ Colilert ☐ Colilert-18 ☒ Colisure

TEST RESULTS:

Total Coliforms: ☒ **Present** ☐ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: 1/22/09 10:00 am

Analyst: [illegible]

Review by: DB Date: 1/23/09

Reported By: DB Report Date: 1/23/09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

REVIEWED By:
Date:

Send results to: DHS-DWP P.O. Box 14350, Portland OR 97293-0350 Phone (971) 673-0416

WS#: 41 00 07

JAN 26 2009 DHS

MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

Water System: City of Adrian
Address: P.O. Box 226
City, County: Adrian, - Malheur
Phone: Fax:

MAGIC VALLEY LABS, INC
PO Box 1867
210 Addison Ave
Twin Falls, ID 83303

Return Address for Report

Name: City of Adrian
Address: P.O. Box 226
City, State, Zip: Adrian, Ore. 97901

Bottle #:
☐ Results do not meet NELAC Standards-see page 2
Lab Sample ID#: 301816981

Sample Collection Date/Time: 1/20/09 - 4:31 PM.
Collected By: Dick Davis
Sample Point: 2nd Line - Lori Hutchens
Address: 601 2nd

Sample Type: ☐ Routine ☑ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water
Chlorinated?: ☐ No ☑ Yes Free Chlorine: 1.23 mg/L
*If Repeat, Date of Initial Positive: 301813361 *Original Positive ID#: 1/8/09

Sample Received Date/Time: JAN 21 AM 8:43 Initials: Temp: 8.0 C Evidence of Cooling ☒ Yes ☐ No

Analysis Start Date/Time: 1/21/09 10:00am Initials:

ORELAP
Methods: ☐ SM 9223 ☐ Colilert ☐ Colilert-18 ☒ Colisure

TEST RESULTS:
Total Coliforms: ☒ Present ☐ Absent
E coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 1/22/09 10:00am
Analyst:
Review by:
Date: 1/22/09

Reported By:
Report Date: 1/22/09

Sample Invalidation:
_____ Over 30 hours
_____ Leak
_____ Heavy non-coliform growth
_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full without written consent of this laboratory.

FAXED By: Date: 1/22/09

Send results to: DHS-DWP P.O. Box 14350, Portland OR 97293-0350 Phone (971) 673-0416

DHS MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

PWS#: 4 1 0 0 0 0 2

PWS Name: City of Adrian

Address: P.O. Box 226

City, County: Adrian / Malheur

Phone: 541 372 2611 Fax:

Pendleton Lab
419 SW 5th Street
Pendleton, Oregon 97801
541 276 0385
Fax 541 276 2041
CustomerServices@PendletonLab.com

OR100058

Return address for report:

Name: City of Adrian

Address: P.O. Box 226

City, State, Zip: Adrian, Ore. 97901

Bottle#:

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: 090128I2

Sample Collection Date/Time: 1 / 27 / 07 (Month / Day / Year) 9 : 30 (Hour / Min) ☒ AM ☐ PM

Collected By: Dick DAVIS

Sample Point: on Line - Tim MAZAC

Address:

Sample Type: ☐ Routine ☑ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☒ Yes

Free Chlorine: ____ mg/L

*If Repeat, Date of Initial Positive: 1 / 8 / 09 (Month / Day / Year)

*Original Positive ID#:

LAB USE ONLY

Sample Received Date/Time: 1 / 28 / 09 (Month / Day / Year) 12 : 30 (Hour / Min) ☐ AM ☒ PM

Initials: G

Temp: 13 °C

Evidence of cooling? ☐ Yes ☐ No

Analysis Start Date/Time: 1 / 28 / 09 (Month / Day / Year) 2 : 30 (Hour / Min) ☐ AM ☒ PM

Initials: G

ORELAP Method(s): Check all that apply.
☐ SM 9222 B (MF) + ☐ 9221E or ☐ 9221F or ☐ 9222G
☒ SM 9223 ☐ Colilert ® ☐ Colilert-18 ® ☒ Colisure ® ☐ Other:

Test Results:

Total Coliforms: ☒ Present ☐ Absent

E. coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 1 / 29 / 09 (Month / Day / Year) 2 : 45 (Hour / Min) ☐ AM ☒ PM

Analyst: G

Review by: DG 01 / 29 / 09 (Month / Day / Year)

☐ Fax Results Fax# Completed

☐ Email Results Address Completed

☐ Call Results Phone# Completed

☐ Copy Mailed To State ☐ Positive Result Faxed To State

Sample Invalidation:

☐ over 30 hours
☐ leak
☐ heavy non-coliform growth
☐ other

COPY SENT TO
STATE HEALTH DIVISION

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

Send results to: DHS-DWP P.O. Box 14350, Portland OR 97293-0350, Phone (971) 673-0416

PWS#: 4 1 0 0 6 0 2

PWS Name: City of Adrian

Address: P.O. Box 226

City, County: Adrian / Malheur

Phone: 541-372-2611 Fax:

Return address for report:

Name: ~~Dick Davis~~ City of Adrian

Address: Box 226

City, State, Zip: Adrian,

DHS MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

Pendleton Lab
419 SW 5th Street
Pendleton, Oregon 97801
541 276 0385
Fax 541 276 2041
CustomerServices@PendletonLab.com

OR100058

Bottle#: 1L

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: 0901281 I

Sample Collection Date/Time: 1 / 27 / 09 (Month / Day / Year) 9 : 45 (Hour / Min) ☐ AM ☐ PM

Collected By: DICK DAVIS

Sample Point: on Line / T.L.C.

Address:

Sample Type: ☐ Routine ☑ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☒ Yes Free Chlorine: ____ mg/L

*If Repeat, Date of Initial Positive: 01 / 08 / 09 (Month / Day / Year) *Original Positive ID#:

LAB USE ONLY

Sample Received Date/Time: 1 / 28 / 09 (Month / Day / Year) 12 : 30 (Hour / Min) ☐ AM ☒ PM Initials: Temp: 13 °C

Evidence of cooling? ☐ Yes ☐ No

Analysis Start Date/Time: 1 / 28 / 09 (Month / Day / Year) 2 : 30 (Hour / Min) ☐ AM ☒ PM Initials:

ORELAP Method(s): Check all that apply. ☐ SM 9222 B (MF) + ☐ 9221E or ☐ 9221F or ☐ 9222G ☒ SM 9223 ☐ Colilert ® ☐ Colilert-18 ® ☒ Colisure ® ☐ Other:

Test Results:

Total Coliforms: ☒ Present ☐ Absent

E. coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 1 / 29 / 09 (Month / Day / Year) 2 : 45 (Hour / Min) ☐ AM ☒ PM

Analyst:

Review by: 01 / 29 / 09 (Month / Day / Year)

☐ Fax Results Fax# Completed

☐ Email Results Address Completed

☐ Call Results Phone# Called client Completed

☐ Copy Mailed To State ☒ Positive Result Faxed To State 1/29/08

Sample Invalidation:

☐ over 30 hours
☐ leak
☐ heavy non-coliform growth
☐ other

COPY SENT TO
OREGON STATE HEALTH DIVISION

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory.

Send results to: DHS-DWP P.O. Box 14350, Portland OR 97293-0350 Phone (971) 673-0416

PWS#: 4100002

Water System: City of Adrian

Address: PO Box 226

City, County Adrian, Malheur

Phone: 541-372-2611 Fax:

DHS

MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

MAR 03 2009

MAGIC VALLEY LABS, INC
PO Box 1867
210 Addison Ave
Twin Falls, ID 83303

Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Ore. 97901

Bottle #: _____

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: **302824561**

Sample Collection Date/Time: 2/25/09 - 4:40 PM

Collected By: Dick Davis

Sample Point: Adel Dockter

Address: _____

Sample Type: ☑ Routine ☐ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☐ Yes Free Chlorine: _____ mg/L

*If Repeat, Date of Initial Positive: _____ *Original Positive ID#: _____

Sample Received Date/Time: 2/26/09 8:35 Initials: [illegible] Temp: 11° C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: 2/26/09 10:00am Initials: [illegible]

ORELAP

Methods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms:	☐ **Present**	☒ **Absent**
E coli:	☐ **Present**	☒ **Absent**

Analysis Complete Date/Time: 2/27/09

Analyst: [illegible]

Review by: [illegible] Date: 2/27/09

Reported By: [illegible] Report Date: 2/27/09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

Source: 0002

Water System: City of Adrian

Address: PO Box 226

City, County: Adrian, Malheur

Phone: Fax:

DHS

MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

MAR 03 2009

MAGIC VALLEY LABS, INC
PO Box 1867
210 Addison Ave
Twin Falls, ID 83303

Return Address for Report

Name: City of Adrian

Address: P.O. Box 226

City, State, Zip: Adrian, Ore. 97901

Bottle #:

☐ Results do not meet NELAC Standards

Lab Sample ID#: 302824681

Sample Collection Date/Time: 2/26/09 3:35 PM

Collected By: Dick Davis

Sample Point: Adrian School \ Cafateria

Address:

Sample Type: ☐ Routine ☐ *Repeat ☑ Special Chlorinated?: ☐ No ☐ Yes Free Chlorine: _____ mg/l

☐ Temporary Routine ☐ Source Water

*If Repeat, Date of Initial Positive: _____ *Original Positive ID#: _____

Sample Received Date/Time: 2/27/09 8:30A Initial: [illegible] Temp: 8° C Evidence of Cooling: ☐ Yes X No

Analysis Start Date/Time: 2/27/09 9:00am Initial: [illegible]

SM LAP

Test Procedure: X SM 9223 ☐ Colilert ☐ Colilert-18 X Colisure

TEST RESULTS:

Total Coliforms: ☐ Present ☒ Absent

E coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 2/28/09

Analyst: [illegible]

Review by: [illegible] Date: 3/2/09

Supported By: [illegible] Report Date: 3/2/09

Sample Invalidation:

☐ Over 30 hours

☐ Leak

☐ Heavy non-coliform growth

☐ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

Send results to: DHS-DWP P.O. Box [illegible]

PWS#: 41 00002

Water System: City of Adrian

Address: P.O. Box 226

City, County: Adrian, Malheur

Phone: Fax:

MAR 2 3 2009

DHS MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

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PO Box 1867
210 Addison Ave
Twin Falls, ID 83303

Return Address for Report

Name: City of Adrian

Address: P.O. Box 226

City, State, Zip: Adrian, Ore. 97901

Bottle #: _____

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: **303828421**

Sample Collection Date/Time: 3/18/09 4:25pm

Collected By: Dick Davis

Per call to Dick 3/19/09 JD 1:52pm

Sample Point: T.L.C.

Address: _____

Sample Type: ☒ Routine ☐ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☒ Yes Free Chlorine: .15 mg/L

*If Repeat, Date of Initial Positive: _____ *Original Positive ID#: _____

Sample Received Date/Time: 3/19/09 8:33A Initials: DB Temp: 14° C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: 3/19/09 9:00am Initials: DB

ORELAP

Methods: ☒ SM 9223 ☐ Colilert ☐ Colilert-18 ☒ Colisure

TEST RESULTS:

Total Coliforms: ☐ **Present** ☒ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: 3/20/9 9:00am

Analyst: [illegible]

Review by: DB Date: 3/20/09

Reported By: DB Report Date: 3/20/09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

Send results to: DHS-DWP P.O. Box 14350, Portland OR 97293-0350 Phone (971) 673-0416

PWS#: 41 0 0 0 2

MAY 2 6 2009

Water System: City of Adrian

Address: PO Box 226

City, County Adrian / Malheur

Phone: Fax:

DHS

MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

MAGIC VALLEY LABS, INC
PO Box 1867
210 Addison Ave
Twin Falls, ID 83303
208-733-4250
ID 100001

Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Ore. 97901

Bottle #:

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: 305841611

Sample Collection Date/Time: 5/20/09 @ 4:35pm

Collected By: Dick Davis

Sample Point: on Line; T.P.C.

Address: 503 1st St

per call w/ Dick on 5/21/09 @ 9:30am

Sample Type: ☒ Routine ☐ *Repeat ☐ Special Chlorinated?: ☐ No ☒ Yes Free Chlorine: .04 mg/L

☐ Temporary Routine ☐ Source Water

*If Repeat, Date of Initial Positive: *Original Positive ID#:

Sample Received Date/Time: MAY 21 AM 8:32 Initials: Temp: 12°C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time MAY 2 1 2009 Initials:

ORELAP

Methods: ☒ SM 9223 ☐ Colilert ☐ Colilert-18 ☒ Colisure

TEST RESULTS:

Total Coliforms: ☐ **Present** ☒ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: MAY 2 2 2009 0900

Analyst:

Review by:

Date: 05/22/09

Reported By:

Report Date: 05/22/2009

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

PWS#: 41 [illegible]

JUN 15 2009 DHS

MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

Water System: City of Adrian

Address: PO Box 226

City, County: Adrian / Malheur

Phone: Fax:

MAGIC VALLEY LABS, INC
PO Box 1867
210 Addison Ave
Twin Falls, ID 83303

208-733-4250
ID 100001

Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, OR 97901

Bottle #:

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: 306847051

Sample Collection Date/Time: 6/10/09 - 4:20 P.M.

Collected By: Dick Davis

Sample Point: Entry T.L.

Address:

Sample Type: ☒ Routine ☐ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☒ Yes Free Chlorine: .05 mg/L

*If Repeat, Date of Initial Positive: *Original Positive ID#:

Sample Received Date/Time: JUN 11 AM 8:56 Initials: [illegible] Temp: 10° C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: JUN 11 2009 0900 Initials: [illegible]

ORELAP

Methods: ☒ SM 9223 ☐ Colilert ☐ Colilert-18 ☒ Colisure

TEST RESULTS:

Total Coliforms: ☐ **Present** ☒ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: 06/12/09 0900

Analyst: [illegible]

Review by: [illegible]

Date: 06/12/09

Reported By:

Report Date:

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

Send results to: DHS-DWP P.O. Box 14350, Portland OR 97293-0350 Phone (971) 673-0416

PWS#: 41 00007

Water System: City of Adrian

Address:

City, County

Phone: Fax:

AUG 10 2009

DHS

MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

MAGIC VALLEY LABS, INC
PO Box 1867
210 Addison Ave
Twin Falls, ID 83303
208-733-4250
ID 100001

Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, OR 97901

Bottle #:

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: 307858321

Sample Collection Date/Time: 07/29/09 3:30pm

Collected By: Dick Davis

Sample Point: TLC

Address:

*07/30/09 @ 0910 COC filled out per call w/ Dick D

Sample Type: ☒ Routine ☐ *Repeat ☐ Special Chlorinated?: ☐ No ☒ Yes Free Chlorine: 0 mg/L

☐ Temporary Routine ☐ Source Water

*If Repeat, Date of Initial Positive: *Original Positive ID#:

Sample Received Date/Time: JUL 30 2009 0835 Initials: Td Temp: 11° C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: 07/30/09 0900 Initials: Td

ORELAP

Methods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms: ☐ **Present** ☒ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: 07/31/09 0900

Analyst:

Review by:

Date: 07/31/09

Reported By:

Report Date: 07/31/09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

Send results to: DHS-DWP P.O. Box 14350, Portland OR 97293-0350 Phone (971) 673-0416

PWS#: 41 00002

AUG 17 2009

Water System: City of Adrian

Address: PO Box 226

City, County: Malheur

Phone: Fax:

DHS

MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

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PO Box 1867
210 Addison Ave
Twin Falls, ID 83303
208-733-4250
ID 100001

Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian Ore 97901

Bottle #:

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: 308862141

Sample Collection Date/Time: 8/12/09 4:45 PM

Collected By: Dick Davis

Sample Point: on Line Kieth Baldwin

Address:

Sample Type: ☒ Routine ☐ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☒ Yes

Free Chlorine: 0.13 mg/L

Per call w/ Dick on 8/13/09 @ 1255 MN

*If Repeat, Date of Initial Positive:

*Original Positive ID#:

Sample Received Date/Time: AUG 13 2009 0900 Initials: Id Temp: 11° C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: AUG 13 2009 0900 Initials:

ORELAP

Methods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms: ☐ **Present** ☒ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: AUG 14 2009 0900

Analyst:

Review by:

Date: 08/14/09

Reported By: MF

Report Date: 08/14/09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

Send results to: DHS-DWP P.O. Box 14350, Portland OR 97293-0350 Phone (971) 673-0416

PWS#: 41 00002

Water System: City of Adrian

Address: PO Box 226

City, County: Adrian / Malheur

Phone: 541-372-2611 Fax:

SEP 1 2009

DHS

MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

MAGIC VALLEY LABS, INC
PO Box 1867
210 Addison Ave
Twin Falls, ID 83303
208-733-4250
ID 100001

Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Ore. 97901

Bottle #:

☐ Results do not meet NELAC Standards-see page

Lab Sample ID#: 30986875

Sample Collection Date/Time: 9/3/09 - 4:00 PM

Collected By: Dick Davis

Sample Point: online - Kieth Baldwin

Address: 107 Main St.

Sample Type: ☒ Routine ☐ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☒ Yes Free Chlorine: .15 mg/L

*If Repeat, Date of Initial Positive: *Original Positive ID#:

Sample Received Date/Time: SEP 5 AM 8:47 Initials: DD Temp: 19° C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: SEP 05 2009 0900 Initials: DD

ORELAP

Methods: ☒ SM 9223 ☐ Colilert ☐ Colilert-18 ☒ Colisure

TEST RESULTS: Sample Rejected > 30 hrs DB

Total Coliforms: ☒ **Present** ☐ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: 09/07/09 0900

Analyst:

Review by: DB

Date: 09/08/09

Reported By: DD

Report Date: 09-08-09

Sample Invalidation:

X Over 30 hours

___ Leak

___ Heavy non-coliform growth

___ Other

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

Send results to: DHS-DWP P.O. Box 14350, Portland OR 97293-0350 Phone (971) 673-0416

PWS#: 41 00702

Water System: City of Adrian

Address: PO Box 226

City, County Adrian / Malheur

Phone: 541-372-2611 Fax:

SEP 1 2009

DHS MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

MAGIC VALLEY LABS, INC
PO Box 1867
210 Addison Ave
Twin Falls, ID 83303
208-733-4250
ID 100001

Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Ore. 97901

Bottle #: _____

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: **309869581**

Sample Collection Date/Time: 9/8/09 - 4:10 P.M.

Collected By: Dick Davis

Sample Point: Kirth Baldwin

Address: 107 Main St.

Sample Type: ☒ Routine ☐ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☒ Yes Free Chlorine: .09 mg/L

*If Repeat, Date of Initial Positive: _____ *Original Positive ID#: _____

Sample Received Date/Time: 09/09/09 0800 Initials: [illegible] Temp: 9.5 C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: 09/09/09 1000 Initials: [illegible]

ORELAP

Methods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms: ☒ **Present** ☐ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: 09/10/09 1000

Analyst: [illegible]

Review by: DB Date: 09/10/09

Reported By: [illegible] Report Date: 09-10-09

FAXED By: DB Date: 09/10/09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

Send results to: DHS-DWP P.O. Box 14350, Portland OR 97293-0350 Phone (971) 673-0416

PWS#: 41 00009

Water System: city of Adrian

Address: PO Box 218

City, County Adrian / Malheur

Phone: Fax:

OCT 0 2009

DHS

MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

MAGIC VALLEY LABS, INC
PO Box 1867
210 Addison Ave
Twin Falls, ID 83303
208-733-4250
ID 100001

Return Address for Report

Name: City of Adrian

Address: PO Box 218

City, State, Zip: Adrian, Ore. 97901

Bottle #:

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: **309874761**

Sample Collection Date/Time: 9/29/09 - 4:25 PM

Collected By: Dick Davis

Sample Point: Hydrant W.

Address: 402 Main

Sample Type: ☐ Routine ☒ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☒ Yes Free Chlorine: .09 mg/L

*If Repeat, Date of Initial Positive: 09/10/09 *Original Positive ID#: 309869551

Sample Received Date/Time SEP 30 2009 0815 Initials: Temp: 9.0 C Evidence of Cooling ☒ Yes ☐ No

Analysis Start Date/Time: SEP 30 2009 1000 Initials:

ORELAP-

Methods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms: ☐ **Present** ☒ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time OCT 01 2009 1000

Analyst:

Review by: DB Date: 10/01/09

Reported By: SA Report Date: 10-1-09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

Send results to: DHS-DWP P.O. Box 14350, Portland OR 97293-0350 Phone (971) 673-0416

PWS#: 41 00602

OCT 0 2009

Water System: City of Adrian

Address: PO Box 226

City, County Adrian, Malheur

Phone: Fax:

DHS MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

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210 Addison Ave
Twin Falls, ID 83303
208-733-4250
ID 100001

Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Ore. 97901

Bottle #:

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: 309874751

Sample Collection Date/Time: 9/29/09 - 4:10 PM

Collected By: Rick Davis

Sample Point: A-1/2

Address: 2nd & Main

Sample Type: ☐ Routine ☒ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☒ Yes Free Chlorine: [illegible] mg/L

*If Repeat, Date of Initial Positive: 09/10/09 *Original Positive ID#: 309869551

Sample Received Date/Time: SEP 30 2009 0815 Initials: [illegible] Temp: 9.0 C Evidence of Cooling ☒ Yes ☒ No

Analysis Start Date/Time: SEP 30 2009 1000 Initials: [illegible]

ORELAP

Methods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms: ☐ **Present** ☒ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: OCT 01 2009 1000

Analyst: [illegible]

Review by: DB Date: 10/01/09

Reported By: [illegible] Report Date: 10/1/09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

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PWS#: 41 00002 OCT 0 2009

Water System: City of Adrian

Address: PO Box 226

City, County Adrian / Malheur

Phone: Fax:

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Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Ore. 97901

Bottle #: _____

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: 309874781

Sample Collection Date/Time: 9/27/09 - 4:00 PM

Collected By: Dick Davis

Sample Point: Kirk Baldwin

Address: 407 Main St.

Sample Type: ☐ Routine ☒ *Repeat ☐ Special Chlorinated?: ☐ No ☑ Yes Free Chlorine: .09 mg/L

☐ Temporary Routine ☐ Source Water

*If Repeat, Date of Initial Positive: 09/10/09 *Original Positive ID#: 309869581

Sample Received Date/Time: SEP 30 2009 0815 Initials: Temp: 9° C Evidence of Cooling ☒ Yes ☐ No

Analysis Start Date/Time: SEP 30 2009 1000 Initials:

ORELAP

Methods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms: ☐ **Present** ☒ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: OCT 01 2009 1000

Analyst:

Review by:

Date: 10/01/09

Reported By: Date: 10-1-09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

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Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, OR 97901

Bottle #:

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: **309874771**

Sample Collection Date/Time: 9/28/09 4:40 PM

Collected By: Dick Davis

Sample Point: W. Bridge

Address: Wash.

Sample Type: ☐ Routine ☒ *Repeat ☐ Special Chlorinated?: ☐ No ☒ Yes Free Chlorine: 0.2 mg/L

☐ Temporary Routine ☐ Source Water

*If Repeat, Date of Initial Positive: 09/10/09 *Original Positive ID#: 309864581

Sample Received Date/Time: SEP 3 0 2009 0815 Initials: Temp: 9.0 C Evidence of Cooling ☒ Yes ☐ No

Analysis Start Date/Time: SEP 3 0 2009 1000 Initials:

DRELAP

Methods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms: ☐ **Present** ☒ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: OCT 0 1 2009 1000

Analyst:

Review by: Date: 10/01/09

Reported By: Date: 10-1-09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

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OCT 1 2009

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lress: PO Box 226

, County Adrian, Malheur

ne: Fax:

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ne: City of Adrian

lress: PO Box 226

, State, Zip: Adrian, Ore. 97901

Bottle #:

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID# 310878321

ıple Collection Date/Time: 10/14 – 4:15 PM

lected By: Dick Davis

ıple Point: Ardie Freitas

lress: 2nd + Main St.

ıple Type: ☐ Routine ☐ *Repeat ☒ Special Chlorinated?: ☐ No ☒ Yes Free Chlorine: .09 mg/L

☐ Temporary Routine ☐ Source Water

*If Repeat, Date of Initial Positive: *Original Positive ID#:

nple Received Date/Time: OCT 15 AM 8:40 Initials: Temp: 4.0 C Evidence of Cooling ☐ Yes ☒ No

alysis Start Date/Time: OCT 15 2009 0900 Initials:

ELAP

ethods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

EST RESULTS:

Total Coliforms: ☐ Present ☒ Absent

E coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: OCT 16 2009 0900

Analyst:

Review by:

Date: 10/16/09

eported By: Report Date: 10-16-09

ample Invalidation:

____ Over 30 hours

____ Leak

____ Heavy non-coliform growth

____ Other _____

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OCT 1 7 2009

PWS#: 41 0 0 0 0 2

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Address: PO Box 226

City, County Adrian - Malheur

Phone: Fax:

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Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Ore. 97901

Bottle #: _____

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID# **310878311**

FAXED By: Date: 10-16-0

Sample Collection Date/Time: 10/14 4:25 P.M.

Collected By: Dick DAVIS

Sample Point: 403

Address: MAIN ST.

Sample Type: ☐ Routine ☐ *Repeat ☒ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☒ Yes Free Chlorine: .09 mg/L

*If Repeat, Date of Initial Positive: _____ *Original Positive ID#: _____

Sample Received Date/Time: OCT 15 AM 8:40 Initials: Temp: 4.0 C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: OCT 1 5 2009 0900 Initials:

ORELAP

Methods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms: ☒ **Present** ☐ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: OCT 1 6 2009 0900

Analyst:

Review by:

Date: 10/16/09

Reported By:

Report Date: 10/16/09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

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OCT 2 2009

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Bottle #:

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID 310879841

Sample Collection Date/Time: 10/21/09 - 4:25 PM

Collected By: Dick Davis

Sample Point: 5th ST - MAIN

Address:

FAXED By: Dk Date: 10/23/09

Sample Type: ☐ Routine ☒ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☒ Yes Free Chlorine: .09 mg/L

*If Repeat, Date of Initial Positive: *Original Positive ID#:

Sample Received Date/Time: OCT 22 AM 8:2 Initials: Temp: 10 C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: OCT 22 2009 0900 Initials:

ORELAP

Methods: ☒ SM 9223 ☐ Colilert ☐ Colilert-18 ☒ Colisure

TEST RESULTS:

Total Coliforms: ☒ **Present** ☐ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: OCT 23 2009 0900

Analyst:

Review by: Date: 10/23/09

Reported By: Date: 10/23/09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

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'WS#: 41 00002

OCT 2 2009

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Vater System: City of Adrian
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City, County Adrian - Malheur
'hone: Fax:

Return Address for Report
Name: City of Adrian
Address: PO Box 226
City, State, Zip: Adrian, Ore. 97901

Bottle #:
☐ Results do not meet NELAC Standards-see page 2
Lab Sample ID#: 310879831

ample Collection Date/Time: 10/21/09 - 4:10 PM
Collected By: Dick Davis
ample Point: 403 Main
Address:

ample Type: ☐ Routine ☒ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water
Chlorinated?: ☐ No ☒ Yes Free Chlorine: .09 mg/L
*If Repeat, Date of Initial Positive: *Original Positive ID#:

ample Received Date/Time: OCT 22 AM 8:13 Initials: Temp: 10° C Evidence of Cooling ☐ Yes ☒ No

nalysis Start Date/Time: OCT 22 2009 0900 Initials:

RELAP
Methods: ☒ SM 9223 ☐ Colilert ☐ Colilert-18 ☒ Colisure

EST RESULTS:
Total Coliforms: ☐ **Present** ☒ **Absent**
E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: OCT 23 2009 0900
Analyst:
Review by:
Date: 10/23/09

eported By: Report Date: 10/23/09

ample Invalidation:
____ Over 30 hours
____ Leak
____ Heavy non-coliform growth
____ Other

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PWS#: 4100002 OCT 2 6 2009

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Address: PO Box 226

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Bottle #: _____

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: **310879851**

Sample Collection Date/Time: 10/21/09 - 4:00 PM

Collected By: Dirk Davis

Sample Point: 2nd + Maine

Address: _____

Sample Type: ☐ Routine ☒ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☒ Yes Free Chlorine: .09 mg/L

*If Repeat, Date of Initial Positive: _____ *Original Positive ID#: _____

Sample Received Date/Time: OCT 22 [illegible] Initials: [illegible] Temp: 10° C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: OCT 2 2 2009 0900 Initials: [illegible]

ORELAP-

Methods: ☒ SM 9223 ☐ Colilert ☐ Colilert-18 ☒ Colisure

TEST RESULTS:

Total Coliforms: ☐ **Present** ☒ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: OCT 2 3 2009 0900

Analyst: [illegible]

Review by: [illegible] Date: 10/23/09

Reported By: [illegible] Report Date: 10/23/09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

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PWS#: 41 0 0 0 0 2

Water System: City of Adrian

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Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Ore. 97901

Bottle #: _____

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: – **310881691**

Sample Collection Date/Time: 10/29/09 – 4:20 PM

Collected By: Dick Davis

Sample Point: Vince Bingham

Address: 201 Wash. ST.

Sample Type: ☒ Routine ☐ *Repeat ☐ Special Chlorinated?: ☐ No ☒ Yes Free Chlorine: .82 mg/L

☐ Temporary Routine ☐ Source Water

*If Repeat, Date of Initial Positive: _____ *Original Positive ID#: _____

Sample Received Date/Time: 10/30/09 0830 Initials: JD Temp: 11 C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: 10/30/09 0900 Initials: JD

DRELAP

Methods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms: ☐ **Present** ☒ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: 10/31/09 0900

Analyst: MM

Review by: DB Date: 10/31/09

Reported By: SM Report Date: ~~10/30/09~~ 11/03/09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

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PWS#: 4100002

Water System: City of Adrian

Address: PO Box 226

City, County Adrian – Malheur

Phone: Fax:

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Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Ore, 97901

Bottle #:

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: **310881681**

Sample Collection Date/Time: 10/29/09 – 3:50 P.M.

Collected By: Dick Davis

Sample Point: Artie Freitag

Address: 203 Main

Sample Type: ☒ Routine ☐ *Repeat ☐ Special Chlorinated?: ☐ No ☒ Yes Free Chlorine: .82 mg/L
☐ Temporary Routine ☐ Source Water

*If Repeat, Date of Initial Positive: *Original Positive ID#:

Sample Received Date/Time: 10/30/09 0830 Initials: JD Temp: 11.0 C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: ~~10/30~~ 0900 Initials: JD
JD 10/30/09

DRELAP

Methods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms: ☒ **Present** ☐ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: 10/31/09 0900
Analyst: JS
Review by: DB Date: 10/31/09

Reported By: JD Report Date: ~~10/30/09~~ 11/02/09 FAXED By: DB Date: 11/01/09

Sample Invalidation:
_____ Over 30 hours
_____ Leak
_____ Heavy non-coliform growth
_____ Other _____

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WS#: 41 00002

Water System: City of Adrian

Address: PO Box 226

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Phone: Fax:

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City, State, Zip: Adrian, Ore. 97901

Bottle #:

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: 310881671

Sample Collection Date/Time: 10/29/09 - 4:10 P.M.

Collected By: Dick Davis

Sample Point: Woody W.

Address: 403 Main

Sample Type: ☒ Routine ☐ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☒ Yes Free Chlorine: .82 mg/L

*If Repeat, Date of Initial Positive: *Original Positive ID#:

Sample Received Date/Time: 10/30/09 8:30 AM Initials: Td Temp: 11° C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: 10/30/09 0900 Initials: Td

RELAP

Methods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms: ☒ **Present** ☐ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: 10/31/09 0900

Analyst: MB

Review by: DB Date: 10/31/09

Reported By: Sa Report Date: ~~10/30/09~~ 11/02/09

FAXED By: DB Date: 11/01/09

Sample Invalidation:

____ Over 30 hours

____ Leak

____ Heavy non-coliform growth

____ Other

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

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PWS#: 41 00008

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Address: PO Box 226

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Address: PO Box 226

City, State, Zip: Adrian Ore 97901

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ID 100001

Bottle #: _____

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: **311887331**

Sample Collection Date/Time: 11/24-09 - 4:37PM

Collected By: Dick Davis

Sample Point: Dixie Bingham

Address: 207 Wash

Sample Type: ☒ Routine ☐ *Repeat ☐ Special Chlorinated?: ☐ No ☒ Yes Free Chlorine: .08 mg/L

☐ Temporary Routine ☐ Source Water

*If Repeat, Date of Initial Positive: _____ *Original Positive ID#: _____

Sample Received Date/Time: _____ Initials: JD Temp: 10 C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: NOV 25 2009 0900 Initials: JD

ORELAP

Methods: ☐ SM 9223 ☐ Colilert ☐ Colilert-18 ☒ Colisure

TEST RESULTS:

Total Coliforms: ☐ **Present** ☑ **Absent**

E coli: ☐ **Present** ☑ **Absent**

Analysis Complete Date/Time: NOV 27 2009 0900

Analyst: 27 JD

Review by: DB

Date: 11/30/09

Reported By: _____ Report Date: 11/30/09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

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PWS#: 41 00006

Water System: City of Adrian

Address: PO Box 226

City, County Adrian - Malheur

Phone: 372- Fax:

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ID 100001

Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Ore. 97[illegible]

Bottle #: _____

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: 311887341

Sample Collection Date/Time: 11/24/09 4:51 pm

Collected By: Dick Lane

Sample Point: Elevated Res

Address: Emerald Slope Rd.

Sample Type: ☒ Routine ☐ *Repeat ☐ Special Chlorinated?: ☑ No ☐ Yes Free Chlorine: [illegible] mg/L

☐ Temporary Routine ☐ Source Water

*If Repeat, Date of Initial Positive: _____ *Original Positive ID#: _____

Sample Received Date/Time: _____ Initials: [illegible] Temp: 9.1 C Evidence of Cooling ☐ Yes ☐ No

Analysis Start Date/Time: NOV 25 2009 0900 Initials: [illegible]

ORELAP

Methods: ☐ SM 9223 ☐ Colilert ☐ Colilert-18 ☒ Colisure

TEST RESULTS:

Total Coliforms: ☐ **Present** ☑ **Absent**

E coli: ☐ **Present** ☑ **Absent**

Analysis Complete Date/Time: NOV ~~26~~ 27 2009 0900

Analyst: [illegible]

Review by: [illegible]

Date: 11/30/09

Reported By: [illegible] Report Date: 11/24/09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

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PWS#: 41[illegible]

Water System: City of Adrian

Address: PO Box 226

City, County: Adrian - Malheur

Phone: [illegible] Fax:

Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Oregon [illegible]

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ID 100001

Bottle #: _____

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: 311887321

Sample Collection Date/Time: [illegible] 4:52 PM

Collected By: [illegible]

Sample Point: 101 Main St

Address: _____

Sample Type: ☑ Routine ☐ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☑ Yes Free Chlorine: .05 mg/L

*If Repeat, Date of Initial Positive: _____ *Original Positive ID#: _____

Sample Received Date/Time: [illegible] Initials: [illegible] Temp: 9.0 C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: NOV 25 2009 0900 Initials: [illegible]

ORELAP

Methods: ☐ SM 9223 ☐ Colilert ☐ Colilert-18 ☒ Colisure

TEST RESULTS:

Total Coliforms: ☐ **Present** ☑ **Absent**

E coli: ☐ **Present** ☑ **Absent**

Analysis Complete Date/Time: NOV 26 2009 0900

Analyst: [illegible]

Review by: [illegible]

Date: 11/30/09

Reported By: [illegible] Report Date: 11/24/09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

Send results to: DHS-DWP P.O. Box 14350, Portland OR 97293-0350 Phone (971) 673-0416

PWS#: 4100002

Water System: City of Adrian

Address: PO Box 226

City, County: Adrian - Malheur

Phone: 372 - 2611 Fax:

Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, OR. 97901

DHS

MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

MAGIC VALLEY LABS, INC
PO Box 1867
210 Addison Ave
Twin Falls, ID 83303
208-733-4250
ID 100001

Bottle #:

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: 312888061

Sample Collection Date/Time: 11/30/09 - 4:09 PM

Collected By: DICK DAVIS

Sample Point: ON LINE

Address: 307 WASH.

Sample Type: ☒ Routine ☐ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☒ Yes Free Chlorine: .03 mg/L

*If Repeat, Date of Initial Positive: *Original Positive ID#:

Sample Received Date/Time: DEC [illegible] Initials: [illegible] Temp: 12° C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: DEC 0 1 2009 [illegible] Initials: [illegible]

ORELAP

Methods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms:	☐ **Present**	☒ **Absent**
E coli:	☐ **Present**	☒ **Absent**

Analysis Complete Date/Time: DEC 0 2 2009 1000

Analyst: [illegible]

Review by: [illegible]

Date: 12/02/09

Reported By: [illegible]

Report Date: 12/02/09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

PWS#: 4100002

DEC 0 3 2009 DHS

MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

Water System: City of Adrian

Address: PO Box 226

City, County: Adrian - Malheur

Phone: 372 - 2611 Fax:

MAGIC VALLEY LABS, INC
PO Box 1867
210 Addison Ave
Twin Falls, ID 83303
208-733-4250
ID 100001

Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, OR. 97901

Bottle #:

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: 312888071

Sample Collection Date/Time: 11/30/09 - 350 PM

Collected By: DICK

Sample Point: ON LINE - WOODY WI

Address: 403 MAIN ST.

Sample Type: ☑ Routine ☐ *Repeat ☐ Special Chlorinated?: ☐ No ☑ Yes Free Chlorine: .1 mg/L

☐ Temporary Routine ☐ Source Water

*If Repeat, Date of Initial Positive: *Original Positive ID#:

Sample Received Date/Time: [illegible] Initials: [illegible] Temp: 12.9 C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: DEC 0 1 2009 1000 Initials: [illegible]

ORELAP

Methods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms: ☐ Present ☒ Absent

E coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: DEC 0 2 2009 1000

Analyst: [illegible]

Review by: DB

Date: 12/02/09

Reported By: [illegible]

Report Date: 12/02/09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

DEC 2 8 2009

PWS#: 4100002

Water System: City of Adrian

Address: PO Box 226

City, County: Adrian - Malheur

Phone: 372 - 2611 Fax:

DHS

MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

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Twin Falls, ID 83303
208-733-4250
ID 100001

Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, OR. 97901

Bottle #:

☐ Results do not meet NELAC Standards - see page 2

Lab Sample ID# 312892371

Sample Collection Date/Time: 12/22/09 - 430 P.M.

Collected By: Dick Davis

Sample Point: online - Elsworth

Address: Emerald Slope Rd.

Sample Type: ☒ Routine ☐ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☒ Yes Free Chlorine: .25 mg/L

*If Repeat, Date of Initial Positive: _____ *Original Positive ID#: _____

Sample Received Date/Time: DEC 23 AM 8:45 Initials: [illegible] Temp: 9° C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: 12/23/09 1000 Initials: [illegible]

ORELAP

Methods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms: ☐ **Present** ☒ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: DEC 2 4 2009 1400

Analyst: [illegible]

Review by: [illegible]

Date: 12/24/09

Reported By: [illegible]

Report Date: 12-24-09

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

PWS#: 4100002 JAN 19 2010

Water System: City of Adrian

Address: PO Box 226

City, County: Adrian - Malheur

Phone: 372 - 2611 Fax:

DHS

MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

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Twin Falls, ID 83303
208-733-4250
ID 100001

Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, OR. 97901

Bottle #:

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: 301895771

Sample Collection Date/Time: 1/12/010 - 4:35 PM

Collected By: Dick Davis

Sample Point: Woody W. / 403 Main

Address:

Sample Type: ☒ Routine ☐ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☒ Yes Free Chlorine: .34 mg/L

*If Repeat, Date of Initial Positive: *Original Positive ID#:

Sample Received Date/Time: 01/13/10 11:10A Initials: SM Temp: 4.4 C Evidence of Cooling ☐ Yes ☐ No

Analysis Start Date/Time: 01/13/10 11:15am Initials: JD

ORELAP

Methods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms: ☐ **Present** ☒ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: JAN 14 2010 11:15am

Analyst: JD

Review by: DB Date: 01/14/10

Reported By: SM Report Date: 01/14/10

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

PWS#: 4100002

Water System: City of Adrian

Address: PO Box 226

City, County: Adrian - Malheur

Phone: 372 - 2611 Fax:

MAR 02 2010

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Public Water Supplies
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208-733-4250
ID 100001

Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, OR. 97901

Bottle #:

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: 302900791

Sample Collection Date/Time: 2/1/10 – well Hd. #2 4:35pm per call w/Dick 02/02/10 @ 330pm DD

Collected By: Dick Davis

Sample Point: well Hd #2

Address: well RD. - Emerald Slope RD.

Sample Type: ☐ Routine ☐ *Repeat ☐ Special ☐ Temporary Routine ☒ Source Water

Chlorinated?: ☒ No ☐ Yes Free Chlorine: _____ mg/L

*If Repeat, Date of Initial Positive: _____ *Original Positive ID#: _____

Sample Received Date/Time: FEB 2 AM 3 Initials: JD Temp: 12° C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: 02/02/10 1000 Initials: JD

ORELAP

Methods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms: ☐ **Present** ☒ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: 02/03/10 1600

Analyst: JD

Review by: [illegible] Date: 02/04/10

Reported By: [illegible] Report Date: 02/04/10

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

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PWS#: 4100002

Water System: City of Adrian

Address: PO Box 226

City, County: Adrian - Malheur

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Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, OR. 97901

Bottle #:

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: 302900781

Sample Collection Date/Time: 2/1/10 - 4:35 PM

Collected By: DICK DAVIS

Sample Point: 403 MAIN ST

Address:

Sample Type: ☒ Routine ☐ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☒ Yes Free Chlorine: .03 mg/L

*If Repeat, Date of Initial Positive: *Original Positive ID#:

Sample Received Date/Time: FEB 2 [illegible] Initials: [illegible] Temp: 12° C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: 02/03/10 1000 Initials: [illegible]

ORELAP

Methods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms: ☐ **Present** ☒ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: 02/03/10 1000

Analyst: [illegible]

Review by: [illegible] Date: 02/04/10

Reported By: [illegible] Report Date: 02/04/10

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

PWS#: 41 00002

Water System: City of Adrian

Address: PO Box 226

City, County: Adrian - Malheur

Phone: 372 - 2611 Fax:

MAR 22 2010

DHS

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Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, OR. 97901

Bottle #:

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: **303909821**

Sample Collection Date/Time: 3/8/10 – 4:15 P.M.

Collected By: DICK DAVIS

Sample Point: 4 C 3 MAIN

Address:

per phone call w/ Dick Danson 3/10/10 @ 830am - SA

Sample Type: ☒ Routine ☐ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☒ Yes Free Chlorine: 3.4 mg/L

*If Repeat, Date of Initial Positive: *Original Positive ID#:

Sample Received Date/Time: 03/09/10 0810 Initials: MW Temp: 9.5 C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: 03/09/10 1000AM Initials: MW

ORELAP

Methods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms:	☐ **Present**	☒ **Absent**
E coli:	☐ **Present**	☒ **Absent**

Analysis Complete Date/Time: 03/10/10 1000am

Analyst: [illegible]

Review by: [illegible] Date: 03/11/10

Reported By: [illegible] Report Date: 03/11/10

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

PWS#: 4100002

Water System: City of Adrian

Address: PO Box 226

City, County: Adrian - Malheur

Phone: 372 - 2611 Fax:

APR 19 2010 DHS

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Public Water Supplies
Drinking Water Program

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ID 100001

Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, OR. 97901

Bottle #: MED13

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: **304916491**

Sample Collection Date/Time: 4-13-10 / 4:25 P.M.

Collected By: DICK DAVIS

Sample Point: 403 MAIN ST.

Address: SAME

Sample Type: ☑ Routine ☐ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☑ Yes Free Chlorine: .19 mg/L

*If Repeat, Date of Initial Positive: _____ *Original Positive ID#: _____

Sample Received Date/Time: 04 14 10 8:15am Initials: JD Temp: 12° C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: 04-14-10 1000am Initials: JD

ORELAP

Methods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms: ☐ **Present** ☒ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: 04-15-10 10:00am

Analyst: JD

Review by: [illegible] Date: 04/15/10

Reported By: [illegible] Report Date: 04/15/10

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

PWS#: 4100002

Water System: City of Adrian

Address: PO Box 226

City, County: Adrian - Malheur

Phone: 372 - 2611 Fax:

MAY 2010 DHS

MICROBIOLOGICAL ANALYSIS
Public Water Supplies
Drinking Water Program

MAGIC VALLEY LABS, INC
PO Box 1867
210 Addison Ave
Twin Falls, ID 83303
208-733-4250
ID 100001

Return Address for Report

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, OR. 97901

Bottle #: _____

☐ Results do not meet NELAC Standards-see page 2

Lab Sample ID#: **305920811**

Sample Collection Date/Time: 5-5-10 \ 400 P.M.

Collected By: Dick Davis

Sample Point: Woody W.

Address: 403 MAIN ST.

Sample Type: ☒ Routine ☐ *Repeat ☐ Special ☐ Temporary Routine ☐ Source Water

Chlorinated?: ☐ No ☒ Yes Free Chlorine: .08 mg/L

*If Repeat, Date of Initial Positive: _____ *Original Positive ID#: _____

Sample Received Date/Time: 05/06/10 8:30AM Initials: [illegible] Temp: 14 C Evidence of Cooling ☐ Yes ☒ No

Analysis Start Date/Time: 05/06/10 9:00AM Initials: [illegible]

ORELAP

Methods: ☒ SM 9223 ☒ Colilert ☐ Colilert-18 ☐ Colisure

TEST RESULTS:

Total Coliforms: ☐ **Present** ☒ **Absent**

E coli: ☐ **Present** ☒ **Absent**

Analysis Complete Date/Time: 05/07/10 9:00AM

Analyst: [illegible]

Review by: [illegible] Date: 05/07/10

Reported By: [illegible] Report Date: 05/07/10

Sample Invalidation:

_____ Over 30 hours

_____ Leak

_____ Heavy non-coliform growth

_____ Other _____

Test Results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced, except in full, without written consent of this laboratory.

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00002

PWS Name: Adrian, City of

City, County:

Phone: Fax:

Return address for report:

Name: City of Adrian

Address: P.O. Box 226

City, State, Zip: Adrian OR 97901

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Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

JUN 07 2010

Bottle#:

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 306926871

Sample Collected Date/Time: 06 / 03 / 10 (MM / DD / YYYY) 4 : 45 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐No ☐Yes

Collected By: Dick Davis

Free Chlorine: 0.07 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address:

Sampled at (ex. "SINK"): 403 Main Street

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 06 / 03 / 10 (MM / DD / YYYY) 8 : 15 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 12.6 °C

Evidence of cooling? ☐ Yes ☐ No

Analysis Start Date/Time: 06 / 03 / 10 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 06 / 04 / 10 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: Lisa DeRuiter

Review by: J. DeRuiter 06 / 04 / 10 (MM / DD / YYYY)

Reported By: J. DeRuiter

Report Date 06 / 04 / 10 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

r technical support and information, please call Data Management Coordinator
. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

JUL 1 2010

PWS# 41 00002

PWS Name: City of Adrian

City, County: Adrian, Malheur

Phone: (541) 372-2179 Fax:

Return address for report:

Name: City of Adrian

Address: P.O. Box 226

City, State, Zip: Adrian, OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: ME013

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 307935591

Sample Collected Date/Time: 7 / 8 / 2010 (MM / DD / YYYY) 4 : 35 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐No ☒Yes

Collected By: Dick Davis

Free Chlorine: .09 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: 00002

Address: 403 MAIN ST.

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 07 / 09 / 2010 (MM / DD / YYYY) 8 : 15 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

Temp: 13 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 07 / 09 / 2010 (MM / DD / YYYY) 9 00 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☒ Present ☐ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 07 / 10 / 2010 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: JB

Review by: Shelly Miller 07 / 12 / 2010 (MM / DD / YYYY)

Reported By: Shelly Miller

Report Date 07 / 12 / 2010 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

For technical support and information, please call Data Management Coordinator (971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

FAXED By: [illegible]

DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

JUL 2 2010

PWS# 41 00002

PWS Name: City of Adrian

City, County: Adrian, Malheur

Phone: (541) 372-2179 Fax:

Return address for report:

Name: City of Adrian

Address: P.O. Box 226

City, State, Zip: Adrian, OR 97901

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FX 208-734-2539
ID100001

Bottle#: MED13

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 307938361

Sample Collected Date/Time: 07 / 20 / 10 (MM / DD / YYYY) 4:37 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By: Dick Davis

Free Chlorine: .27 mg/L

DISTRIBUTION Sample Type: ☐ Routine ☒ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: 07 / 7 / 10 (MM / DD / YYYY)

*Original Positive ID#:

Address:

Sampled at (ex. "SINK"): F.P. Hydrant

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: 07 / 7 / 10 (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"): Well 2 Sight

LAB USE ONLY

Sample Received Date/Time: 07 / 21 / 2010 (MM / DD / YYYY) 8:15 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

Temp: 13 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 07 / 22 / 2010 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 07 / 22 / 2010 (MM / DD / YYYY) 10:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J DeRuiter

Review by: [illegible] 07 / 22 / 2010 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 07 / 22 / 2010 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

JUL 2 7 2010

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

PWS# 41 00002
PWS Name: City of Adrian
City, County: Adrian, Malheur
Phone: (541) 372-2179 Fax:

Return address for report:
Name: City of Adrian
Address: P.O. Box 226
City, State, Zip: Adrian, OR 97901

Bottle#: MED13

☐ Results do not meet NELAC Standards. See page 2

Lab Sample ID#: 307938371

Sample Collected Date/Time: 07 / 20 / 10 (MM / DD / YYYY) 4 : 47 (Hour : Min) ☐ AM ☒ PM
Chlorinated: ☐ No ☒ Yes
Collected By: Dick Davis
Free Chlorine: .27 mg/L

DISTRIBUTION Sample Type: ☐ Routine ☒ *Repeat ☐ Temporary Routine ☐ Special
*Date of Initial Positive: 07 / 7 / 10 (MM / DD / YYYY)
*Original Positive ID#:
Address: 403 MAIN
Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special
*Date of Initial Positive: 07 / 7 / 10 (MM / DD / YYYY)
*Original Positive ID#:
Source ID: SRC-
Source name (ex. "WELL #1"): 403 MAIN

LAB USE ONLY

Sample Received Date/Time: 07 / 21 / 2010 (MM / DD / YYYY) 8 : 15 (Hour: Min) ☒ AM ☐ PM
Initials: JR
Temp: 13 °C
Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 07 / 21 / 2010 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM
Initials: JR

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:
Total Coliforms: ☐ Present ☒ Absent
E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 07 / 22 / 2010 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM
Analyst: J. DeRuiter
Review by: Shelley Wells 07 / 22 / 2010 (MM / DD / YYYY)

Reported By: Shelley Wells
Report Date 07 / 22 / 2010 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

JUL 27 2010

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

PWS# 41 00002
PWS Name: City of Adrian
City, County: Adrian, Malheur
Phone: (541) 372-2179 Fax:

Return address for report:
Name: City of Adrian
Address: P.O. Box 226
City, State, Zip: Adrian, OR 97901

Bottle#: MED13

☐ Results do not meet NELAC Standards. See page 2

Lab Sample ID#: 307938381

Sample Collected Date/Time: 07/20/10 4:02 PM (MM DD YYYY Hour:Min) ☐ AM ☒ PM
Chlorinated: ☒ No ☐ Yes
Free Chlorine: _____ mg/L
Collected By: Dick DAVIS

DISTRIBUTION Sample Type: ☐ Routine ☒ *Repeat ☐ Temporary Routine ☐ Special
*Date of Initial Positive: 07/20/10 (MM / DD / YYYY)
*Original Positive ID#:
Address: Well RD No 4 Well
Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special
*Date of Initial Positive: 07/20/10 (MM / DD / YYYY)
*Original Positive ID#:
Source ID: SRC-
Source name (ex. "WELL #1"): well 4

LAB USE ONLY

Sample Received Date/Time: 07/21/2010 8:15 (MM / DD / YYYY Hour: Min) ☒ AM ☐ PM
Initials: JD
Temp: 13 °C
Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 07/21/2010 10:00 (MM / DD / YYYY Hour: Min) ☒ AM ☐ PM
Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure®
☐ Other:

Test Results:
Total Coliforms: ☐ Present ☒ Absent
E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 07/22/2010 10:00 (MM / DD / YYYY Hour: Min) ☒ AM ☐ PM
Analyst: J. De Ruiter
Review by: [signature] 07/22/2010 (MM / DD / YYYY)

Reported By: [signature]
Report Date 07/22/2010 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

JUL 29 2010

PWS# 41 00002

PWS Name: City of Adrian

City, County: Adrian, Malheur

Phone: (541) 372-2179 Fax:

Return address for report:

Name: City of Adrian

Address: P.O. Box 226

City, State, Zip: Adrian, OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: ME013

☐ Results do not m 307938831 page 2

Lab Sample ID#:

Sample Collected Date/Time: 7 / 21 / 10 (MM / DD / YYYY) 4 : 10 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: 2.1 mg/L

Collected By: Dick DALLIS

DISTRIBUTION Sample Type: ☐ Routine ☒ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: 7 / 7 / 10 (MM / DD / YYYY)

*Original Positive ID#:

Address: 403 MAIN ST.

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: 7 / 7 / 10 (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"): 403 MAIN ST

LAB USE ONLY

Sample Received Date/Time: 07 / 22 / 10 (MM / DD / YYYY) 10 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: SA

Temp: 8.2 °C

Evidence of cooling? ☐ Yes ☐ No

Analysis Start Date/Time: 07 / 22 / 2010 (MM / DD / YYYY) 3 : 00 (Hour: Min) ☐ AM ☒ PM

Initials:

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☐ Colilert® ☒ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 07 / 23 / 2010 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst:

Review by: 07 / 23 / 2010 (MM / DD / YYYY)

Reported By:

Report Date 07 / 23 / 2010 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2) JUL 29 2010

PWS# 41 00002

PWS Name: City of Adrian

City, County: Adrian, Malheur

Phone: (541) 372-2179 Fax:

Return address for report:

Name: City of Adrian

Address: P.O. Box 226

City, State, Zip: Adrian, OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: ME013

☐ Results do not [illegible] see page 2

Lab Sample ID#: 307938821

Sample Collected Date/Time: 7 / 21 / 10 (MM / DD / YYYY) 4 : 28 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .21 mg/L

Collected By: Dick DAVIS

607 3rd ST.

DISTRIBUTION Sample Type: ☐ Routine ☒ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: 7 / 7 / 10 (MM / DD / YYYY)

*Original Positive ID#:

Address:

Sampled at (ex. "SINK"): AT SINK

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: / / (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 07 / 22 / 10 (MM / DD / YYYY) 10:30 (Hour: Min) ☒ AM ☐ PM

Initials: JW

Temp: 7.6 °C

Evidence of cooling? ☐ Yes ☐ No

Analysis Start Date/Time: 07 / 22 / 2010 (MM / DD / YYYY) 3:00 (Hour: Min) ☐ AM ☒ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☐ Colilert® ☒ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 07 / 23 / 2010 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: Shelley Wolf 07 / 23 / 2010 (MM / DD / YYYY)

Reported By: Shelley Wolf

Report Date 07 / 23 / 2010 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00002

PWS Name: City of Adrian

City, County: Adrian, Malheur

Phone: (541) 372-2179 Fax:

Return address for report:

Name: City of Adrian

Address: P.O. Box 226

City, State, Zip: Adrian, OR 97901

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Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: ME013

☐ Results do not m page 2

Lab Sample ID#: 308942901

Sample Collected Date/Time: 8 / 9 / 10 (MM / DD / YYYY) 4 : 20 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Collected By:

Free Chlorine: .14 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: 7 / 7 / 10 (MM / DD / YYYY)

*Original Positive ID#:

Address: 307 3rd ST.

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: / / (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 08 / 10 / 2010 (MM / DD / YYYY) 8 30 (Hour: Min) ☒ AM ☐ PM

Initials: JA

Temp: 14 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 08 / 10 / 2010 (MM / DD / YYYY) 10 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: JA

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 08 / 11 / 2010 (MM / DD / YYYY) 1000 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRiver

Review by: Shelley Fuller 08 / 11 / 2010 (MM / DD / YYYY)

Reported By: Shelley Fuller

Report Date 08 / 11 / 2010 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

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Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

WS# 41 00002
WS Name: City of Adrian
City, County: Adrian
Phone: 541-372-2611 Fax:
Form address for report:
Name: City of Adrian
Address: P.O. Box 226
City, State, Zip: Adrian, OR 97901

Bottle#: DFD09

☐ Results do not meet NELAC Standards See page 2

Lab Sample ID# 308947381

Sample Collected Date/Time: 08/25/2010 4:15 (MM/DD/YYYY Hour:Min) ☐ AM ☒ PM
Chlorinated: ☐ No ☒ Yes
Free Chlorine: .24 mg/L
Collected By: Dick Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special
*Date of Initial Positive: ___/___/___ (MM/DD/YYYY)
*Original Positive ID#:
Address:
Sampled at (ex. "SINK"): Online 403, Main St

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special
*Date of Initial Positive: ___/___/___ (MM/DD/YYYY)
*Original Positive ID#:
Source ID: SRC-
Source name (ex. "WELL #1"):

LAB USE ONLY
Sample Received Date/Time: 08/26/2010 8:30 (MM/DD/YYYY Hour:Min) ☒ AM ☐ PM
Initials: DD
Temp: 12 °C
Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 08/26/2010 9:00 (MM/DD/YYYY Hour:Min) ☒ AM ☐ PM
Initials: DD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:
Total Coliforms: ☐ Present ☒ Absent
E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 08/27/2010 9:00 (MM/DD/YYYY Hour:Min) ☒ AM ☐ PM
Analyst: [signature]
Review by: [signature] 08/27/2010 (MM/DD/YYYY)

Reported By: [signature]
Report Date 08/27/2010 (MM/DD/YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator
[illegible] 0405 M.E. form form RT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

AUG 30 2010

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State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

PWS# 41 00002
PWS Name: City of Adrian
City, County: Adrian
Phone: 541-372-2611 Fax:

Bottle#: DF009

Mailing address for report:
Name: City of Adrian
Address: P.O. Box 226
City, State, Zip: Adrian, OR 97901

☐ Results do not include ... See page 2
Lab Sample ID#: 308947371

Sample Collected Date/Time: 08 / 25 / 2010 (MM / DD / YYYY) 3:47 (Hour : Min) ☐ AM ☒ PM
Chlorinated: ☐ No ☒ Yes
Free Chlorine: .23 mg/L

Collected By: Dick Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special
*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)
*Original Positive ID#:
Address:
Sampled at (ex. "SINK"): Ardies Main St.

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special
*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)
*Original Positive ID#:
Source name (ex. "WELL #1"):
Source ID: SRC-

LAB USE ONLY
Sample Received Date/Time: 08 / 26 / 2010 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM
Initials: JD
Temp: 12 °C
Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 08 / 26 / 2010 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM
Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Analysis Complete Date/Time: 08 / 27 / 2010 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Test Results:
Total Coliforms: ☐ Present ☒ Absent
E. Coli: ☐ Present ☒ Absent

Analyst: J. DeRuiter
Review by: Shelley Miller 08 / 27 / 2010 (MM / DD / YYYY)

Reported By: Shelley Miller
Report Date 08 / 27 / 2010 (MM / DD / YYYY)

DHS USE ONLY

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

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For technical support and information, please call Data Management Coordinator (... form PD) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

AUG 30 2010

PWS# 41 00002
PWS Name: City of Adrian
City, County: Adrian
Phone: 541-372-2611 Fax:

Form address for report:
Name: City of Adrian
Address: P.O. Box 226
City, State, Zip: Adrian, OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: D.F009

☐ Results do not ... e page 2

Lab Sample ID#: 308947361

Sample Collected Date/Time: 08 / 25 / 2010 (MM / DD / YYYY) 3 : 20 (Hour : Min) ☐ AM ☒ PM
Chlorinated: ☐ No ☒ Yes
Free Chlorine: .22 mg/L
Collected By: Dick Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special
*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)
*Original Positive ID#:
Address:
Sampled at (ex. "SINK"): Emerald Slope Rd

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special
*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)
*Original Positive ID#:
Source ID: SRC-
Source name (ex. "WELL #1"):

LAB USE ONLY
Sample Received Date/Time: 08 / 26 / 2010 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM
Initials: JD
Temp: 12 °C
Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 08 / 26 / 2010 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM
Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:
Total Coliforms: ☐ Present ☒ Absent
E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 08 / 27 / 2010 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM
Analyst: J. DeKuiper
Review by: [signature] 08 / 27 / 2010 (MM / DD / YYYY)

Reported By: [signature]
Report Date 08 / 27 / 2010 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

AUG 2010

PWS# 41 00002
PWS Name: City of Adrian
City, County: Adrian
Phone: 541-372-2611 Fax:

Return address for report:
Name: City of Adrian
Address: P.O Box 226
City, State, Zip: Adrian, OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: DF009

☐ Results do n See page 2
308947351
Lab Sample ID#:

Sample Collected Date/Time: 08 / 25 / 2010 3 : 35 (MM / DD / YYYY Hour : Min) ☐ AM ☒ PM
Chlorinated: ☐ No ☒ Yes
Free Chlorine: .42 mg/L
Collected By: Dick Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special
*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)
*Original Positive ID#:
Address:
Sampled at (ex. "SINK"): On Line / 107 Main St

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special
*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)
*Original Positive ID#:
Source ID: SRC-
Source name (ex. "WELL #1"):

LAB USE ONLY
Sample Received Date/Time: 08 / 26 / 2010 8 : 30 (MM / DD / YYYY Hour: Min) ☒ AM ☐ PM
Initials: DD
Temp: 12 °C
Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 08 / 26 / 2010 9 : 00 (MM / DD / YYYY Hour: Min) ☒ AM ☐ PM
Initials: DD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:
Total Coliforms: ☐ Present ☒ Absent
E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 08 / 27 / 2010 9 : 00 (MM / DD / YYYY Hour: Min) ☐ AM ☐ PM
Analyst: J. DeRuiter
Review by: [signature] 08 / 27 / 2010 (MM / DD / YYYY)

Reported By: [signature]
Report Date 08 / 27 / 2010 (MM / DD / YYYY)

Sample invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

For technical support and information, please call Data Management Coordinator (503-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

SEP 2010

PWS# 41 00002

PWS Name: City of Adrian

City, County: Adrian Malheur

Phone: _____ Fax: _____

Return address for report:

Name: City of Adrian

Address: P.O. Box 226

City, State, Zip: Adrian OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: MED13

☐ Results do not ee page 2

Lab Sample ID#: 309952621

Sample Collected Date/Time: 09 / 15 / 2010 (MM / DD / YYYY) 4 : 25 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐No ☒Yes

Collected By: Dick Davis

Free Chlorine: .08 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Address: _____

Sampled at (ex. "SINK"): Online Arties 2nd & Main

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Source ID: SRC- _____

Source name (ex. "WELL #1"): _____

LAB USE ONLY

Sample Received Date/Time: 09 / 16 / 2010 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: DD

Temp: 15 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 09 / 16 / 2010 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: DD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other: _____

Test Results:

Total Coliforms: ☒ Present ☐ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 09 / 17 / 2010 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: J. DeRuiter 09 / 17 / 2010 (MM / DD / YYYY)

Reported By: J. DeRuiter

Report Date 09 / 17 / 2010 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other _____

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

OCT 25 2010

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

PWS# 41 00002

PWS Name: City of Adrian

City, County: Adrian, Malheur

Phone: [illegible] Fax:

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, OR 97901

Bottle#:

☐ Results do not m [illegible] page 2

Lab Sample ID#: 310961741

Sample Collected Date/Time: 10 / 20 / 10 (MM / DD / YYYY) 3 : 56 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .18 mg/L

Collected By: Divia Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: Avdie Main St

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 10 / 21 / 2010 (MM / DD / YYYY) 8 : 15 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

Temp: 15 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 10 / 21 / 2010 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☒ Present ☐ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 10 / 22 / 2010 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J. DeRuiter

Review by: [illegible] 10 / 22 / 2010 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 10 / 22 / 2010 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

OCT 25 2010

PWS# 41 00002

PWS Name: City of Adrian

City, County: Adrian, Malheur

Phone: (541) 372-2179 Fax:

Return address for report:

Name: City of Adrian

Address: P.O. Box 226

City, State, Zip: Adrian, OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: MED13

☐ Results do not meet NELAC Standards See page 2

Lab Sample ID#: 310961751

Sample Collected Date/Time: 10 / 20 / 10 (MM / DD / YYYY) 3 : 40 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .16 mg/L

Collected By: Dick Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: Bill Elsworth

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 10 / 21 / 2010 (MM / DD / YYYY) 8 : 15 (Hour: Min) ☒ AM ☐ PM

Initials: RH

Temp: 15 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 10 / 21 / 2010 (MM / DD / YYYY) 9 00 (Hour: Min) ☒ AM ☐ PM

Initials: RH

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☒ Present ☐ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 10 / 22 / 2010 (MM / DD / YYYY) 9 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J DeRuiter

Review by: Shelley Viola 10 / 22 / 2010 (MM / DD / YYYY)

Reported By: Shelley Viola

Report Date 10 / 22 / 2010 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

OCT 25 2010

PWS# 41 00002

PWS Name: City of Adrian

City, County: Adrian, Malheur

Phone: (541) 372 3179 Fax:

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: DF009

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 310961731

Sample Collected Date/Time: 10 / 20 / 10 (MM / DD / YYYY) 3 : 48 (Hour : Min) ☐ AM ☑ PM

Chlorinated: ☐ No ☑ Yes

Free Chlorine: .18 mg/L

Collected By: Dick Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: 15th Baldwin Main St

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 10 / 21 / 2010 (MM / DD / YYYY) 8 : 15 (Hour: Min) ☒ AM ☐ PM

Initials: DH

Temp: 15 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 10 / 21 / 2010 (MM / DD / YYYY) 9 00 (Hour: Min) ☒ AM ☐ PM

Initials: DH

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Analysis Complete Date/Time: 10 / 21 / 2010 (MM / DD / YYYY) 9 00 (Hour: Min) ☑ AM ☐ PM

Test Results:

Total Coliforms: ☑ Present ☐ Absent

E. Coli: ☐ Present ☑ Absent

Analyst: J DeRuiter

Review by: Shelley Wells 10 / 22 / 2010 (MM / DD / YYYY)

Reported By: Shelley Wells

Report Date 10 / 22 / 2010 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

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DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

DEC 1 - 2010

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

PWS# 41 00042

PWS Name: City of Adrian

City, County: Adrian/Malheur

Phone: _____ Fax: _____

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Ore. 97351

Bottle#: GF013

☐ Results do not ... see page 2

Lab Sample ID#: 312970241

Sample Collected Date/Time: 12 / 8 / 10 (MM / DD / YYYY) 4:22 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: 1.0 mg/L

Collected By: Dick Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Address: 403 Main St.

Sampled at (ex. "SINK"): _____

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Source ID: SRC- _____

Source name (ex. "WELL #1"): _____

LAB USE ONLY

Sample Received Date/Time: 12 / 09 / 2010 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

Temp: 12 °C

Evidence of cooling? ☐ Yes ☒ No

12/09/10

Analysis Start Date/Time: 12 / 10 / 2010 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other: _____

Analysis Complete Date/Time: 12 / 10 / 2010 (MM / DD / YYYY) 9:00 (Hour: Min) ☒ AM ☐ PM

Test Results:

Total Coliforms: ☒ Present ☐ Absent

E. Coli: ☐ Present ☒ Absent

Analyst: J DeRuiter

Review by: [illegible] 12/10/2010 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 12 / 10 / 2010 (MM / DD / YYYY)

Sample Invalidation:
- ☐ Over 30 hours
- ☐ Leak
- ☐ Heavy non-coliform growth
- ☐ Other _____

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

2010

PWS# 41 00003

PWS Name: City of Adrian

City, County: Adrian, Malheur

Phone: (541) 372-2119 Fax:

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#:

☐ Results do no See page 2

Lab Sample ID# 310963051

Sample Collected Date/Time: 10 / 27 / 10 (MM / DD / YYYY) 3 : 39 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Free Chlorine: _____ mg/L

Collected By: DICK DAVIS

DISTRIBUTION Sample Type: ☐ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address: WELL #4

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☒ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 10 / 28 / 2010 (MM / DD / YYYY) 8 : 40 (Hour: Min) ☒ AM ☐ PM

Initials: JD

Temp: 12 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 10 / 28 / 2010 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: JD

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 10 / 29 / 2010 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: J DeRuiter

Review by: Shelley Weber 10 / 29 / 2010 (MM / DD / YYYY)

Reported By: Shelley Weber

Report Date 10 / 29 / 2010 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

2010

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

PWS# 41 CCCC 2

PWS Name: City of Adrian

City, County: Adrian, Malheur

Phone: (541) 372-3175 Fax:

Return address for report:

Name: City of Adrian

Address: P.O Box 226

City, State, Zip: Adrian, OR 97901

Bottle#:

☐ Results do no See page 2

Lab Sample ID#: 310963051

Sample Collected Date/Time: 10 / 27 / 10 (MM / DD / YYYY) 3 : 39 (Hour : Min) ☐ AM ☒ PM

Chlorinated: ☒ No ☐ Yes

Free Chlorine: _____ mg/L

Collected By: DICK DAVIS

DISTRIBUTION Sample Type: ☐ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Address:

Sampled at (ex. "SINK"):

SOURCE Sample Type: ☒ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#:

Source ID: SRC-

Source name (ex. "WELL #1"):

LAB USE ONLY

Sample Received Date/Time: 10 / 28 / 2010 (MM / DD / YYYY) 8 : 40 (Hour: Min) ☒ AM ☐ PM

Initials: NH

Temp: 12 °C

Evidence of cooling? ☐ Yes ☒ No

Analysis Start Date/Time: 10 / 28 / 2010 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: NH

ORELAP Method(s): Check all that apply. ☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other:

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 10 / 29 / 2010 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: D. DeRuiter

Review by: Shelley Wiles 10 / 29 / 2010 (MM / DD / YYYY)

Reported By: Shelley Wiles

Report Date 10 / 29 / 2010 (MM / DD / YYYY)

Sample Invalidation:
- ☐ Over 30 hours
- ☐ Leak
- ☐ Heavy non-coliform growth
- ☐ Other

DHS USE ONLY

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full, without written consent of this laboratory. Send results to DHS-DWP P.O. Box 14350, Portland, OR 97293-0350

DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

DEC 1 7 2010

PWS# 41 00042

PWS Name: Keith Baldwin

City, County: City of Adrian/Malheur

Phone: _____ Fax: _____

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: City of Adrian, Ore. 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: _____

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 312970681

Sample Collected Date/Time: 11 / 23 / 2010 (MM / DD / YYYY) 9 : 46 (Hour : Min) ☒ AM ☐ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: _____ mg/L

Collected By: Dick Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Address: 107 Main St

Sampled at (ex. "SINK"): _____

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Source ID: SRC- _____

Source name (ex. "WELL #1"): _____

LAB USE ONLY

Sample Received Date/Time: 12 / 09 / 2010 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: _____

Temp: _____ °C

Evidence of cooling? ☐ Yes ☐ No

Analysis Start Date/Time: ___ / ___ / ___ (MM / DD / YYYY) ___ : ___ (Hour: Min) ☐ AM ☐ PM

Initials: _____

ORELAP Method(s): Check all that apply. ☐ SM 9223 ☐ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other: _____

Test Results:

Total Coliforms: ☐ Present ☐ Absent

E. Coli: ☐ Present ☐ Absent

Analysis Complete Date/Time: ___ / ___ / ___ (MM / DD / YYYY) ___ : ___ (Hour: Min) ☐ AM ☐ PM

Analyst: _____

Review by: _____ ___ / ___ / ___ (MM / DD / YYYY)

Reported By: Shelly [illegible]

Report Date 12 / 10 / 2010 (MM / DD / YYYY)

Sample Invalidation:
☒ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other _____

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00002

PWS Name: Adrian Fire Tank

City, County: City of Adrian/Malheur

Phone: _____ Fax: _____

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Oregon 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: _____

☐ Results do not ... See page 2

Lab Sample ID#: 312970691

Sample Collected Date/Time: 11 / 23 / 2010 8 : 56 (MM / DD / YYYY Hour : Min) ☒ AM ☐ PM

Chlorinated: ☐ No ☒ Yes

Collected By: Dick Davis

Free Chlorine: .62 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Address: 201 Main St.

Sampled at (ex. "SINK"): _____

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Source ID: SRC- _____

Source name (ex. "WELL #1"): _____

LAB USE ONLY

Sample Received Date/Time: 12 / 09 / 2010 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: _____ Temp: _____ °C

Evidence of cooling? ☐ Yes ☐ No

Analysis Start Date/Time: ___ / ___ / ___ (MM / DD / YYYY) ___ : ___ (Hour: Min) ☐ AM ☐ PM

Initials: _____

ORELAP Method(s): Check all that apply. ☐ SM 9223 ☐ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other: _____

Test Results:

Total Coliforms: ☐ Present ☐ Absent

E. Coli: ☐ Present ☐ Absent

Analysis Complete Date/Time: ___ / ___ / ___ (MM / DD / YYYY) ___ : ___ (Hour: Min) ☐ AM ☐ PM

Analyst: _____

Review by: _____ ___ / ___ / ___ (MM / DD / YYYY)

Reported By: _____

Report Date 12 / 10 / 2010 (MM / DD / YYYY)

Sample Invalidation:
☒ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other _____

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS Oregon Department of Human Services

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2) DEC 1 7 2010

PWS# 41 00007

PWS Name: Bill Elsworth

City, County: City of Adrian

Phone: _____ Fax: _____

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: City of Adrian, Ore, 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: _____

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 312970701

Sample Collected Date/Time: 11 / 23 / 2010 (MM / DD / YYYY) 9 : 27 (Hour : Min) ☒ AM ☐ PM

Chlorinated: ☐ No ☒ Yes

Collected By: Dick Davis

Free Chlorine: _____ mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Address: 784 Emerald Slope RD.

Sampled at (ex. "SINK"): _____

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Source ID: SRC- _____

Source name (ex. "WELL #1"): _____

LAB USE ONLY

Sample Received Date/Time: 12 / 09 / 2010 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: _____ Temp: _____ °C

Evidence of cooling? ☐ Yes ☐ No

Analysis Start Date/Time: ___ / ___ / ___ (MM / DD / YYYY) ___ : ___ (Hour: Min) ☐ AM ☐ PM

Initials: _____

ORELAP Method(s): Check all that apply. ☐ SM 9223 ☐ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other: _____

Test Results:

Total Coliforms: ☐ Present ☐ Absent

E. Coli: ☐ Present ☐ Absent

Analysis Complete Date/Time: ___ / ___ / ___ (MM / DD / YYYY) ___ : ___ (Hour: Min) ☐ AM ☐ PM

Analyst: _____

Review by: _____ ___ / ___ / ___ (MM / DD / YYYY)

Reported By: _____

Report Date 12 / 10 / 2010 (MM / DD / YYYY)

Sample Invalidation:
☒ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other _____

DHS USE ONLY

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DHS

DEC 1 2010

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00082

PWS Name: W. Wiarman

City, County: City of Adrian

Phone: _____ Fax: _____

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: City of Adrian, Oregon 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: _____

☐ Results do not meet NELAC Standards See page 2

Lab Sample ID#: 312970711

Sample Collected Date/Time: 11 / 23 / 2010 (MM / DD / YYYY) 9 : 45 (Hour : Min) ☒ AM ☐ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .13 mg/L

Collected By: Dick Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Address: 423 Main St.

Sampled at (ex. "SINK"): _____

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Source ID: SRC- _____

Source name (ex. "WELL #1"): _____

LAB USE ONLY

Sample Received Date/Time: 12 / 09 / 2010 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: _____ Temp: _____ °C

Evidence of cooling? ☐ Yes ☐ No

Analysis Start Date/Time: ___ / ___ / ___ (MM / DD / YYYY) ___ : ___ (Hour: Min) ☐ AM ☐ PM

Initials: _____

ORELAP Method(s): Check all that apply. ☐ SM 9223 ☐ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other: _____

Test Results:

Total Coliforms: ☐ Present ☐ Absent

E. Coli: ☐ Present ☐ Absent

Analysis Complete Date/Time: ___ / ___ / ___ (MM / DD / YYYY) ___ : ___ (Hour: Min) ☐ AM ☐ PM

Analyst: _____

Review by: _____ ___ / ___ / ___ (MM / DD / YYYY)

Reported By: [signature]

Report Date 12 / 10 / 2010 (MM / DD / YYYY)

Sample Invalidation:
☒ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other _____

DHS USE ONLY

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DHS

DEC 1 0 2010

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

PWS# 41 00002

PWS Name: Clay Webb

City, County: City of Adrian / Malheur

Phone: _____ Fax: _____

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: City of Adrian OR. 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: _____

☐ Results do not meet NELAC ... page 2

Lab Sample ID#: 312970721

Sample Collected Date/Time: 11 / 23 / 2010 (MM / DD / YYYY) 10 : 15 (Hour : Min) ☒ AM ☐ PM

Chlorinated: ☐ No ☒ Yes

Collected By: Dick Davis

Free Chlorine: .16 mg/L

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Address: 607 3rd St

Sampled at (ex. "SINK"): _____

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Source ID: SRC- _____

Source name (ex. "WELL #1"): _____

LAB USE ONLY

Sample Received Date/Time: 12 / 09 / 2010 (MM / DD / YYYY) 8:30 (Hour: Min) ☒ AM ☐ PM

Initials: DD

Temp: _____ °C

Evidence of cooling? ☐ Yes ☐ No

Analysis Start Date/Time: ___ / ___ / ___ (MM / DD / YYYY) ___ : ___ (Hour: Min) ☐ AM ☐ PM

Initials: _____

ORELAP Method(s): Check all that apply. ☐ SM 9223 ☐ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other: _____

Test Results:

Total Coliforms: ☐ Present ☐ Absent

E. Coli: ☐ Present ☐ Absent

Analysis Complete Date/Time: ___ / ___ / ___ (MM / DD / YYYY) ___ : ___ (Hour: Min) ☐ AM ☐ PM

Analyst: _____

Review by: _____ ___ / ___ / ___ (MM / DD / YYYY)

Reported By: [signature]

Report Date 12 / 10 / 2010 (MM / DD / YYYY)

Sample Invalidation:
☒ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other _____

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

JAN 0 5 2011

PWS# 41 00002

PWS Name: Bill Elsworth

City, County: City of Adrian / Malheur

Phone: _____ Fax: _____

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Ore 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: AFNG

☐ Results do not me page 2

Lab Sample ID#: 312974291

Sample Collected Date/Time: 12 / 29 / 10 (MM / DD / YYYY) 10 : 30 (Hour : Min) ☒ AM ☐ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .10 mg/L

Collected By: Dick Davis - per call w/ Dick 12/30/10 @ 0855 DB

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Address: _____

Sampled at (ex. "SINK"): _____

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☒ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Source ID: SRC- Emerald Spr

Source name (ex. "WELL #1"): _____

LAB USE ONLY

Sample Received Date/Time: 12 / 30 / 2010 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

Temp: -- °C

Evidence of cooling? ☒ Yes ☐ No

Analysis Start Date/Time: 12 / 30 / 2010 (MM / DD / YYYY) 8 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

ORELAP Method(s): Check all that apply.
☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure®
☐ Other: _____

Test Results:

Total Coliforms: ☒ Present ☐ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 12 / 31 / 2010 (MM / DD / YYYY) 09 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: [signature]

Review by: [signature] 12 / 31 / 2010 (MM / DD / YYYY)

Reported By: [signature]

Report Date 12 / 31 / 2010 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other _____

DHS USE ONLY

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State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

JAN 0 5 2011

PWS# 41 00207

PWS Name: City Wells

City, County: Edgood / Malheur

Phone: _____ Fax: _____

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, OR 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: GF013

☐ Results do not meet NELAC Chlorine page 2

Lab Sample ID#: 312974281

Sample Collected Date/Time: 12 / 29 / 10 (MM DD YYYY) 11 : 45 (Hour : Min) ☒ AM ☐ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .11 mg/L

Collected By: Dick Davis

-per call w/ Dick 12/30/10 @ 0855 DB

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Address: _____

Sampled at (ex. "SINK"): _____

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Source ID: SRC- 007 3rd ST

Source name (ex. "WELL #1"): _____

LAB USE ONLY

Sample Received Date/Time: 12 / 30 / 2010 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: JC

Temp: ___ °C

Evidence of cooling? ☒ Yes ☐ No

Analysis Start Date/Time: 12 / 30 / 2010 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: JC

ORELAP Method(s): Check all that apply.
☒ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure®
☐ Other: _____

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 12 / 31 / 2010 (MM / DD / YYYY) 2 : 00 (Hour: Min) ☐ AM ☒ PM

Analyst: [signature]

Review by: [signature] 12 / 31 / 2010 (MM / DD / YYYY)

Reported By: [signature]

Report Date 12 / 31 / 2010 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other _____

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

JAN 0 5 2011

PWS# 41 [illegible]

PWS Name: [illegible]

City, County: Adrian / Malheur

Phone: _____ Fax: _____

Return address for report:

Name: City of Adrian

Address: PO Box [illegible]

City, State, Zip: Adrian, OR [illegible]

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: G[illegible]

☐ Results do not meet NELAC Standards - See page 2

Lab Sample ID#: 312974311

Sample Collected Date/Time: 12 / 29 / 10 (MM / DD / YYYY) 10 : 42 (Hour : Min) ☒ AM ☐ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: [illegible] mg/L

Collected By: Dick Davis → per call w/ Dick 12/30/10 @0855 DB

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Address: _____

Sampled at (ex. "SINK"): _____

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Source ID: SRC- [illegible]

Source name (ex. "WELL #1"): _____

LAB USE ONLY

Sample Received Date/Time: 12 / 30 / 2010 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible] Temp: 4 °C

Evidence of cooling? ☒ Yes ☐ No

Analysis Start Date/Time: 12 / 30 / 2010 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

ORELAP Method(s): Check all that apply.
☐ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure®
☐ Other: _____

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 12 / 31 / 2010 (MM / DD / YYYY) 09:00 (Hour: Min) ☒ AM ☐ PM

Analyst: [illegible]

Review by: [illegible] 12 / 31 / 2010 (MM / DD / YYYY)

Reported By: [illegible]

Report Date 12 / 31 / 2010 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other _____

DHS USE ONLY

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DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

JAN 0 5 2011

PWS# 41 [illegible]

PWS Name: Woody Wiebrich

City, County: City of Adrian / Malheur

Phone: _____ Fax: _____

Return address for report:

Name: City of Adrian

Address: PO Box 226

City, State, Zip: Adrian, Ore. 97209

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: GFD13

☐ Results do not m[illegible] e page 2

Lab Sample ID#: 312974321

Sample Collected Date/Time: 12 / 29 / 10 (MM / DD / YYYY) 11 : 35 (Hour : Min) ☒ AM ☐ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .16 mg/L

Collected By: Dick Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Address: 412 Main

Sampled at (ex. "SINK"): _____

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___ / ___ / ___ (MM / DD / YYYY)

*Original Positive ID#: _____

Source ID: SRC- _____

Source name (ex. "WELL #1"): _____

LAB USE ONLY

Sample Received Date/Time: 12 / 30 / 2010 (MM / DD / YYYY) 8 : 30 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

Temp: 4 °C

Evidence of cooling? ☒ Yes ☐ No

Analysis Start Date/Time: 12 / 30 / 2010 (MM / DD / YYYY) 9 : 00 (Hour: Min) ☒ AM ☐ PM

Initials: [illegible]

ORELAP Method(s): Check all that apply.
☐ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure®
☐ Other: _____

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analysis Complete Date/Time: 12 / 31 / 2010 (MM / DD / YYYY) 09 : 00 (Hour: Min) ☒ AM ☐ PM

Analyst: [signature]

Review by: [signature] 12/31/2010 (MM / DD / YYYY)

Reported By: [signature]

Report Date 12/31/2010 (MM / DD / YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other _____

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

DHS

State of Oregon - Drinking Water Program
Microbiological Analysis (Coliform) Reporting Form for Public Water Supplies (v3.2)

JAN 0 5 2011

PWS# 41 00002

PWS Name: Adrian School

City, County: City of Adrian/Malheur

Phone: _____ Fax: _____

Return address for report:

Name: C.T. of Adrian

Address: PO Box

City, State, Zip: Adrian, Ore, 97901

MAGIC VALLEY LABS, INC
PO Box 1867, 210 Addison Ave
Twin Falls, ID 83303
PH 208-733-4250
FX 208-734-2539
ID100001

Bottle#: AFCB

☐ Results do not meet NELAC Standards-See page 2

Lab Sample ID#: 312974301

Sample Collected Date/Time: 12/29/10 (MM/DD/YYYY) 10:56 (Hour:Min) ☒ AM ☐ PM

Chlorinated: ☐ No ☒ Yes

Free Chlorine: .02 mg/L

Collected By: Dick Davis

DISTRIBUTION Sample Type: ☒ Routine ☐ *Repeat ☐ Temporary Routine ☐ Special

*Date of Initial Positive: ___/___/___ (MM/DD/YYYY)

*Original Positive ID#: _____

Address: High St.

Sampled at (ex. "SINK"): _____

SOURCE Sample Type: ☐ *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: ___/___/___ (MM/DD/YYYY)

*Original Positive ID#: _____

Source ID: SRC- _____

Source name (ex. "WELL #1"): _____

LAB USE ONLY

Sample Received Date/Time: 12/30/2010 (MM/DD/YYYY) 9:30 (Hour:Min) ☒ AM ☐ PM

Initials: [illegible]

Temp: 4 °C

Evidence of cooling? ☒ Yes ☐ No

Analysis Start Date/Time: 12/30/2010 (MM/DD/YYYY) 9:40 (Hour:Min) ☒ AM ☐ PM

Initials: [illegible]

ORELAP Method(s): Check all that apply. ☐ SM 9223 ☒ Colilert® ☐ Colilert-18® ☐ Colisure® ☐ Other: _____

Analysis Complete Date/Time: 12/31/2010 (MM/DD/YYYY) 09:00 (Hour:Min) ☒ AM ☐ PM

Test Results:

Total Coliforms: ☐ Present ☒ Absent

E. Coli: ☐ Present ☒ Absent

Analyst: [signature]

Review by: [signature] 12/31/2010 (MM/DD/YYYY)

Reported By: [signature]

Report Date 12/31/2010 (MM/DD/YYYY)

Sample Invalidation:
☐ Over 30 hours
☐ Leak
☐ Heavy non-coliform growth
☐ Other _____

DHS USE ONLY

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For technical support and information, please call Data Management Coordinator (ph. 971-673-0405, M-F, 8am-5pm PT) or visit http://www.oregon.gov/DHS/ph/dwp/labs.shtml

OREGON PUBLIC HEALTH DIVISION
Drinking Water Program

John A. Kitzhaber, MD, Governor

MAR 2 3 2012

Oregon Health Authority

444 A Street
Springfield, OR 97477
541-726-2587 ext.
FAX: 541-726-2596
www.healthoregon.org/dwp

March 20, 2012

Shawn Snyder
City of Adrian
P. O. Box 226
Adrian, OR 97901

RE: Completion of Monthly Source Assessment Monitoring at Public Water System (PWS) #4100002 – City of Adrian; SRC-AA (Well #4) and SRC-AC (Well #2)

At the beginning of 2010, we informed you of a new requirement under the Groundwater Rule (GWR) to initiate monthly assessment monitoring of the raw water at **sources SRC-AA (Well #4) and SRC-AC (Well #2)**. The original letter explained why these sources had been identified as susceptible to fecal contamination, and thus required more evaluation.

The City of Adrian has completed the required source assessment monitoring by submitting monthly raw water coliform samples. The monitoring data has been reviewed, and none of the samples were confirmed positive for fecal coliform (*E. coli*). Based on the results, the risk of fecal contamination (bacteria or viruses) occurring in your water supply appears to be low.

You can see your results by:

- Going to the "Data Online" feature on the Drinking Water Program's Web Site - http://170.104.63.9/;
- Looking up your public water system by name or by number (options at top of page);
- Clicking on the "Coliform Results" heading at the bottom of your system's page.

On the Coliform Results page, those listed as "SRC-" under the "Facility" column were reported as source water samples. (SRC stands for "source" and the letters that follow it correspond to each individual water source listed on the main web page for your water system: SRC-AA, SRC-AB, etc.)

Since the evaluation process has been completed, you may discontinue conducting the monthly monitoring of your raw water. We have notified your regulator that you have completed the monitoring. In the future, if the geologic conditions, water quality trends, or other indicators change, the Drinking Water Program can require re-evaluation of a source despite the results of any previously collected data or determinations.

Here are the current coliform sampling requirements for your system from now on:

1. Continue to collect routine coliform samples in the distribution system, as always.
2. If any of the distribution samples tests positive for coliform bacteria (total or fecal), that becomes a "trigger" to collect a raw water sample from each active source at that time (called the **triggered monitoring** requirement of the GWR).
3. All groundwater systems that use ultraviolet, chlorine, ozone, or other disinfectant must submit at least one raw water assessment sample from each active source per year under the GWR. Either a triggered sample or a separate, annual assessment sample will count toward this requirement for a groundwater source.

To ensure proper credit for your source water samples, follow the lab form labeling instructions at our website and **be sure to fill in the "Source" sample section** (http://www.oregon.gov/DHS/ph/dwp/docs/lab/LabFormGuidance.pdf). Below is an example for a **Triggered Monitoring** source sample:

SOURCE Sample Type: X *Triggered ☐ *Confirmation ☐ Assessment ☐ Special

*Date of Initial Positive: 08 / 22 / 2012 (MM / DD / YYYY) *Original Positive ID#: 45835

Source ID: SRC- AA Source name (ex. "WELL #1"): Well #4

Any remaining questions about source water sampling should be directed to the agency representative responsible for your water system (either at the County Health Dept., Dept. of Agriculture, or state DWP). If you are unsure who the representative is for your system, you may call our general program number at (971) 673-0405.

Sincerely,

Tom Pattee

Tom Pattee, R.G.
Groundwater Coordinator
OHA Drinking Water Program

CC: Amy Word, OHA-DWP
Bill Goss, OHA-DWP

Oregon Public Health
Drinking Water Data Online

Health

Groundwater/GWUDI Source Detail for PWS 00002 ---- ADRIAN, CITY OF

Non-purchased Groundwater/GWUDI Sources:

- SRC-AA - WELL #4
- SRC-AC - WELL #2
- SRC-AB - WELL #3 (Inactive)
- SRC-AD - WELL #1 DISCONNECTED (Inactive)
- SRC-AE - WELL #5 DISCONNECTED (Inactive)

Related Pages:

- Coliform Sampling Schedules
- Coliform Results

Contact Us:

- Email us with questions, comments, or suggestions about this page.

SRC-AA: WELL #4

GW, Active, Permanent ---- Operating Period: Jan 1 - Dec 31

Disinfection: HYPOCHLORINATION, PRE ; HYPOCHLORINATION, PRE ; HYPOCHLORINATION, PRE ; RESID. MAINT. HYPOCHLORINATION

Sensitivity Analysis Data

Aquifer sensitivity:	High	Surface water within 500 feet:	Yes
Well construction adequate?:	No - Seal Not Constructed Properly	Surface water type:	Stream
E. coli sources within 2-year time-of-travel:	Yes	Data last updated:	03/30/2004

Monthly Assessment Monitoring Data

Monthly Assessment Monitoring Required? Yes

Monthly Schedule (Closed): 1 sample(s) per month to be taken beginning 01/01/2010 - 01/31/2012

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
# Samples	1	0	1	1	1	1	2	1	1	2	1	1
TC+	0	-	0	0	0	0	0	0	0	0	0	0
E. coli+	0	-	0	0	0	0	0	0	0	0	0	0

No historic GWUDI data were found.

Back to top

SRC-AC: WELL #2

GW, Active, Seasonal ---- Operating Period: Jan 1 - Dec 31

Disinfection: HYPOCHLORINATION, PRE ; HYPOCHLORINATION, PRE ; HYPOCHLORINATION, PRE ; RESID. MAINT. HYPOCHLORINATION

Sensitivity Analysis Data

Aquifer sensitivity:	High	Surface water within 500 feet:	Yes
Well construction adequate?:	No - Seal Not Constructed Properly	Surface water type:	Stream
E. coli sources within 2-year time-of-travel:	Yes	Data last updated:	03/30/2004

Monthly Assessment Monitoring Data

Monthly Assessment Monitoring Required? Yes

Monthly Schedule (Closed): 1 sample(s) per month to be taken beginning 01/01/2010 - 01/31/2012

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
# Samples	1	1	1	0	0	1	1	1	1	1	1	1
TC+	0	0	0	-	-	0	0	0	0	0	0	0
E. coli+	0	0	0	-	-	0	0	0	0	0	0	0

No historic GWUDI data were found.

Back to top

SRC-AB: WELL #3

GW, Inactive, Emergency ---- *Operating Period Unknown*

Disinfection: HYPOCHLORINATION, PRE ; HYPOCHLORINATION, PRE ; HYPOCHLORINATION, PRE ; RESID. MAINT. HYPOCHLORINATION

Sensitivity Analysis Data

Aquifer sensitivity:	High	Surface water within 500 feet:	Yes
Well construction adequate?:	No - Seal Not Constructed Properly	Surface water type:	Stream
E. coli sources within 2-year time-of-travel:	Yes	Data last updated:	03/30/2004

Monthly Assessment Monitoring Data

Monthly Assessment Monitoring Required? Yes
No monthly assessment monitoring schedule found.
No historic GWUDI data were found.

Back to top

SRC-AD: WELL #1 DISCONNECTED

GW, Inactive (Disconnected), Emergency ---- *Operating Period Unknown*
Disinfection: None

Sensitivity Analysis Data

Aquifer sensitivity:	Unknown	Surface water within 500 feet:	Unknown
Well construction adequate?:	Unknown	Surface water type:	Unknown
E. coli sources within 2-year time-of-travel:	Unknown	Data last updated:	08/22/2006

Monthly Assessment Monitoring Data

Monthly Assessment Monitoring Required? No
No monthly assessment monitoring schedule found.
No historic GWUDI data were found.

Back to top

SRC-AE: WELL #5 DISCONNECTED

GW, Inactive (Disconnected), Other ---- Operating Period: Jan 1 - Dec 31
Disinfection: None

Sensitivity Analysis Data

Aquifer sensitivity:	Unknown	Surface water within 500 feet:	No
Well construction adequate?:	Yes	Surface water type:	Unknown
E. coli sources within 2-year time-of-travel:	Unknown	Data last updated:	07/24/2009

Monthly Assessment Monitoring Data

Monthly Assessment Monitoring Required? No
No monthly assessment monitoring schedule found.
No historic GWUDI data were found.

Back to top

For further information on this public water system, click on the area of interest below:
System Info :: Report for Lenders :: Alerts :: Violations :: Enforcements :: Contacts :: Site Visits :: Public Notice :: Plan Review
Coliform Summary :: Coliform Results :: Sampling Schedule for Coliform :: Groundwater/GWUDI Source Details
Chemical Group Summary :: Latest Chemical Results :: Entry Point Detects :: Single Analyte Results
Chemical Schedule Summary :: Chemical Schedule Details
Lead & Copper :: Corrosion Control (LCR) :: Nitrate :: Arsenic :: Radionuclides :: GWR 4-Log
DBPs :: TOC & Alkalinity :: DBP/TOC/Bromate/Chlorine Monitoring :: FANLs :: MRDL :: Turbidity :: SWTR :: RAA

Inventory List for all Oregon Drinking Water Systems in Excel or printable screen format
Tools for Laboratories

Introduction :: Data Search Options :: WS Name Look Up :: WS ID Look Up :: DWP Home

MAGIC VALLEY LABS
210 Addison Ave / PO Box 1867
Twin Falls ID 83303-1867
Phone: (208) 733-4250
Fax: (208) 734-2539

ADRIAN CITY OF

PO BOX 205
ADRIAN OR 97901

Collection Date 9/19/2012 **Received Date** 9/20/2012 **Location**
Collection Time 10:26 AM **Received Time** 8 :30 AM WASHINGTON ST 400

Sample #	Test / Method Code	Results in mg/L	Date Analyzed	Analyst
1243601	THM	0.0011	9/27/2012	EAL
1243602	HAA	0.0014	9/27/2012	EAL

Signature **Report Date:** Tuesday, March 12, 2013

Roland Rocha

From: Magic Valley Labs, Inc [mvlabs@cableone.net]
Sent: Tuesday, March 12, 2013 4:06 PM
To: Roland Rocha
Subject: NITRATE - OREGON MVL

MAGIC VALLEY LABS
215 Addison Box 1867
Twin Falls, ID 83301
ORELAP #: ID 100001

To be Filled in by Person Submitting Sample:		
Public Water System ☑		Realty Transaction ☐
Pws ID #: **4100002**	Source ID:	Source name:
Public Water System or Property Owner Name		
ADRIAN CITY OF		
Address **PO BOX 205**		
City, State, Zip **ADRIAN OR 97901**		
Sampled at: WELL HEAD	Sampled by:	
Date Collected: 12/28/2009	Time collected: 3:40:00 PM	
Sample Composition:	Single	

To be Completed by Laboratory	
Date received in lab: 12/29/2009	Nitrate MDL = 0.1mg/L Nitrite MDL = 0.1mg/L Date analyzed NO3: 12/30/2009 Date analyzed NO2:
Lab sampled ID #: 982301	Sample composited in lab: N

Contaminant	Code	MCL mg/l	Analysis mg/l	Method	Analyst
Nitrate**	1040	10.	ND	SM4500NO3	*
Nitrate-Nitrite**	1038	10.			
Nitrite**	1041	1.0	.	EPA300.0	

**These results comply with the NELAC standard

_____
Signature / date

Roland Rocha

From: Magic Valley Labs, Inc [mvlabs@cableone.net]
Sent: Tuesday, March 12, 2013 4:06 PM
To: Roland Rocha
Subject: IOC - Oregon ANATEK

MAGIC VALLEY LABS, INC.
210 Addison Ave, PO Box 1867
Twin Falls, ID 83301
ID100001

System ID #: 4100002	Entry Point or Source ID:	Source name(s):
Water System	**ADRIAN CITY OF**	
Address	**PO BOX 205**	
City, State, Zip	**ADRIAN OR 97901**	
	Sample Identification	
Sampled at:	WELL HEAD	Sampled by:
Date Collected:	12/28/2009	Time collected: 3:40:00 PM
Date received:	12/29/2009	
Sample:	| Single (Circle appropriate descriptors above)	
Lab sample ID #:	982311	Composite Sample:

Inorganic Chemicals

Contaminant	Code	MCL mg/l	Analysis mg/l	Method	LRL	Analyst	Date
Antimony Total	1074	0.006		200.8	0.001	*	
Arsenic	1005	0.010	<0.001	200.8	0.001	*	
Asbestos	1094	7 MF/l[3]					
Barium	1010	2		200.8	0.001	*	
Berylium Total	1075	0.004		200.8	0.001	*	
Cadmium	1015	0.005		200.8	0.001	*	
Chromium	1020	0.1		200.8	0.001	*	
Cyanide	1024	0.2		335.4	0.01	*	
Fluoride	1025	4.0		300.0	0.1	*	
Lead	1030	0.015		200.8	0.001	*	
Mercury	1035	0.002		200.8	0.0001	*	
Nickel	1036			200.8	0.01	*	
Selenium	1045	0.05		200.8	0.001	*	
Sodium[2]	1052	15		200.8	0.1	*	
Sulfate	1055			300.0	0.001	*	
Thallium Total	1085	0.002		200.8	0.001	*	

*TEST PERFORMED BY ANATEK LABS, INC. ORELAP #ID200001

[2] Community systems only
[3] Million Fibers/liter >10um

Signature / Date:_____

Roland Rocha

From: Magic Valley Labs, Inc [mvlabs@cableone.net]
Sent: Tuesday, March 12, 2013 4:08 PM
To: Roland Rocha
Subject: ADRIAN 12-10-12

MAGIC VALLEY LABS, INC.
210 Addison Ave. PO Box 1867
Twin Falls ID 83301
Phone: 208-733-4250 Fax: 208-734-2539
Orelap ID100001

Oregon Department of Human Services

Oregon Drinking Water Program Chemical Analysis Report

Water System Information	Sample Information	
PWS ID: OR4100002	Collection Date: 9/19/2012	Report Date: 10/25/2012
PWS Name: ADRIAN CITY OF	Source ID (EP-A, EP-B, etc.): WELL #4	
Address: PO BOX 205	Sample Type: ROUTINE	
City, State, Zip: ADRIAN OR 97901	**Sample/Lab ID**: 1243591	

Analytical results meet all NELAC requirements unless otherwise noted.

*Benchmark Analytics PA00153

Radiological Compounds

Primary Regulated Radiologicals

Analyte Code	Analyte	MCL	Result	Precision	Units	Limit of Quantitation (LQ)	Test Method	Comments
4000	Adjusted Gross Alpha Particle Activity, **Excludes** Uranium & Radon	15 pCi/L	1.58*	±0.90	pCi/L	2.89	EPA 900.0	**Calculated at lab when U is also analyzed.**
4010	Combined Radium 226/228	5 pCi/L	0.30*	±0.41	pCi/L	1.50	EPA 903.0 / 904.0	Add Radium 226 + Radium 228
4006	Combined Uranium	0.03 mg/L			mg/L	0.001	EPA 200.8	
4100	Gross Beta Particle Activity	*50 pCi/L*		±	pCi/L		EPA 900.0	*MCL = Screening level*

Additional Radiologicals (if analysis is requested by water system, or to use for calculations of regulated analytes)

4002	Gross Alpha Particle Activity, ***Excludes*** Radon, ***Includes*** Uranium		*		pCi/L			
4020	Radium 226		*		pCi/L		EPA 903.0	
4030	Radium 228		*		pCi/L		EPA 904.0	

4100	Gross Beta Particle Activity (Dose)	4 mrem/y	*		mrem/y			
4044	Potassium-40				pCi/L			
4004	Radon-222				pCi/L			
4264	Iodine-131				pCi/L			
4174	Strontium-90				pCi/L			
4102	Tritium				pCi/L			

Reviewed by_____ Date Reviewed_____

Roland Rocha

From: Magic Valley Labs, Inc [mvlabs@cableone.net]
Sent: Tuesday, March 12, 2013 4:08 PM
To: Roland Rocha
Subject: ADRIAN 9-19-12

MAGIC VALLEY LABS, INC.
210 Addison Ave. PO Box 1867
Twin Falls ID 83301
Phone: 208-733-4250 Fax: 208-734-2539
Orelap ID100001

Oregon Department of Human Services

Oregon Drinking Water Program Chemical Analysis Report

Water System Information	Sample Information	
PWS ID: OR4100002	Collection Date: 9/19/2012	Report Date: 10/25/2012
PWS Name: ADRIAN CITY OF	Source ID (EP-A, EP-B, etc.): WELL #4	
Address: PO BOX 205	Sample Type: ROUTINE	
City, State, Zip: ADRIAN OR 97901	**Sample/Lab ID**: 1243591	

Analytical results meet all NELAC requirements unless otherwise noted.

*Benchmark Analytics PA00153 **Anatek Labs, Inc ID200001

Radiological Compounds

Primary Regulated Radiologicals

Analyte Code	Analyte	MCL	Result	Precision	Units	Limit of Quantitation (LQ)	Test Method	Comments
4000	Adjusted Gross Alpha Particle Activity, **Excludes** Uranium & Radon	15 pCi/L	1.74*	0.94 ±	pCi/L	2.94	EPA 900.0	**Calculated at lab when U is also analyzed.**
4010	Combined Radium 226/228	5 pCi/L	0.44*	0.52±	pCi/L	1.52	EPA 903.0 / 904.0	Add Radium 226 + Radium 228
4006	Combined Uranium	0.03 mg/L	**		mg/L	0.001	EPA 200.8	
4100	Gross Beta Particle Activity	*50 pCi/L*	*	±	pCi/L		EPA 900.0	*MCL = Screening level*

Additional Radiologicals (if analysis is requested by water system, or to use for calculations of regulated analytes)

4002	Gross Alpha Particle Activity, ***Excludes*** Radon, ***Includes*** Uranium		*		pCi/L			
4020	Radium 226		*		pCi/L		EPA 903.0	
4030	Radium 228		*		pCi/L		EPA 904.0	

4100	Gross Beta Particle Activity (Dose)	4 mrem/y	*		mrem/y			
4044	Potassium-40				pCi/L			
4004	Radon-222				pCi/L			
4264	Iodine-131				pCi/L			
4174	Strontium-90				pCi/L			
4102	Tritium				pCi/L			

Reviewed by_____ Date Reviewed_____

Attachment 2

2015 Preliminary Engineering Report

CITY OF ADRIAN, OREGON

Water System Improvements

PRELIMINARY ENGINEERING REPORT

Final – December 2015

REGISTERED PROFESSIONAL ENGINEER
84116PE
OREGON
MARCH 9, 2010
ROLAND ROCHA
EXPIRES: 12/31/2016

KELLER associates

213013-003/PER/15-373

PUBLIC HEALTH DIVISION
Drinking Water Services

Kate Brown, Governor

Oregon Health Authority

800 SE Emigrant Ave., Suite 240
Pendleton, OR 97801
(541) 276-8006
FAX (541) 276-4778
www.healthoregon.org/dwp

November 19, 2015

Roland Rocha, P.E.
Keller Associates
131 SW 5th Avenue, Suite A
Meridian, Idaho 83642

Re: Preliminary Engineering Report for City of Adrian, PWS ID: 4100002

Thank you for your submittal of the Preliminary Engineering Report for the City of Adrian's Water System Improvements to the Oregon Health Authority's Drinking Water Services (DWS), which was received on October 15, 2015.

DWS concurs that the recommended alternative be option 3, which would include a polishing filter with NXT-2 media in addition to coagulation/pressure filtration for arsenic and uranium removal. The estimated cost of this option is $1.46 million.

I also have the following comments:

- I note that although sample results indicate nitrate concentrations in water from well 6 are above 9 mg/l but less than the maximum contaminant level (MCL) of 10 mg/l, there are no plans at present to treat the water for nitrate removal. Should nitrate concentrations exceed the MCL in the future, treatment for nitrate removal will likely be required. I recommend taking the possibility of adding another treatment train into consideration in the final design of the treatment facility.
- Section 5.1 #6 states that there have been 8 violations for total coliform in the last 7 years. The city has received 13 violations for total coliform and one violation for *E. coli* in the last five years as shown here: https://yourwater.oregon.gov/violsum.php?pwsno=00002
- The third paragraph on page 13 states that an operator with higher certification would be required once the treatment plant is operating. As Adrian has less than 150 service connections, the current requirement of having a Small Groundwater System Operator would remain the same, although additional training on operation of the plant would be needed.

If you have any questions or need this information in an alternate format please call me at 541-966-0900, or by email at william.h.goss@state.or.us .

Sincerely,

William Goss, P.E.
Regional Engineer

c. File, OHA - Drinking Water Services, Portland
Shawn Snyder, City of Adrian
Shanna Bailey, Infrastructure Finance Authority

ADRIAN, OREGON
WATER SYSTEM IMPROVEMENTS
PRELIMINARY ENGINEERING REPORT

1. Executive Summary

The 2013 Adrian Water Master Plan identified the need for an additional potable water source to continue to provide water to the residents of Adrian. Since the completion of the master plan, the City drilled a new well (Well 6) and found that it has the yield to meet Adrian's projected needs far beyond the next 20 years. The water quality of Well 6, however, is extremely poor. The well site is roughly a mile outside of town and has no pump or ancillary facilities and utilities needed to make the well operational. The City enlisted the help of Keller Associates to address these challenges.

A water treatment pilot test completed by the City and Keller Associates in August 2015 demonstrated coagulation, pressure filtration, and adsorption to be an effective treatment technology to bring Well 6 water up to State and Federal water quality standards.

This preliminary engineering report provides supporting technical details regarding the proposed well pumping facilities, transmission pipeline, and treatment system.

2. Introduction

The City of Adrian has been working to improve their water supply and quality for many years. Most recently, the City commissioned Keller Associates to complete a Water Master Plan, which was finalized in October 2013. The priority improvements recommended in the Water Master Plan included drilling a new well, equipping the well with treatment facilities to meet water quality standards, constructing necessary transmission pipelines to connect the new well to the water system, and equipping the storage tank with a mixing system to improve the water quality. The City of Adrian began implementing these priority improvements by drilling a new well (Well 6) in 2014.

While the production capacity from Well 6 was excellent, the water quality was much worse than anticipated. Water quality samples from Well 6 were taken at various times in 2015 after the well was developed (see Appendix B for testing results). Each of the tests revealed arsenic concentrations seven times higher than the maximum contaminant level (MCL) established by EPA. Such high levels are difficult and expensive to treat.

Moreover, one out of the five tests showed uranium to be at 31.7 micrograms per liter (µg/L), which is over the MCL of 30 µg/L. The remaining four tests showed uranium consistently below 26 µg/L. As with arsenic, uranium is also difficult and expensive to treat. Because uranium is radioactive, disposal of the treatment waste can be one of the most significant difficulties and expenses of the treatment process. The allowable method of disposal depends greatly upon the concentration of the uranium in the treatment waste.

In addition to high levels of arsenic and uranium, the nitrate levels in Well 6 were at 9.5 milligrams per liter (mg/L) and the MCL is 10 mg/L. None of the tests showed nitrates to exceed the MCL, but it is mentioned here specifically because of its relatively high level.

After considering the options, the City council decided to pursue treatment technologies that addressed arsenic and any uranium that my get removed with the arsenic treatment system, but not nitrates due to the high operational costs associated with nitrate removal technologies (reverse osmosis and ion exchange). With groundwater as the source, wide variations in pollutant concentrations are not anticipated; however, gradual changes over time are possible. If nitrate concentrations ever increase to exceed the MCL, additional treatment will be required, which could include a polishing step at the end of the existing treatment train.

The purpose of this preliminary engineering report is to document the water treatment alternatives evaluated to meet federal water quality standards in Well 6, report findings of a pilot test of the alternatives, and identify the recommended alternative to integrate Well 6 into the existing water system.

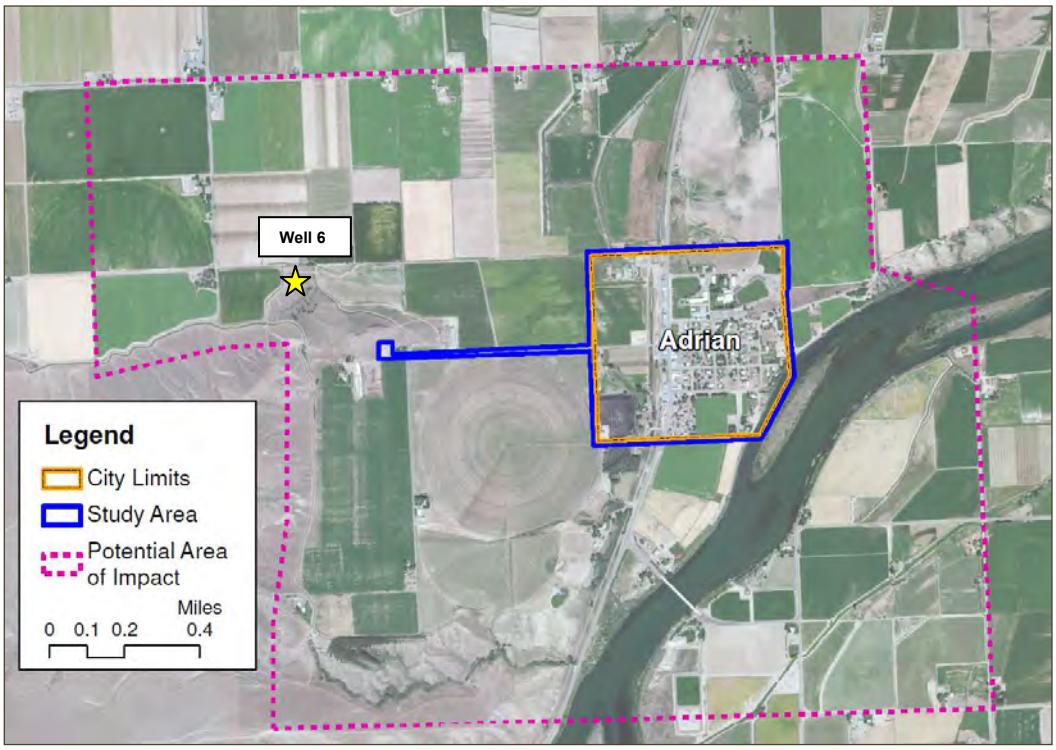
3. Project Planning Area

The project planning area correlates to the region inside the current city limits (illustrated in Figure 3.1 below), along with the new Well 6 site and its access road. The project is adjacent to farmland and commercial lands.

3.1 Study Area Location

The study area includes Malheur County roadways, public rights of way, easements dedicated to the City of Adrian, and waters of the United States. Figure A.1 (Appendix A) shows legal boundaries, key elevations, roads, and other key features in the study area. Figures A.2 and A.3 (Appendix A) are photographs of the area surrounding the well site.

Figure 3.1: Adrian Water Project Area



3.2 Physical Environment

This section provides information on important land resources, historic sites, endangered species/critical habitats, etc. within the project area.

3.2.1 Land Use

a. General Land Use: As shown in Figure A.4 (Appendix A), the proposed water treatment site is currently in a City land use area. The waste line from the treatment plant will be constructed along the border of a residential land use zone, and all other aspects of the project are in an agricultural zone.

b. Prime and Important Farmland, Prime Rangeland, and Prime Forest land: As discussed in the 2013 Water Master Plan, some areas outside of the city limits are zoned Exclusive Farm Use (EFU); however, this project will not affect the use of such lands or restrict property owners' abilities to farm. Easements have already been granted for all EFU land in the project area. There is no prime rangeland or prime forest land in the project area.

c. Formally Classified Lands: There are no formally classified lands within the project area.

3.2.2 Floodplains

Although Adrian is adjacent to the Snake River, the majority of the City is located outside the designated floodplain. Figures A.5 and A.6 (Appendix A) are FEMA flood insurance rate maps for the project area. These figures show that the project does not involve any land within the 100- or 500-year floodplains.

3.2.3 Wetlands

Some designated wetlands exist south of Adrian, but the project area does not include any of these wetlands (see Figure A.7, Appendix A, for a wetlands map).

3.2.4 Cultural Resources

The project improvements will occur in previously-disturbed areas, which include the Well 2/3 site, Well 6 site, and existing access roads to Well 6. This project is not anticipated to impact cultural resources.

3.2.5 Biological Resources

a. Flora and Fauna: As this project will be constructed on land that has existing improvements (roads, well sites), no flora or fauna will be affected by the project.

b. Threatened and Endangered Species: Due to existing improvements in the project area, no threatened or endangered species will be impacted during this project. Species listed in the project location as endangered, threatened, proposed, or candidate species by the U.S. Fish and Wildlife Service (as of 7/24/2015) are listed below:

- Endangered: (None)
- Threatened: (None)
- Proposed: (None)
- Candidate: Greater Sage-grouse

3.2.6 Water Quality

The water quality of the project area is discussed in Section 5 of this report. In summary, the project improvements will improve groundwater quality to comply with Environmental Protection Agency (EPA) standards. No impacts are proposed to surface water.

3.2.7 Water Quantity

The water quantity in the project area is discussed in Section 5 of this report. In summary, the project improvements will increase groundwater supply for the City of Adrian residents.

3.2.8 Coastal Resources

There are no coastal resources in the project area.

3.2.9 Miscellaneous Issues

a. Air Quality: No existing air quality issues have been identified for Adrian, nor are any expected to be created from the project. The finished project will have zero emissions under normal operations. However, in the case of power loss a backup diesel generator will provide power to the treatment building, which will emit exhaust during operation.

b. Transportation: Due to the remote location of the project, it will not have an impact on the transportation of goods or people.

c. Noise: No existing noise restrictions or issues have been identified in Adrian. This project will not create any noise issues.

3.2.10 Environmental Justice

The project will uniformly benefit and meaningfully involve all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

3.3 Socio-Economic Environment

Refer to the 2013 Water Master Plan for all Socio-Economic Environment information relevant to this preliminary engineering report.

3.3.1 Economic Conditions and Trends

Refer to Section 2.8.8 of the 2013 Water Master Plan for more information.

3.3.2 Population Trends and Growth Projection

Refer to Section 2.9 of the 2013 Water Master Plan for more information.

4. Existing Water System Facilities

The City of Adrian currently has three functioning wells, 16,500 feet of water mains, and one storage tank, which service a population of 180 through 104 water connections. For more detailed information, refer to Chapter 3 of the 2013 Water Master Plan.

4.1 Location Map

An overview of the existing water system facilities is shown in Figure A.8 (Appendix A).

4.2 History

Historically, the City of Adrian has depended on the three existing wells shown in Figure A.8 (Appendix A). As discussed in the Water Master Plan, Wells 2 and 3 were constructed in 1978, and Well 4 was constructed in 1982. Well 4 has been the City's primary drinking water source for a number of years. However, all three existing wells have poor water quality, in addition to being insufficient to meet peak water demands. While the water quality problems do not technically violate national primary water standards, they do exceed secondary standards, which leads to very poor taste and odor.

4.3 Condition of Facilities

Wells 2, 3, and 4 were completed with open (not lined or screened) boreholes. All three wells have antiquated control and electrical gear with primitive building enclosures, and they all experience significant drawdown and declining pump capacity when operated for sustained periods. Additionally, Wells 2 and 3 create drawdown conflicts when operated simultaneously, which prevents running both wells at the same time. The City suffers from poor water quality, aging infrastructure, and declining pumping capacity from all three wells. Well 4 pumps significant amounts of sand, which accelerates pump wear and increases maintenance and replacement costs. Currently, water from Well 4 is disinfected with 12.5% liquid chlorine dosed by an injection pump located at the well. The pumping facility's' enclosure is very rudimentary and dilapidated. The theoretic pumping capacities of the existing facilities are summarized in Table 4.1. However, the pumping rate drops by more than half after extended pumping for all three wells. It is assumed that this drop in capacity is due to aquifer drawdown and depletion. The City has struggled to keep up with system demands in recent years because the combined capacity of the wells during the peak demand months drops to 65 gpm. The concern is that this a pattern that will ultimately leave the city without a water supply.

Table 4.1: Water Supply of Existing System

	Pumping Capacity (gpm)[1]
Well 4	100
Well 2 or 3 [2]	30
Total Capacity	<130 (drawdown influence)
Firm Capacity (largest well out of service)	30
Max Day Demand	**66**
Firm Capacity Deficiency	**36**

1. As reported in previous study

2. Well 2 and 3 cannot be operated simultaneously due to drawdown conflicts

The water storage tank was constructed in 1978 and is the only water storage for the City. The approximate useable storage of the tank is 200,000 gallons. However, due to poor circulation in the tank and water quality problems described in previous sections, only half of the storage tank volume can be used during winter months.

The water distribution system consists of approximately 3.1 miles of pipe ranging from 6 to 10 inches in diameter. There are approximately 20 triple-port fire hydrants throughout the city. It was recommended in the 2013 Water Master Plan that the dead-end lines be looped, and that a yearly maintenance and replacement schedule be implemented.

Currently, the City water is in compliance with the Safe Drinking Water Act and all applicable State requirements other than the intermittent bacteria violations.

4.4 Financial Status of any Operating Central Facilities

The rate schedule, annual operating and maintenance cost, recommended user rate, and all other financial data available was discussed in the 2013 Water Master Plan. In summary, historical operating revenue has been sufficient to cover operating expenditures. However, it has not been adequate to fund depreciation and system replacement. In addition, the proposed project improvements will increase operating costs, require more sophisticated operators, and incur debt, which will create an additional loan payment. All of these conditions will require an increase in the monthly user charge to offset these additional operating costs.

5. Basis of Planning

This section will describe why the project is needed, give the regulations that must be met with the project, describe the basis for the cost estimate, and discuss the capacity of the proposed improvements.

5.1 Need for Project

The project need is discussed in full detail in the 2013 Water Master Plan. As a summary, system deficiencies include the following:

1. A declining water table in the existing wells reduces their production capacity below summer water demands.
2. The existing operational wells (2, 3, and 4) are not able to meet the maximum day demands with redundancy.
3. There is insufficient backup power for the water supply.
4. The existing system does not provide mechanical redundancy for fire flows with the largest pump offline.
5. All wells have significant water quality problems that affect taste and odor, and cause disinfection byproducts in the water storage tank. This, in turn, prevents use of the full storage volume.
6. The City has received 13 violations for total coliform and one violation for E. coli in the last 5 years.

5.1.1 Health and Safety

As part of implementing a solution to the water supply deficiencies, the City drilled and developed Well 6. The well has not been equipped with a pump, nor has it been piped to the distribution system. Unfortunately, Well 6's water supply presents potential health and safety concerns if not properly treated prior to serving to the public. Water quality reports (Appendix B) show that water from Well 6 needs to be treated based on federal drinking water standards, as the arsenic concentration exceeded the maximum contaminant levels of 0.010 mg/L, and other constituents (including uranium and nitrates) were near the MCLs. In one test, Uranium was shown to be over the MCL.

5.1.2 System Operation, Maintenance, and Replacement

These elements are discussed in length in Chapters 4 and 6 of the 2013 Water Master Plan. In summary, the proposed project will require more sophisticated and qualified water system operators. Furthermore, the City's current operator desires to retire. Consequently, the City needs to start now to identify a new qualified operator and incorporate this operator's salary costs into system operating expenditures. Historically, the City has not been able to budget for a consistent replacement program. Additional revenue should be budgeted and set aside for a replacement program.

5.1.3 Growth

The current population is around 190, and the annual population growth for the last 20 years has been 1.45%. Based on this rate, the 20-year population projection would be 240 people. The proposed project is expected to provide sufficient water supply for the next 20 years.

5.2 Basis for Design

5.2.1 Regulatory Requirements

The project design will be submitted to the Oregon Department of Environmental Quality for an environmental impact analysis in accordance with the National Environmental Policy Act and United States Department of Agriculture-Rural Utilities Service (USDA-RUS) procedures. The project will be designed to minimize adverse environmental impacts while complying with Federal and State drinking water standards.

5.2.2 Design Criteria

As stated, Well 6 has already been drilled and developed. Water quality testing has been completed (see Appendix B for testing results) and is the basis of the design criteria for the well pumping and treatment facilities. The pump for Well 6 will need to be capable of pumping at least the 20-year maximum day demand estimated at 90 gpm through the water treatment plant (WTP) and into the City's potable distribution system. A new power service/supply will be required at the

Well 6 site for the new pump and motor. A 6-inch transmission pipeline from Well 6 to the treatment plant will be required.

The water treatment facility will be designed for compliance with Safe Drinking Water Act standards. The design criteria for the water supply and treatment facility are summarized in Table 5.1.

Table 5.1: Water Supply and Treatment Criteria

Item	Units	Criteria
Well 6 Pumping Facilities		
Ground Elevation at Well 6	ft	2453
Static Groundwater Level	ft-bgs	153
Estimated Well 6 Yield	gpm	350
Target Production Rate	gpm	100
Estimated Drawdown at 100 gpm Pumping Rate	ft	9
Estimated Drawdown from Neighboring Wells	ft	10
Existing Storage Tank Hydraulic Grade	ft	2389
Pump/Motor Pumping Rate Target	gpm	100
Pump Total Dynamic Head Target	ft	136
Pump / Motor Horsepower Minimum	hp	5
Raw Water Concentrations for Pollutants of Concern		
Uranium	mg/L	0.026-0.032
Arsenic	mg/L	0.073
Nitrate	mg/L	9.5
Treatment Plant Effluent Concentration Limits		
Uranium	mg/L	< 0.030
Arsenic	mg/L	< 0.010
Nitrate	mg/L	< 10.0

A geotechnical investigation of the proposed WTP site location was conducted in July 2015. The findings of the investigation are included in Appendix C and summarized in Table 5.2.

Table 5.2: Geotechnical Design Criteria

Item	Units	Criteria
Seismic Classification	N/A	ASCE/SEI 7-10
Groundwater Depth Below Ground Surface	ft	>8
Infiltration Rate	in/hr	4
Depth of Undisturbed, Native Soils Below Ground Surface	ft	3-4
Recommended Subgrade Compaction	%	95
Net Allowable Soil Bearing Capacity [1]	psf	2,000

1. Upper 1-2' of soil across site is in disturbed condition and not suitable for support of foundation elements.

The transmission pipeline improvements from Well 6 to the WTP site shall be aligned inside existing recorded easements (see the appendix to the well completion report in Appendix D) and/or inside existing public right of ways.

5.3 Basis for Cost Estimate

Cost estimates for construction, engineering, legal, and administrative services are based on 2015 dollars. A contingency of 20% has been incorporated into the cost estimate to account for unanticipated costs or fluctuations in bid prices. It is recommended that the City set aside a 5% contingency fund after the project is awarded to the apparent low bidder for change orders that may occur during construction.

5.4 Water System Design Capacity

See Section 5.2.2 of this report. No modifications are proposed to the existing storage tank or Wells 2-4. While the Well 6 pump and motor will be sized to provide a pumping capacity of 100 gpm, the WTP facilities will be sized to treat as little as 50 gpm and as much as 100 gpm at any given time. An optional lower treatment capacity will allow the City flexibility in how much water is treated and consequently stored under various demand scenarios. This not only improves operations and water quality, but also affords a cost savings by extending the life of the treatment media and reducing waste production rates.

6. Development and Evaluation of Alternatives

Three water treatment options were evaluated to meet national drinking water standards for Well 6. Option 1 is the no-action alternative. Options 2 and 3 are different treatment technologies that were pilot tested at Well 6 to confirm their viability. Pilot test results (Appendix F) showed both of the alternatives to be effective at bringing Well 6 water into conformance with drinking water standards.

Membrane filtration methods (such as nanofiltration and reverse osmosis) and ion exchange methods were also considered early in the evaluation process and are all considered to be more stringent and thorough treatment methods than coagulation-filtration. However, these methods also carry a relatively higher lifetime cost, increased operational complexity, and significantly higher treatment waste volumes, which made coagulation-filtration the preferred option for Adrian. While less stringent, the pilot test indicated that coagulation-filtration is still capable of producing safe drinking water.

If, in the future, the groundwater concentrations of nitrates ever increase in Well 6, more advanced treatment (such as reverse osmosis or ion exchange) would need to be incorporated to some degree.

6.1 Description

Option #1: No-Action Alternative

The first alternative is to make no system improvements. By selecting no action, the water system would remain out of compliance with current public drinking water standards. In addition, the City would not be able to utilize the new Well 6 for public consumption. This alternative would represent an abandonment of the significant investment the City has made into Well 6.

Option #2: New Well 6 with Pressure Filtration Treatment, No Adsorptive Polishing Media

This option would include the following project elements:

1. Extension of electrical power service to Well 6.
2. Installation of submersible pump/motor in Well 6 with a pitless adaptor.
3. Construction of 6-inch water transmission pipeline from Well 6 to existing 6-inch water main in Emerald Slope Road.
4. Construction of new ground water treatment facility (WTP). The WTP would include coagulation and pressure filtration, but no adsorptive media.
5. Construction of 8-inch sewer collection line from the WTP to the existing 8-inch sewer main at the intersection of Well Road and Washington Street.
6. Completion of liner repairs in Cell B of the existing wastewater lagoons.

Option #3: New Well 6 with Pressure Filtration Treatment and Adsorptive Polishing Media

Implement Option #2 and add a polishing step at the end of the treatment process. This extra step would take a portion of the filtered water through a 3-foot diameter vessel in the WTP building. Minor additional piping and valving would be required.

This polishing step would consist of passing water through an adsorptive media coated with lanthanum hydroxide [$La(OH)_3$,], which would permanently bind and concentrate arsenic and possibly some uranium, but no nitrate, on the media.

The media is not typically regenerated through chemical reconditioning, but rather is replaced when the adsorptive capacity is filled. The piloted media – NXT-2, made by EP Minerals Co. – is expected to treat 15 MG of water before replacement is needed.

After having passed through the adsorptive media, this side-stream of higher quality water would be blended back in with the remainder of the coagulation filtration water to produce an effluent with an overall greater level of pollutant removal. The current projection is that a side-stream equal to 25-50% of the total filtered flow would be sufficient to produce consistently safe drinking water. However, this percentage would need to be fine-tuned once the equipment was in place.

The polishing step would serve as an assurance for adequate arsenic removal. A side-stream treatment setup is recommended to extend the life of the adsorptive media, and therefore, reduce operating costs for the City. The piping would be configured to allow the polishing media to be bypassed if its use it not required to meet the MCLs.

6.2 Map

A map of the existing system (Figure A.8, Appendix A) illustrates Option #1. The site map (Figure E.1, Appendix E) illustrates the general configuration of the alternatives. The only variance between Options #2 and #3 is different equipment inside the WTP building.

6.3 Environmental Impacts

Option #1: No-Action Alternative

There are no negative environmental impacts with Option #1.

Option #2 New Well 6 with Pressure Filtration Treatment, No Adsorptive Polishing Media

The transmission line from the well, the sewer discharge line from the WTP, and the new WTP building would all be constructed in existing roadways or previously-disturbed and developed sites. There are no anticipated long-term environmental impacts from their construction. Temporary dust, noise, and heavy machinery exhaust during construction are expected with this option.

The waste generated by the treatment process would consist of backwash water and solid media; the media would consist of sand-like material. Both the backwash water and treatment waste would be discharged to the City's wastewater lagoons.

Option #3: New Well 6 with Pressure Filtration Treatment and Adsorptive Polishing Media

Because Option #3 is a variation of Option #2, the environmental considerations are identical with one exception: The adsorptive media would need to be disposed of after reaching the end of its useful life.

If the media treats a side-stream equal to 25-50% of the filtered flow, it is estimated to last 3-5 years. At the end of its useful life, the adsorptive media would be discharged to the wastewater lagoons and settled with the wastewater sludge.

6.4 Land Requirements

Option #1: No-Action Alternative

There are no land requirements for Option #1.

Option #2 and Option #3

As shown in Figure A.1 (Appendix A), the existing Well 6 is located on private property. The landowner previously granted an easement that authorizes the use of the property for operation and maintenance of the municipal Well 6. This same property owner has also granted an access and utility easement for conveyance of water and electricity to/from Well 6 and public rights of way, and ultimately to the WTP. (See Appendix D for easement)

The WTP will be constructed on a portion of a City-owned lot, which currently houses the existing Well 4 facilities. The lot is large enough to house the proposed WTP.

6.5 Construction Problems

Option #1: No-Action Alternative

There are no construction problems for Option #1.

Option #2 & Option #3

The remote location of Well 6 could present access challenges for large equipment and vehicles. In addition, subsurface basalt rock could be encountered when constructing the transmission line illustrated in Figure E.1 (Appendix E). There is an existing, large-diameter underground siphon that would require crossing with the new transmission line (illustrated on Figure E.1). Performing this crossing could require directional drilling or jack/bore technology rather than open-cut trenching.

6.6 Cost Estimates

6.6.1 Construction

Construction cost estimates for each option are presented in Table 6.1. Backup details for Options #2 and #3 can be found in Appendix G.

Table 6.1: Construction Cost Estimates (2015 Dollars)

Option #1	Option #2	Option #3
$0	$1.37M	$1.46M

6.6.2 Non-Construction and Other Project Costs

Option #1: No-Action Alternative

While difficult to quantify and predict, the City would be subject to significant regulatory violation assessments, and would likely experience significant economic losses under this alternative.

Option #2 & Option #3

Depending on the funding source used to complete construction, the City may incur some legal or financing costs. Those costs are expected to be similar for both Options #2 and #3.

6.6.3 Annual Operation, Maintenance, and Replacement

Option #1: No-Action Alternative

Although difficult to quantify, no action may have a significant cost in terms of increased electrical power, chemical, or repair expenses necessary for water treatment and maintenance to keep aging or inefficient components operating.

Option #2: New Well 6 with Pressure Filtration Treatment, No Adsorptive Polishing Media

Operation of Well 6 would generate a cost savings in power since it would replace Wells 2, 3, and 4. The older wells use 10-hp pumps, while the new well pump is anticipated to be 5 hp and more efficient.

Well 6 would generate a cost savings in chemicals because high quantities of chlorine are currently required to mitigate poor water quality problems in Wells 2, 3, and 4. The cost savings in using less chlorine are estimated to more than cover all the chemical costs for treating Well 6.

Approximately 250 gallons of ferric chloride (used as a coagulant) and 350 gallons of Sodium Hypochlorite would be consumed on an annual basis as part of the treatment process. These two chemical costs are anticipated to be just under $2,000/yr, while the current chemical costs are estimated at $3,000/yr.

Operation and maintenance of the treatment facility would create additional operating costs, including personnel, building power, and treatment media replacement.

The proposed water treatment system would require an operator with a higher training and expertise than the current system requires, which is expected to cost more in terms of salary. This additional cost is estimated at $10,000/yr.

Additional power costs would come from the operation of new equipment such as a positive displacement blower (used for filter backwash), electrical controls and valves, chemical metering pumps, a building alarm system, and typical lighting and HVAC power loads. The additional power cost to operate the building and ancillary equipment is estimated at $3,200/yr.

The manganese dioxide (filtration media) has an estimated life of 15 years before it would need to be replaced. It is recommended that the City budget $150 per year to save for the replacement cost of the media at the end of its useful life.

When the filter media has reached its useful life, the recommended method of disposal would be to the City's wastewater lagoons. When the lagoon solids are dredged, the solids would be tested and the best disposal method determined at that time. It is recommended that the City set aside $2,000/yr as part of the regular operations and maintenance budget to cover potential additional disposal charges of the lagoon sludge that would arise as a result of water treatment waste. This annual budget should also be earmarked for any miscellaneous unexpected water treatment expenses that may arise.

Furthermore, it is recommended that the City budget approximately $4,600/yr for replacement of the pumping and treatment equipment when it reaches its useful life after 15-20 years. The net additional operational, maintenance, and replacement costs are summarized in Table 6.2.

Option #3: New Well 6 w/ Pressure Filtration Treatment/Adsorptive Polishing Media

The operation, maintenance, and replacement costs of the water system under Options #3 would have all of the costs under Option #2, with the added cost of the adsorptive media in the polishing step of the treatment process.

The adsorptive media (lanthanum hydroxide) is estimated to treat approximately 15 million gallons before needing replacement. It is recommended that the City set aside $2,000/yr to cover media replacement if 25% of the filtered flow is polished. The cost would increase or decrease based the amount of flow diverted to the polishing media.

The net additional operational, maintenance, and replacement costs are summarized in Table 6.2

Table 6.2: Net Additional Water Treatment O&M&R Costs

Component	Option #2	Option #3
Additional O&M per year [1]	$ 14,200	$ 16,300
Recommended Replacement per year	$ 4,600	$ 4,600
Total Additional O&M&R per year	**$ 18,800**	**$ 20,900**

1. Includes additional $10,000 cost for operator per year

6.7 Advantages/Disadvantages of Alternatives

Option #1: No-Action Alternative

Advantages:

- No increase to the user cost or debt load.

Disadvantages:

- The City would continue to struggle with a declining water table in the existing well
- City residents would continue to be plagued by low-quality water or pay for bottled water delivery

Option #2: New Well 6 with Pressure Filtration Treatment, No Adsorptive Polishing Media

Advantages:

- Well 6 should be able to meet the City's water needs over the 20-year planning horizon.
- This treatment option has been tested at Well 6 and would be effective at bringing the water into compliance with safe drinking water standards.
- The cost and complexity is the least of other viable treatment options considered.

Disadvantages:

- Consistency of effluent quality is a concern. A single pilot test has proven the concept, but long-term operations introduce additional variables. The pilot test outcome recommended a polishing step for assurance of consistent effluent quality.
- While it could meet basic safe drinking water standards, it could not remove water contaminants to such low levels as those obtainable by membranes or ion exchange.

Option #3: New Well 6 with Pressure Filtration Treatment and Adsorptive Polishing Media

Advantages:

- This option would provide greater removal of contaminants in Well 6 water and better assurance of consistent results.
- Lower capital and operating costs than membranes or ion exchange.

Disadvantages:

- Higher capital and operating costs than Option #2 due to the addition of adsorptive media.
- While it could meet basic safe drinking water standards, it could not remove water contaminants to such low levels as those obtainable by membranes or ion exchange.

Recommendation

Option #3 is the recommended alternative. This option provides adequate water supply for the City of Adrian for well beyond the 20-year planning horizon. It also provides better assurance of consistently providing safe drinking water than Option #2, but without the added complexity and cost of other more stringent methods, such as ion exchange or membranes. This option is discussed in more detail below.

7. Recommended Alternative

The proposed project improvements include installation of a well pump for Well 6, a transmission pipeline, a new groundwater treatment plant at the intersection of Emerald Slope Road and Well Road, and a waste disposal line form the treatment facility to an existing sewer main. These improvements are illustrated graphically in Figure E.1 (Appendix E). The treatment facility will house equipment designed to remove arsenic and uranium to drinking water standards.

7.1 Project Design

7.1.1 Water Supply

The water supply source for the project has already been determined (Well 6), and is shown in Figure E.1 (Appendix E). A new submersible well pump and motor with a pitless adaptor will be installed in Well 6 with a target pumping rate of 100 gpm. There will be no well building at the well site.

7.1.2 Treatment

The water treatment facility (WTP) will be located on the City-owned property on the corner of Well Road and Emerald Slope Road. Wells 2 and 3 are also on this site, as shown in Figure E.2 (Appendix E). The treatment process will include oxidation, coagulation, pressure filtration, and side-stream polishing. A schematic drawing of the WTP building is included in Appendix E (Figure E.3).

The oxidation will be achieved with a 12.5% concentration of sodium hypochlorite (SH), and the coagulation will be provided by 38% ferric chloride (FC). One new 100-gallon crosslinked polyethylene storage container will hold a 30-day supply of SH, and a separate 50-gallon crosslinked polyethylene storage container will hold a 30-day supply of FC. Both storage containers will be located in the treatment building. The storage tanks will be housed in 115%-volume secondary-containment with venting, and will meet chemical storage requirements stipulated by applicable building, fire, and safety codes.

The backwash water will be conveyed from the WTP to the existing sewer lagoons. A new waste line will be installed from the WTP to the existing sewage collection system at the west end of Washington Street. These improvements are shown in Figures E.1 and E.2 (Appendix E). A backwash recovery tank may also be considered as a means of reducing backwash water volumes being sent to the lagoons.

Proposed design criteria for the water treatment system is outlined in Table 7.1

Table 7.1: Water Treatment System Design Criteria

Item	Units	Criteria
WTP – Oxidation, Coagulation, Pressure Filtration, Adsorption Polishing		
Oxidant	Chemical	Sodium Hypochlorite
Coagulant	Chemical	Ferric Chloride
Filter Media	Media	Manganese Dioxide
Number of Filters	No.	2
Production Rate Per Filter	gpm	50
Total Plant Production	gpm	100
Cells/Filter	No.	1
Filtration Rate (maximum)	gpm/sqft	6
Filter Area	sqft	8.4
Filter Media Depth	in	36
Gravel Depth	in	15
Adsorptive Media – Polishing Step	Media	lanthanum hydroxide
Adsorptive Media – Side-Stream Flow % of Total Flow	%	25-50
Adsorptive Media – Minimum Life	MG	15
WTP Filter Backwash		
Backwash Type	Method	Simultaneous Air/Water
Approximate Simultaneous Air Rate	scfm/sqft	2.2
Approximate Simultaneous Water Rate	gpm/sqft	9.0
WTP Settled Wastewater		
Arsenic in Supernatant	mg/L	0.011
Uranium in Supernatant	mg/L	0.004
Nitrate in Supernatant	mg/L	9.0
Backwash Wastewater Volume per Backwash	gal	1,050
Volume Filtered Between Backwashes	gal	36,000
Backwash Wastewater Peak Flow Rate	gpm	150
Disposal Method	Method	Municipal Sanitary Sewer
Excess Available Capacity of Receiving Sewer System	gpm	250
Disposal Line Pipe Size	in	8
Disposal Line Slope	ft/ft	0.0035

7.1.3 Transmission Layout

The water transmission line improvements will be as shown in Figures E.1 and E.2 (Appendix E). The pipes will be 6-inch diameter PVC pipes. The WTP will tie into the existing 10-inch diameter waterline in Emerald Slope Road. This 10-inch line will divert water to the City if there is a demand; otherwise, it will be used to fill the storage reservoir.

7.1.4 Hydraulic Calculations

A hydraulic model of the existing water system was developed during the 2013 Water Master Plan. The improvements included in this project have been added to the model to appropriately size the transmission line from Well 6 to the WTP. Water model output reports can be found in Appendix E.

Hydraulic calculations were also performed on the sewer system collection system to determine allowable discharge rates from the water treatment process. A summary of the sewer capacity calculations can be found in Appendix E.

7.1.5 Treatment Wastewater Impacts

Filters used to remove contaminants from the drinking water will need to be washed. The wash-water will reverse flow through the filters from the drinking water system and will be discharged to the City's collection system, which ultimately discharges to two evaporative wastewater lagoon cells. This section presents the potential impacts from this disposal method of the treatment waste.

Treatment Wastewater Volume and Storage

The projected backwash volumes represent an estimated average annual 6% increase to the existing sewer flows by volume. During the summer – when the lagoons are at their lowest levels – the backwash flows could average as much as 11%; during the winter, they could be as low as 3%.

Adrian's wastewater treatment consists of two separate evaporative lagoon cells (A and B) that have no discharge and no land application sites. Cell B is presently empty and only used as an emergency overflow since its liner is compromised.

A water balance analysis on Adrian's wastewater inflows shows that Cell A currently encroaches on the existing 3-ft freeboard space during high times, but is generally balanced at the upper end of the cell's storage capacity given the estimated amount of precipitation, evaporation, and leakage. Leakage estimates on Cell A are roughly 1/8 of an inch per day.

It is estimated that adding the treatment backwash water to Cell A will cause it to overflow to Cell B. However, if Cell B were operational, the lagoons would readily handle both the domestic wastewater and treatment backwash water, while using less than 20% of their combined capacity now, and 70% twenty years from now.

The solids from the treatment waste are so minimal that they are not likely to appreciably accumulate in the lagoons within the next 50 years.

In light of these estimates, it is recommended that the City repair Cell B to accommodate the increased wastewater flows from the Well 6 treatment process. The City has already initiated efforts to evaluate the second lagoon cell and develop repair options.

Treatment Wastewater Peak Flow Rates

The projected peak instantaneous backwash rate discharged to the City's sewer collection system is 220 gpm for 10 minutes. A hydraulic evaluation of the existing sewer collection system from the proposed point of backwash discharge to the City's lift station (which collects all wastewater from the city and pumps it directly to the lagoons) suggests the sewer system has 250 gpm of available excess capacity (see Appendix E for sewer capacity calculations). In light of this information, the existing collection system will be capable of conveying the water treatment backwash water. Programmable logic control could also be established to stagger the backwash cycles of the filtration media and the polishing media. This would drop the peak waste discharge rate to 150 gpm for 10 minutes.

Treatment Wastewater Pollutant Loads

In addition to concerns over backwash wastewater volumes and flow rates, there is also pollutant loading to consider. Specific pollutants of concern are arsenic and uranium, since these contaminants from the raw well water become concentrated on the filters and in the resulting backwash water. Nitrates in the raw water are below the MCL and will not be treated; therefore, they are not concentrated in the backwash water.

During the pilot test, the backwash water was first settled for 8 hours, after which the supernatant was sampled to provide an estimated concentration of the pollutants in the wastewater lagoons after settling. Because the contaminants primarily concentrate on the coagulant and settle out, the supernatant from the lagoons could be evaporated or land-applied to nearby farmland. The concentration of arsenic and uranium in the settled sludge solids of the lagoons will need to be tested once the lagoons are dredged. The disposal method of the dredged sludge will need to be determined at that time since the method will depend on pollutant concentrations. However, a dredging is not anticipated to occur in the next 50 years. The estimated supernatant concentrations of arsenic and uranium are listed in Table 7.2.

Table 7.2: Projected Arsenic and Uranium Concentrations in Settled Backwash Wastewater

Pollutant	Concentration (mg/L)
Arsenic	0.011
Uranium	0.004

Once the backwash water mixes with wastewater coming into the lagoons from the rest of the city – as well as wastewater already in the lagoons – these pollutant concentrations will be substantially lower. For example, the arsenic concentration drops to 0.00069 mg/L when mixed with average daily wastewater flow into the lagoon.

The arsenic concentrations in the wastewater lagoons must be less than 5 mg/L; otherwise, the wastewater will be classified as hazardous waste.

OAR 333-117-0040(1) specifies the requirements for disposal of naturally-occurring radioactive material. Uranium concentrations less than 0.05% by weight are specifically exempt. At a concentration of 0.004 mg/L in settled backwash water, the uranium concentration is less than 0.0000004% by weight, and even less once it mixes with the other incoming and existing lagoon wastewater.

The filter media is anticipated to have a 15-year life, and the adsorptive media is anticipated to have about a 3- to 5-year life. Both will have trace amounts of arsenic and uranium accumulated on the surface. The adsorptive media is also coated with lanthanum hydroxide. When the filter and adsorptive media have reached the end of their useful life, the sand-like solids will be discharged to the lagoons and settled with the wastewater sludge.

In summary, the supernatant from the backwash water is expected to be non-hazardous waste with extremely low concentrations of arsenic and uranium. The proposed method of disposal is to discharge to the wastewater lagoons, where it will be evaporated. The solids portion of water-treatment waste will settle in the lagoon sludge. These solids will be comprised of the coagulated filtrate from the backwash water, the filter media, and the polishing media. These solids are expected to contain stable and bound arsenic and uranium concentrations. The lagoon sludge will need tested prior to dredging in order to determine the best disposal method. However, the lagoons are not anticipated to need a dredging within the next 50 years.

7.1.6 Electrical and Control Upgrades

Well 6 is approximately 1,600 feet northwest of the existing water storage reservoir. To power the new well pump, a new electrical service from Idaho Power will be installed near the well site.

The water treatment system improvements include construction of a new treatment facilities building, located on City-owned property at the corner of Well Road and Emerald Slope Road. A new electrical service from Idaho Power will be installed to provide power to the building.

Well 6 Power Supply

Idaho Power is the local electrical utility and has existing overhead distribution lines running along Clover Lane approximately 1,000 feet west of Well 6, and along Emerald Slope Road approximately 2,000 feet southeast of Well 6. After a brief on-site investigation with Mike Negri of Idaho Power, it was determined that extending power with overhead conductors from Clover Lane would be the least costly option. The exact route of the service extension has not yet been finalized; however, Idaho Power indicated the existing well easement could be used to reach Well 6 if a canal crossing is obtained.

To meet the pumping requirements for Well 6, a 5-hp pump will be required. Normally, Idaho Power will not serve motor loads larger than 7.5 hp with single-phase power, as they can cause numerous power quality problems. Since the power needs are less than 7.5 hp, the new electrical service to Well 6 could potentially be single phase. Triple phase may be desirable depending on future potential for additional power needs at the site. See the site electrical plan in Appendix E.

Water Treatment Building Power Supply

Electrical requirements for the process equipment in the water treatment facilities building are minimal; the total connected load is expected to be approximately 5 kW. Lighting and HVAC loads are anticipated to be another 5 to 10 kW, bringing the total load in the building to roughly 15 kW. A standard 200A, 120/240V single-phase service can easily accommodate this size load, while having ample spare capacity for future additional loads. The new electrical service will be run overhead from the existing Idaho Power utility pole at the northwest corner of Well Road and Emerald Slope Road. See the site electrical plan in Appendix E.

Controls

The existing water storage reservoir has five float switches that provide High Level, Low Level, Stop, Start Lead Pump, and Start Lag Pump indications. These float switches are hardwired to a relay panel in the well house for Well 2. The relay panel controls the starters for Wells 2 and 3.

Depending on the existing route of the float signals from the reservoir to the well house, they could be intercepted by, or extended to, the water treatment facilities building, which would become the central control point. A new control panel in the building would control nearby Wells 2 and 3 with discrete start/stop signals run in underground conduit.

To establish a communication link with Well 6, radio antennas would be installed at the water treatment facilities building and at Well 6. An unlicensed spread spectrum radio telemetry system would provide start/stop control and other communication as needed. The path between the water treatment facilities building and Well 6 is generally free of obstructions and should be favorable for radio communication. A radio path study will need to be conducted to confirm the reliability of the proposed radio telemetry link.

Establishing a direct controls link between the existing water storage reservoir and Well 6 would be difficult and costly due to the nature of the terrain and available conduit route; therefore, it is not recommended.

7.2 Opinion of Probable Cost

An opinion of cost for the recommended project is provided in Table 7.3. The actual cost will vary depending on final bid prices.

Table 7.3: Recommended Alternative Opinion of Probable Cost[1]

Description	Probable Cost
General Conditions (Mob/Demob, Bonds/Insurance)	$ 39,250
Sitework	$ 40,400
Site Piping	$ 48,600
Transmission Piping to Well	$ 252,800
Treatment Building	$ 65,000
Mechanical Piping	$ 34,100
Filtration System with Polishing Step	$ 259,100
HVAC	$ 12,000
Electrical and Power	$ 47,000
Instrumentation and Controls	$ 26,000
Well Pump, Drop Pipe, and VFD	$ 46,200
Total Direct Cost	**$ 880,000**
15% General Contractor Markup	$ 130,000
Total Estimated Construction Cost	**$ 1,010,000**
Permitting, Legal	$ 5,000
20% Contingency and Allowances	$ 202,000
Subtotal	**$ 1,217,000**
Engineering	$ 243,400
Total Estimated Project Cost	**$ 1,460,400**

1. This opinion of probable cost does not include wastewater lagoon improvements.
2. The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

7.3 Annual Operating Budget

7.3.1 Existing Income and Operation and Maintenance Costs

A summary of the Fiscal Year 2012 income and operation and maintenance costs are summarized in Table 7.4. The values are from the recently-completed Water Master Plan.

Table 7.4: Fiscal Year 2013-2014 Adrian Water Fund Summary

Component	Value
Average Monthly Residential Water Rates	$ 33.75
Number of Accounts	105
Annual Water System Income	$ 49,032
Annual Water System O&M Expenses	$ 37,030
Safe DW Loan payment[1]	$ 15,000
Water Fund Balance (end of FY)	$ 375,602

1. City estimates an annual principal and interest loan payment near $15,000 once loan is finalized.

7.3.2 Debt Repayments

The City of Adrian currently earmarks $15,000 each year to repay a Safe Drinking Water Act Loan.

Additional grant and loan funds will be required to implement the proposed project improvements. The 2013 Water Master Plan discusses four IFA funding programs. These funding programs are described briefly below; more detail is available in the master plan.

Special Public Works Fund

The Special Public Works Fund program was established by the Legislature in 1985 to provide primarily loan funding for municipally-owned infrastructure and other facilities that support economic and community development in Oregon. Loans and grants are available to municipalities for planning, designing, purchasing, improving and constructing municipally-owned facilities.

For design and construction projects, loans are primarily available; however, grants are available for projects that will create and/or retain traded-sector jobs. A traded-sector industry sells its goods or services into nationally- or internationally-competitive markets. Loans range in size from less than $100,000 to $10 million. The department is able to offer very attractive interest rates that reflect tax-exempt market rates for very good quality creditors. Loan terms can be up to 25 years or the useful life of the project, whichever is less. Grants are limited to projects associated with job creation/retention. The maximum grant award is $500,000 or 85% of the project cost, whichever is less. The grant amount per project is based on up to $5,000 per eligible job created or retained.

Water/Wastewater Financing Program

This is a loan and grant program that provides for the design and construction of public infrastructure when needed to ensure compliance with the Safe Drinking Water Act or the Clean Water Act. To be eligible a system must have received, or is likely to soon receive, a Notice of Non-Compliance from the appropriate regulatory agency, associated with the Safe Drinking Water Act or the Clean Water Act.

While primarily a loan program, grants and reduced interest rates are available for municipalities who meet the eligibility criteria for subsidies. The loan/grant amounts are determined by a financial analysis of the applicant's ability to afford a loan (debt capacity, repayment sources, current and projected utility rates, and other factors). The maximum loan term is 25 years or the useful life of the infrastructure financed, whichever is less. Loan amounts are determined by financial review and may be offered through a combination of direct and/or bond-funded loans. Loans are typically repaid with utility revenues, or for some larger loans, voter-approved bond issues. A limited tax general obligation pledge may also be required to secure the loan. Borrowers that meet "healthy" credit quality standards may be included in a pooled loan program for longer-term financing, funded through the sale of State revenue bonds. The maximum grant is $750,000 per project and is based on a financial analysis. An applicant is not eligible for grant funds or reduced interest subsidy if the applicant's annual median household income is equal to or greater than 100% of the statewide median household income for the same year.

Community Development Block Grant Program

The primary objective of the program is the development of viable (livable) urban communities by expanding economic opportunities and providing decent housing and a suitable living environment principally for persons of low and moderate income.

This is a grant program that only non-metropolitan (non-entitlement) cities and counties in rural Oregon can apply for. The State receives an annual allocation from HUD for the CDBG program. Grant funding is subject to the applicant's need, availability of funds, and any other restrictions in the State's *Method of Distribution* (i.e., program guidelines). It is not possible to determine how much, if any, grant funds may be awarded prior to an analysis of the application and financial information.

Safe Drinking Water Revolving Loan Fund

This is primarily a loan program for the construction and/or improvement of public and private water systems to address regulatory compliance issues. This is accomplished through two separate programs:

Safe Drinking Water Revolving Loan Fund (SDWRLF) for collection, treatment, distribution and related infrastructure; and Drinking Water Protection Loan Fund (DWPLF) for protection of sources of drinking water prior to system intake.

The SDWRLF program normally lends up to $6 million per project. Loan amounts greater than $6 million may be available. The standard SDWRLF loan term is 20 years or the useful life of project assets, whichever is less. Loan terms up to 30 years may be available for "Disadvantaged Communities." This program offers subsidized interest rates for all successful projects. Interest rates for a standard loan start at only 80% of State/local bond rate. Interest rates for loans to disadvantaged communities are based on a sliding scale between the interest rate for a standard loan and 1%. Communities may be eligible for some

of the principal on their SDWRLF loan to be "forgiven." This Forgivable Loan feature is similar to a grant and is offered to disadvantaged communities.

The DWPLF program normally lends up to $100,000 per project. Loan amounts greater than $100,000 may be available. A grant may be available from the DWPLF depending on funds available.

IFA Programs (Contact Regional Coordinator)

Since program eligibility and funds availability may change from year to year, potential applicants are encouraged to contact their respective Regional Coordinator to obtain the most accurate and up-to-date information for each program.

The user rate increase needed to finance the proposed water project will depend on the interest rate, loan life, amount of grant fund secured, and other loan terms. Many of these factors change continuously based on current interest rates. However, in general, a monthly water user rate increase of $2.60 per connection for every $100,000 of loan money is needed for repayment of the loan only (based on a 30-year loan at 1% interest, which are the apparent best loan terms available to the City). Moreover, the user rate increase is required to cover the costs of operating, maintaining, and eventually replacing the proposed water treatment improvements. The potential impact to user rates for the recommended improvements is illustrated in Table 7.5. The projected rates assume the City will not receive grant funds, but is able to secure the apparent best possible loan terms.

United States Department of Agriculture-Rural Development (USDA-RD)

USDA-RD offers a grant and loan program for improvements to water systems serving rural communities, which are defined as populations less than 10,000. Priority is given to communities smaller than 5,500 residents. Grants up to 75% of the project cost are eligible depending on user rates. Applicants can apply for USDA-RD funds any time during the year. Funds have many program requirements, including but not limited to the completion of a short-lived assets inventory, approved engineering report, and limited funding for fire protection water storage volumes. Interest rates are set periodically based on current market yields for municipal obligations. Interim construction financing is required since USDA-RD funds are only available once facilities are constructed.

Potential Rate Impacts:

We recommend the City seek the funding package that is most advantageous to them. This package might include a combination of multiple funding sources and agencies. The City should work with Tawni Bean with the Infrastructure Financing Authority (IFA) to arrange a One-Stop Financing Meeting as soon as possible.

Table 7.5 compares the existing water system costs and rates to estimates if the City were required to secure a loan to finance the total cost of the proposed

project. The City's current annual median household income is around $41,000. Consequently, its water rate affordability index calculates to around $43/month. The projected rate in Table 7.5 is more than double the affordable rate if the City were to secure a loan for the entire project cost plus fully fund an asset replacement program. The last column shows the estimated minimum annual operation, maintenance, and replacement costs which excludes funding an asset replacement program. Because of this difference, the City qualifies as a disadvantaged community, which will likely qualify it for financial assistance in the form of grants and favorable loan terms.

Table 7.5: Projected Rate Impacts for Recommended Water System Improvements

Annual O&M&R Costs	Fiscal Year 2013-2014	With Project (Ideal Values)	With Project (Minimum Values)
Cost Breakdown for Overall System Total			
Existing O&M	$ 37,030	$ 40,500[1]	$ 40,500[1]
Existing Infrastructure Replacement Fund	-	$ 13,600[2]	
Existing SDWR Loan Payment (assumed)	$ 15,000	$ 15,000	$ 15,000
New Improvements O&M&R	-	$ 20,900[3]	$ 16,400[3]
New Bond/Loan Payment	-	$ 56,588[4]	$ 56,588[4]
Total O&M&R	**$ 52,030**	**$ 146,588**	**$ 128,488**
Cost Breakdown per EDU			
Existing O&M	$ 24.69	$ 26.98	$ 26.98
Existing Infrastructure Replacement Fund	-	$ 8.65	
Existing SDWR Loan Payment	$ 10.00	$ 10.00	$ 10.00
New Improvements O&M&R	-	$ 13.30	$ 10.43
New Bond/Loan Payment	-	$ 36.56	$ 36.56
Total Recommended Rate (rounded)	**$ 35[5]**	**$ 95**	**$ 84**

1. Existing O&M costs increase to account for 3% inflation.
2. Infrastructure replacement is recommended to cover the cost of replacing the existing water. infrastructure such as transmission pipelines, storage, distribution pipelines, valves, and fire hydrants.
3. New Improvements O&M&R covers the cost of operating, maintaining, and replacing the proposed water treatment improvements.
4. New Bond/Loan Payment is to cover the cost of financing the proposed water treatment improvements ($1.46M over 30 years at 1% interest).
5. Based on 125 EDUs.

7.3.3 Reserve

The City needs to maintain a reserve fund of one-tenth of the annual debt payment for the loan that is incurred to complete this project.

8. Conclusions and Recommendations

It is recommended that Adrian utilize the remaining loan fund from the drinking water loan to commence with final design of the recommended Well 6 project. **At the same time, the City should aggressively pursue loan and grant funds for project implementation by arranging a One-Stop Financing Meeting with funding agencies.** Once a funding package is confirmed, the City should reach out to the public for input on financial and rate implications. In addition, it is recommended that the City begin increasing monthly water rates incrementally to a level closer to the anticipated monthly user rate required to finance the project. Gradual rate increases are more acceptable to the public than abrupt, large increases. Lastly, it is recommended that the City begin now to seek a qualified, competent operator to assume operation of the new and existing water infrastructure.

APPENDIX A

FIGURES

KELLER associates

213013-003/PER/15-373

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KELLER associates

Prepared for:
CITY of ADRIAN, OREGON

Project :
ADRIAN WATER SYSTEM IMPROVEMENTS

Title:
STUDY AREA LOCATION

Figure:
A.1

FIGURE A.2: AREA SURROUNDING THE WELL SITE

FIGURE A.3: AREA SURROUNDING THE WELL SITE

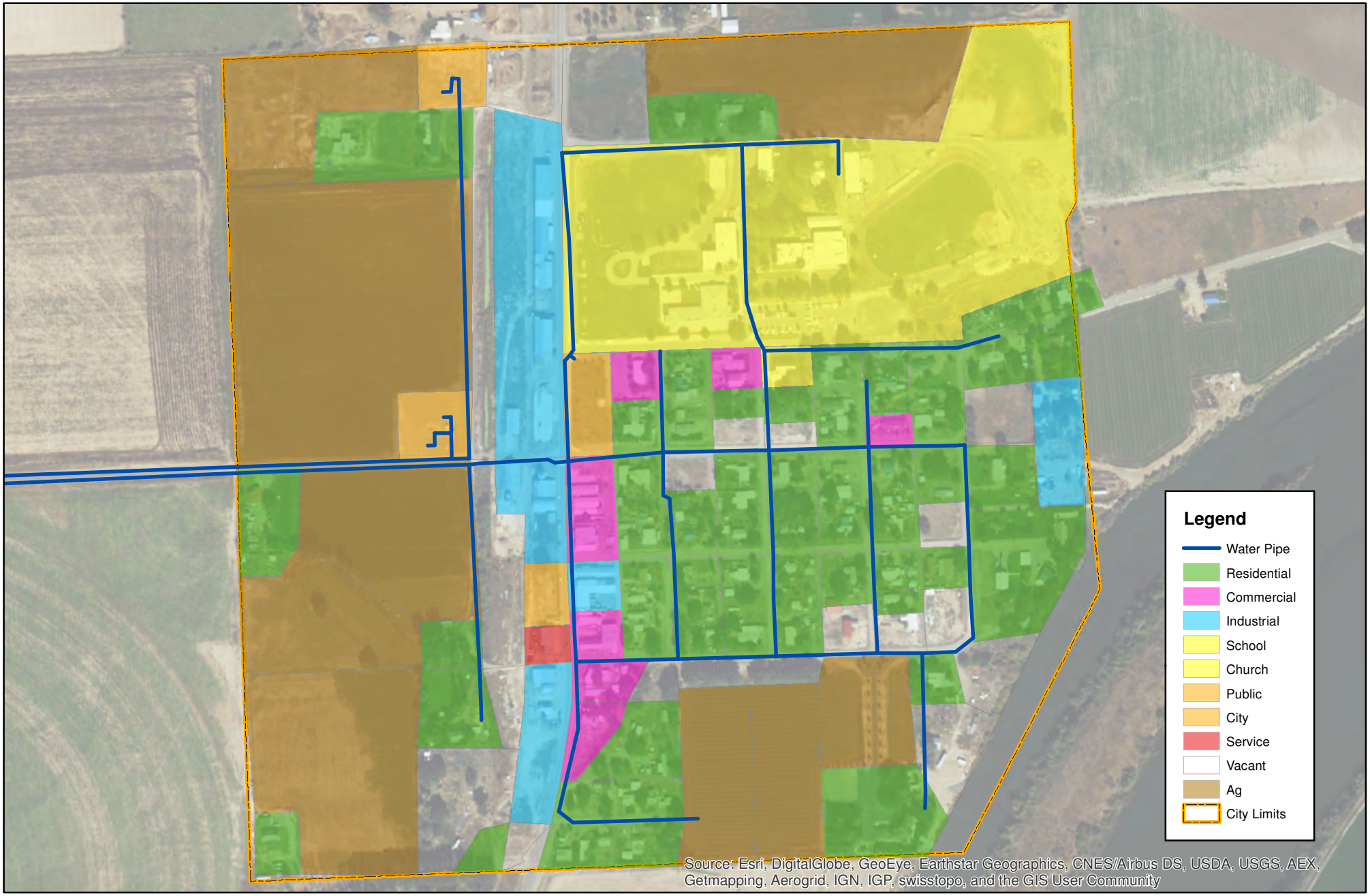


Figure:	Title:	Project :	Prepared for:		
A.4	Existing Land Use	ADRIAN WATER SYSTEM IMPROVEMENTS	CITY of ADRIAN, OREGON		KELLER associates

FIGURE A.5

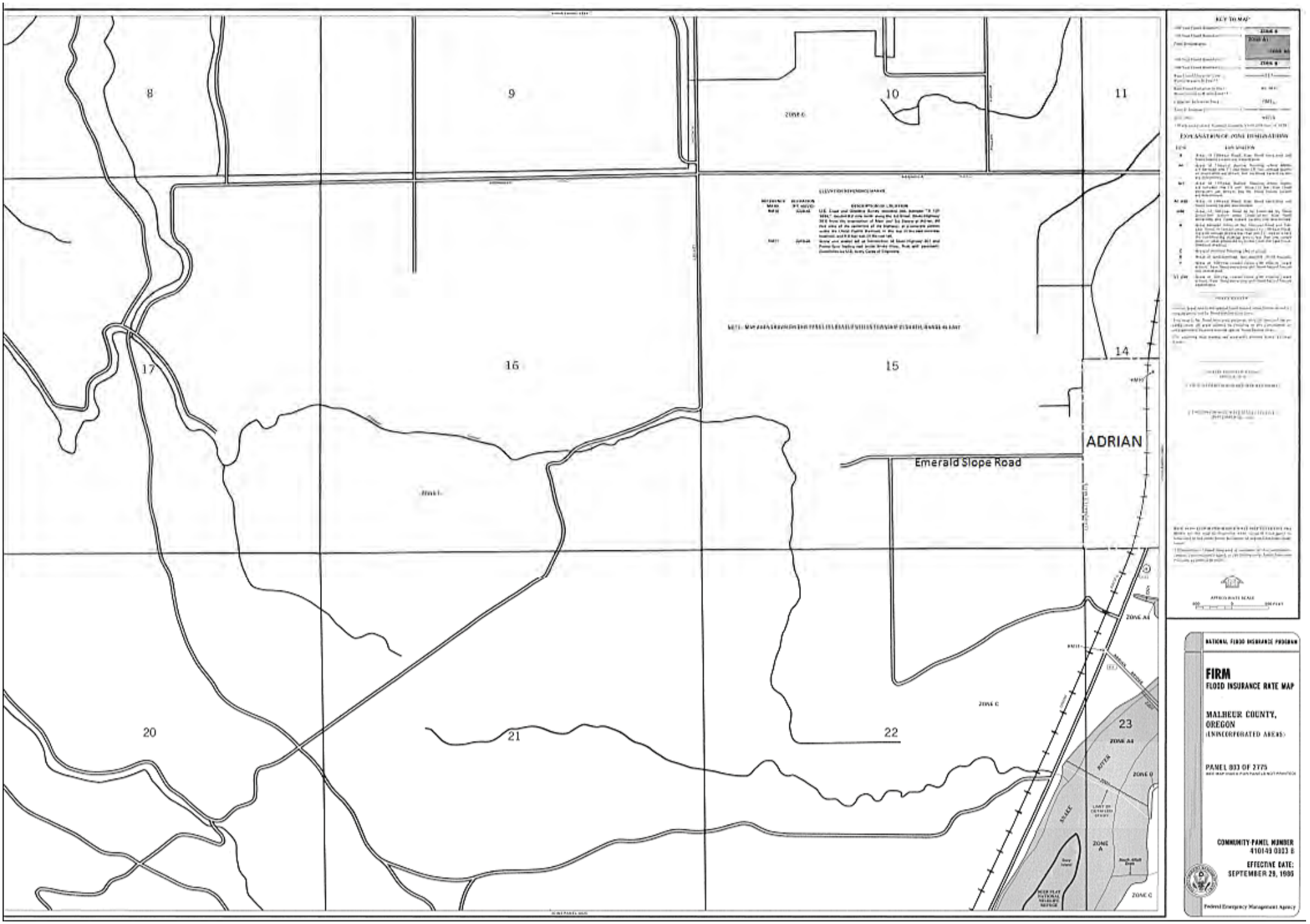

8
9
10
11
17
16
15
14
ADRIAN
Emerald Slope Road
20
21
22
23
ZONE C
ZONE A
ZONE AE
ZONE D
KEY TO MAP
EXPLANATION OF ZONE DESIGNATIONS
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
MALHEUR COUNTY, OREGON
(UNINCORPORATED AREAS)
PANEL 803 OF 2775
COMMUNITY-PANEL NUMBER
410149 0803 B
EFFECTIVE DATE:
SEPTEMBER 29, 1986
Federal Emergency Management Agency

FIGURE A.6

KEY TO MAP

100-Year Flood Boundary	
500-Year Flood Boundary	ZONE B
Zone Designations*	ZONE A1 ZONE AE
100-Year Flood Boundary	
500-Year Flood Boundary	ZONE C
Base Flood Elevation Line With Elevation in Feet**	~~~~~~~~~~ 513 ~~~~~~~~~~
Base Flood Elevation in Feet Where Uniform Within Zone**	514 NGVD
Elevation Reference Mark	RM2 x
Zone D Boundary	
River Mile	• M1.5

** Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
AE	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
AR/A	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTE TO USER

Enclosure areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all potential flood hazards.

INITIAL IDENTIFICATION:
June 26, 1979

FLOOD HAZARD BOUNDARY MAP REVISIONS:

FLOOD INSURANCE RATE MAP EFFECTIVE:
SEPTEMBER 18, 1984

FLOOD INSURANCE RATE MAP REVISIONS:

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

APPROXIMATE SCALE
200 0 200 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
ADRIAN,
OREGON
MALHEUR COUNTY

ONLY PANEL PRINTED

COMMUNITY-PANEL NUMBER
410285 0001 B

EFFECTIVE DATE:
SEPTEMBER 18, 1984

Federal Emergency Management Agency

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION (FT. NGVD)	DESCRIPTION OF LOCATION
RM1	2006.85	U.S. Coast and Geodetic Survey standard disk, stamped "A 131 1934", located 0.2 mile north along the Nyssa-Adrian-Danielle Chain Highway 201 from the intersection of Main Street, 42 feet east of the centerline of the highway, at a concrete culvert under the Union Pacific Railroad, in the top of the east concrete headwall, and 0.6 feet east of the east rail.
RM2*	2010.28	Brass cap marker located at intersection of State Highway 201 and Pacific Spur leading east across Snake River, flush with pavement. Established by U.S. Army Corps of Engineers.

*LOCATED OUTSIDE OF CORPORATE LIMITS

FIGURE A.7

U.S. Fish and Wildlife Service

National Wetlands Inventory

Adrian Wetlands Map

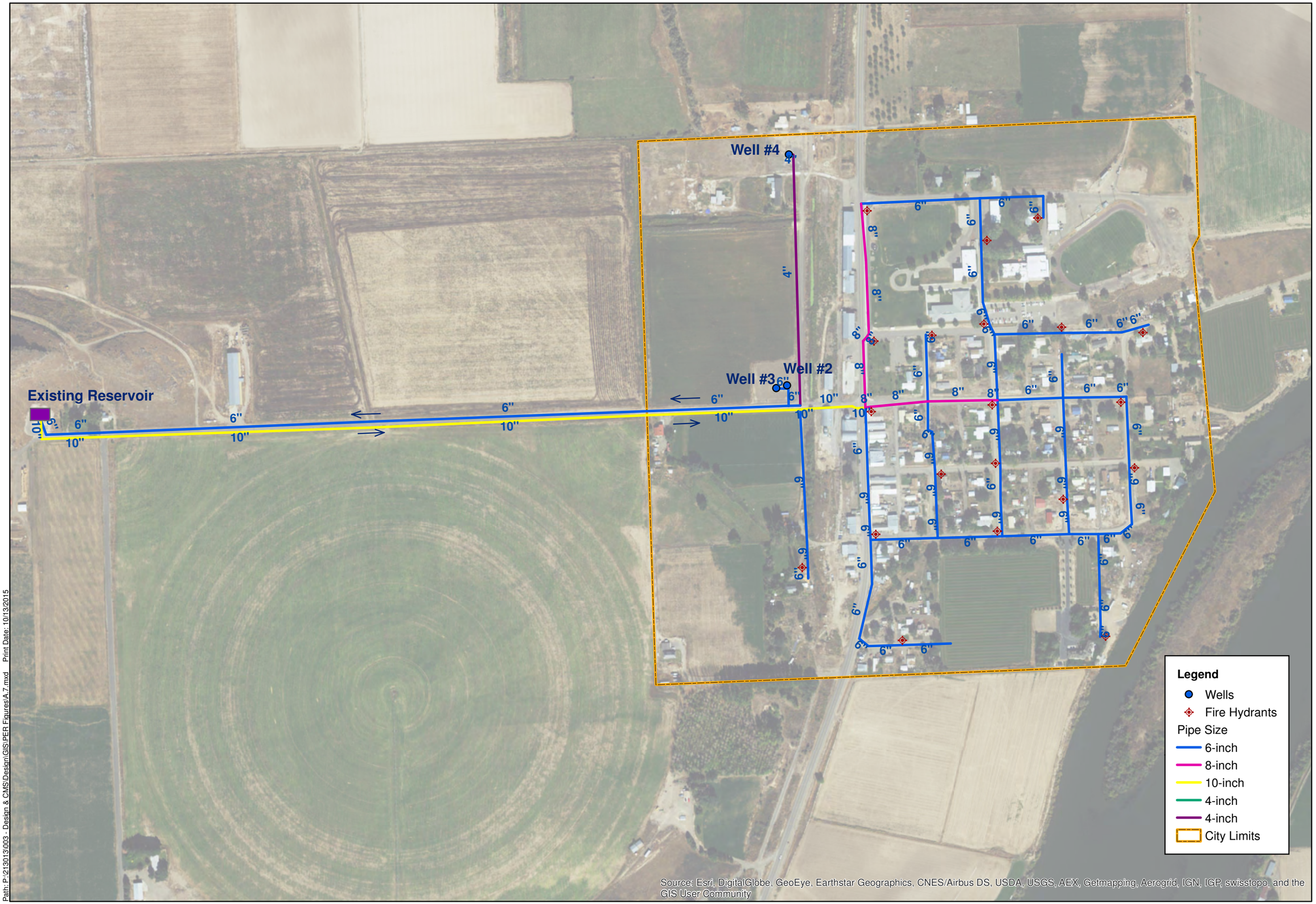
Jul 24, 2015

Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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KELLER associates

Prepared for: CITY of ADRIAN, OREGON

Project : ADRIAN WATER SYSTEM IMPROVEMENTS

Title: Existing Water System

Figure: A.8

APPENDIX B

SUPPLY EVALUATION

KELLER associates

213013-003/PER/15-373

MAGIC VALLEY LABS
210 Addison Ave / PO Box 1867
Twin Falls ID 83303-1867
Phone: (208) 733-4250
Fax: (208) 734-2539

JUSTIN WALKER
PRIVATE
KELLER ASSOCIATES
131 SW 5TH AVE, STE A
MERIDIAN, ID 83642

Collection Date 5/21/2015 **Received Date** 5/21/2015 **Location**
Collection Time 1 :10 PM **Received Time** 4 :48 PM ADRIAN WELL 6 AQUIFER

Sample #	Test / Method Code	Results in mg/L	Date Analyzed	Analyst
1496911	URANIUM EPA 200.8	0.0317	6/10/2015	SET
1496912	NITRATE/N EPA300.0	9.65	5/22/2015	JJ
1496913	VANADIUM EPA 200.8	0.0190	6/10/2015	SET
1496914	TOTAL ARSENIC EPA 200.8	0.0742	6/14/2015	SVL
1496915	ARSENIC III EPA 200.8	<0.0030	6/12/2015	SVL
1496916	ARSENIC V EPA 200.8	0.0742	6/14/2015	SVL

Signature

Report Date: Tuesday, June 16, 2015

Table 1
Summary of Water Quality Testing Results
City of Adrian Well 6

Analyte	State Standards MCL	State Standards SMCL	Units	*Test Boring (220'-235' Interval)* 5-Jun-14	*Production Well* 29-Jan-15
Inorganic Constituents					
Ammonia (as N)			mg/L	<0.02	NT
Antimony	0.006		mg/L	<0.005	<0.001
Arsenic	0.01		mg/L	0.092	0.0734
Asbestos[1]	7		MFL	NT	<0.066
Barium	2		mg/L	<0.05	0.0251
Beryllium	0.004		mg/L	<0.0005	<0.0003
Bicarbonate			mg/L	314	302
Calcium			mg/L	75.6	81.6
Carbonate			mg/L	0.0	<5
Cadmium	0.005		mg/L	<0.0005	<0.001
Chromium (total)	0.1		mg/L	<0.002	0.00163
Copper[2]	1.3		mg/L	<0.01	0.00106
Cyanide (as free cyanide)	0.2		mg/L	<0.005	<0.01
Flouride	4	2	mg/L	0.66	0.519
Lead[2]	0.015		mg/L	<0.005	<0.001
Mercury (inorganic)	0.002		mg/L	<0.0002	<0.0001
Magnesium			mg/L	21.3	22.9
Molybdenum			mg/L	NT	0.00787
Nickel			mg/L	<0.02	<0.001
Nitrate (as N)	10		mg/L	8.1	8.83
Nitrite (as N)	1		mg/L	<0.01	<0.5
Total Nitrate + Nitrite (as N)	10		mg/L	7.96	8.83
Ortho Phosphate			mg/L	0.11	NT
Potassium			mg/L	17.3	NT
Selenium	0.05		mg/L	0.011	0.00858
Sodium			mg/L	NT	64.0
Thallium	0.002		mg/L	<0.001	<0.001
Organic Chemicals (SOCs and VOCs)	**MCL**	**SMCL**			
Acrylamide	0.05% dosed at 1ppm		mg/L	NT	NT
Alachlor	0.002		mg/L	<0.0004	<0.0004
Aldicarb			mg/L	<0.003	NT
Aldicarb sulfone			mg/L	<0.002	NT
Aldicarb sulfoxide			mg/L	<0.004	NT
Adrin			mg/L	<0.0002	NT
Atrazine	0.003		mg/L	<0.0002	<0.0002
Benzene	0.005		mg/L	<0.0005	<0.0005
Benzo(a)pyrene (PAHs)	0.0002		mg/L	<0.00002	<0.00004
Butachlor			mg/L	<0.0004	NT
Carbaryl			mg/L	<0.002	NT
Carbofuran	0.04		mg/L	<0.002	<0.002
Carbon, Total Organic (TOC)			mg/L	11.4	NT
3-Hydroxycarbofurn			mg/L	<0.002	NT
Carbon tetrachloride	0.005		mg/L	<0.0005	<0.0005
Chlordane	0.002		mg/L	<0.0001	<0.0005
Chlorobenzene			mg/L	<0.0005	<0.0005
2,4-Dichlorophenoxyacetic acid (2,4-D)	0.07		mg/L	<0.0001	<0.0001
Dalapon	0.2		mg/L	<0.0001	<0.001
1,2-Dibromo-3-chloropropane (DBCP)	0.0002		mg/L	<0.00002	<0.00004
o-Dichlorobenzene	0.6		mg/L	<0.0005	<0.0005
p-Dichlorobenzene	0.075		mg/L	<0.0005	<0.0005
1,2-Dichloroethane	0.005		mg/L	<0.0005	<0.0005
1,1-Dichloroethylene	0.007		mg/L	<0.0005	<0.0005
cis-1,2-Dichloroethylene	0.07		mg/L	<0.0005	<0.0005
trans-1,2-Dichloroethylene	0.1		mg/L	<0.0005	<0.0005
Dichloromethane	0.005		mg/L	<0.0005	<0.0005
1,2-Dichloropropane	0.005		mg/L	<0.0005	<0.0005
Di(2-ethylhexyl)adipate	0.04		mg/L	<0.0002	<0.0002
Di(2-ethylhexyl)phthalate	0.006		mg/L	<0.0006	<0.0006
Dieldrin			mg/L	<0.0002	NT
Dinoseb	0.007		mg/L	<0.0002	<0.0002
Dioxin (2,3,7,8-TCDD)	0.00000003		mg/L	NT	<0.000000005
Dissolved Organic Carbon			Mg/L	0.8	NT
Diquat	0.02		mg/L	<0.0008	<0.0008
Endothall	0.1		mg/L	<0.025	<0.01
Endrin	0.002		mg/L	<0.00002	<0.00002
Ethane			mg/L	<0.00080	NT
Ethene			mg/L	<0.0012	NT
Ethylbenzene	0.7		mg/L	<0.0005	<0.0005
Ethylene Dibromide (EDB)	0.00005		mg/L	<0.00002	<0.00002
Glyphosate	0.7		mg/L	<0.01	<0.01
Heptachlor	0.0004		mg/L	<0.00004	<0.00008
Heptachor epoxide	0.0002		mg/L	<0.00002	<0.00004
Hexachlorobenzene	0.001		mg/L	<0.0002	<0.0002
Hexchlorocyclopentadiene (C-56)	0.05		mg/L	<0.0002	<0.0002
Lindane	0.0002		mg/L	<0.00002	<0.00004
Methane			mg/L	<0.00040	NT
Methyl-tert-butylether (MTBE)			mg/L	<0.0005	NT
Methoxychlor	0.04		mg/L	<0.0001	<0.0002
Methomyl			mg/L	<0.002	NT
Metolachlor			mg/L	<0.001	NT
Metribuzin			mg/L	<0.0002	NT

Table 1 (Con't)
Summary of Water Quality Testing Results
City of Adrian Well 6

Analyte	State Standards MCL	State Standards SMCL	Units	*Test Boring (220'-235' Interval)* 5-Jun-14	*Production Well* 29-Jan-15
Monochlorobenzene	0.1		mg/L	<0.0005	<0.0005
Oxamyl (Vydate)	0.2		mg/L	<0.004	<0.004
Pentachlorophenol (PCP)	0.001		mg/L	<0.00004	<0.00004
Picloram	0.5		mg/L	<0.0001	<0.0001
Polychlorinated Biphenyls (PCBs)	0.0005		mg/L	<0.00010	<0.0005
Propachlor			mg/L	<0.0002	NT
Silica			mg/L	66.1	NT
Simazine	0.004		mg/L	<0.00015	<0.00015
Styrene	0.1		mg/L	<0.0005	<0.0005
Tetrachloroethylene (PCE)	0.005		mg/L	<0.0005	<0.0005
Toluene	1		mg/L	0.0008	<0.0005
Toxaphene	0.003		mg/L	<0.001	<0.002
2,4,5-TP Silvex	0.05		mg/L	<0.0002	<0.0002
1,2,4-Trichlorobenzene	0.07		mg/L	<0.0005	<0.0005
1,1,1-Trichloroethane	0.2		mg/L	<0.0005	<0.0005
Trichloroethylene (TCE)	0.005		mg/L	<0.0005	<0.0005
1,1,2-Trichloroethane	0.005		mg/L	<0.0005	<0.0005
Vinyl chloride	0.002		mg/L	<0.0005	<0.0005
Xylenes (total)	10		mg/L	<0.0005	<0.0005
Disinfection Byproducts	**MCL**	**SMCL**			
Total Trihalomethanes (TTHM)	0.08		mg/L	<0.0005	<0.0003
Haloacetic acids (five)(HAA5)	0.06		mg/L	NT	NT (untreated)
Bromate	0.01		mg/L	<0.005	NT (untreated)
Chlorite	1		mg/L	<0.010	NT (untreated)
Radionuclides	**MCL**	**SMCL**			
Gross Alpha	15		pCi/L	33 ± 7.1	18.7 ± 2.83
Combined Radium-226 and Radium-228	5		pCi/L	<1	0.272 ± 0.646
Uranium	30		ug/L	30	22.2
Beta/Photon emitters	4 mrem/yr		pCi/L	7.5 ± 4.3	14.2 ± 1.67
Secondary Contaminants	**MCL**	**SMCL**			
Color		15	CU	<5	<5
Corrosivity		non-corrosive	LI	NT	0.423 (non-corrosive)*
Foaming Agents		0.5	mg/L	<0.01	<0.05
pH (laboratory)		6.5-8.5	SU	7.1	7.62
Hardness (as CaCO3)		250	mg/L	189	204
Odor		3	TON	<1	<1
Total dissolved solids (TDS)		500	mg/L	580	576
Aluminum		0.05-0.2	mg/L	0.46	<0.01
Chloride		250	mg/L	30	25.9
Iron (total)		0.3	mg/L	0.29	0.0311
Iron (dissolved)			mg/L	<0.05	NT
Manganese		0.05	mg/L	<0.05	<0.01
Silver		0.1	mg/L	<0.010	<0.001
Sulfate		250	mg/L	85	80.5
Zinc		5	mg/L	0.02	0.00146
Microbiological	**MCL**	**SMCL**			
Total Coliforms			mg/L	NT	NT
Turbidity	5		NTU	1	NT
Iron Bacteria				NT	Present
Sulfate reducing bacteria				NT	Not Present
Miscellaneous	**MCL**	**SMCL**			
Hardness			mg/L	296	298
Alkalinity			mg/L	314	302
Conductivity (laboratory)			µS/cm	861	NT
Hydrogen Sulfide			mg/L	<0.05	NT
Chemical Oxygen Demand			mg/L	33.8	NT
Total Suspended Solids			mg/L	4	NT
Field Parameters	**MCL**	**SMCL**			
pH			SU	7.1	7.5
Temperature			°C	16.6	14.8
Specific Conductance			µS/cm	798	785
Dissolved Oxygen			mg/L	8.0	6.1
ORP			mV	126	163

NOTES

Units are in milligrams per liter (mg/L) unless otherwise noted.

MFL = million fibers per liter	SU = standard unit
CU = color units	µS/cm = micro siemens per centimeter
TON = threshold odor number	mV = millivolt
pCi/L = picocuries per liter	°C = degrees celsius
mrem/yr = millirems per year	NTU = nephelometric turbidity unit
LI = Langlier Index	ug/L = micrograms per liter
*Slight tendency towards precipitation	Exceeds MCL or SMCL

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Laboratory Analysis Report

Sample Number: 1533822

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT AFTER COAG/FILT.

Time of Collection: 13:25
Date of Collection: 8/12/2015
Date Received: 8/12/2015
Report Date: //

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		0.010	mg/L	0.003	EPA 200.8	8/17/2015	JH
Iron, Fe		<0.05	mg/L	0.05	EPA 200.7	8/20/2015	KC
Silica		66.0	mg/L	0.25	EPA 200.7	8/18/2015	KC
Uranium, U		18	ug/L	1	EPA 200.8	8/17/2015	JH
Vanadium, V		<0.05	mg/L	0.05	EPA 200.7	8/19/2015	KC
Nitrate (as N)		9.5	mg/L	0.2	EPA 300.0	8/13/2015	NC
Total Phosphate (as P)			mg/L	0.05	EPA 365.4		

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.
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Laboratory Analysis Report

Sample Number: 1534038

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT AFTER COAG/FILT.

Time of Collection: 7:47
Date of Collection: 8/13/2015
Date Received: 8/13/2015
Report Date: //

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		<0.003	mg/L	0.003	EPA 200.8	8/20/2015	JH
Iron, Fe		<0.05	mg/L	0.05	EPA 200.7	8/17/2015	KC
Metals Digestion		*			EPA 200.9-11	8/14/2015	JMS
Silica		62.5	mg/L	0.25	EPA 200.7	8/20/2015	KC
Uranium, U		6	ug/L	1	EPA 200.8	8/20/2015	JH
Vanadium, V		<0.05	mg/L	0.05	EPA 200.7	8/19/2015	KC
Nitrate (as N)		9.4	mg/L	0.2	EPA 300.0	8/14/2015	NC
Total Phosphate (as P)			mg/L	0.05	EPA 365.4		

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MDL = Method/Minimum Detection Limit
UR = Unregulated

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Laboratory Analysis Report

Sample Number: 1534041

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT AFTER COAG/FILT.

Time of Collection: 13:25
Date of Collection: 8/13/2015
Date Received: 8/13/2015
Report Date: //

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		0.008	mg/L	0.003	EPA 200.8	8/20/2015	JH
Iron, Fe		<0.05	mg/L	0.05	EPA 200.7	8/17/2015	KC
Metals Digestion		*			EPA 200.9-11	8/14/2015	JMS
Silica		64.2	mg/L	0.25	EPA 200.7	8/20/2015	KC
Uranium, U		20	ug/L	1	EPA 200.8	8/20/2015	JH
Vanadium, V		<0.05	mg/L	0.05	EPA 200.7	8/19/2015	KC
Nitrate (as N)		9.3	mg/L	0.2	EPA 300.0	8/14/2015	NC
Total Phosphate (as P)			mg/L	0.05	EPA 365.4		

MCL = Maximum Contamination Level
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UR = Unregulated

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Laboratory Analysis Report

Sample Number: 1533584

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT TEST RAW INFLUENT

Time of Collection: 9:30
Date of Collection: 8/11/2015
Date Received: 8/11/2015
Report Date: 8/17/2015

PWS#:

Field Temp: Temp Rcvd in Lab: **PWS Name:**

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		0.070	mg/L	0.003	EPA 200.8	8/13/2015	JH
Uranium, U		26	ug/L	1	EPA 200.8	8/13/2015	JH
Nitrate (as N)		9.5	mg/L	0.2	EPA 300.0	8/12/2015	NC

MCL = Maximum Contamination Level
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UR = Unregulated

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Laboratory Analysis Report

Sample Number: 1533585

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT TEST AFTER COAG/FILT

Time of Collection: 9:32
Date of Collection: 8/11/2015
Date Received: 8/11/2015
Report Date: 8/24/2015

PWS#:

Field Temp: Temp Rcvd in Lab: **PWS Name:**

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		<0.003	mg/L	0.003	EPA 200.8	8/13/2015	JH
Iron, Fe		<0.05	mg/L	0.05	EPA 200.7	8/14/2015	JH
Silica		62.1	mg/L	0.25	EPA 200.7	8/17/2015	KC
Uranium, U		<1	ug/L	1	EPA 200.8	8/13/2015	JH
Vanadium, V		<0.05	mg/L	0.05	EPA 200.7	8/19/2015	KC
Nitrate (as N)		9.4	mg/L	0.2	EPA 300.0	8/12/2015	NC
Total Phosphate (as P)		0.07	mg/L	0.05	EPA 365.4	8/20/2015	DS

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

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Laboratory Analysis Report

Sample Number: 1533586

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT TEST NXT-2

Time of Collection: 9:36
Date of Collection: 8/11/2015
Date Received: 8/11/2015
Report Date: 8/18/2015

PWS#:

Field Temp: Temp Rcvd in Lab: **PWS Name:**

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		<0.003	mg/L	0.003	EPA 200.8	8/14/2015	JH
Uranium, U		<1	ug/L	1	EPA 200.8	8/14/2015	JH
Nitrate (as N)		8.3	mg/L	0.2	EPA 300.0	8/12/2015	NC

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

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Laboratory Analysis Report

Sample Number: 1533587

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT TEST FO36

Time of Collection: 9:38
Date of Collection: 8/11/2015
Date Received: 8/11/2015
Report Date: 8/18/2015

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		<0.003	mg/L	0.003	EPA 200.8	8/14/2015	JH
Uranium, U		<1	ug/L	1	EPA 200.8	8/14/2015	JH
Nitrate (as N)		7.1	mg/L	0.2	EPA 300.0	8/12/2015	NC

MCL = Maximum Contamination Level
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UR = Unregulated

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Laboratory Analysis Report

Sample Number: 1533588

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT TEST AFTER COAG/FILT.

Time of Collection: 15:18
Date of Collection: 8/11/2015
Date Received: 8/11/2015
Report Date: 8/24/2015

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		0.006	mg/L	0.003	EPA 200.8	8/14/2015	JH
Iron, Fe		<0.05	mg/L	0.05	EPA 200.7	8/17/2015	KC
Silica		66.6	mg/L	0.25	EPA 200.7	8/18/2015	KC
Uranium, U		16	ug/L	1	EPA 200.8	8/14/2015	JH
Vanadium, V		<0.05	mg/L	0.05	EPA 200.7	8/19/2015	KC
Nitrate (as N)		9.5	mg/L	0.2	EPA 300.0	8/12/2015	NC
Total Phosphate (as P)		<0.05	mg/L	0.05	EPA 365.4	8/20/2015	DS

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MDL = Method/Minimum Detection Limit
UR = Unregulated

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Laboratory Analysis Report

Sample Number: 1533589

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT TEST NXT-2

Time of Collection: 15:21
Date of Collection: 8/11/2015
Date Received: 8/11/2015
Report Date: 8/18/2015

PWS#:

Field Temp: Temp Rcvd in Lab: **PWS Name:**

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		<0.003	mg/L	0.003	EPA 200.8	8/14/2015	JH
Uranium, U		<1	ug/L	1	EPA 200.8	8/14/2015	JH
Nitrate (as N)		9.4	mg/L	0.2	EPA 300.0	8/12/2015	NC

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Laboratory Analysis Report

Sample Number: 1533590

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT TEST FO36

Time of Collection: 15:20
Date of Collection: 8/11/2015
Date Received: 8/11/2015
Report Date: 8/18/2015

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		0.006	mg/L	0.003	EPA 200.8	8/14/2015	JH
Uranium, U		16	ug/L	1	EPA 200.8	8/14/2015	JH
Nitrate (as N)		8.9	mg/L	0.2	EPA 300.0	8/12/2015	NC

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Laboratory Analysis Report

Sample Number: 1533821

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT RAW INFLUENT

Time of Collection: 13:23
Date of Collection: 8/12/2015
Date Received: 8/12/2015
Report Date: 8/18/2015

PWS#:

Field Temp: Temp Rcvd in Lab: **PWS Name:**

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		0.073	mg/L	0.003	EPA 200.8	8/17/2015	JH
Uranium, U		23	ug/L	1	EPA 200.8	8/17/2015	JH
Nitrate (as N)		9.4	mg/L	0.2	EPA 300.0	8/13/2015	NC

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
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These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1533823

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT FO-36

Time of Collection: 13:28
Date of Collection: 8/12/2015
Date Received: 8/12/2015
Report Date: 8/18/2015

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		0.009	mg/L	0.003	EPA 200.8	8/17/2015	JH
Uranium, U		17	ug/L	1	EPA 200.8	8/17/2015	JH
Nitrate (as N)		8.3	mg/L	0.2	EPA 300.0	8/13/2015	NC

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MDL = Method/Minimum Detection Limit
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These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1533824

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT NXT-2

Time of Collection: 13:30
Date of Collection: 8/12/2015
Date Received: 8/12/2015
Report Date: 8/18/2015

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		<0.003	mg/L	0.003	EPA 200.8	8/17/2015	JH
Uranium, U		<1	ug/L	1	EPA 200.8	8/17/2015	JH
Nitrate (as N)		9.4	mg/L	0.2	EPA 300.0	8/13/2015	NC

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MDL = Method/Minimum Detection Limit
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Laboratory Analysis Report

Sample Number: 1534037

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT RAW INFLUENT

Time of Collection: 7:45
Date of Collection: 8/13/2015
Date Received: 8/13/2015
Report Date: 8/24/2015

PWS#:

Field Temp: Temp Rcvd in Lab: **PWS Name:**

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		0.068	mg/L	0.003	EPA 200.8	8/20/2015	JH
Metals Digestion		*			EPA 200.9-11	8/14/2015	JMS
Uranium, U		25	ug/L	1	EPA 200.8	8/20/2015	JH
Nitrate (as N)		9.4	mg/L	0.2	EPA 300.0	8/14/2015	NC

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.
If you have any questions about this report, or any
future analytical needs, please contact your client
manager: Brian M. McGovern

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 8/25/2015 9:37:29 AM
http://www.analyticallaboratories.com

These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1534039

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT NXT-2

Time of Collection: 7:49
Date of Collection: 8/13/2015
Date Received: 8/13/2015
Report Date: 8/24/2015

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		<0.003	mg/L	0.003	EPA 200.8	8/20/2015	JH
Metals Digestion		*			EPA 200.9-11	8/14/2015	JMS
Uranium, U		<1	ug/L	1	EPA 200.8	8/20/2015	JH
Nitrate (as N)		9.3	mg/L	0.2	EPA 300.0	8/14/2015	NC

MCL = Maximum Contamination Level
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1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 8/25/2015 9:37:29 AM
http://www.analyticallaboratories.com

These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1534040

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT FO-36

Time of Collection: 7:51
Date of Collection: 8/13/2015
Date Received: 8/13/2015
Report Date: 8/24/2015

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		<0.003	mg/L	0.003	EPA 200.8	8/20/2015	JH
Metals Digestion		*			EPA 200.9-11	8/14/2015	JMS
Uranium, U		5	ug/L	1	EPA 200.8	8/20/2015	JH
Nitrate (as N)		8.3	mg/L	0.2	EPA 300.0	8/14/2015	NC

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

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future analytical needs, please contact your client
manager: Brian M. McGovern

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 8/25/2015 9:37:29 AM
http://www.analyticallaboratories.com

These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1534042

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT NXT-2

Time of Collection: 13:26
Date of Collection: 8/13/2015
Date Received: 8/13/2015
Report Date: 8/24/2015

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		<0.003	mg/L	0.003	EPA 200.8	8/20/2015	JH
Metals Digestion		*			EPA 200.9-11	8/14/2015	JMS
Uranium, U		<1	ug/L	1	EPA 200.8	8/20/2015	JH
Nitrate (as N)		9.3	mg/L	0.2	EPA 300.0	8/14/2015	NC

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

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future analytical needs, please contact your client
manager: Brian M. McGovern

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 8/25/2015 9:37:29 AM
http://www.analyticallaboratories.com

These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1534043

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT FO-36

Time of Collection: 13:27
Date of Collection: 8/13/2015
Date Received: 8/13/2015
Report Date: 8/24/2015

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		0.012	mg/L	0.003	EPA 200.8	8/20/2015	JH
Metals Digestion		*			EPA 200.9-11	8/14/2015	JMS
Uranium, U		16	ug/L	1	EPA 200.8	8/20/2015	JH
Nitrate (as N)		8.2	mg/L	0.2	EPA 300.0	8/14/2015	NC

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

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future analytical needs, please contact your client
manager: Brian M. McGovern

APPENDIX C

GEOTECHNICAL REPORT

KELLER associates

213013-003/PER/15-373

Mr. Justin Walker
Keller & Associates
131 SW 5th Ave.
Meridian, Idaho 83642
208-859-2932

Re: Geotechnical Engineering Report
Adrian Water System Improvements
Well House 2 & 3 – Emerald Slope and Well Rd
Adrian, Oregon

Dear Mr. Walker:

In compliance with your instructions, MTI has conducted a limited soils exploration and foundation evaluation for the above referenced development. Fieldwork for this investigation was conducted on 6 July 2015. The proposed building site is in the northwestern portion of the City of Adrian, Malheur County, Oregon, and occupies a portion of the NW¼SW¼ of Section 14, Township 21 South, Range 46 East, Boise Meridian. This project will consist of construction of one single-story structure to be developed on the City of Adrian enclosure at location of Well 2 and 3. MTI has not been informed of the proposed grading plan.

Authorization

Authorization to perform this exploration and analysis was given in the form of a written authorization to proceed from Mr. Justin Walker of Keller Associates to Charles D. Walker of Materials Testing and Inspection, Inc. (MTI), on 23 June 2015. Said authorization is subject to terms, conditions, and limitations described in the Professional Services Contract entered into between Keller Associates and MTI. Our scope of services for the proposed development has been provided in our proposal dated 2 July 2015 and repeated below.

Scope of Investigation

The scope of this investigation included review of geologic literature and existing available geotechnical studies of the area, visual site reconnaissance of the immediate site, subsurface exploration of the site, field and laboratory testing of materials collected, and engineering analysis and evaluation of foundation materials. Our scope of work did not include foundation design, pavement design, or earthwork recommendations. The scope of work did not include design recommendations specific to individual residences.

Regional Geology

The subject site is located within the Western Snake River Flood Plain. This geomorphological feature, within this region, consists of a broad, deeply floored, thick sequence of alluvial silts, clays, sands and gravel. These sediments typically have been deposited on Miocene (24 to 5 million years ago) basalt flows and tuffaceous sediments, the eastern most reaches of the Columbia Plateau. This thick sequence of generally

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fine-grained sediments, predominately derived from the Idaho Batholith, contains minor intercalated tuffs and basalt flows within the earliest deposits. Most of these sediments were placed during the latter part of the Miocene and are predominately of lacustrine origin. Lakes were created within this area as a result of basalt flow impoundments formed to the west along the ancestral Columbia River. Many of the fossil leaf forms uncovered in these lacustrine plain sediments indicate the presence of a wet tropical climate that prevailed at this time. Early Quaternary age (1.6 million years ago to present) sediments deposited on top of the lacustrine plain were apparently deposited during a time of extremely dry climactic conditions in which little water was present for removal, sorting, and deposition of the debris.

General Site Characteristics

This proposed development consists of approximately one half acre of enclosed relatively flat terrain. The enclosure consists of an 8 foot security fence with one gated entry point located at the South East corner. Throughout the majority of the site, surficial soils consist of fine-grained sandy-silt mixtures. Vegetation is limited across the area proposed for the structure. Two well houses that supply the city of Adrian are situated inside the fenced enclosure.

The project site is bisected by farm ground that has a west to east trending drainage. This drainage slopes downwards from the west to the east at approximately 25 feet horizontal to 1 foot vertical (25:1) and represents the most gently sloping portion of the site. Slopes that are west of the enclose that are outside the acreage are steepest on hillsides above the drainage floor at approximately 2:1.

Regional drainage is east toward a drainage canal approximately 75 feet east of the enclosure. Stormwater drainage for the site is achieved by both sheet runoff and percolation through surficial soils. Runoff predominates off of the adjacent farm ground and is channeled into the aforementioned drainage canal while percolation prevails across the gently sloping enclosure and near level areas. Stormwater drainage collection and retention systems are not in place on the project site and do not currently exist within the vicinity of the project site.

Geoseismic Setting

Soils on site are classed as Site Class D in accordance with Chapter 20 of the American Society of Civil Engineers (ASCE) publication ASCE/SEI 7-10. Structures constructed on this site should be designed per IBC requirements for such a seismic classification. Our investigation did not reveal hazards resulting from potential earthquake motions including: slope instability, liquefaction, and surface rupture caused by faulting or lateral spreading. Incidence and anticipated acceleration of seismic activity in the area is low.

Exploration and Sampling Procedures

Field exploration conducted to determine engineering characteristics of subsurface materials included a reconnaissance of the project site and investigation by test pit. Test pit sites were located in the field by means of visual approximation from on-site features or known locations and are presumed to be accurate to within a few feet. Upon completion of investigation, each test pit was backfilled with loose excavated

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materials. Re-excavation and compaction of these test pit areas are required prior to construction of overlying structures.

In addition, samples were obtained from representative soil strata encountered. Samples obtained have been visually classified in the field by professional staff, identified according to test pit number and depth, placed in sealed containers, and transported to our laboratory for additional testing. Subsurface materials have been described in detail on logs provided in the **Enclosures** section. Results of field and laboratory tests are also presented in the **Enclosures** section. MTI recommends that these logs **not** be used to estimate fill material quantities.

Laboratory Testing Program

Along with our field investigation, a supplemental laboratory testing program was conducted to determine additional pertinent engineering characteristics of subsurface materials necessary in an analysis of anticipated behavior of the proposed structures. Laboratory tests were conducted in accordance with current applicable American Society for Testing and Materials (ASTM)) specifications and results of these tests are to be found on the accompanying logs located in the **Enclosures** section. The laboratory testing program for this report included: Atterberg Limits Testing and ASTM D4318, Grain Size Analysis

Soil and Sediment Profile

The profile below represents a generalized interpretation for the project site. Note that on site soils strata, encountered between test pit locations, may vary from the individual soil profiles presented in the logs, which can be found in the **Enclosures** section.

The materials encountered during exploration were quite typical for the geologic area. Surficial soils were predominately silts and sandy silts. Clays were not encounter at either of the two test pit locations. Silts were more often a light to medium brown. These fine grained soils generally exhibited moisture contents of dry, slightly moist to moist. Consistencies commonly ranged from stiff to hard, with some of the firmer soil horizons containing some degree of calcium carbonate cementation (hardpan). No Organic materials were present and disturbed materials, as a result of plowing activities prior to the wells 1985 existence were not encountered.

In many of the more deeply developed soils, silt with sand sediments were encountered, and in a few cases, poorly graded sand were present. Silt with sands were most often classified as light brown, moist, and varied in relative density from medium dense to dense. Hardpan cementation also extended through portions of these horizons. The occurrence of poorly graded sands was limited, and usually consisted of brown to light brown, slightly moist to moist.

Competency of test pit walls varied little across the site. In general, fine grained soils remained stable. However, moisture contents will also affect wall competency with saturated soils having a tendency to readily slough when under load and unsupported.

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Groundwater

During this field investigation, groundwater was encountered in test pits at depths ranging from 9.0 to 10.0 feet bgs. Actual groundwater depths varied because of soil type and ground elevation. Soil moistures in the test pits were generally dry to slightly moist within surficial soils. Within the poorly graded sands, soil moistures graded from moist to saturated as the water table was approached and penetrated.

In the vicinity of the project site, groundwater levels are controlled in large part by residential and commercial irrigation activity. Maximum groundwater elevations likely occur during late spring to early summer runoff season. Based on evidence of this investigation and background knowledge of the area, MTI estimates groundwater depths to remain approximately 8 feet bgs throughout the year. This depth can be confirmed through long-term groundwater monitoring.

It is recommended that if infiltration facilities are constructed on the site they should be extended into native poorly graded sand sediments. Excavation depths of approximately 7 to 8 feet bgs should be anticipated to expose these poorly graded sand sediments. Because of the soil permeability, ASTM C33 filter sand, or equivalent, should be incorporated into design for the infiltration facilities. An infiltration rate of 4 inches per hour should be used in design. If infiltration facilities are expected to be part of the project construction then actual infiltration rates would need to be confirmed at the time of construction.

Foundation Design Recommendations

Based on data obtained from the site and test results from various laboratory tests performed, MTI recommends the following guidelines for the net allowable soil bearing capacity:

Soil Bearing Capacity

Footing Depth	ASTM D1557 Subgrade Compaction	Net Allowable Soil Bearing Capacity
Footings must bear on competent, undisturbed, native sandy silt soils or compacted structural fill. Excavation depths ranging from roughly 3 to 4 feet bgs should be anticipated to expose proper bearing soils.[1]	95% for Native Soils & Structural Fill	2,000 lbs/ft^2 A ⅓ increase is allowable for short-term loading, which is defined by seismic events or designed wind speeds.

[1]It will be required for MTI personnel to verify the bearing soil suitability for each structure at the time of construction. It is noted that the upper couple of feet across the site is in a disturbed condition and is not suitable for support of foundation elements.

Footings should be proportioned to meet either the stated soil bearing capacity or the 2012 IBC minimum requirements. Total settlement should be limited to approximately 1 inch, and differential settlement should be limited to approximately ½ inch. Objectionable soil types encountered at the bottom of footing excavations should be removed and replaced with structural fill. Excessively loose or soft areas that are encountered in the footings subgrade will require over-excavation and backfilling with structural fill. To minimize the effects of slight differential movement that may occur because of variations in the character of supporting soils and seasonal moisture content, MTI recommends continuous footings be suitably reinforced

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to make them as rigid as possible. For frost protection, the bottom of external footings should be 30 inches below finished grade.

Warranty and Limiting Conditions

MTI warrants that findings and conclusions contained herein have been formulated in accordance with generally accepted professional engineering practice in the fields of foundation engineering, soil mechanics, and engineering geology only for the site and project described in this report. These engineering methods have been developed to provide the client with information regarding apparent or potential engineering conditions relating to the site within the scope cited above and are necessarily limited to conditions observed at the time of the site visit and research. Field observations and research reported herein are considered sufficient in detail and scope to form a reasonable basis for the purposes cited above.

Exclusive Use

This report was prepared for exclusive use of the property owner(s), at the time of the report, and their retained design consultants ("Client"). Conclusions and recommendations presented in this report are based on the agreed-upon scope of work outlined in this report together with the Contract for Professional Services between the Client and Materials Testing and Inspection, Inc. ("Consultant"). Use or misuse of this report, or reliance upon findings hereof, by parties other than the Client is at their own risk. Neither Client nor Consultant make representation of warranty to such other parties as to accuracy or completeness of this report or suitability of its use by such other parties for purposes whatsoever, known or unknown, to Client or Consultant. Neither Client nor Consultant shall have liability to indemnify or hold harmless third parties for losses incurred by actual or purported use or misuse of this report. No other warranties are implied or expressed.

Report Recommendations are Limited and Subject to Misinterpretation

There is a distinct possibility that conditions may exist that could not be identified within the scope of the investigation or that were not apparent during our site investigation. Findings of this report are limited to data collected from noted explorations advanced and do not account for unidentified fill zones, unsuitable soil types or conditions, and variability in soil moisture and groundwater conditions. To avoid possible misinterpretations of findings, conclusions, and implications of this report, MTI should be retained to explain the report contents to other design professionals as well as construction professionals.

Since actual subsurface conditions on the site can only be verified by earthwork, note that construction recommendations are based on general assumptions from selective observations and selective field exploratory sampling. Upon commencement of construction, such conditions may be identified that require corrective actions, and these required corrective actions may impact the project budget. Therefore, construction recommendations in this report should be considered preliminary, and MTI should be retained to observe actual subsurface conditions during earthwork construction activities to provide additional construction recommendations as needed.

Since geotechnical reports are subject to misinterpretation, **do not** separate the soil logs from the report. Rather, provide a copy of, or authorize for their use, the complete report to other design professionals or

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contractors. Locations of exploratory sites referenced within this report should be considered approximate locations only. For more accurate locations, services of a professional land surveyor are recommended.

This report is also limited to information available at the time it was prepared. In the event additional information is provided to MTI following publication of our report, it will be forwarded to the client for evaluation in the form received.

Environmental Concerns

Comments in this report concerning either onsite conditions or observations, including soil appearances and odors, are provided as general information. These comments are not intended to describe, quantify, or evaluate environmental concerns or situations. Since personnel, skills, procedures, standards, and equipment differ, a geotechnical investigation report is not intended to substitute for a geoenvironmental investigation or a Phase II/III Environmental Site Assessment. If environmental services are needed, MTI can provide, via a separate contract, those personnel who are trained to investigate and delineate soil and water contamination.

General Comments

Often, questions arise concerning soil conditions because of design and construction details that occur on a project. MTI would be pleased to continue our role as geotechnical engineers during project implementation. Additionally, MTI can provide materials testing and special inspection services during construction of this project. If you will advise us of the appropriate time to discuss these engineering services, we will meet with you at your convenience.

MTI appreciates this opportunity to be of service to you and looks forward to working with you in the future. If you have questions, please call «Office_Phone_Number».

Respectfully Submitted,
Materials Testing & Inspection, Inc.

Charles D. Walker
Regional Manager

Reviewed by: David O. Cram, P.E.
General Manager

Enclosures:
Geotechnical General Notes
Geotechnical Investigation Test Pit Logs
Vicinity Map
Site Map

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Geotechnical General Notes

RELATIVE DENSITY AND CONSISTENCY CLASSIFICATION			
Coarse-Grained Soils	**SPT Blow Counts (N)**	**Fine-Grained Soils**	**SPT Blow Counts (N)**
Very Loose:	< 4	Very Soft:	< 2
Loose:	4-10	Soft:	2-4
Medium Dense:	10-30	Medium Stiff:	4-8
Dense:	30-50	Stiff:	8-15
Very Dense:	>50	Very Stiff:	15-30
		Hard:	>30

Moisture Content	
Description	**Field Test**
Dry	Absence of moisture, dusty, dry to touch
Moist	Damp but not visible moisture
Wet	Visible free water, usually soil is below water table

Cementation	
Description	**Field Test**
Weakly	Crumbles or breaks with handling or slight finger pressure
Moderately	Crumbles or beaks with considerable finger pressure
Strongly	Will not crumble or break with finger pressure

PARTICLE SIZE					
Boulders:	>12 in.	Coarse-Grained Sand:	5 to 0.6 mm	Silts:	0.075 to 0.005 mm
Cobbles:	12 to 3 in.	Medium-Grained Sand:	0.6 to 0.2 mm	Clays:	<0.005 mm
Gravel:	3 in. to 5 mm	Fine-Grained Sand:	0.2 to 0.075 mm		

UNIFIED SOIL CLASSIFICATION SYSTEM			
Major Divisions		**Symbol**	**Soil Descriptions**
Coarse-Grained Soils <50% passes No.200 sieve	Gravel & Gravelly Soils <50% coarse fraction passes No.4 sieve	GW	Well-graded gravels; gravel/sand mixtures with little or no fines
		GP	Poorly-graded gravels; gravel/sand mixtures with little or no fines
		GM	Silty gravels; poorly-graded gravel/sand/silt mixtures
		GC	Clayey gravels; poorly-graded gravel/sand/clay mixtures
	Sand & Sandy Soils >50% coarse fraction passes No.4 sieve	SW	Well-graded sands; gravelly sands with little or no fines
		SP	Poorly-graded sands; gravelly sands with little or no fines
		SM	Silty sands; poorly-graded sand/gravel/silt mixtures
		SC	Clayey sands; poorly-graded sand/gravel/clay mixtures
Fine Grained Soils >50% passes No.200 sieve	Silts & Clays LL < 50	ML	Inorganic silts; sandy, gravelly or clayey silts
		CL	Lean clays; inorganic, gravelly, sandy, or silty, low to medium-plasticity clays
		OL	Organic, low-plasticity clays and silts
	Silts & Clays LL > 50	MH	Inorganic, elastic silts; sandy, gravelly or clayey elastic silts
		CH	Fat clays; high-plasticity, inorganic clays
		OH	Organic, medium to high-plasticity clays and silts

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Highly Organic Soils	PT	Peat, humus, hydric soils with high organic content

FRACTURING	
SPACING	**DISCRIPTION**
6 ft.	Very widely
2 – 6 ft.	Widely
8 – 24 in.	Moderately
2 ½ - 8 in.	Closely
¾ - 2 ½ in.	Very Closely

ROCK QUALITY DESIGNATION (RQD)	
RQD (%)	**ROCK QUALITY**
90 – 100	Excellent
75 – 90	Good
50 – 75	Fair
25 – 50	Poor
0 - 25	Very Poor

COMPETENCY			
STRENGTH	**CLASS**	**FIELD TEST**	**APPROXIMATE RANGE OF UNCONFINED COMPRESSIVE STRENGTH (tsf)**
Extremely Strong	I	Many blows with geologic hammer required to break intact specimen.	>2000
Very Strong	II	Hand-held specimen breaks with pick end of hammer under more than one blow.	2000 - 1000
Strong	III	Cannot be scraped or peeled with knife, hand-held specimen can be broken with single moderate blow with pick end of hammer.	1000 - 500
Moderately Strong	IV	Can just be scraped or peeled with knife. Indentations 1 mm to 3 mm show in specimen with moderate blow with pick end of hammer.	500 - 250
Weak	V	Material crumbles under moderate blow with pick end of hammer and can be peeled with a knife, but is hard to hand-trim for tri-axial test specimen.	250 - 10
Friable	VI	Material crumbles in hand.	N/A

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GEOTECHNICAL INVESTIGATION TEST PIT LOG

Test Pit Log #: TP-1 **Date Advanced:** 6 July 2015 **Logged by:** Charles D. Walker
Excavated by: David Durham Gravel Works **Location:** See Site Map Plates
Latitude: 43.740761 **Longitude:** -117.073571
Depth to Water Table: 10.0 feet bgs **Total Depth:** 10.5 Feet bgs

Depth (Feet bgs)	Field Description and USCS Soil and Sediment Classification	Sample Type	Sample Depth (Feet bgs)	Qp	Lab Test ID
0.0-2.1	Silt (ML): *Brown to dark brown, dry, loose to medium dense, with fine to coarse-grained sand. Note that near surface materials were in a disturbed condition.*	Bulk	0.5-1.0		A
2.1-4.3	Sandy Silt (ML): *Brown, moist, very stiff to hard, with fine-grained sand.*	Bulk	2.5-3.0		B
4.3-7.5	Silt with Sand (ML): *Light brown, slightly moist to moist, medium dense to dense, with fine to medium-grained sand.*	Bulk	5.0-7.0		C
7.5-10.5	Sandy Silt (ML): *Light brown, slightly moist to moist, medium dense to dense, with medium to coarse-grained sand.*	Bulk	8.0-9.5		D

Lab Test ID	M	LL	PI	Sieve Analysis				
-	%	-	-	#4	#10	#40	#100	#200
A	12.3	NP	NP	100	99	98	95	82.0
B		NP	NP	100	100	98	93	70.4
C		NP	NP	100	100	100	99	76.4
D	18.6	NP	NP	100	100	99	95	64.9

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GEOTECHNICAL INVESTIGATION TEST PIT LOG

Test Pit Log #: TP-2 **Date Advanced:** 6 July 2015 **Logged by:** Charles D. Walker
Excavated by: David Durham Gravel Works **Location:** See Site Map Plates
Latitude: 43.740995 **Longitude:** -117.073331
Depth to Water Table: 9.0 feet bsg **Total Depth:** 9.5 Feet bgs

Depth (Feet bgs)	Field Description and USCS Soil and Sediment Classification	Sample Type	Sample Depth (Feet bgs)	Qp	Lab Test ID
0.0-3.4	Silt (ML): *Brown to dark brown, dry, loose to medium dense, with fine to coarse-grained sand. Note that near surface materials were in a disturbed condition.*				
3.4-7.6	Sandy Silt (ML): *Brown, moist, very stiff to hard, with fine-grained sand.*				
7.6-9.5	Sandy Silt (ML): *Light brown, slightly moist to moist, medium dense to dense, with medium to coarse-grained sand.*	Bulk	8.0-9.0		A

Lab Test ID	M	LL	PI	Sieve Analysis				
-	%	-	-	#4	#10	#40	#100	#200
A	20.1	NP	NP	100	100	99	95	66.1

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APPENDIX D

WELL 6 DEVELOPMENT

KELLER associates

213013-003/PER/15-373

March 17, 2015

Mr. Justin Walker, PE
Keller Associates, Inc.
131 S.W. 5th Ave., Suite A
Meridian, ID 83642

Subject: Summary of City of Adrian Well 6 Drilling, Construction and Testing

Justin:

This letter report summarizes the results of drilling, construction and testing of Well 6 for the City of Adrian (City). The City installed Well 6 to develop a new higher quality groundwater source to increase the reliability and capacity of the City's water supply. GSI Water Solutions, Inc. (GSI) provided well design, permitting, construction observation and pre-design hydrogeologic services for the Well 6 project under subcontract to Keller Associates, Inc. (Keller). Our services for this project were authorized by Keller on January 19, 2015 in Addendum No. 1 to the February 12, 2013 Agreement for Engineering Services between Keller and GSI.

General

The City contracted Riverside Inc. (Riverside) of Parma, Idaho to drill, construct and test Well 6. The Well 6 project was completed in two phases: (1) Riverside initially drilled a large diameter test boring at the Well 6 location and completed zonal testing of the boring in May 2014; (2) on the basis of the zonal testing, Riverside installed a production well in the boring in June 2014, and subsequently developed and tested the well in January 2015. The remainder of this document summarizes the following information:

- Permitting and authorizations for Well 6
- Summary of test boring drilling and testing
- Production well screen and filterpack design
- Well development
- Pumping test results
- Water quality sampling results

Authorization and Permitting

Well Site Easements

Well 6 is located in the NW¼ of SW¼ of Section 15, Township 21 South, Range 46 East, (Lat. 43.74366 Long. -117.091796) on an unirrigated parcel of property owned by DeHoog Properties, LLC (DeHoog), an Idaho limited liability corporation. DeHoog provided the City access to the site to drill a test well in spring 2014. DeHoog subsequently granted the City permanent easements for the well and access to the site for operation of the well. A copy of the recorded easements is provided in Attachment A.

Water Rights

Well 6 will be added as a new point of appropriation under Permit G-16074, with a maximum allowed instantaneous rate of 1.0 cubic feet per second (cfs), or approximately 448 gpm (Attachment B). Application for the amendment to the permit to add Well 6 is pending approval of an extension of the completion date for the permit by Oregon Water Resources Department (OWRD). The City has submitted an application for the extension, which is pending approval by OWRD.

Oregon Health Authority (OHA) Drinking Water Program (DWP) Plan Review

The City submitted initial requirements for plan review of a new supply well to the OHA DWP in June 2014 per Oregon Administrative Rules (OAR) 333-061-0060. Plan review materials submitted to the DWP included a general site plan, geologic log, well design, Land Use Compatibility Statement (LUCS) signed by a representative of Malheur County, Oregon, and the required plan review fee. DWP provided initial approval of the well in a June 17, 2014 letter to the City (Plan Review #94-2014). A copy of the letter is provided in Attachment C.

This letter report provides several required elements of the final plan review, including an as-built of the well, OWRD well report, including a geologic log, pumping test results and data, and water quality testing results.

Well Drilling, Construction and Development

Test Boring Drilling and Testing

Riverside began drilling of a test boring at the Well 6 site on May 28, 2014 and completed the boring on June 4. Interval testing of the boring was completed on June 5 and 6, 2014. The purpose of the test boring was to evaluate whether the unconfined aquifer hosted by alluvial terrace deposits under the parcel owned by DeHoog was suitable for construction of a water supply well to serve the City's long-term future needs. Objectives of the test boring were to evaluate the productivity and water quality of the alluvial terrace deposits. The sequencing of the test boring was as follows:

1. Riverside drilled a 20-inch diameter borehole to 250 feet below ground surface (bgs) with flooded and mud rotary reverse circulation techniques.
2. Riverside lost circulation while drilling the interval from 233 - 237 feet bgs, which drained the mud pit. Some sloughing of the borehole occurred with the

loss of hydrostatic pressure. Riverside restored circulation with addition of water and a thicker and heavier drilling mud mixture, cleaned out the lower 50 feet borehole and resumed drilling to the total borehole depth of 250 feet bgs.

3. Riverside completed testing of two intervals within the borehole to assess productivity and water quality. The tested intervals were (1) 220 – 235 feet bgs and (2) 170 – 185 feet bgs. Interval testing was completed as follows:
    a. Attached a 15-foot length of 6-inch diameter temporary screen on the end of the drill stem and lowering it into the borehole to the desired test depth
    b. Isolated the screened interval by placing a bentonite plug below the screen, filling the annulus with filterpack between the screen and the borehole, and placing bentonite pellets above the screen. Development and testing was completed after the bentonite pellets were allowed to hydrate for several hours.
    c. Installed a submersible pump in the drill stem, developed the interval and then completed a pumping test.
4. The City decided to construct a production well in the test boring on the basis of the interval testing, rather than to decommission the test boring and complete a separate production well. Riverside backfilled the borehole with pea gravel to stabilize it while waiting for the screen design to be completed and well materials to be delivered to the site.

Production Well Construction

Riverside began construction of the production well on June 25, 2014 and completed the well on July 2, 2014. Development and testing of the well was completed in January 2015. The general sequencing of well completion activities is summarized below:

1. A single 12-inch diameter riser, screen, and sump string was assembled and lowered into the 20-inch-diameter borehole. Riverside set the bottom of the assembly at a total depth of 250 feet bgs. The filterpack was immediately installed to stabilize the formation.
2. The filterpack was installed by pouring the filterpack material into the annulus between the screen assembly and borehole.
3. A 5-foot bentonite plug was installed over the top of the filterpack and allowed to completely hydrate before installing the grout seal.
4. Riverside installed a cement grout seal from the top of the bentonite plug to ground surface using a tremie pipe and grout pump. Installation of the grout seal was completed on July 2, 2014.
5. Riverside developed the well and completed an aquifer test in January 2015 (described in subsequent sections).
6. Riverside completed well video survey on February 23, 2015.

As-Built Well Specifications

General

Well 6 consists of a single 12-inch-diameter (ID) production casing and screen assembly, which extends from +2.3 above ground surface to a depth of 250 feet bgs. The production casing consists of 0.375-inch diameter low carbon steel from +2.3 ft above ground surface to a depth of 207 feet bgs. A benchmark has been etched around the

casing 1.0 feet below the top of the casing to establish a common reference for measurements.

The top and bottom of the screen assembly are approximately 207 feet bgs and 247 feet bgs, respectively. A 3-foot sump consisting of blank casing with a welded end cap extends below the screen to the depth of 250 feet. A schematic as-built diagram of the well is provided in Figure 1. Copies of the start card and well report submitted by Riverside to OWRD are provided in Attachment D**.**

Screen and Filter Pack

The screen assembly consists of Type 304 stainless steel Johnson Free Flow wire-wrap screen including:

- 30 feet of 12-inch ID, 0.035-inch (35-slot) slot opening from 207 to 237 ft bgs
- 10 feet of 12-inch ID, 0.025-inch (25-slot) slot opening from 237 to 247 ft bgs.

The total open area of the 40-foot screen interval is 23.2 ft^2 (18.9 percent). This configuration provides an approximate entrance velocity of 0.03 feet per second at a pumping rate of 300 gpm, well below the entrance velocity criterion of 0.1 feet/second cited by Johnson Screens (Groundwater and Wells, 2007).

The filter pack is composed of 8-12 Colorado Silica Sand from 195 to 250 ft bgs. The filter pack is topped by 5 feet of bentonite from 190 to 195 ft bgs. The bentonite was topped with 19.5 cubic yards of cement grout tremied in the annulus from 190 ft bgs to surface.

Development

Riverside developed Well 6 between January 26 and 27, 2015 by pumping and rawhiding (surging) the well. Riverside added one gallon of Aqua-Clear PFD (phosphate-free dispersant) to the well one hour before the start of development to break up the mud cake on the borehole walls. The development process involved pumping the well for a period of time at a rate of approximately 325 gpm and then shutting off the pump briefly to surge the well. This cycle was repeated numerous times over a duration of 15 hours. Development was terminated after drawdown at the development pumping rate stabilized, visual inspection of development water indicated minimal and temporary turbidity after successive rawhiding cycles, and no apparent sand generated during pumping and rawhiding.

Well Testing

Well testing included interval testing of the borehole, and step-rate and constant-rate testing of the finished production well. The interval testing was completed between June 3 and 5, 2015. The step-rate test was completed on January 28, 2015. The constant rate test was initiated in the late afternoon of January 28, 2015 after recovery criteria from the step-rate test were met.

Water levels were measured during testing using a pressure transducer and data logger, which were supplemented with manual measurements using an electronic water level indicator. Water level data recorded by the transducer and data logger for the background, step-rate test, recovery, constant-rate test, and recovery are plotted on Figure

2. Flow from the well was measured with a calibrated analog totalizing flow meter and/or a circular orifice weir.

Borehole Interval Testing

Two intervals were tested in the test borehole: The first interval (220 – 235 feet bgs) was developed by pumping for 5 hours before testing and then allowed to recover for 9.5 hours. The interval was then pumped at a rate of 50 gpm for 24 hours. The tested specific capacity of the interval at the end of 24 hours of pumping was 13.2 gpm/ft. A water sample was obtained from the first interval after 6 hours of pumping and submitted to Analytical Laboratories, Inc. of Boise, Idaho for analysis of metals, general chemistry (common ions) and synthetic organic compounds.

For the second interval test, the screen was set 170 to 185 ft bgs and isolated with bentonite seals. The second interval would not produce enough water to support the test and so a water quality sample was not obtained from this interval. The estimated capacity of the interval is less than 25 gpm.

Step-Rate and Constant-Rate Testing

Step-rate and constant-rate tests were conducted in January 2015. The step-rate test included pumping the well at four different pumping rates, each of 1-hour duration. The approximate discharge rates for each step of the test were 119 gpm, 175 gpm, 251 gpm and 323 gpm. The approximate 1-hour specific capacity (SC) at these different flow rates ranged from 19 to 12.7 gpm/foot of drawdown. Figure 3 shows the step-rate test hydrograph.

The constant-rate test was initiated on January 28, 2015. The well was pumped at a rate of 323 gpm (60 inches on the circular orifice weir) for a 26.7 hour pumping period. Total drawdown at the end of the pumping period was 26.8 feet. The 24-hour specific capacity for the well is 12.0 gpm/foot. Figure 4 shows the constant-rate test and recovery hydrograph. Review of data from the pumping and recovery phases (Figures 5 and 6) indicate the presence of a negative (low permeability) boundary in the aquifer. The most likely nearby feature bounding the aquifer is bedrock forming the hills south of the well. Analysis of test data yields aquifer transmissivity estimates of 65,000 gpd/ft (early time, pre-boundary). Analysis of late time data indicates an effective (post-boundary) transmissivity of 37,000 gallons per day per foot (gpd/ft).

Sand content was measured using a Rossum Sand Tester, which operated throughout the step-rate and constant-rate aquifer tests. The amount of sand generated during the aquifer tests was less than 0.1 milligram (mg). The small amount of sand generated during the aquifer tests indicate adequate development of the well.

Water Quality

GSI collected a water sample from the 220-foot to 235-foot interval in the test boring on June 4, 2014 for preliminary water quality analyses. The sample was analyzed for general water quality and the Safe Drinking Water Act (SDWA) parameters. Additionally, field measurements of water quality including pH, temperature, dissolved oxygen, conductivity, and oxidation-reduction potential (ORP) were taken. Subsequently, GSI collected a water sample from the completed production well on

January 29, 2015, approximately 19 hours after commencing the constant rate test. This sample was submitted to Table Rock Analytical, an Oregon-certified laboratory for SDWA analyses. The samples was analyzed for general water quality and SDWA parameters and the presence of iron-related bacteria. Field water quality parameters, including pH, temperature, dissolved oxygen, conductivity, and ORP, were logged every 5 minutes during the duration of the pumping test. The results of the water quality analyses are presented in Table 1. The constant-rate test water quality analyses report is provided in Attachment E. The interval test water quality analyses report is provided in Attachment F. The field water quality parameters logged during the last 1.5 hours of the constant-rate test are tabulated in Attachment G.

With a few exceptions, concentrations of most detected constituents in the samples collected from the test boring and production well generally were comparable, though concentrations of some inorganic constituents in the test boring sample were slightly greater than in the production well sample. The differences in constituent concentrations between the test boring and production well samples could reflect slightly higher suspended solids in the test boring sample, or could be a result of seasonal changes in the aquifer (e.g., changes in pH, redox potential and temperature).

Concentrations of the following analytes in one or both of the test borehole or production well samples exceeded state and federal primary Maximum Contaminant Levels (MCLs):

- Arsenic (test boring and production well)
- Uranium (test boring) – the concentration of uranium detected in the sample from the completed production well was less than the MCL.
- Gross alpha particles (test boring and production well) – alpha particles are emitted by members of the uranium decay series, including radium and uranium and are likely related to the uranium and minor radium detected in the samples.

The concentrations of the remainder of regulated constituents were either not detected or were less than the MCL, although nitrate concentrations in both samples were greater than one half the MCL.

Concentrations of the following analytes exceeded secondary MCLs (non-enforceable aesthetic standards):

- Aluminum (test boring) – aluminum was not detected in the production well sample. We believe that the production well sample result is likely more representative.
- Total dissolved solids (test boring and production well)

The concentration of total (unfiltered) iron detected in the test boring sample (0.29 mg/L) was slightly less than the SMCL, whereas the concentration detected in the production well sample (0.0311 mg/L) was approximately an order-of-magnitude less. The reason for the difference in total iron concentrations between the test boring and production samples is unknown. The higher concentration in the test boring sample may be because (1) the presence of higher suspended solids content in the test boring sample, or (2) the solubility of iron is sensitive to pH and the increased pH measured in the production well

sample reflect reduced iron solubility in the aquifer at the time the sample was obtained from the production well.

Iron bacteria also were detected in the production well sample. The analysis for iron bacteria is purely qualitative and the types and aggressiveness of the iron-related bacteria is unknown.

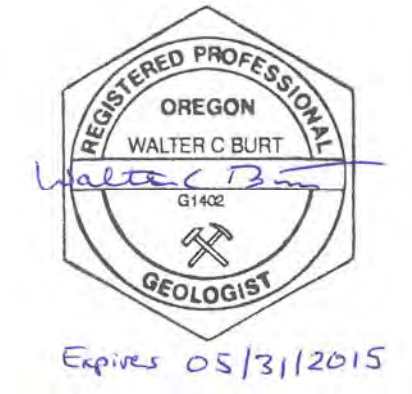
Production Rates and Pumping Levels

The results of well testing were used to estimate projected pumping levels over a range of pumping rates and durations in the well for use in sizing and designing the production pump and motor. The analysis included consideration of drawdowns under longer-term pumping scenarios and potential interference from nearby proposed irrigation wells. For the purposes of this analysis, we have assumed a total of 10 feet of combined interference and water level declines. Current estimates suggest approximately 6 to 7 feet of interference due to nearby proposed irrigation supply pumping. Additional pumping will further decrease available drawdown and could potentially impact the maximum well capacity. The results of this analysis are plotted on Figure 7. Estimates for pumping levels over a range of rates are also provided in Table 2.

We recommend setting the pump intake near the top of the screen to maximize available drawdown and pump submergence. Assuming a static water level of 153 feet bgs, an intake setting of 200 feet and a minimum pump submergence of 10 feet, the maximum projected pumping rate that can be sustained by the well is approximately 300 gpm. This estimate accounts for up to 10 feet of combined well interference and overall aquifer level declines. A slightly higher rate may be possible during periods where interference is less. A higher pump intake setting or greater water level declines will correspondingly reduce the maximum well yield.

Thank you for this opportunity to work with you on this project. Please contact us at (503) 239-8799 if you have any questions regarding this report.

Sincerely,
Groundwater Solutions, Inc. dba
GSI Water Solutions, Inc.,



Walter Burt, RG, LHG
Principal Hydrogeologist

Attachments

Table 1
Summary of Water Quality Testing Results
City of Adrian Well 6

Analyte	State Standards MCL	State Standards SMCL	Units	*Test Boring (220'-235' Interval)* 5-Jun-14	*Production Well* 29-Jan-15
Inorganic Constituents					
Ammonia (as N)			mg/L	<0.02	NT
Antimony	0.006		mg/L	<0.005	<0.001
Arsenic	0.01		mg/L	0.092	0.0734
Asbestos[1]	7		MFL	NT	<0.066
Barium	2		mg/L	<0.05	0.0251
Beryllium	0.004		mg/L	<0.0005	<0.0003
Bicarbonate			mg/L	314	302
Calcium			mg/L	75.6	81.6
Carbonate			mg/L	0.0	<5
Cadmium	0.005		mg/L	<0.0005	<0.001
Chromium (total)	0.1		mg/L	<0.002	0.00163
Copper[2]	1.3		mg/L	<0.01	0.00106
Cyanide (as free cyanide)	0.2		mg/L	<0.005	<0.01
Flouride	4	2	mg/L	0.66	0.519
Lead[2]	0.015		mg/L	<0.005	<0.001
Mercury (inorganic)	0.002		mg/L	<0.0002	<0.0001
Magnesium			mg/L	21.3	22.9
Molybdenum			mg/L	NT	0.00787
Nickel			mg/L	<0.02	<0.001
Nitrate (as N)	10		mg/L	8.1	8.83
Nitrite (as N)	1		mg/L	<0.01	<0.5
Total Nitrate + Nitrite (as N)	10		mg/L	7.96	8.83
Ortho Phosphate			mg/L	0.11	NT
Potassium			mg/L	17.3	NT
Selenium	0.05		mg/L	0.011	0.00858
Sodium			mg/L	NT	64.0
Thallium	0.002		mg/L	<0.001	<0.001
Organic Chemicals (SOCs and VOCs)	**MCL**	**SMCL**			
Acrylamide	0.05% dosed at 1ppm		mg/L	NT	NT
Alachlor	0.002		mg/L	<0.0004	<0.0004
Aldicarb			mg/L	<0.003	NT
Aldicarb sulfone			mg/L	<0.002	NT
Aldicarb sulfoxide			mg/L	<0.004	NT
Adrin			mg/L	<0.0002	NT
Atrazine	0.003		mg/L	<0.0002	<0.0002
Benzene	0.005		mg/L	<0.0005	<0.0005
Benzo(a)pyrene (PAHs)	0.0002		mg/L	<0.00002	<0.00004
Butachlor			mg/L	<0.0004	NT
Carbaryl			mg/L	<0.002	NT
Carbofuran	0.04		mg/L	<0.002	<0.002
Carbon, Total Organic (TOC)			mg/L	11.4	NT
3-Hydroxycarbofurn			mg/L	<0.002	NT
Carbon tetrachloride	0.005		mg/L	<0.0005	<0.0005
Chlordane	0.002		mg/L	<0.0001	<0.0005
Chlorobenzene			mg/L	<0.0005	<0.0005
2,4-Dichlorophenoxyacetic acid (2,4-D)	0.07		mg/L	<0.0001	<0.0001
Dalapon	0.2		mg/L	<0.0001	<0.001
1,2-Dibromo-3-chloropropane (DBCP)	0.0002		mg/L	<0.00002	<0.00004
o-Dichlorobenzene	0.6		mg/L	<0.0005	<0.0005
p-Dichlorobenzene	0.075		mg/L	<0.0005	<0.0005
1,2-Dichloroethane	0.005		mg/L	<0.0005	<0.0005
1,1-Dichloroethylene	0.007		mg/L	<0.0005	<0.0005
cis-1,2-Dichloroethylene	0.07		mg/L	<0.0005	<0.0005
trans-1,2-Dichloroethylene	0.1		mg/L	<0.0005	<0.0005
Dichloromethane	0.005		mg/L	<0.0005	<0.0005
1,2-Dichloropropane	0.005		mg/L	<0.0005	<0.0005
Di(2-ethylhexyl)adipate	0.04		mg/L	<0.0002	<0.0002
Di(2-ethylhexyl)phthalate	0.006		mg/L	<0.0006	<0.0006
Dieldrin			mg/L	<0.0002	NT
Dinoseb	0.007		mg/L	<0.0002	<0.0002
Dioxin (2,3,7,8-TCDD)	0.00000003		mg/L	NT	<0.000000005
Dissolved Organic Carbon			Mg/L	0.8	NT
Diquat	0.02		mg/L	<0.0008	<0.0008
Endothall	0.1		mg/L	<0.025	<0.01
Endrin	0.002		mg/L	<0.00002	<0.00002
Ethane			mg/L	<0.00080	NT
Ethene			mg/L	<0.0012	NT
Ethylbenzene	0.7		mg/L	<0.0005	<0.0005
Ethylene Dibromide (EDB)	0.00005		mg/L	<0.00002	<0.00002
Glyphosate	0.7		mg/L	<0.01	<0.01
Heptachlor	0.0004		mg/L	<0.00004	<0.00008
Heptachor epoxide	0.0002		mg/L	<0.00002	<0.00004
Hexachlorobenzene	0.001		mg/L	<0.0002	<0.0002
Hexchlorocyclopentadiene (C-56)	0.05		mg/L	<0.0002	<0.0002
Lindane	0.0002		mg/L	<0.00002	<0.00004
Methane			mg/L	<0.00040	NT
Methyl-tert-butylether (MTBE)			mg/L	<0.0005	NT
Methoxychlor	0.04		mg/L	<0.0001	<0.0002
Methomyl			mg/L	<0.002	NT
Metolachlor			mg/L	<0.001	NT
Metribuzin			mg/L	<0.0002	NT

Table 1 (Con't)
Summary of Water Quality Testing Results
City of Adrian Well 6

Analyte	State Standards MCL	State Standards SMCL	Units	*Test Boring (220'-235' Interval)* 5-Jun-14	*Production Well* 29-Jan-15
Monochlorobenzene	0.1		mg/L	<0.0005	<0.0005
Oxamyl (Vydate)	0.2		mg/L	<0.004	<0.004
Pentachlorophenol (PCP)	0.001		mg/L	<0.00004	<0.00004
Picloram	0.5		mg/L	<0.0001	<0.0001
Polychlorinated Biphenyls (PCBs)	0.0005		mg/L	<0.00010	<0.0005
Propachlor			mg/L	<0.0002	NT
Silica			mg/L	66.1	NT
Simazine	0.004		mg/L	<0.00015	<0.00015
Styrene	0.1		mg/L	<0.0005	<0.0005
Tetrachloroethylene (PCE)	0.005		mg/L	<0.0005	<0.0005
Toluene	1		mg/L	0.0008	<0.0005
Toxaphene	0.003		mg/L	<0.001	<0.002
2,4,5-TP Silvex	0.05		mg/L	<0.0002	<0.0002
1,2,4-Trichlorobenzene	0.07		mg/L	<0.0005	<0.0005
1,1,1-Trichloroethane	0.2		mg/L	<0.0005	<0.0005
Trichloroethylene (TCE)	0.005		mg/L	<0.0005	<0.0005
1,1,2-Trichloroethane	0.005		mg/L	<0.0005	<0.0005
Vinyl chloride	0.002		mg/L	<0.0005	<0.0005
Xylenes (total)	10		mg/L	<0.0005	<0.0005
Disinfection Byproducts	**MCL**	**SMCL**			
Total Trihalomethanes (TTHM)	0.08		mg/L	<0.0005	<0.0003
Haloacetic acids (five)(HAA5)	0.06		mg/L	NT	NT (untreated)
Bromate	0.01		mg/L	<0.005	NT (untreated)
Chlorite	1		mg/L	<0.010	NT (untreated)
Radionuclides	**MCL**	**SMCL**			
Gross Alpha	15		pCi/L	33 ± 7.1	18.7 ± 2.83
Combined Radium-226 and Radium-228	5		pCi/L	<1	0.272 ± 0.646
Uranium	30		ug/L	30	22.2
Beta/Photon emitters	4 mrem/yr		pCi/L	7.5 ± 4.3	14.2 ± 1.67
Secondary Contaminants	**MCL**	**SMCL**			
Color		15	CU	<5	<5
Corrosivity		non-corrosive	LI	NT	0.423 (non-corrosive)*
Foaming Agents		0.5	mg/L	<0.01	<0.05
pH (laboratory)		6.5-8.5	SU	7.1	7.62
Hardness (as CaCO3)		250	mg/L	189	204
Odor		3	TON	<1	<1
Total dissolved solids (TDS)		500	mg/L	580	576
Aluminum		0.05-0.2	mg/L	0.46	<0.01
Chloride		250	mg/L	30	25.9
Iron (total)		0.3	mg/L	0.29	0.0311
Iron (dissolved)			mg/L	<0.05	NT
Manganese		0.05	mg/L	<0.05	<0.01
Silver		0.1	mg/L	<0.010	<0.001
Sulfate		250	mg/L	85	80.5
Zinc		5	mg/L	0.02	0.00146
Microbiological	**MCL**	**SMCL**			
Total Coliforms			mg/L	NT	NT
Turbidity	5		NTU	1	NT
Iron Bacteria				NT	Present
Sulfate reducing bacteria				NT	Not Present
Miscellaneous	**MCL**	**SMCL**			
Hardness			mg/L	296	298
Alkalinity			mg/L	314	302
Conductivity (laboratory)			µS/cm	861	NT
Hydrogen Sulfide			mg/L	<0.05	NT
Chemical Oxygen Demand			mg/L	33.8	NT
Total Suspended Solids			mg/L	4	NT
Field Parameters	**MCL**	**SMCL**			
pH			SU	7.1	7.5
Temperature			°C	16.6	14.8
Specific Conductance			µS/cm	798	785
Dissolved Oxygen			mg/L	8.0	6.1
ORP			mV	126	163

NOTES

Units are in milligrams per liter (mg/L) unless otherwise noted.

MFL = million fibers per liter	SU = standard unit
CU = color units	µS/cm = micro siemens per centimeter
TON = threshold odor number	mV = millivolt
pCi/L = picocuries per liter	°C = degrees celsius
mrem/yr = millirems per year	NTU = nephelometric turbidity unit
LI = Langlier Index	ug/L = micrograms per liter
*Slight tendency towards precipitation	Exceeds MCL or SMCL

Table 2
Pumping Level Estimates
Adrian Well 6
City of Adrian, Oregon

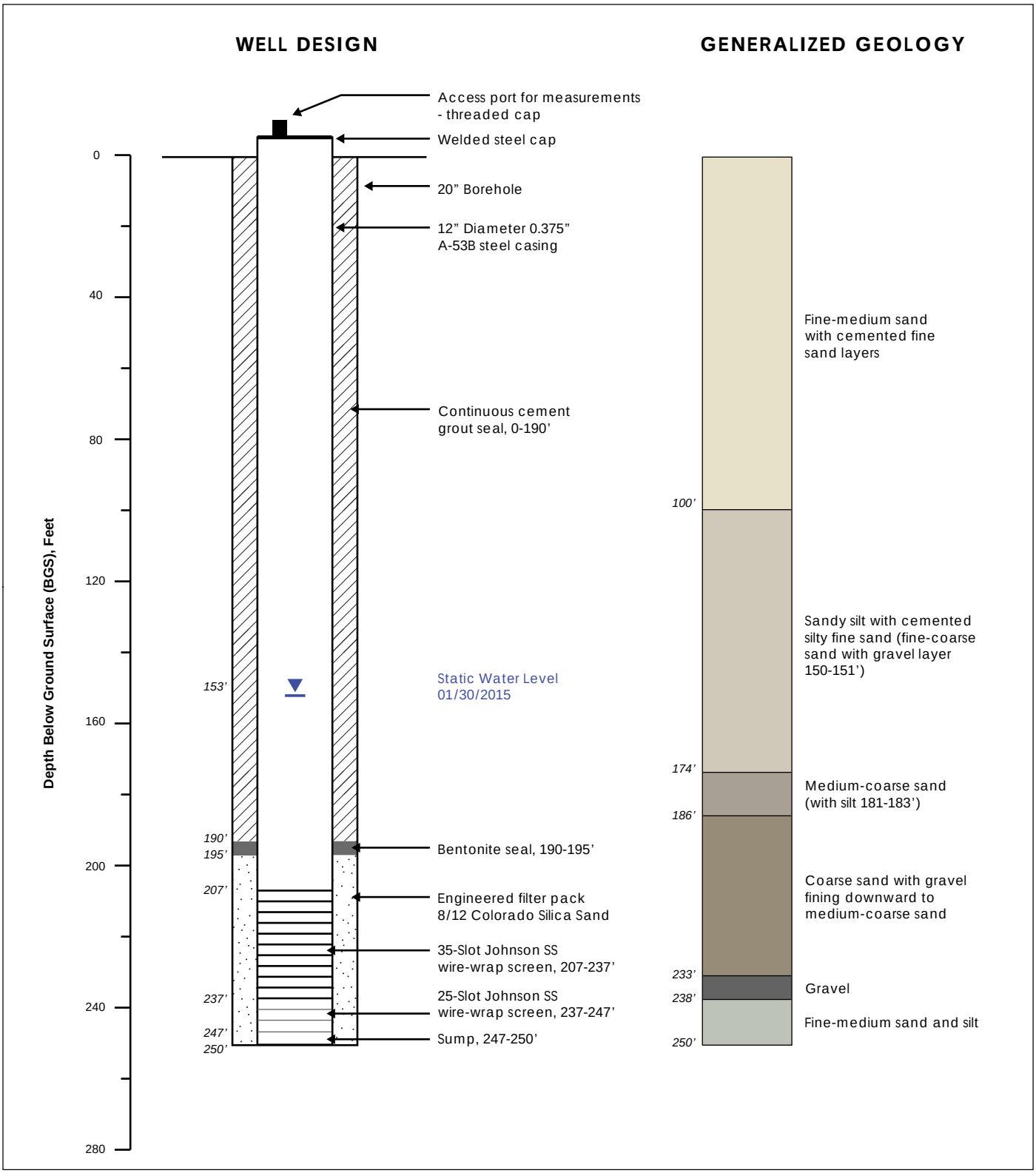
		Time (Days)			
Q (gpm)		0.5	1	7	30
150	EstimatedDrawdown (ft)[1]	9.0	9.0	10.0	10.0
	Estimated Max. Interference (ft)[2]	10	10	10	10
	SWL (bgs)[3]	153	153	153	153
	Pumping Level (bgs)	**172.0**	**172.0**	**173.0**	**173.0**
200	Drawdown (ft)[1]	15.0	16.0	16.0	17.0
	Interference (ft)[2]	10	10	10	10
	SWL (bgs)[3]	153	153	153	153
	Pumping Level (bgs)	**178.0**	**179.0**	**179.0**	**180.0**
250	Drawdown (ft)[1]	19.0	19.0	20.0	21.0
	Interference (ft)[2]	10	10	10	10
	SWL (bgs)[3]	153	153	153	153
	Pumping Level (bgs)	**182.0**	**182.0**	**183.0**	**184.0**
300	Drawdown (ft)[1]	23.0	23.0	25.0	26.0
	Interference (ft)[2]	10	10	10	10
	SWL (bgs)[3]	153	153	153	153
	Pumping Level (bgs)	**186.0**	**186.0**	**188.0**	**189.0**
350	Drawdown (ft)[1]	30.0	30.0	32.0	33.0
	Interference (ft)[2]	10	10	10	10
	SWL (bgs)[3]	153	153	153	153
	Pumping Level (bgs)	**193.0**	**193.0**	**195.0**	**196.0**

Notes:

1 Drawdowns estimated from semi-log plot extrapolations of constant rate test data.

2 Estimated interference from local irrigation wells.

3 Water level prior to constant rate test. Antecedent water level in aquifer was rising; thus, water level reflects dynamic conditions characteristic of regular cycling of the well.



NOTES:

1. Drilled to total depth of 250' bgs using flooded reverse circulation mud rotary.
2. First water-bearing zone encountered at 174' bgs.
3. Completed well July 2, 2014.
4. Developed well January 27, 2015.
5. Completed step-rate test January 28, 2015.
6. Completed constant rate test January 29, 2015.

FIGURE 1

Well 6 AS-Built

City of Adrian, Oregon

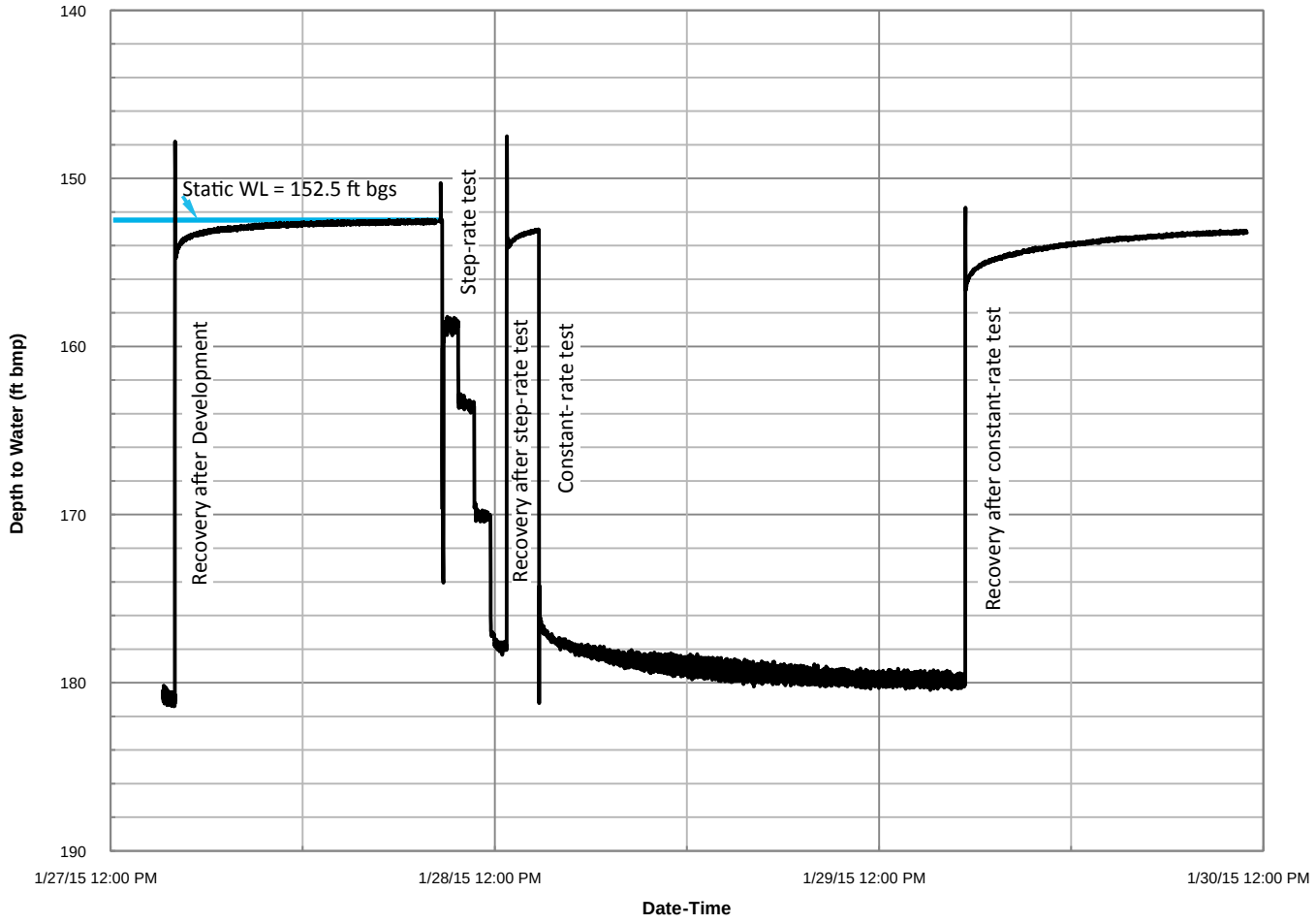
Date: February 11, 2015

P:\Portland\464-Keller_Assoc\004-Adrian Well 6\Figures

FIGURE 2

Well 6 Pumping Test Hydrograph

City of Adrian, Oregon



LEGEND

- Well 6 Pressure Transducer Water Level data
- Manual Static Water Level = 152.5 ft bgs Measured 01/28/15 08:37 am

Date: February 18, 2014

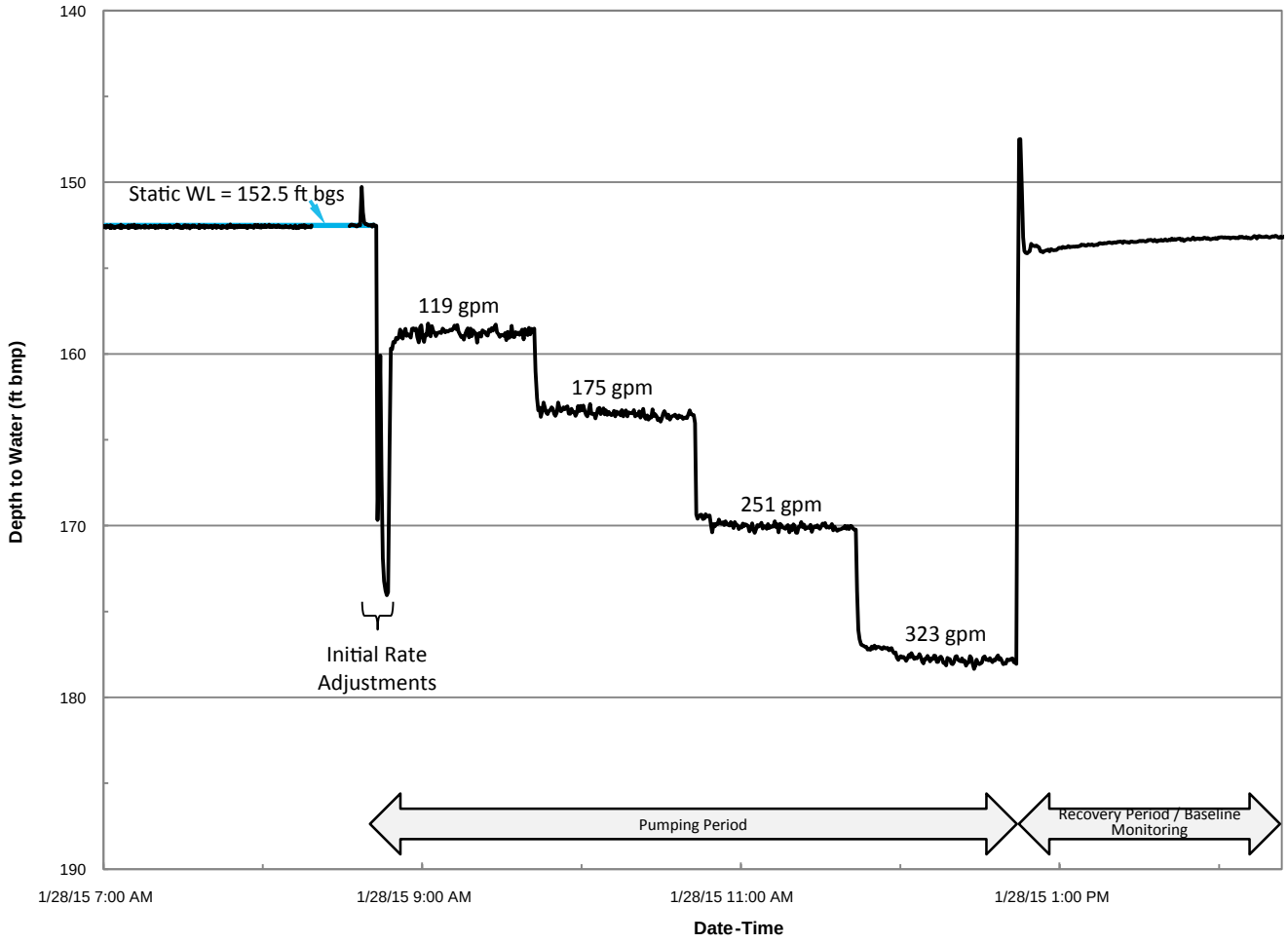
GSI Water Solutions, Inc.

P:\Portland\464-Keller_Assoc\002 - Adrian WMP\Figures

FIGURE 3

Step-Rate Test

City of Adrian, Oregon



LEGEND

Well 6 Pressure Transducer
Water Level data

Manual Static Water Level = 152.5 ft bgs
Measured 01/28/15 08:37 am

Date: February 18, 2014

GSI Water Solutions, Inc.

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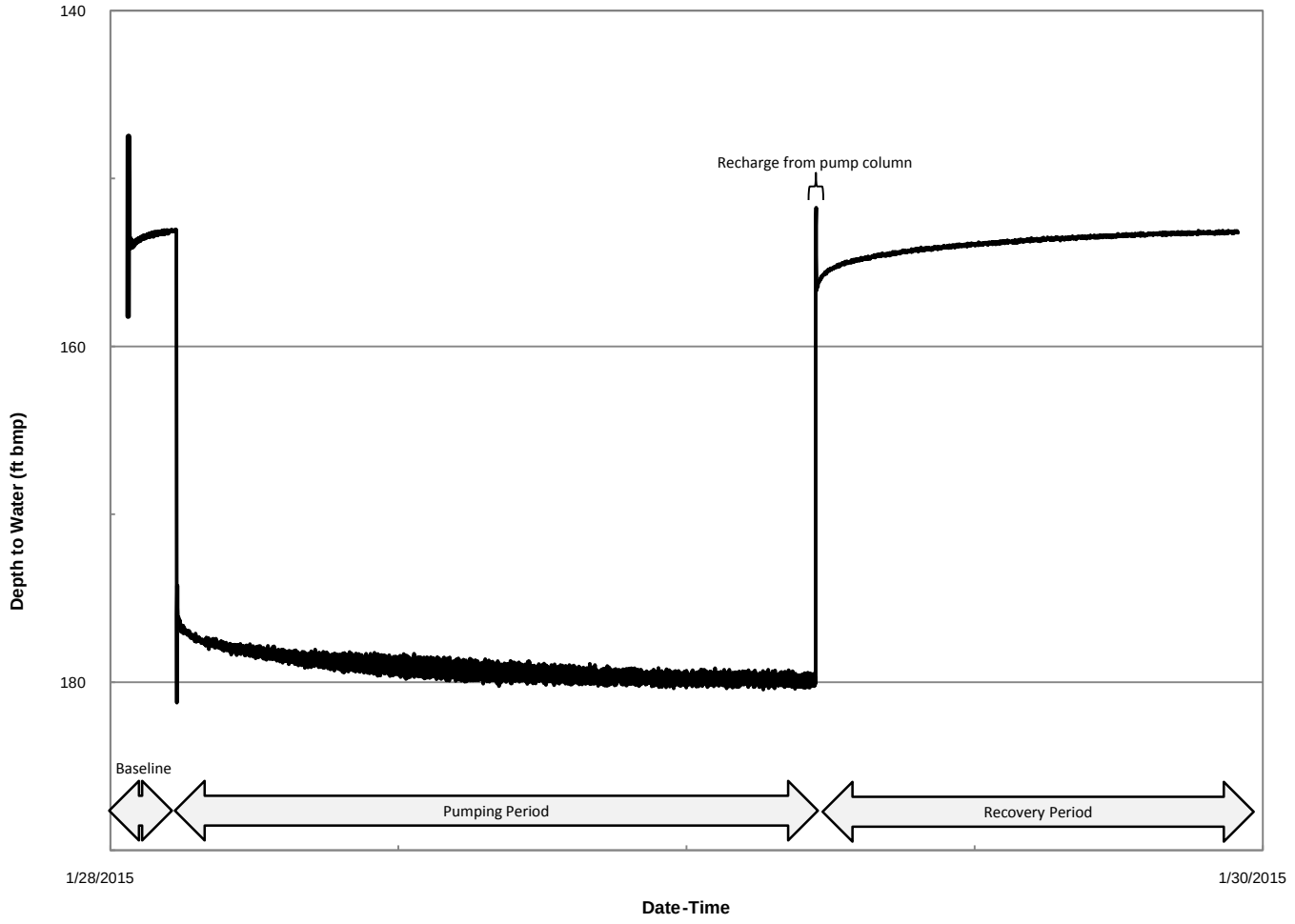


FIGURE 4

Constant-Rate Test

City of Adrian, Oregon

LEGEND

Well 6

Date: February 18, 2014

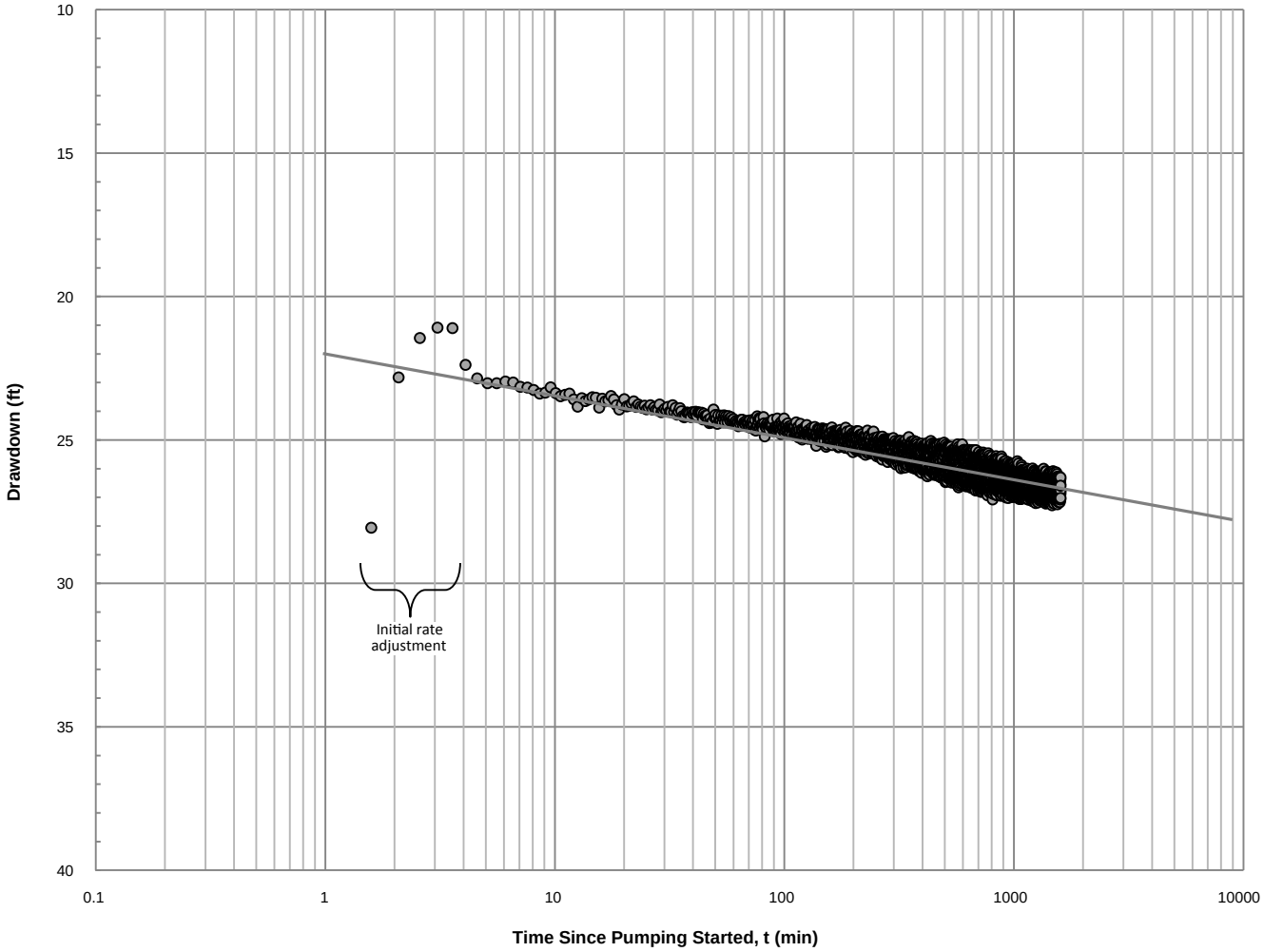
GSI Water Solutions, Inc.

P:\Portland\464-Keller_Assoc\002 - Adrian WMP\Figures

FIGURE 5

Semi-Log Drawdown

City of Adrian, Oregon



LEGEND

Well 6

Cooper - Jacob Analysis

T = (264•Q)/Δs

Q = 323 gpm

Δs = 1.75 feet

T = (264•323) / 1.75 = **48,700 gpd/ft**

Date: February 18, 2014

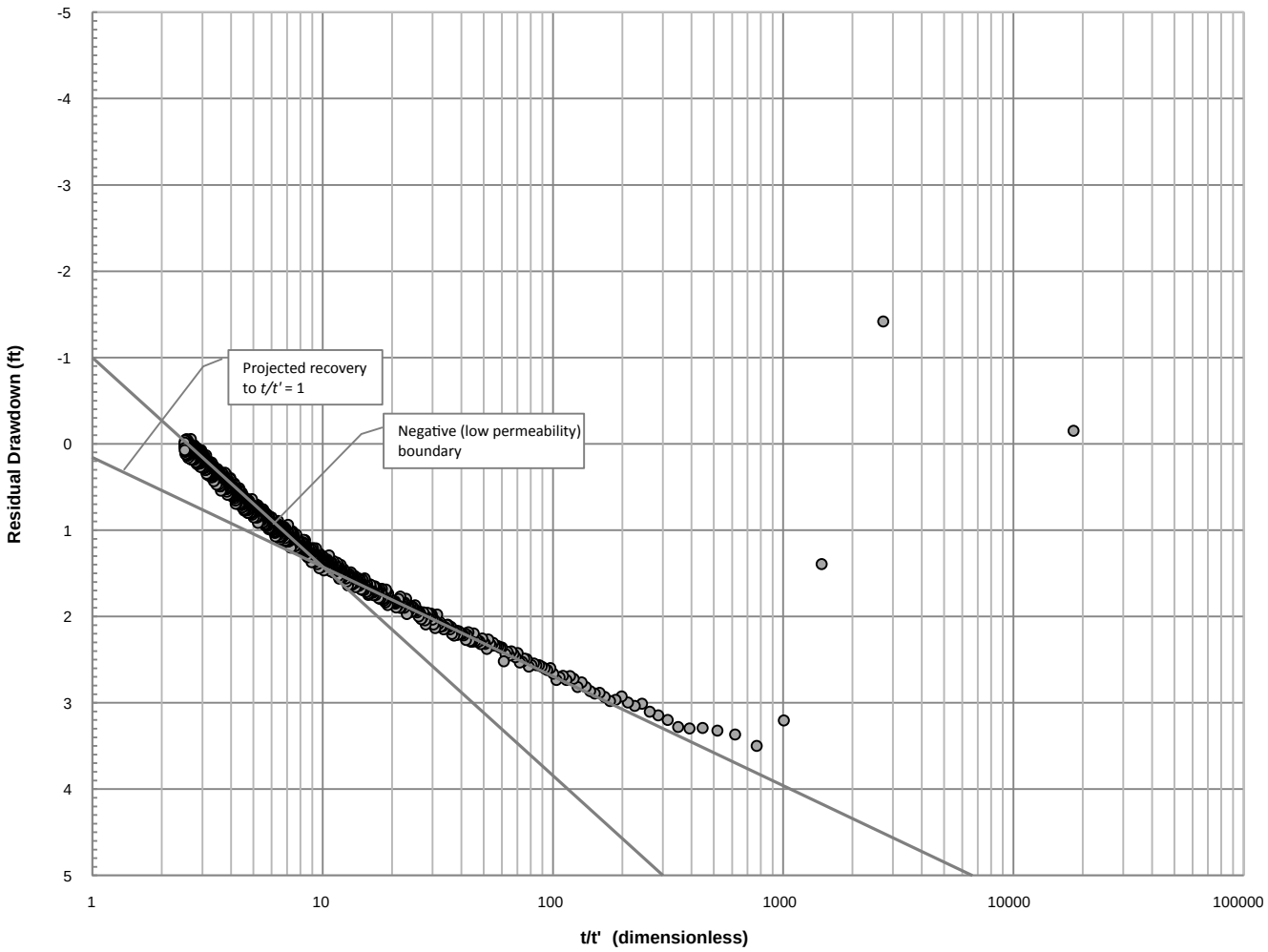
GSI Water Solutions, Inc.

P:\Portland\464-Keller_Assoc\002 - Adrian WMP\Figures

FIGURE 6

Residual Drawdown

City of Adrian, Oregon



LEGEND

● Well 6

Theis Recovery Analysis - Early Time

T = (264•Q)/Ds
Q = 323 gpm
Ds = 1.3 feet per log cycle
T = (264•323) / 1.3 = **65,500 gpd/ft**

Theis Recovery Analysis - Late Time (Post-Boundary)

T = (264•Q)/Ds
Q = 323 gpm
Ds = 1.3 feet per log cycle
Effective T = (264•323) / 2.3 = **37,000 gpd/ft**

Date: February 18, 2014

GSI Water Solutions, Inc.

P:\Portland\464-Keller_Assoc\002 - Adrian WMP\Figures

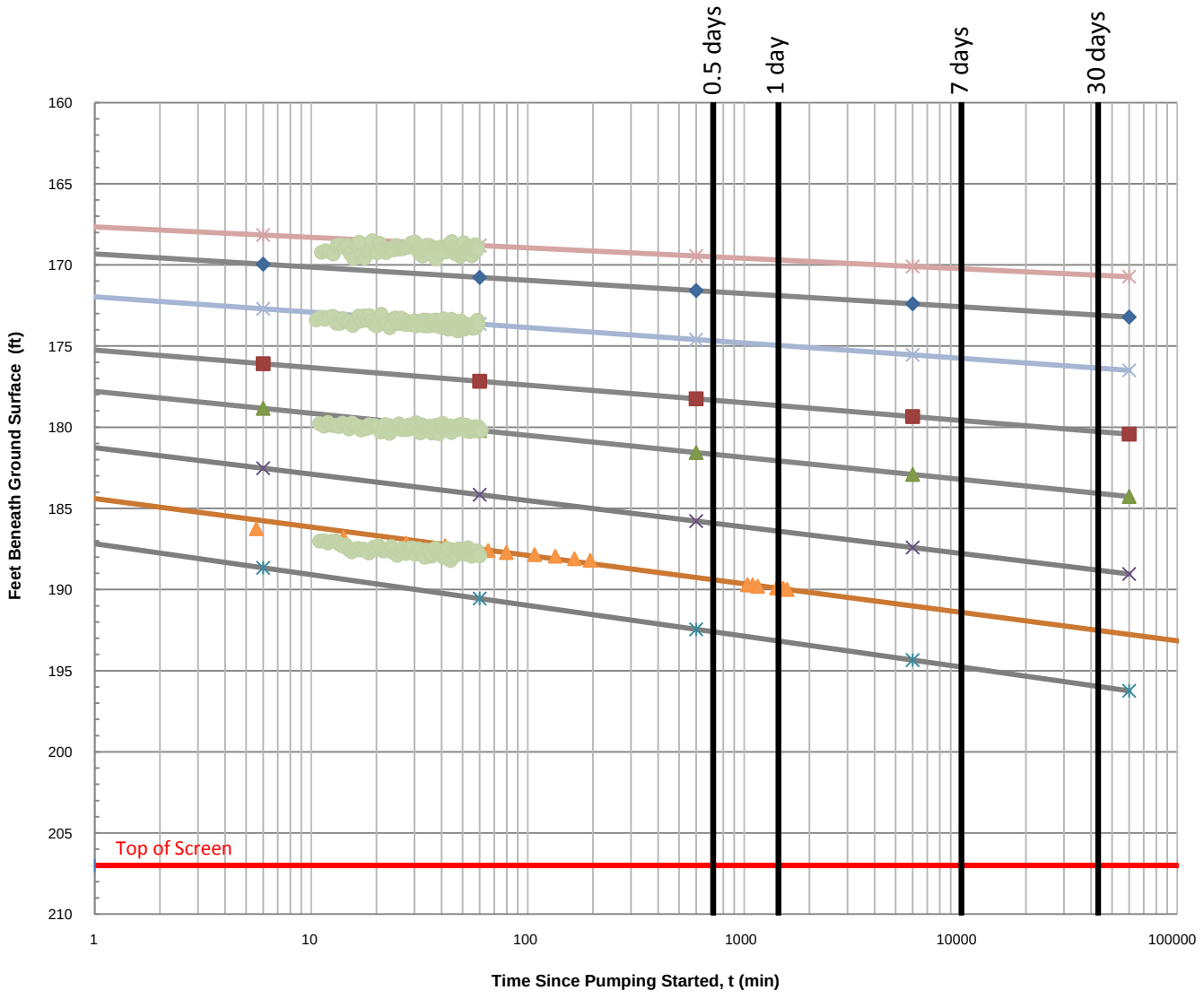


FIGURE 7

Semi-Log Predicted Water Level with 10 Feet of Interference

City of Adrian, Oregon

LEGEND

- 119 gpm
- 150 gpm
- 175 gpm
- 200 gpm
- 250 gpm
- 300 gpm
- 323 gpm
- Manuals 323 gpm Constant Rate
- 350 gpm
- Step-Rate Test Transducer Data

Cooper - Jacob Analysis

$T = (264 \cdot Q)/\Delta s$

Q = 323 gpm

Δs = 1.75 feet per log cycle

T = (264•323) / 1.75 = **48,700 gpd/ft**

Date: February 18, 2014

GSI Water Solutions, Inc.

P:\Portland\464-Keller_Assoc\002 - Adrian WMP\Figures

Attachment A

Wellsite Easement

MALHEUR COUNTY, OR 2014-4000
DEASEMENT
12/18/2014 09:46 AM
Cnt=2 Pgs=8
Total:$92.00

0002715820140004000080081

I, Deborah R. DeLong, County Clerk for Malheur County, Oregon certify that the instrument identified herein was recorded in the Clerk records.
Deborah R. DeLong - County Clerk

After recording return to:

Larry A. Sullivan
PO Box 220
Vale, OR 97918

EASEMENTS AND COVENANT

DEHOOG PROPERTIES, LLC, an Idaho Limited Liability Company, is the Grantor. The CITY OF ADRIAN, OREGON, a municipal corporation and political subdivision of the State of Oregon, is the Grantee. Grantor hereby grants to Grantee a municipal well easement on Grantor's real property described in Exhibit "1" attached hereto, and for access to said well on Grantor's real property described in Exhibit "2" attached hereto. Both easements are permanent easements. Both easements are granted in gross. Both easements are for the exclusive benefit of the Grantee and its successors and assigns and are binding on Grantor's heirs, successors and assigns.

The consideration for the grant of both easements is the sum of THREE HUNDRED FIFTEEN DOLLARS ($315.00).

The easements are more particularly described as follows:

1. Municipal Well Easement. The municipal well easement authorizes Grantee to construct and maintain a well and public water system, including pumps, power and utility lines and other equipment and accessories related thereto, on the real property described in Exhibit "1". For the consideration set forth herein, Grantor covenants that Grantor, its heirs, successors and assigns shall not use pesticides or herbicides within a 100 foot perimeter of the real property described in Exhibit "1" or allow other sanitary hazards listed in Oregon Administrative Rule ("OAR") 333-061-0050(2)(a)(E) to be used within said perimeter. OAR 333-061-0050(2)(a)(E) reads as follows:

> The following sanitary hazards are not allowed within 100 feet of a well which serves a public water system unless waived by the Authority; any existing or proposed pit privy, subsurface sewage disposal drain field; cesspool; solid waste disposal site; pressure sewer line; buried fuel storage tank; animal yard, feedlot or animal waste storage; untreated storm water or gray water disposal; chemical (including solvents, pesticides and fertilizers) storage, usage or application; fuel transfer or storage; mineral resource extraction, vehicle or machinery maintenance or long term storage; junk/auto/scrap yard; cemetery; unapproved well; well that has not been properly abandoned or of unknown or suspect construction; source of pathogenic organisms or any other similar public health hazards. No gravity sewer line or septic tank shall be permitted within50 feet of a well which serves a public water system. Clearances greater than indicated above shall be provided when it is determined by the Authority that the aquifer sensitivity and degree of hazard require a greater degree of protection. Above ground fuel storage tanks provided for emergency water pumping equipment may be exempted from this requirement by the Authority provided that a secondary containment system is in place that

will accommodate 125 percent of the fuel tank storage.

2. Access to Municipal Well. The access easement is 25 feet in width and is located on the real property described in Exhibit "2" . The easement includes the right to use the access easement above, below and on the surface of said real property for the installation and maintenance of power lines and utilities extending to and from the well and public water system.

DATED this 10 day of DECEMBER, 2014.

DEHOOG PROPERTIES, LLC
By:

AMY DEHOOG, Member

JAKE DEHOOG, Member

STATE OF IDAHO)
) ss.
County of CANYON)

Personally appeared the above named AMY DEHOOG as a member of DeHoog Properties, LLC, and acknowledged the foregoing instrument to be her voluntary act and deed before me this 10 day of DECEMBER, 2014.

MIGUEL VICTORIO
NOTARY PUBLIC
STATE OF IDAHO

Notary Public for CANYON COUNTY
My Commission Expires: 9/12/18

STATE OF IDAHO)
) ss.
County of CANYON)

Personally appeared the above named JAKE DEHOOG as a member of DeHoog Properties, LLC, and acknowledged the foregoing instrument to be his voluntary act and deed before me this 10 day of DECEMBER, 2014.

MIGUEL VICTORIO
NOTARY
PUBLIC
STATE OF IDAHO

Notary Public for CANYON COUNTY
My Commission Expires: 9/12/18

*Accepted by THE CITY OF ADRIAN
By:

Attest:

Vince Bingham, Mayor

Shawn Snyder, Adrian City Recorder

*by THE CITY OF

Exhibit 1

CK3, LLC

CIVIL-STRUCTURAL-ELECTRICAL
ENGINEERING-SURVEYING & PLANNING
368 SW 5TH AVENUE, ONTARIO, OR 97914
945 W. ORCHARD, HERMISTON, OR 97838

Exhibit "A"
Well Site Easement

Land in the NW1/4SE1/4, Section 15, T. 21 S., R. 46 E., W.M. Malheur County Oregon, more particularly described as follows:

Commencing at the one quarter (1/4) corner common to Sections 15 and 16;
thence S. 89° 52' 53" E., 958.55 feet;
thence S. 02° 13' 50" E., 116.22 feet to the Point of Beginning;
thence N. 87° 46' 10" E., 172.50 feet;
thence S. 02° 13' 50" E., 252.50 feet;
thence S. 87° 46' 10" W., 172.50 feet;
thence N. 02° 13' 50" W., 252.50 feet to the Point of Beginning.

TOGETHERWITH an Easement for Ingress and Egress and Utilities over and across a strip of land 25 feet wide being 12.50 feet of both sides of the following described centerline:

Commencing at the one quarter (1/4) corner common to Sections 15 and 16;
thence S. 0° 19' 15" W., 12.50 feet to the Point of Beginning;
thence S. 89° 52' 53" E., 804.22 feet;
thence S. 82° 04' 44" E., 137.56 feet;
thence S. 74° 50' 54" E., 42.71 feet;
thence S. 26° 05' 40" E., 37.21 feet;
thence S. 10° 45' 53" E., 31.37 feet;
thence S. 0° 32' 08" E., 89.54 feet to the Point of Terminus.

REGISTERED
PROFESSIONAL
LAND SURVEYOR

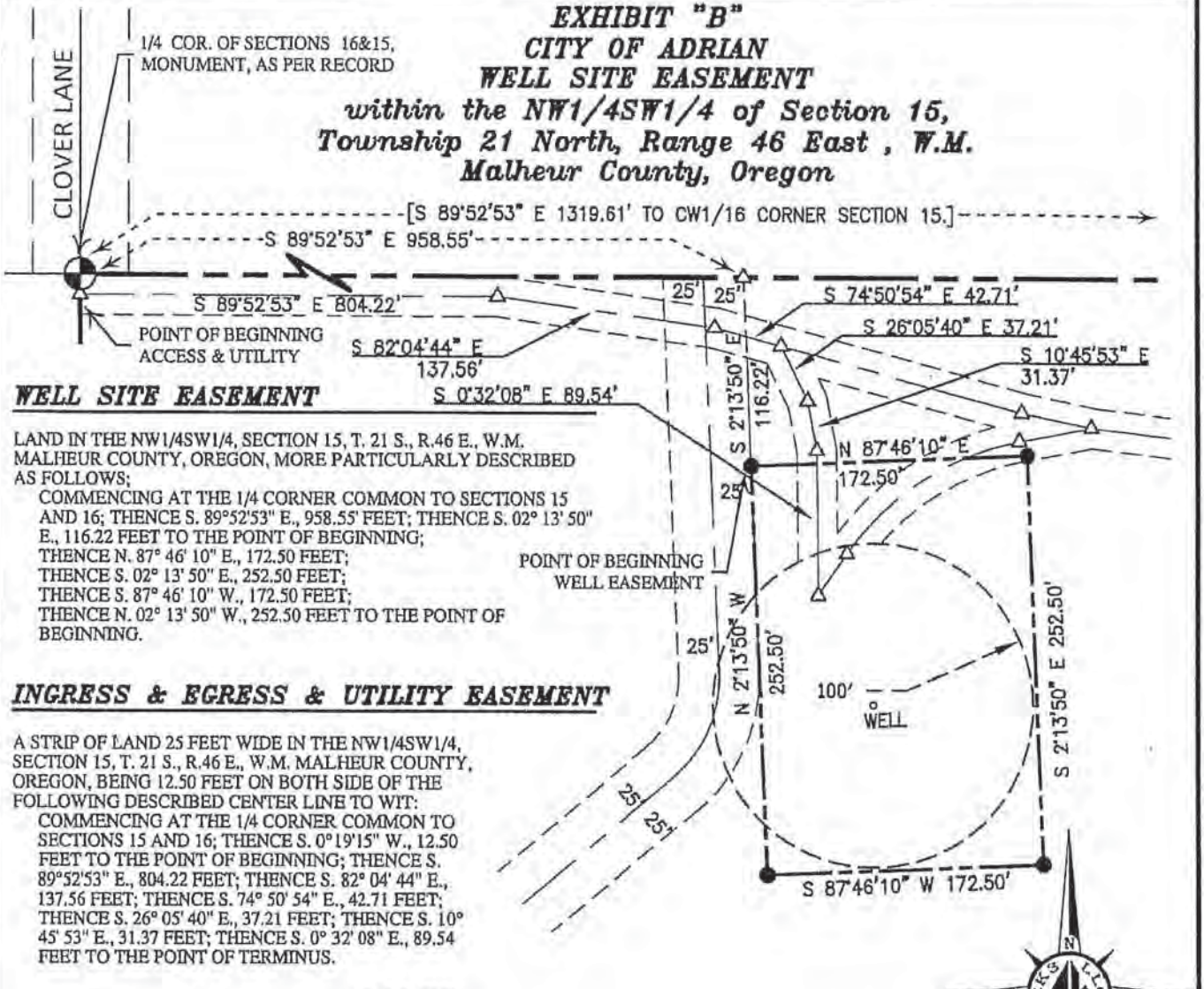
Danny Cummings

OREGON
JAN. 21, 1988
DANNY K. CUMMINGS
2316

RENEWS: 12/31/2014

Ontario Phone (541) 889-5411 Fax (541) 889-2074 Web Address: ck3llc.net
Hermiston Phone (541) 567-2345 Fax (541) 567-2305
Visit us at www.CK3LLC.net

EXHIBIT "B"
CITY OF ADRIAN
WELL SITE EASEMENT
within the NW1/4SW1/4 of Section 15, Township 21 North, Range 46 East , W.M. Malheur County, Oregon



WELL SITE EASEMENT

LAND IN THE NW1/4SW1/4, SECTION 15, T. 21 S., R.46 E., W.M. MALHEUR COUNTY, OREGON, MORE PARTICULARLY DESCRIBED AS FOLLOWS;

COMMENCING AT THE 1/4 CORNER COMMON TO SECTIONS 15 AND 16; THENCE S. 89°52'53" E., 958.55' FEET; THENCE S. 02° 13' 50" E., 116.22 FEET TO THE POINT OF BEGINNING; THENCE N. 87° 46' 10" E., 172.50 FEET; THENCE S. 02° 13' 50" E., 252.50 FEET; THENCE S. 87° 46' 10" W., 172.50 FEET; THENCE N. 02° 13' 50" W., 252.50 FEET TO THE POINT OF BEGINNING.

INGRESS & EGRESS & UTILITY EASEMENT

A STRIP OF LAND 25 FEET WIDE IN THE NW1/4SW1/4, SECTION 15, T. 21 S., R.46 E., W.M. MALHEUR COUNTY, OREGON, BEING 12.50 FEET ON BOTH SIDE OF THE FOLLOWING DESCRIBED CENTER LINE TO WIT:

COMMENCING AT THE 1/4 CORNER COMMON TO SECTIONS 15 AND 16; THENCE S. 0°19'15" W., 12.50 FEET TO THE POINT OF BEGINNING; THENCE S. 89°52'53" E., 804.22 FEET; THENCE S. 82° 04' 44" E., 137.56 FEET; THENCE S. 74° 50' 54" E., 42.71 FEET; THENCE S. 26° 05' 40" E., 37.21 FEET; THENCE S. 10° 45' 53" E., 31.37 FEET; THENCE S. 0° 32' 08" E., 89.54 FEET TO THE POINT OF TERMINUS.

LEGEND

PROPERTY LINE (PL)	( )	DATA OF RECORD
WELL EASEMENT AREA	[ ]	CALCULATED DATA
ACCESS / UTILITY EASTMENT	⊕	MONUMENT AS NOTED
RIGHT-OF-WAY LINE (R-O-W)	●	SET 5/8"x30" REBAR WITH 2316 YELLOW PLASTIC CAP
CENTERLINE	△	CALCULATED POINT
SECTION LINE		

REGISTERED PROFESSIONAL LAND SURVEYOR

OREGON
JAN. 21, 1988
DANNY K. CUMMINGS
2316

RENEWS: 12/31/2015

SCALE 1"=100'

CK3, LLC
CIVIL-STRUCTURAL-ELECTRICAL ENGINEERING, SURVEYING & PLANNING

ONTARIO
368 SW 5TH AVE.
ONTARIO, OR 97914
PHONE (541) 889-5411
FAX (541) 889-2074

HERMISTON
945 W. ORCHARD AVE.
HERMISTON, OR 97838
PHONE (541) 567-2345
FAX (541) 567-2305

WEB: CK3LLC.NET

EXHIBIT FOR
CITY OF ADRIAN

CHECKED BY: LCK	FIELDBOOK No.:	PAGE(S): 0-
DRAWN BY: DKC	DWG FILE No.: N/A	
APPROVED BY: DCK	FILENAME: EXH WELL.dwg	JOB No.VO-14046
DATE: 9/17/2014	REVISED: --	SHEET: 1 of 1

Exhibit 2

CK3, LLC

CIVIL-STRUCTURAL-ELECTRICAL
ENGINEERING-SURVEYING & PLANNING

368 SW 5TH AVENUE, ONTARIO, OR 97914
945 W. ORCHARD, HERMISTON, OR 97838

Exhibit "A"

Easement

Line "A":

A strip of land 25 feet wide in the N1/2S1/2, Section 15, T. 21 S., R. 46 E., W.M. Malheur County Oregon, being 12.5 feet on both sides of the following described centerline to wit:

Commencing at the Center south one sixteenth (CS1/16) corner of Sections 15; thence S. 89° 45' 34" E., 462.45 feet to the Point of Beginning (Sta. 0+00.00); thence along said centerline the following 34 courses

L1:	N 00° 15'39" E.	218.53';
L2:	N 07° 36' 16" W.	51.10';
L3:	N 20° 00' 26" W,	50.82';
L4:	N 28° 21' 27" W.	50.25';
L5:	N 43° 37' 36" W.	54.44';
L6:	N 55° 58' 39" W.	98.41';
L7:	N 59° 42' 14" W.	56.99';
L8:	N 63° 00' 45" W.	94.89';
L9:	N 65° 53' 11" W.	161.07';
L10:	N 60° 12' 20" W.	100.30';
L11:	N 63° 41' 23" W.	54.25';
L12:	N 71° 06' 36" W.	99.59';
L13:	N 78° 10' 01" W.	54.85';
L14:	N 81° 39' 33" W.	55.29';
L15:	N 85° 06' 26" W.	92.26';
L16:	N 88° 37' 37" W.	65.68';
L17:	N 89° 54' 04" W.	243.40';
L18:	N 87° 30' 49" W.	64.68';
L19:	N 76° 05' 22" W.	50.96';
L20:	N 59° 36' 26" W.	46.55';
L21:	N 46° 05' 20" W.	98.19';
L22:	N 52° 13' 15" W.	54.02';
L23:	N 54° 32' 03" W.	148.52';
L24:	N 47° 47' 35" W.	54.75';
L25:	N 31° 04' 44" W.	49.70';
L26:	N 16° 13' 08" W.	48.43';
L27:	N 12° 39' 33" W.	55.47';
L28:	N 08° 05' 55" W.	49.84' to the beginning of a curve to the left;

Thence along said curve as follows

C1 62.59 feet, whose radius is 45.00 feet, with a central angle of 62° 59' 38" and a long chord that bears N 47° 56' 50" W for 57.67 feet;

L29:	N 87° 47' 44" W.	92.45';

Ontario Phone (541) 889-5411 Fax (541) 889-2074 Web Address: ck3llc.net
Hermiston Phone (541) 567-2345 Fax (541) 567-2305
Visit us at www.CK3LLC.net

L30:	N 87° 14' 40" W.	44.65';
L31:	N 83° 06' 31" W	69.43' to centerline Sta. 25+92.36;
L32:	N 78° 01' 00" W.	44.68';
L33:	N 74° 50' 54" W.	155.69' to the Point of Terminus of Line "A" Sta. 27+92.73.

TOGETHERWITH;

Line "B":

A strip of land 25 feet wide in the N1/2S1/2, Section 15, T. 21 S., R. 46 E., W.M. Malheur County Oregon, being 12.5 feet on both sides of the following described centerline to wit:

Beginning at the Centerline Station 25+92.36 of the above described Line "A", which is centerline Station, 0+00 of this line "B";

thence along said centerline the following 3 courses

L34:	S 79° 18' 52" W.	45.97' to the beginning of a curve to the left;

Thence along said curve as follows

C2	131.49 feet, whose radius is 170.00 feet, with a central angle of 44° 19' 02" and a long chord that bears N 57° 09' 21" W for 128.24 feet;
L35:	S 34° 59' 50" W. 31.41' to the Point of Terminus of Line "B" Sta. 2+08.87.

This Easement is also shown on the attached Exhibit "B" which by this reference is made a part hereof.

REGISTERED
PROFESSIONAL
LAND SURVEYOR

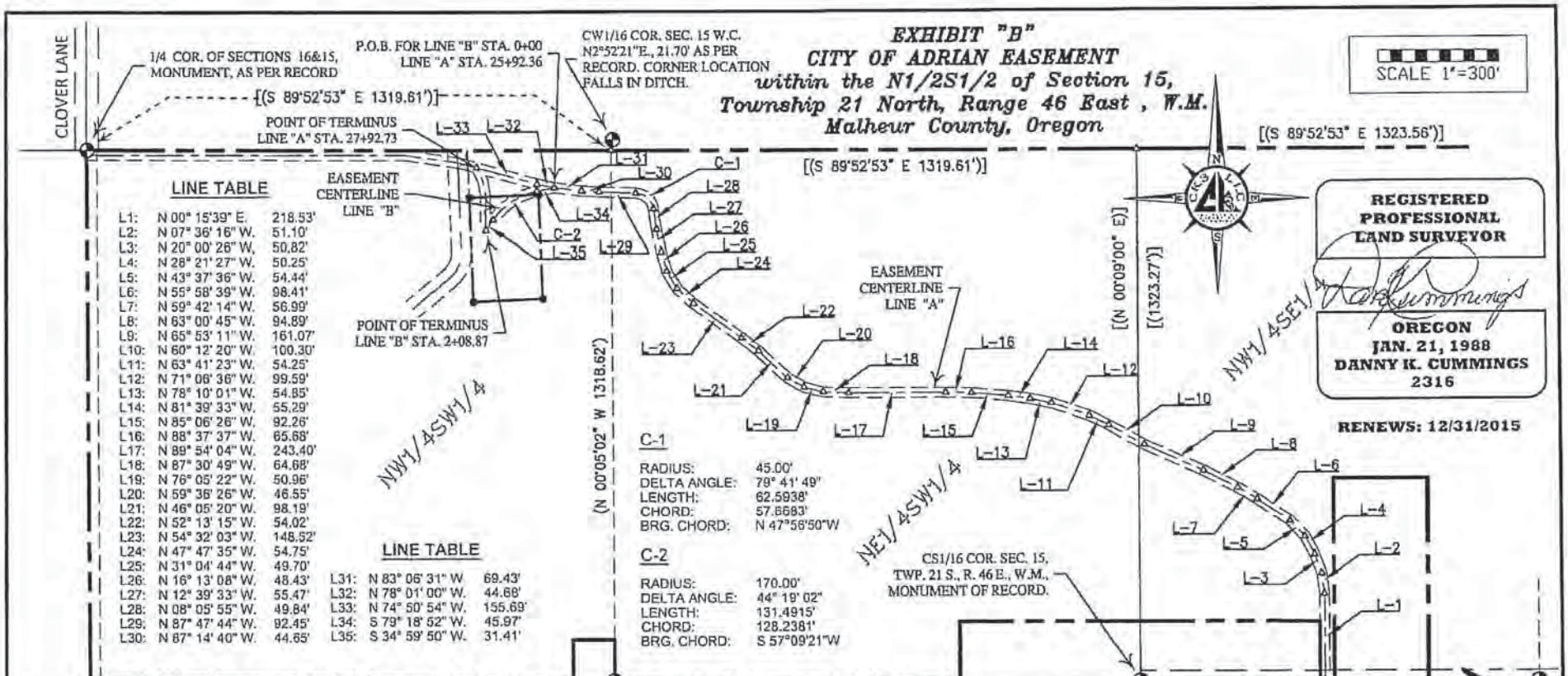
OREGON
JAN. 21, 1988
DANNY K. CUMMINGS
2316

RENEWS:12/31/2014

Ontario Phone (541) 889-5411 Fax (541) 889-2074 Web Address: ck3llc.net
Hermiston Phone (541) 567-2345 Fax (541) 567-2305

EXHIBIT "B"
CITY OF ADRIAN EASEMENT
within the N1/2S1/2 of Section 15, Township 21 North, Range 46 East, W.M. Malheur County, Oregon

SCALE 1"=300'



REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
JAN. 21, 1988
DANNY K. CUMMINGS
2316
RENEWS: 12/31/2015

LINE TABLE

L1:	N 00° 15'39" E.	218.53'
L2:	N 07° 36' 16" W.	51.10'
L3:	N 20° 00' 26" W.	50.82'
L4:	N 28° 21' 27" W.	50.25'
L5:	N 43° 37' 36" W.	54.44'
L6:	N 55° 58' 39" W.	98.41'
L7:	N 59° 42' 14" W.	56.99'
L8:	N 63° 00' 45" W.	94.89'
L9:	N 65° 53' 11" W.	161.07'
L10:	N 60° 12' 20" W.	100.30'
L11:	N 63° 41' 23" W.	54.25'
L12:	N 71° 06' 36" W.	99.59'
L13:	N 78° 10' 01" W.	54.85'
L14:	N 81° 39' 33" W.	55.29'
L15:	N 85° 06' 26" W.	92.26'
L16:	N 88° 37' 37" W.	65.68'
L17:	N 89° 54' 04" W.	243.40'
L18:	N 87° 30' 49" W.	64.68'
L19:	N 76° 05' 22" W.	50.96'
L20:	N 59° 36' 26" W.	46.55'
L21:	N 46° 05' 20" W.	98.19'
L22:	N 52° 13' 15" W.	54.02'
L23:	N 54° 32' 03" W.	148.52'
L24:	N 47° 47' 35" W.	54.75'
L25:	N 31° 04' 44" W.	49.70'
L26:	N 16° 13' 08" W.	48.43'
L27:	N 12° 39' 33" W.	55.47'
L28:	N 08° 05' 55" W.	49.84'
L29:	N 87° 47' 44" W.	92.45'
L30:	N 87° 14' 40" W.	44.65'

LINE TABLE

L31:	N 83° 06' 31" W	69.43'
L32:	N 78° 01' 00" W.	44.68'
L33:	N 74° 50' 54" W.	155.69'
L34:	S 79° 18' 52" W.	45.97'
L35:	S 34° 59' 50" W.	31.41'

C-1

RADIUS:	45.00'
DELTA ANGLE:	79° 41' 49"
LENGTH:	62.5938'
CHORD:	57.6683'
BRG. CHORD:	N 47°56'50"W

C-2

RADIUS:	170.00'
DELTA ANGLE:	44° 19' 02"
LENGTH:	131.4915'
CHORD:	128.2381'
BRG. CHORD:	S 57°09'21"W

LEGEND

PROPERTY LINE (PL)	( )	DATA OF RECORD
WELL EASEMENT AREA	[ ]	CALCULATED DATA
ACCESS / UTILITY EASTMENT	◕	MONUMENT AS NOTED
RIGHT-OF-WAY LINE (R-O-W)	⊙	SET 5/8"x30" REBAR WITH 2316 YELLOW PLASTIC CAP
CENTERLINE	△	CALCULATED POINT
SECTION LINE		

NOTE;

SURVEY CONTROL AND BASIS OF BEARINGS ARE FROM RECORD OF SURVEY FILED UNDER COUNTY SURVEY No. 21-46-0058.

CK3, LLC
CIVIL-STRUCTURAL-ELECTRICAL ENGINEERING, SURVEYING & PLANNING

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368 SW 5TH AVE.
ONTARIO, OR 97914
PHONE (541) 889-5411
FAX (541) 889-2074

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945 W. ORCHARD AVE.
HERMISTON, OR 97838
PHONE (541) 567-2345
FAX (541) 567-2305

WEB: CK3LLC.NET

EXHIBIT FOR
CITY OF ADRIAN

CHECKED BY: LCK	FIELDBOOK No.:		PAGE(S): 0-
DRAWN BY: DKC	DWG FILE No.:	N/A	
APPROVED BY: DCK	FILENAME:	EXH WELL.dwg	JOB No.V0-14046
DATE: 9/17/2014	REVISED:	--	SHEET: 1 of 1

Attachment B

Permit To Appropriate The Public Waters

STATE OF OREGON

COUNTY OF MALHEUR

PERMIT TO APPROPRIATE THE PUBLIC WATERS

THIS PERMIT IS HEREBY ISSUED TO

CITY OF ADRIAN
PO BOX 226
ADRIAN, OR 97901

The specific limits and conditions of the use are listed below.

APPLICATION FILE NUMBER: G-16386

SOURCE OF WATER: A WELL IN SNAKE RIVER BASIN

PURPOSE OR USE: MUNICIPAL USE

MAXIMUM RATE: 1.0 CUBIC FOOT PER SECOND

PERIOD OF USE: YEAR ROUND

DATE OF PRIORITY: FEBRUARY 10, 2005

WELL LOCATION: SE ¼ NE ¼, SECTION 16, T21S, R46E, W.M.; 2590 FEET SOUTH & 50 FEET WEST FROM NE CORNER, SECTION 16

THE PLACE OF USE IS THE SERVICE AREA OF THE CITY OF ADRIAN.

Measurement, recording and reporting conditions:

A. Before water use may begin under this permit, the water user shall install a meter or other suitable measuring device as approved by the Director. The water user shall maintain the meter or measuring device in good working order, shall keep a complete record of the amount of water used each month and shall submit a report which includes the recorded water use measurements to the Department annually or more frequently as may be required by the Director. Further, the Director may require the water user to report general water use information, including the place and nature of use of water under the permit.

B. The water user shall allow the watermaster access to the meter or measuring device; provided however, where the meter or measuring device is located within a private structure, the watermaster shall request access upon reasonable notice.

STANDARD CONDITIONS

If the number, location, source, or construction of any well deviates from that proposed in the permit application or required by permit conditions, this permit may not be valid.

If substantial interference with a senior water right occurs due to withdrawal of water from any well listed on this permit, then use of water from the well(s) shall be discontinued or reduced and/or the schedule of withdrawal shall be regulated until or unless the Department approves or implements an alternative administrative action to mitigate the interference. The Department encourages junior and senior appropriators to jointly develop plans to mitigate interferences.

The wells shall be constructed in accordance with the General Standards for the Construction and Maintenance of Water Wells in Oregon. The works shall be equipped with a usable access port, and may also include an air line and pressure gauge adequate to determine water level elevation in the well at all times.

Where two or more water users agree among themselves as to the manner of rotation in the use of water and such agreement is placed in writing and filed by such water users with the watermaster, and such rotation system does not infringe upon such prior rights of any water user not a party to such rotation plan, the watermaster shall distribute the water according to such agreement.

Prior to receiving a certificate of water right, the permit holder shall submit the results of a pump test meeting the department's standards, to the Water Resources Department. The Director may require water level or pump test results every ten years thereafter.

Failure to comply with any of the provisions of this permit may result in action including, but not limited to, restrictions on the use, civil penalties, or cancellation of the permit.

This permit is for the beneficial use of water without waste. The water user is advised that new regulations may require the use of best practical technologies or conservation practices to achieve this end.

By law, the land use associated with this water use must be in compliance with statewide land-use goals and any local acknowledged land-use plan.

The use of water shall be limited when it interferes with any prior surface or ground water rights.

The permit holder shall commence and complete the construction of any proposed works within five years from the date of permit issuance. The Department may order and allow an extension of time to complete construction or to perfect a water right beyond five years from the date of permit issuance.

Within one year after complete application of water to the proposed use, the water user shall submit a claim of beneficial use, which includes a map and report, prepared by a Certified Water Rights Examiner (CWRE).

Issued July 20, 2006

E. Timothy Walker

Phillip C. Ward, Director for
Water Resources Department

Attachment C

OAH Plan Review Submittal Letter and Approval

PUBLIC HEALTH DIVISION
Drinking Water Services

John A. Kitzhaber, MD, Governor

Oregon Health Authority

800 SE Emigrant Avenue, Suite 240
Pendleton, OR 97801
Phone: 541-276-8006
Fax: 541-276-4778
http://healthoregon.org/dwp

June 17, 2014

Chuck Mickelson
852 Red Top Road
Adrian, Oregon 97901

Re: New Well; Plan Review #94-2014; City of Adrian, PWS ID #4100002
Conditional Approval

Dear Chuck:

Thank you for the submittal of plan review information for the new well for the City of Adrian to the Oregon Health Authority's Drinking Water Services (DWS). On June 10, 2014, our office received a sketch of the proposed design for well #6 and a map showing the general location of the well. On June 11, 2014 a copy of the "Agreement for Well Easement" was received from the city's attorney. On June 12, 2014 a revised well design sketch was received. On June 13, 2014 a signed Land Use Compatibility Statement was received. It is my understanding that the $600 plan review fee was delivered to the Portland office today.

The project includes drilling a new well #6 and a transmission line to the existing city reservoir. It is my understanding plans for the transmission line, well head appurtenances, and any treatment system will be provided by others.

The proposed well construction meets Oregon Water Resources Department minimum well construction standards and is approved. I have enclosed a copy of the geologist's evaluation.

The plans are approved for construction with the following conditions:

1. The final easement agreement with the property owners must include restrictions not to use pesticides, herbicides, or allow other sanitary hazards listed in OAR 333-061-0050(2)(a)(E) within 100 feet of the well.

2. The irrigation district must agree not to use herbicides within 100 feet of the well.
3. One set of microbiological, inorganic (IOC), synthetic organic (SOC), volatile organic (VOC), and radionuclide (Gross Alpha, Combined Radium 226/228, Uranium) chemical test results must be submitted for review. It is expected the well will need to be treated for arsenic removal in order to meet water quality standards.
4. The driller's well log and pump test results must be submitted when they become available.

I also have the following comments:

- Due to the proximity of the irrigation canal, coliform samples will be required from the new well monthly for twelve months once the well is placed into service.
- The final restrictive easement for the well should be created in a manner such that it coordinates with the irrigation district's easement.

If you have any questions or would like this in an alternate format, please feel free to call me at (541) 966-0900.

Sincerely,

William Goss

William Goss, PE
Regional Engineer

enclosure

cc: Julie Wray, OHA/DWS, Portland
Russ Kazmierczak, RG, OHA/DWS, Springfield
Walter Burt, RG. GSI Water Solutions, Inc.
Justin Walker, PE, Keller Associates
Shawn Snyder, City of Adrian
Larry Sullivan
Ron Jacobs, Oregon Water Resources Department, Vale
Gary Viehdorfer, Infrastructure Finance Authority

Evaluation Results From Regional Hydrogeologist:

Proposed Well Construction Recommendations:

Estimated depth to water–bearing zone: 193 ft
Estimated aquifer nature: ☒ Confined ☐ Unconfined
Estimated depth of casing seal: ~205
Comments: Proposed design construction for Well #6 is approved (see attached preliminary design documents for additional information on bore hole and casing diameter).

As Built Well Construction Evaluation for Plan Review and/or Setback Waiver:

☐ Well construction is adequate, approved for use.
  ☐ WRD special construction standards, see well log or Comments.
☐ Well construction is inadequate.
  ☐ Not sealed to appropriate depth. Recommended depth: _____
  ☐ Not appropriate seal materials
  ☐ Open to more than one aquifer
  ☐ Seal info missing or unknown
  ☐ Seal not constructed properly (☐ Insufficient sealant volume ☐ Insufficient annular space)
☐ Susceptible well construction, but approved for use. Triggered source sample required if total coliform detected in distribution system. Consider for reconstruction if nitrate ≥ 5mg/L or confirmed *E. coli* at source.
☐ Susceptible well construction, **not approved for use**.

Comments: _____

Nature of Aquifer Evaluation:

Aquifer Nature: ☐ Confined aquifer ☐ Semi-confined aquifer ☐ Unconfined aquifer
Comments: _____

Construction Setback Waiver Results:

☐ Facility Profiler review for additional contamination info:
  ☐ Not applicable, Facility Profiler doesn't track releases from this type of contaminant source.
  ☐ Facility Profiler does not indicate a spill or chemical release related to the sanitary setback violation.
  ☐ Facility Profiler indicates that there **is** a spill or chemical release related to the sanitary setback violation.
☐ Approved
☐ Denied, proceed to Formal Waiver from Construction Standards Request as per OAR 333-061-0055

Comments and/or suggested "alternate measures" that could be considered for a Formal Waiver from Construction Standards Request: Private access roads are located 55 feet and 70 feet from well. Public or private roadways may be allowed within 100 feet of a confined well, provided the well is protected against contamination from surface runoff or hazardous liquids which may be spilled on the roadway and is protected from unauthorized access. If the well cannot be protected from surface runoff or hazardous liquids which may be spilled on the roadway or if the well cannot be protected from unauthorized access, then the City of Adrian will need to apply for a formal wiaver from construction standards.

The test well recently drilled on the site indicates that the aquifer is confined. Final approval of the well construction and confinement cannot be completed until a final well log has been submitted and approved by DWS.

GWUDI Review Results:

☒ New system/source **or** surface water is inside sanitary setback, initiate **monthly source assessment monitoring when source goes into production or as soon as possible.**
- ☐ Fractured bedrock, < 500 ft to surface water
- ☐ Coarse sand, gravel, and boulders, < 200 ft to surface water
- ☒ Sand and gravel, < 100 ft to surface water
- ☐ Sand, < 75 ft to surface water

☐ Pre-existing source, initiate **monthly source assessment monitoring as part of annually generated monthly assessment monitoring list.**
- ☐ Fractured bedrock, < 500 ft to surface water
- ☐ Coarse sand, gravel, and boulders, < 200 ft to surface water
- ☐ Sand and gravel, < 100 ft to surface water
- ☐ Sand, < 75 ft to surface water

☒ Source may be sensitive to GWUDI but approved for use. Source must be included as one of repeat coliform sampling sites, consider for GWUDI if *E. coli* ever confirmed in the source.

☐ Do not need to consider for GWUDI.

Comments: If E. coli is confirmed in the source or monthly assessment monitoring indicates the repeated presence of total coliform, the water system may be required to collect samples for MPA.

Monitoring Reduction Determination Results:

☐ Qualifies for initial chemical monitoring reduction as part of existing Wellfield – one round of chemical testing is sufficient.
- ☐ Source is on existing entry point – future monitoring required at entry point.
- ☐ Source is on a separate entry point – future monitoring includes nitrate at all entry points & source monitoring at entry point designated by geologist in comments below.

☐ Qualifies for initial chemical monitoring reduction based on historical data from nearby public water supply well(s) sharing the same aquifer – one round of chemical testing is sufficient. Future monitoring required at entry point.

☐ Qualifies for Common Aquifer designation for DBP monitoring – additional DBP sample sites not required.

☐ Does not qualify for monitoring reduction.

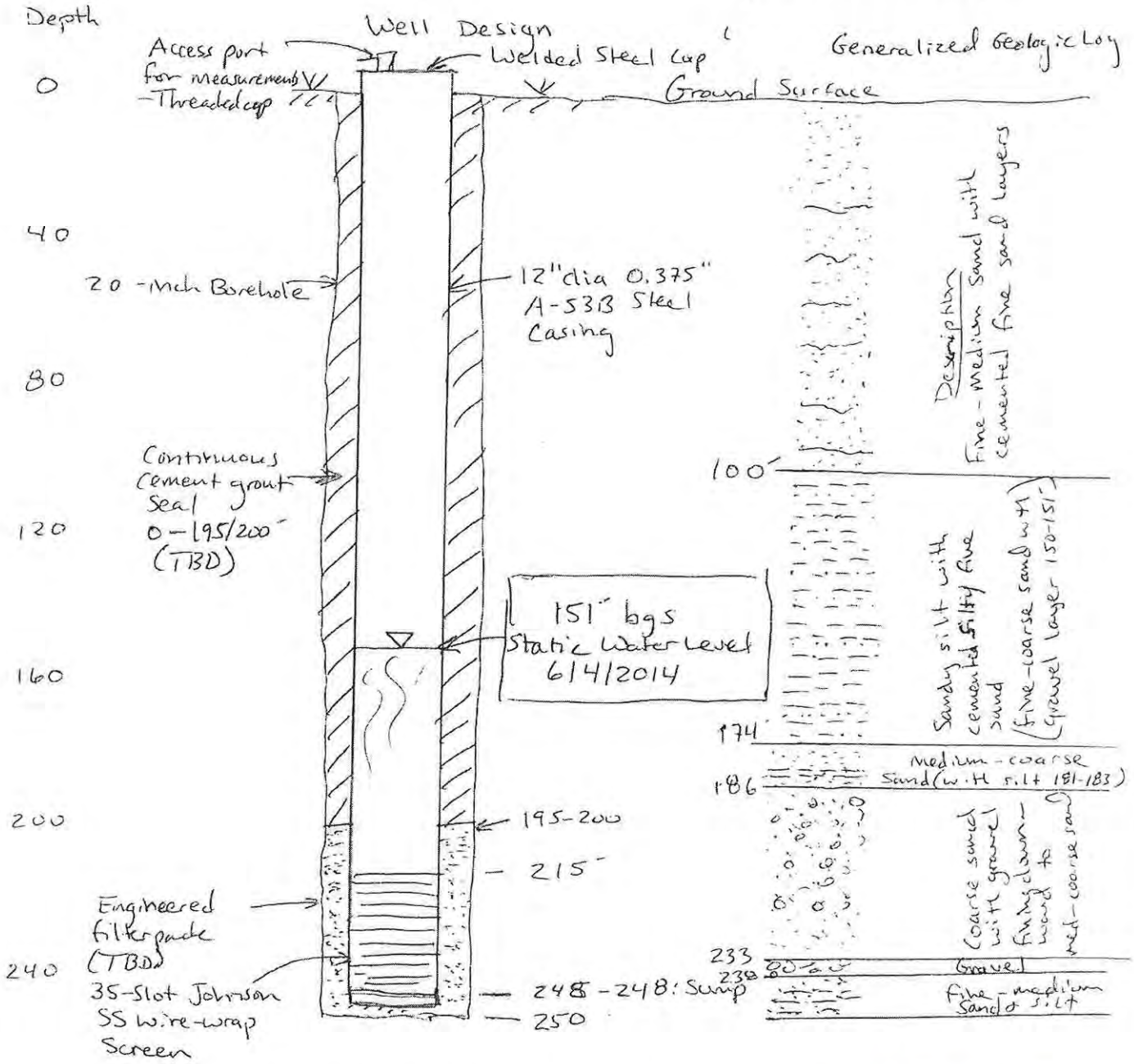
☒ Other: _____

Comments: Initial chemical monitoring reduction cannot be completed until the intial plan review monitoring is completed and submitted for review.

Reviewed by: Russ Kazmierczak Date: 6/12/14

City of Adrian Well 6 Design June 12, 2014

By: Walter Burt, RG



Drilled to total depth of 250' bgs using flooded reverse circulation and mud rotary

First water-bearing zone encountered at 174'

Lost circulation at 233'

Tested 220-235' interval - 50gpm for 24 hours

Total drawdown = 4'

RECEIVED
JUN 12 2014
Drinking Water Program
Pendleton Office

Attachment D

Start Card and Well Report

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765 & OAR 690-205-0210)

WELL LABEL # L 85263

START CARD # 1023167

(1) LAND OWNER

Owner Well I.D. _____

First Name _____ Last Name _____

Company City of Adrian

Address P.O. Box 226

City Adrian State OR Zip 97901

(2) TYPE OF WORK

[X] New Well [ ] Deepening [ ] Conversion [ ] Alteration (repair/recondition) [ ] Abandonment

(3) DRILL METHOD

[ ] Rotary Air [ ] Rotary Mud [ ] Cable [ ] Auger [ ] Cable Mud [X] Reverse Rotary [ ] Other _____

(4) PROPOSED USE

[ ] Domestic [ ] Irrigation [X] Community [ ] Industrial/ Commericial [ ] Livestock [ ] Dewatering [ ] Thermal [ ] Injection [ ] Other _____

(5) BORE HOLE CONSTRUCTION

Special Standard [ ] (Attach copy)

Depth of Completed Well 250 ft.

BORE HOLE Dia	From	To	SEAL Material	From	To	Amt	sacks/ lbs
20	0	250	Cement	0	190	20	6 yrds

How was seal placed: Method [ ] A [ ] B [X] C [ ] D [ ] E

[ ] Other _____

Backfill placed from 190 ft. to 195 ft. Material Bentonite

Filter pack from 195 ft. to 250 ft. Material Sand Size 8/12

Explosives used: [ ] Yes Type _____ Amount _____

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
(•)	( )	12	[X]	2	207	.375	(•)	( )	[X]	[ ]
(•)	( )	12	[ ]	247	250	.375	(•)	( )	[X]	[ ]
( )	( )		[ ]				( )	( )	[ ]	[ ]
( )	( )		[ ]				( )	( )	[ ]	[ ]
( )	( )		[ ]				( )	( )	[ ]	[ ]

Shoe [ ] Inside [ ] Outside [ ] Other Location of shoe(s) _____

Temp casing [ ] Yes Dia _____ From _____ To _____

(7) PERFORATIONS/SCREENS

Perforations Method _____

Screens Type Wire Wrap Material Stainless Steel

Perf/Screen	Casing/ Liner	Screen Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size
Screen	Casing	12	207	237	.035			
Screen	Casing	12	237	247	.025			

(8) WELL TESTS: Minimum testing time is 1 hour

(•) Pump ( ) Bailer ( ) Air ( ) Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
50	9	205	12

Temperature 62 °F Lab analysis [ ] Yes By _____

Water quality concerns? [ ] Yes (describe below)

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County MALHEUR Twp 21 S N/S Range 46 E E/W WM

Sec 15 NW 1/4 of the SW 1/4 Tax Lot 700

Tax Map Number _____ Lot _____

Lat ° ' " or 43.74366 DMS or DD

Long ° ' " or -117.091796 DMS or DD

( ) Street address of well (•) Nearest address

East of Clover Lane 1000'

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Predeepening			[ ]	
Completed Well	07-01-2014		[ ]	151

Flowing Artesian? [ ] Dry Hole? [ ]

WATER BEARING ZONES Depth water was first found 174

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
06-16-2014	150	151			[ ]	151
06-17-2014	174	186			[ ]	151
06-17-2014	186	200			[ ]	151
06-18-2014	207	250			[ ]	151
					[ ]	

(11) WELL LOG

Ground Elevation _____

Material	From	To
Sandy Loam	0	15
Medium to coarse sand	15	105
Soft sandstone, clay mix	105	115
Soft and hard brown clay	115	150
Coarse sand	150	151
Hard brown clay	151	174
Coarse sand, pea gravel	174	186
Fine sand, sandy clay mix	186	198
Coarse sand, pea gravel	198	200
Brown sandy clay	200	207
Coarse sand, pea gravel	207	235
Pea gravel to 1" rock, coarse sand	235	240
Fine - coarse brown sand	240	250

Date Started 06-16-2014 Completed 07-02-2014

(unbonded) Water Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number _____ Date _____

Password : (if filing electronically) _____

Signed _____

(bonded) Water Well Constructor Certification

I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

License Number 1505 Date 07-14-2014

Password : (if filing electronically)

Signed

Contact Info (optional)

ORIGINAL - WATER RESOURCES DEPARTMENT

THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK

Form Version: 0.96

Attachment E

Constant-Rate Laboratory Report

Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: GROUNDWATER SOLUTIONS, INC - PORTLAND
Address: 55 SW YAMHILL ST STE. 400
PORTLAND, OR 97204
Attn: TABLE ROCK ANALYTICAL LAB

Batch #: 150130004
Project Name: 150129D

Analytical Results Report

Sample Number	150130004-001	**Sampling Date**	1/29/2015	**Date/Time Received**	10/30/2015 11:00 AM
Client Sample ID	150129D1 / ADRIAN #6	**Sampling Time**	10:50 AM		
Matrix	Drinking Water	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Carbofuran	ND	mg/L	0.002	2/4/2015	JWC	EPA 531.2	
Oxamyl	ND	mg/L	0.004	2/4/2015	JWC	EPA 531.2	
Diquat	ND	mg/L	0.0008	2/2/2015	JWC	EPA 549.2	
1,2-Dibromo-3-chloropropane(DBCP)	ND	mg/L	4e-005	2/6/2015	MAH	EPA 504.1	
1,2-Dibromoethane (EDB)	ND	mg/L	2e-005	2/6/2015	MAH	EPA 504.1	
Endothall	ND	mg/L	0.01	2/3/2015	JMI	EPA 548.1	
Glyphosate	ND	mg/L	0.01	2/10/2015	JWC	EPA 547	
2,4,5-TP (Silvex)	ND	mg/L	0.0002	2/10/2015	MAH	EPA 515.4	
2,4-D	ND	mg/L	0.0001	2/10/2015	MAH	EPA 515.4	
Dalapon	ND	mg/L	0.001	2/10/2015	MAH	EPA 515.4	
Dinoseb	ND	mg/L	0.0002	2/10/2015	MAH	EPA 515.4	
Pentachlorophenol	ND	mg/L	4e-005	2/10/2015	MAH	EPA 515.4	
Picloram	ND	mg/L	0.0001	2/10/2015	MAH	EPA 515.4	
Alachlor	ND	mg/L	0.0004	2/9/2015	BMM	EPA 525.2	
Atrazine	ND	mg/L	0.0002	2/9/2015	BMM	EPA 525.2	
Benzo[a]pyrene	ND	mg/L	2e-005	2/9/2015	BMM	EPA 525.2	
bis(2-Ethylhexyl)phthalate	ND	mg/L	0.0006	2/9/2015	BMM	EPA 525.2	
bis-2(ethylhexyl)adipate	ND	mg/L	0.0002	2/9/2015	BMM	EPA 525.2	
Hexachlorobenzene	ND	mg/L	0.0002	2/9/2015	BMM	EPA 525.2	
Hexachlorocyclopentadiene	ND	mg/L	0.0002	2/9/2015	BMM	EPA 525.2	
Simazine	ND	mg/L	0.00015	2/9/2015	BMM	EPA 525.2	

Authorized Signature

John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: GROUNDWATER SOLUTIONS, INC - PORTLAND
Address: 55 SW YAMHILL ST STE. 400
PORTLAND, OR 97204
Attn: TABLE ROCK ANALYTICAL LAB

Batch #: 150130004
Project Name: 150129D

Analytical Results Report

Sample Number 150130004-002
Client Sample ID 150129D2 / ADRIAN #6
Matrix Drinking Water
Comments

Sampling Date 1/29/2015
Sampling Time 10:50 AM
Sample Location

Date/Time Received 10/30/2015 11:00 AM

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,1,1-Trichloroethane	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,1,2-Trichloroethane	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,1-Dichloroethene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,2,4-Trichlorobenzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,2-Dichlorobenzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,2-Dichloroethane	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,2-Dichloropropane	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,4-Dichlorobenzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Benzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Carbon Tetrachloride	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Chlorobenzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
cis-1,2-dichloroethene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Ethylbenzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Methylene chloride	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Styrene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Tetrachloroethene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Toluene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Total Xylene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
trans-1,2-Dichloroethene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Trichloroethene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Vinyl Chloride	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: GROUNDWATER SOLUTIONS, INC - PORTLAND
Address: 55 SW YAMHILL ST STE. 400
PORTLAND, OR 97204
Attn: TABLE ROCK ANALYTICAL LAB

Batch #: 150130004
Project Name: 150129D

Analytical Results Report

Sample Number 150130004-010
Client Sample ID Trip Blank
Matrix Drinking Water
Comments

Sampling Date 1/29/2015
Sampling Time
Sample Location

Date/Time Received 10/30/2015 11:00 AM

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,1,1-Trichloroethane	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,1,2-Trichloroethane	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,1-Dichloroethene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,2,4-Trichlorobenzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,2-Dichlorobenzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,2-Dichloroethane	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,2-Dichloropropane	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,4-Dichlorobenzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Benzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Carbon Tetrachloride	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Chlorobenzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
cis-1,2-dichloroethene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Ethylbenzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Methylene chloride	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Styrene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Tetrachloroethene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Toluene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Total Xylene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
trans-1,2-Dichloroethene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Trichloroethene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Vinyl Chloride	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	

Authorized Signature

John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

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The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C585
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	GROUNDWATER SOLUTIONS, INC - PORTLAND	**Batch #:**	150130004
Address:	55 SW YAMHILL ST STE. 400 PORTLAND, OR 97204	**Project Name:**	150129D
Attn:	TABLE ROCK ANALYTICAL LAB		

Analytical Results Report

Sample Number	150130004-002	**Sampling Date**	1/29/2015	**Date/Time Received**	1/30/2015	11:00 AM
Client Sample ID	150129D2 / ADRIAN #6	**Sampling Time**	10:50 AM			
Matrix	Drinking Water	**Sample Location**				
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Bromodichloromethane	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Bromoform	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Chloroform	ND	mg/L	0.0003	2/6/2015	SAT	EPA 524.3	
Dibromochloromethane	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Total Trihalomethane	ND	mg/L	0.0003	2/6/2015	SAT	EPA 524.3	

Authorized Signature

John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

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Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client:	GROUNDWATER SOLUTIONS, INC - PORTLAND		
Address:	55 SW YAMHILL ST STE. 400	**Batch #:**	150130004
	PORTLAND, OR 97204	**Project Name:**	150129D
Attn:	TABLE ROCK ANALYTICAL LAB		

Analytical Results Report

Sample Number	150130004-003	**Sampling Date**	1/29/2015	**Date/Time Received**	10/30/2015 11:00 AM
Client Sample ID	150129D3 / ADRIAN #6	**Sampling Time**	10:50 AM		
Matrix	Drinking Water	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Mercury-ICPMS	ND	mg/L	0.0001	2/4/2015	HSW	EPA 200.8	

Authorized Signature

John Coddington, Lab Manager

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Client:	GROUNDWATER SOLUTIONS, INC - PORTLAND		
Address:	55 SW YAMHILL ST STE. 400	**Batch #:**	150130004
	PORTLAND, OR 97204	**Project Name:**	150129D
Attn:	TABLE ROCK ANALYTICAL LAB		

Analytical Results Report

Sample Number	150130004-004	**Sampling Date**	1/29/2015	**Date/Time Received**	10/30/2015 11:00 AM
Client Sample ID	150129D4 / ADRIAN #6	**Sampling Time**	10:15 AM		
Matrix	Drinking Water	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Chlordane	ND	mg/L	0.0004	2/11/2015	MAH	EPA 505	
Endrin	ND	mg/L	2e-005	2/11/2015	MAH	EPA 505	
gamma-BHC (Lindane)	ND	mg/L	4e-005	2/11/2015	MAH	EPA 505	
Heptachlor	ND	mg/L	8e-005	2/11/2015	MAH	EPA 505	
Heptachlor epoxide	ND	mg/L	4e-005	2/11/2015	MAH	EPA 505	
Methoxychlor	ND	mg/L	0.0002	2/11/2015	MAH	EPA 505	
PCBs	ND	mg/L	0.0005	2/11/2015	MAH	EPA 505	
Toxaphene	ND	mg/L	0.002	2/11/2015	MAH	EPA 505	

Authorized Signature

John Coddington, Lab Manager

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Client: GROUNDWATER SOLUTIONS, INC - PORTLAND
Address: 55 SW YAMHILL ST STE. 400
PORTLAND, OR 97204
Attn: TABLE ROCK ANALYTICAL LAB

Batch #: 150130004
Project Name: 150129D

Analytical Results Report

Sample Number	150130004-005	**Sampling Date**	1/29/2015	**Date/Time Received**	10/30/2015 11:00 AM
Client Sample ID	150129D5 / ADRIAN #6	**Sampling Time**	10:15 AM		
Matrix	Drinking Water	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Gross Alpha	18.7 +/- 2.83	pCi/L	2.83	2/9/2015	SUB	EPA 900.0	
Gross Beta	14.2 +/- 1.67	pCi/L	2.15	2/9/2015	SUB	EPA 900.0	
Radium 226	0.297 +/- 0.356	pCi/L	0.546	2/10/2015	SUB	EPA 903.0	
Radium 228	-0.0251 +/- 0.290	pCi/L	0.685	2/20/2015	SUB	EPA 904.0	
Total Radium	0.272 +/- 0.646	pCi/L	1.23	2/27/2015	SUB	Calculation	

Authorized Signature

John Coddington, Lab Manager

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Client: GROUNDWATER SOLUTIONS, INC - PORTLAND
Address: 55 SW YAMHILL ST STE. 400
PORTLAND, OR 97204
Attn: TABLE ROCK ANALYTICAL LAB

Batch #: 150130004
Project Name: 150129D

Analytical Results Report

Sample Number	150130004-006	**Sampling Date**	1/29/2015	**Date/Time Received**	10/30/2015 11:00 AM
Client Sample ID	150129D6 / ADRIAN #6	**Sampling Time**	10:15 AM		
Matrix	Drinking Water	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	ND	mg/L	0.01	2/9/2015	CRW	EPA 335.4	

Authorized Signature

John Coddington, Lab Manager

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Client: GROUNDWATER SOLUTIONS, INC - PORTLAND
Address: 55 SW YAMHILL ST STE. 400
PORTLAND, OR 97204
Attn: TABLE ROCK ANALYTICAL LAB

Batch #: 150130004
Project Name: 150129D

Analytical Results Report

Sample Number 150130004-007
Client Sample ID 150129D7 / ADRIAN #6
Matrix Drinking Water
Comments

Sampling Date 1/29/2015
Sampling Time 10:15 AM
Sample Location

Date/Time Received 1/30/2015 11:00 AM

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	302	mg CaCO3/L	2	2/5/2015	KJS	SM2320B	
Aluminum	ND	mg/L	0.01	2/4/2015	AMC	EPA 200.7	
Antimony	ND	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Arsenic	0.0734	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Barium	0.0251	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Beryllium	ND	mg/L	0.0003	2/10/2015	HSW	EPA 200.8	
Bicarbonate	302	mg CaCO3/L	2	2/5/2015	KJS	SM2320B	
Cadmium	ND	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Carbonate	ND	mg CaCO3/L	5	2/5/2015	KJS	SM2320B	
Chloride	25.9	mg/L	0.5	1/30/2015	CRW	EPA 300.0	
Chromium	0.00163	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Color	ND @ pH 7.43	Color Units	5	2/3/2015	KJS	SM 2120B	
Copper	0.00106	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Corrosivity	0.423			3/2/2015	JWC	Calculation	
Fluoride	0.519	mg/L	0.5	1/30/2015	CRW	EPA 300.0	
Calcium	81.6	mg/L	0.5	2/4/2015	AMC	EPA 200.7	
Hardness	298	mg/L	1	2/4/2015	AMC	EPA 200.7	
Magnesium	22.9	mg/L	0.1	2/4/2015	AMC	EPA 200.7	
Iron	0.0311	mg/L	0.02	2/4/2015	AMC	EPA 200.7	
Lead	ND	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Manganese	ND	mg/L	0.01	2/4/2015	AMC	EPA 200.7	
Molybdenum	0.00787	mg/L	0.001	3/4/2015	HSW	EPA 200.8	
Nickel	ND	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
NO3/N	8.83	mg/L	0.5	1/30/2015 5:00:00 PM	CRW	EPA 300.0	
NO3/N+NO2/N	8.83	mg/L	0.5	1/30/2015 5:00:00 PM	CRW	EPA 300.0	
NO2/N	ND	mg/L	0.5	1/30/2015 5:00:00 PM	CRW	EPA 300.0	
Odor	ND	Ton	1	2/3/2015	KJS	SM2150B	
pH	7.62	ph Units		2/4/2015	KJS	SM 4500pH-B	
Selenium	0.00858	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Silver	ND	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Sodium	64.0	mg/L	1	2/4/2015	ETL	EPA 200.7	
TDS	576	mg/L	50	2/3/2015	KJS	SM 2540C	
Sulfate	80.5	mg/L	0.5	1/30/2015	CRW	EPA 300.0	
MBAS	ND	mg/L	0.05	2/10/2015	KJS	SM5540C	

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Client:	GROUNDWATER SOLUTIONS, INC - PORTLAND	**Batch #:**	150130004
Address:	55 SW YAMHILL ST STE. 400 PORTLAND, OR 97204	**Project Name:**	150129D
Attn:	TABLE ROCK ANALYTICAL LAB		

Analytical Results Report

Sample Number	150130004-007	**Sampling Date**	1/29/2015	**Date/Time Received**	1/30/2015	11:00 AM	
Client Sample ID	150129D7 / ADRIAN #6	**Sampling Time**	10:15 AM				
Matrix	Drinking Water	**Sample Location**					
Comments							

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Thallium	ND	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Uranium	0.0222	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Uranium Activity	14.9	pCi/L	0.67	2/4/2015	HSW	EPA 200.8	
Zinc	0.00146	mg/L	0.001	2/4/2015	HSW	EPA 200.8	

Authorized Signature

John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
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Client: GROUNDWATER SOLUTIONS, INC - PORTLAND
Address: 55 SW YAMHILL ST STE. 400
PORTLAND, OR 97204
Attn: TABLE ROCK ANALYTICAL LAB

Batch #: 150130004
Project Name: 150129D

Analytical Results Report

Sample Number	150130004-008	**Sampling Date**	1/29/2015	**Date/Time Received**	10/30/2015 11:00 AM
Client Sample ID	150129D8 / ADRIAN #6	**Sampling Time**	10:15 AM		
Matrix	Drinking Water	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2,3,7,8-TCDD	ND	pg/L	5	2/6/2015	SUB	EPA 1613B	

Authorized Signature

John Coddington, Lab Manager

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ND Not Detected
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Client:	GROUNDWATER SOLUTIONS, INC - PORTLAND		
Address:	55 SW YAMHILL ST STE. 400	**Batch #:**	150130004
	PORTLAND, OR 97204	**Project Name:**	150129D
Attn:	TABLE ROCK ANALYTICAL LAB		

Analytical Results Report

Sample Number	150130004-009	**Sampling Date**	1/29/2015	**Date/Time Received**	10/30/2015 11:00 AM
Client Sample ID	150129D9 / ADRIAN #6	**Sampling Time**	10:50 AM		
Matrix	Drinking Water	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Iron bacteria	PRESENT			2/9/2015	KAS	SM9240A	

Authorized Signature

John Coddington, Lab Manager

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ND Not Detected
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Login Report

Customer Name: GROUNDWATER SOLUTIONS, INC - PORTLAND
55 SW YAMHILL ST STE. 400
PORTLAND OR 97204

Order ID: 150130004
Order Date: 1/30/2015

Contact Name: TABLE ROCK ANALYTICAL LAB
Project Name: 150129D

Comment:

Sample #: 150130004-001 **Customer Sample #:** 150129D1 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 10 **Date Received:** 1/30/2015 11:00:00 AM **Time Collected:** 10:50 AM
Comment:

Test	Lab	Method	Due Date	Priority
CARBAMATE 531.2 OR	M	EPA 531.2	2/11/2015	Normal (~10 Days)
DIQUAT 549.2 OR	M	EPA 549.2	2/11/2015	Normal (~10 Days)
EDB 504.1 OR	M	EPA 504.1	2/11/2015	Normal (~10 Days)
ENDOTHALL 548.1 OR	M	EPA 548.1	2/11/2015	Normal (~10 Days)
GLYPHOSATE 547 OR	M	EPA 547	2/11/2015	Normal (~10 Days)
HERBICIDES 515.4 OR	M	EPA 515.4	2/11/2015	Normal (~10 Days)
SEMIVOLATILES 525.2 OR	M	EPA 525.2	2/11/2015	Normal (~10 Days)

Sample #: 150130004-002 **Customer Sample #:** 150129D2 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 3 **Date Received:** 1/30/2015 11:00:00 AM **Time Collected:** 10:50 AM
Comment:

Test	Lab	Method	Due Date	Priority
THM - TOTAL 524.3 OR	M	EPA 524.3	3/6/2015	Normal (~10 Days)
VOLATILES 524.3 OR	M	EPA 524.3	2/11/2015	Normal (~10 Days)

Sample #: 150130004-003 **Customer Sample #:** 150129D3 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 2 **Date Received:** 1/30/2015 11:00:00 AM **Time Collected:** 10:50 AM
Comment:

Test	Lab	Method	Due Date	Priority
MERCURY-ICPMS	M	EPA 200.8	2/11/2015	Normal (~10 Days)

Customer Name: GROUNDWATER SOLUTIONS, INC - PORTLAND
55 SW YAMHILL ST STE. 400
PORTLAND OR 97204

Order ID: 150130004
Order Date: 1/30/2015

Contact Name: TABLE ROCK ANALYTICAL LAB
Project Name: 150129D
Comment:

Sample #: 150130004-004 **Customer Sample #:** 150129D4 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 1 **Date Received:** 1/30/2015 11:00:00 AM **Time Collected:** 10:15 AM
Comment:

Test	Lab	Method	Due Date	Priority
PESTICIDES 505 OR	M	EPA 505	2/11/2015	***Normal (~10 Days)***

Sample #: 150130004-005 **Customer Sample #:** 150129D5 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 4 **Date Received:** 1/30/2015 11:00:00 AM **Time Collected:** 10:15 AM
Comment:

Test	Lab	Method	Due Date	Priority
GROSS ALPHA		EPA 900.0	2/11/2015	***Normal (~10 Days)***
GROSS BETA		EPA 900.0	2/11/2015	***Normal (~10 Days)***
RADIUM 226		EPA 903.0	2/11/2015	***Normal (~10 Days)***
RADIUM 228		EPA 904.0	2/11/2015	***Normal (~10 Days)***
RADIUM TOTAL		Calculation	2/11/2015	***Normal (~10 Days)***

Sample #: 150130004-006 **Customer Sample #:** 150129D6 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 1 **Date Received:** 1/30/2015 11:00:00 AM **Time Collected:** 10:15 AM
Comment:

Test	Lab	Method	Due Date	Priority
CYANIDE IN DW MOSCOW EPA	M	EPA 335.4	2/11/2015	***Normal (~10 Days)***

Sample #: 150130004-007 **Customer Sample #:** 150129D7 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 3 **Date Received:** 1/30/2015 11:00:00 AM **Time Collected:** 10:15 AM
Comment:

Test	Lab	Method	Due Date	Priority
ALKALINITY	M	SM2320B	2/11/2015	***Normal (~10 Days)***
ALUMINUM ICP	M	EPA 200.7	2/11/2015	***Normal (~10 Days)***
ANTIMONY	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***

Customer Name: GROUNDWATER SOLUTIONS, INC - PORTLAND
55 SW YAMHILL ST STE. 400
PORTLAND OR 97204

Order ID: 150130004
Order Date: 1/30/2015

Contact Name: TABLE ROCK ANALYTICAL LAB

Project Name: 150129D

Comment:

ARSENIC	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
BARIUM	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
BERYLLIUM	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
BICARBONATE	M	SM2320B	3/6/2015	***Normal (~10 Days)***
CADMIUM	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
CARBONATE	M	SM2320B	3/6/2015	***Normal (~10 Days)***
CHLORIDE	M	EPA 300.0	2/11/2015	***Normal (~10 Days)***
CHROMIUM	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
COLOR	M	SM 2120B	2/11/2015	***Normal (~10 Days)***
COPPER	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
Corrosivity	M	Calculation	2/11/2015	***Normal (~10 Days)***
FLUORIDE	M	EPA 300.0	2/11/2015	***Normal (~10 Days)***
HARDNESS by EPA 200.7	M	EPA 200.7	2/11/2015	***Normal (~10 Days)***
IRON ICP	M	EPA 200.7	2/11/2015	***Normal (~10 Days)***
LEAD	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
MANGANESE ICP	M	EPA 200.7	2/11/2015	***Normal (~10 Days)***
MOLYBDENUM	M	EPA 200.8	3/6/2015	***Normal (~10 Days)***
NICKEL	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
NITRATE/N	M	EPA 300.0	2/11/2015	***Normal (~10 Days)***
NITRATE+ NITRITE AS N	M	EPA 300.0	2/11/2015	***Normal (~10 Days)***
NITRITE/N	M	EPA 300.0	2/11/2015	***Normal (~10 Days)***
ODOR	M	SM2150B	2/11/2015	***Normal (~10 Days)***
pH	M	SM 4500pH-B	2/11/2015	***Normal (~10 Days)***
SELENIUM	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
SILVER	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
SODIUM ICP	M	EPA 200.7	3/6/2015	***Normal (~10 Days)***
SOLIDS - TDS	M	SM 2540C	2/11/2015	***Normal (~10 Days)***
SULFATE	M	EPA 300.0	2/11/2015	***Normal (~10 Days)***
SURFACTANTS	M	SM5540C	2/11/2015	***Normal (~10 Days)***
THALLIUM	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
URANIUM	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
ZINC	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***

Customer Name: GROUNDWATER SOLUTIONS, INC - PORTLAND
55 SW YAMHILL ST STE. 400
PORTLAND OR 97204

Order ID: 150130004
Order Date: 1/30/2015

Contact Name: TABLE ROCK ANALYTICAL LAB
Project Name: 150129D
Comment:

Sample #: 150130004-008 **Customer Sample #:** 150129D8 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 3 **Date Received:** 1/30/2015 11:00:00 AM **Time Collected:** 10:15 AM
Comment:

Test	Lab	Method	Due Date	Priority
DIOXIN		EPA 1613B	2/11/2015	***Normal (~10 Days)***

Sample #: 150130004-009 **Customer Sample #:** 150129D9 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 2 **Date Received:** 1/30/2015 11:00:00 AM **Time Collected:** 10:50 AM
Comment:

Test	Lab	Method	Due Date	Priority
IRON BACTERIA	S	SM9240A	2/11/2015	***Normal (~10 Days)***

Sample #: 150130004-010 **Customer Sample #:** Trip Blank

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 1 **Date Received:** 1/30/2015 11:00:00 AM **Time Collected:**
Comment:

Test	Lab	Method	Due Date	Priority
VOLATILES 524.3 OR	M	EPA 524.3	2/11/2015	***Normal (~10 Days)***

SAMPLE CONDITION RECORD

Samples received in a cooler?	Yes
Samples received intact?	Yes
What is the temperature of the sample(s)? (°C)	2.4
Samples received with a COC?	Yes
Samples received within holding time?	Yes
Are all sample bottles properly preserved?	Yes
Are VOC samples free of headspace?	Yes
Is there a trip blank to accompany VOC samples?	Yes
Labels and chain agree?	Yes

150130 004 GDWP Last Due 3/6/2015
1st SAMP 1/29/2015 1st RCVD 1/30/2015
150129D

Anatek Labs, Inc
1282 Alturas Drive, Moscow ID 83843
T: (208) 883-2839 F: (208) 882-9246
www.anateklabs.com

State of Oregon
Drinking Water
Chain of Custody Record
(fill in shaded areas below)

Anatek Log In #

Water System: GSI Water Solutions
System ID#: —
Address:
City: State: Zip:
Phone:
Fax:

Send Bill or Receipt To:
☐ Same as Water System Info
Name: Table Rock Analytical Laboratory, LLC
Address: PO Box 746
City: Pendleton State: OR Zip: 97801
Purchase Order #:
Email: trocklab@gmail.com

Return Results By:
☐ Phone ☐ Mail
☐ Fax ☑ Email

Rush Samples - Results Needed By
Date:
Time:

Sample Identification

Sampled At: Adrian #6
Sampled By: Joseph
Date Collected: 1/29/15
Time Collected: 1015 - 1050
Entry Point or Source ID:
Source Name(s):

Sample Composition

Location: ☐ Source ☐ Distribution
Type: ☐ Raw ☐ Treated
Note: Composited samples will not be accepted for analyses.

Check Desired Analyses

☑ Phase II SOC (all 5 listed below)
- ☐ Semivolatiles (525.2)
- ☐ Herbicides (515.3)
- ☐ Carbamates (531.1)
- ☐ Pesticides (505)
- ☐ EDB (504.1)

☑ Phase V SOC (all 3 listed below)
- ☐ Diquat (549.2)
- ☐ Endothall (548.1)
- ☐ Glyphosate (547)

☐ Disinfection Biproducts (2 below)
- ☐ TTHM (524.2)
- ☐ HAA5 (SM6251B)

☑ VOC (524.2)

IOC's
- ☐ Nitrate
- ☐ Pb/Cu
- ☐ Full IOC
- ☐ TOC
- ~~☐ Asbestos~~
- ☑ Gross Alpha
- ☑ Gross Beta
- ☑ Radium 226
- ☑ Radium 228

☑ DIOXIN

5 analyts added on 3/4/15 see attached - TL 3/4/15

MWBS
Rads → Pace
Dioxin → Pace-PN
Iron Bact → TSPA

Inspection Checklist (Anatek Use Only)

Preservative:				Sample Condition:	
Semivolatiles (525.2)	NaSulfite	● Yes	○ No	Received Intact?	(Yes) No
Herbicides (515.3)	NaThiosulfate	● Yes	○ No	Labels & Chains Agree?	(Yes) No
Carbamates (531.1)	MCAA Buffer	● Yes	○ No	Containers Sealed?	(Yes) No
Pesticides (505)	NaThiosulfate	● Yes	○ No	VOC Headspace?	Yes (No)
EDB (504.1)	NaThiosulfate	● Yes	○ No	Temperature (°C)	2.4°C IR-1
Diquat (549.2)	NaThiosulfate	● Yes	○ No		
Endothall (548.1)	NaThiosulfate	● Yes	○ No		
Glyphosate (547)	NaThiosulfate	● Yes	○ No	Date & Time	1/30/15 1100 via UPS
THM's (524.2)	NaThiosulfate	○ Yes	○ No		
HAA5 (SM6251B)	NH_4Cl	○ Yes	○ No	Inspected By:	JL

OTHER: Please see attached list.
Hg vials marked TOC

Comments: 150129D1 = SOC
150129D2 = VOC, 150129D3 = Mercury
150129D4 = PCBs, 150129D5 = Rads
150129D6 = Cyanide, 150129D7 = ICK
150129D8 - Dioxine, 150129D9 = Iron Bacteria

Customer	Date/Time	Received By	Date/Time	Shipped By	Date/Time	Received By
BURead	Usual				1/30/15 1100	JL

Table Rock Analytical Laboratory

GENERAL
CHAIN OF CUSTODY RECORD

Table Rock Analytical Laboratory
419 SW 5th Street, Pendleton, Oregon 97801
541 276 0385 Fax 541 276 2041

Preliminary Results

Call _____ phone
Fax _____ phone
Email jabbott@gsiws.com email
Text _____ phone

Turnaround Time

Standard

Rush (pricing and turnaround must be described)

Page 1 of 1

Reporting Address

Company: GSI
Contact: Joseph Abbott
Address:
City: Kennewick State: WA Zip:
Phone: 239 206 0814 Fax:
Email: jabbott@gsiws.com

Analysis Requested

Sample ID	Collection Date	Time	By	Ashest D5 150129E	TOC D7	Rads D5	Cyanide D6	Dioxine D8	525 SOC	Diquat SOC	515/548 SOC	EDB SOC			Lab Bottle Suffix ID	Comments	Matrix
Adrian #6	1/29	1015	JA	2				1				1				SOC D1	9.3
					2					01						VOC D2	10.8
						4										Mercury D3	10.6
							1									PCBs D4	6.1
								2								Rads D5	4.9
		1050							2							Cyanide D6	5.1
										1						IOC D7	3.9
											1					Asbestos E	5.2
												2				Dioxine D8	7.1

4.9

Laboratory Use Only
Job Number: 150129D
Temperature 150129E

Billing Address

Company GSI Water Solutions, Inc
Contact Joseph Abbott
Address
City State: Zip:
Phone: Fax:

Relinquished By	Date	Time	Received By
[signature]	01/29	1230	Bulkead 1615
			Iron Bacteria D9

Table Rock Analytical Laboratory

GENERAL CHAIN OF CUSTODY RECORD

Table Rock Analytical Laboratory
419 SW 5th Street, Pendleton, Oregon 97801
541 276 0385 Fax 541 276 2041

Preliminary Results

Call 239 206 0814 (phone)
Fax (phone)
Email jabbott@gslws.com (email)
Text (phone)

Turnaround Time
Standard
Rush (pricing and turnaround must be described)

Reporting Address

Company: GSI
Contact: Joseph Abbott
Address: 8019 W. Quinault Ave Suite 201
City: Kennewick State: WA Zip: 99336
Phone: 239-206-0814 Fax:
Email:

Analysis Requested

Sample ID	Collection Date	Time	By	Pesticides 8081	Carbamate 8021	Glyphosate 8321	5243	TOC - mercury	Triplblank	Dioxine D8	PCBs D4	Iron Bacteria			Lab Bottle Suffix ID	Comments	Matrix
Adrian #6	1/29	1050	JA	2													
	↓	↓	↓		1	D1		D3									
				D1	D1	1											
							3		1								
				1		1		2									
					D1												
										1							
											1						
												4					

Laboratory Use Only
Job Number:
Temperature

Billing Address

Company
Contact
Address
City State: Zip:
Phone: Fax:

Relinquished By	Date	Time	Received By
[signature]	01/29	1230	Bread 1/29/15 1615

Customer Name: GROUNDWATER SOLUTIONS, INC - PORTLAND
55 SW YAMHILL ST STE. 400
PORTLAND OR 97204

Order ID: 150130004
Order Date: 1/30/2015

Contact Name: TABLE ROCK ANALYTICAL LAB
Project Name: 150129D

Comment:

ARSENIC	M	EPA 200.8	2/11/2015	Normal (~10 Days)
BARIUM	M	EPA 200.8	2/11/2015	Normal (~10 Days)
BERYLLIUM	M	EPA 200.8	2/11/2015	Normal (~10 Days)
CADMIUM	M	EPA 200.8	2/11/2015	Normal (~10 Days)
CHLORIDE	M	EPA 300.0	2/11/2015	Normal (~10 Days)
CHROMIUM	M	EPA 200.8	2/11/2015	Normal (~10 Days)
COLOR	M	SM 2120B	2/11/2015	Normal (~10 Days)
COPPER	M	EPA 200.8	2/11/2015	Normal (~10 Days)
Corrosivity	M	Calculation	2/11/2015	Normal (~10 Days)
FLUORIDE	M	EPA 300.0	2/11/2015	Normal (~10 Days)
HARDNESS by EPA 200.7	M	EPA 200.7	2/11/2015	Normal (~10 Days)
IRON ICP	M	EPA 200.7	2/11/2015	Normal (~10 Days)
LEAD	M	EPA 200.8	2/11/2015	Normal (~10 Days)
MANGANESE ICP	M	EPA 200.7	2/11/2015	Normal (~10 Days)
NICKEL	M	EPA 200.8	2/11/2015	Normal (~10 Days)
NITRATE/N	M	EPA 300.0	2/11/2015	Normal (~10 Days)
NITRATE+ NITRITE AS N	M	EPA 300.0	2/11/2015	Normal (~10 Days)
NITRITE/N	M	EPA 300.0	2/11/2015	Normal (~10 Days)
ODOR	M	SM2150B	2/11/2015	Normal (~10 Days)
pH	M	SM 4500pH-B	2/11/2015	Normal (~10 Days)
SELENIUM	M	EPA 200.8	2/11/2015	Normal (~10 Days)
SILVER	M	EPA 200.8	2/11/2015	Normal (~10 Days)
SOLIDS - TDS	M	SM 2540C	2/11/2015	Normal (~10 Days)
SULFATE	M	EPA 300.0	2/11/2015	Normal (~10 Days)
SURFACTANTS	M	SM5540C	2/11/2015	Normal (~10 Days)
THALLIUM	M	EPA 200.8	2/11/2015	Normal (~10 Days)
URANIUM	M	EPA 200.8	2/11/2015	Normal (~10 Days)
ZINC	M	EPA 200.8	2/11/2015	Normal (~10 Days)

Sample #: 150130004-008 **Customer Sample #:** 150129D8 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 3 **Date Received:** 10/30/2015 11:00:00 AM **Time Collected:** 10:15 AM
Comment:

Test	Lab	Method	Due Date	Priority
DIOXIN		EPA 1613B	2/11/2015	Normal (~10 Days)

Customer Name: GROUNDWATER SOLUTIONS, INC - PORTLAND
55 SW YAMHILL ST STE. 400
PORTLAND OR 97204

Order ID: 150130004
Order Date: 1/30/2015

Contact Name: TABLE ROCK ANALYTICAL LAB
Project Name: 150129D

Comment:

Sample #: 150130004-009 **Customer Sample #:** 150129D9 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 2 **Date Received:** 10/30/2015 11:00:00 AM **Time Collected:** 10:50 AM
Comment:

Test	Lab	Method	Due Date	Priority
IRON BACTERIA	S	SM9240A	2/11/2015	***Normal (~10 Days)***

Sample #: 150130004-010 **Customer Sample #:** Trip Blank

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 1 **Date Received:** 10/30/2015 11:00:00 AM **Time Collected:**
Comment:

Test	Lab	Method	Due Date	Priority
VOLATILES 524.3 OR	M	EPA 524.3	2/11/2015	***Normal (~10 Days)***

SAMPLE CONDITION RECORD

Samples received in a cooler?	Yes
Samples received intact?	Yes
What is the temperature of the sample(s)? (°C)	2.4
Samples received with a COC?	Yes
Samples received within holding time?	Yes
Are all sample bottles properly preserved?	Yes
Are VOC samples free of headspace?	Yes
Is there a trip blank to accompany VOC samples?	Yes
Labels and chain agree?	Yes

150130 004 GDWP Last Due 2/11/2015
1st SAMP 1/29/2015 1st RCVD 1/30/2015
150129D

Anatek Labs, Inc
1282 Alturas Drive, Moscow ID 83843
T: (208) 883-2839 F: (208) 882-9246
www.anateklabs.com

State of Oregon Drinking Water Chain of Custody Record

(fill in shaded areas below)

Anatek Log In #

Water System: GSI Water Solutions
System ID#: —
Address:
City: State: Zip:
Phone:
Fax:

Send Bill or Receipt To:
☐ Same as Water System Info
Name: Table Rock Analytical Laboratory, LLC
Address: PO Box 746
City: Pendleton State: OR Zip: 97801
Purchase Order #:
Email: trocklab@gmail.com

Return Results By:
☐ Phone ☐ Mail
☐ Fax ☑ Email

Rush Samples - Results Needed By:
Date:
Time:

Sample Identification

Sampled At: Adrian #6
Sampled By: Joseph
Date Collected: 1/29/15
Time Collected: 1015 - 1050
Entry Point or Source ID:
Source Name(s):

Sample Composition

Location: ☐ Source ☐ Distribution
Type: ☐ Raw ☐ Treated

Note: Composited samples will not be accepted for analyses.

Check Desired Analyses

- ☑ Phase II SOC (all 5 listed below)
  - ☐ Semivolatiles (525.2)
  - ☐ Herbicides (515.3)
  - ☐ Carbamates (531.1)
  - ☐ Pesticides (505)
  - ☐ EDB (504.1)
- ☑ Phase V SOC (all 3 listed below)
  - ☐ Diquat (549.2)
  - ☐ Endothall (548.1)
  - ☐ Glyphosate (547)
- ☐ Disinfection Biproducts (2 below)
  - ☐ TTHM (524.2)
  - ☐ HAA5 (SM6251B)
- ☑ VOC (524.2)
- IOC's
  - ☐ Nitrate
  - ☐ Pb/Cu
  - ☐ Full IOC
  - ☐ TOC
  - ~~☐ Asbestos~~
  - ☑ Gross Alpha
  - ☑ Gross Beta
  - ☑ Radium 226
  - ☑ Radium 228
- ☑ DIOXIN

MWBS
Rads → Pace
Dioxin → Pace-MN
Iron Bact → TSPA

Inspection Checklist (Anatek Use Only)

Preservative:			
Semivolatiles (525.2)	NaSulfite	● Yes	○ No
Herbicides (515.3)	NaThiosulfate	● Yes	○ No
Carbamates (531.1)	MCAA Buffer	● Yes	○ No
Pesticides (505)	NaThiosulfate	● Yes	○ No
EDB (504.1)	NaThiosulfate	● Yes	○ No
Diquat (549.2)	NaThiosulfate	● Yes	○ No
Endothall (548.1)	NaThiosulfate	● Yes	○ No
Glyphosate (547)	NaThiosulfate	● Yes	○ No
THM's (524.2)	NaThiosulfate	○ Yes	○ No
HAA5 (SM6251B)	NH_4Cl	○ Yes	○ No

Sample Condition:		
Received Intact?	(Yes)	No
Labels & Chains Agree?	(Yes)	No
Containers Sealed?	(Yes)	No
VOC Headspace?	Yes	(No)

Temperature (°C): 2.4°C IR-1
Date & Time: 1/30/15 1100 via UPS
Inspected By: JK

OTHER: Please see attached list. Hg vials marked TOC

Comments:
01 150129D1 = SOC
02 150129D2 = VOC
03 150129D3 = Mercury
04 150129D4 = PCBs
05 150129D5 = Rads
06 150129D6 = Cyanide
07 150129D7 = IOC
08 150129D8 = Dioxine
09 150129D9 = Iron Bacteria

Customer	Date/Time	Received By	Date/Time	Shipped By	Date/Time	Received By
R. Rand	[illegible]				[illegible]	

Attachment F

Interval Test Laboratory Report

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Attn: WALT BURT
GSI
55 SW YAMHILL STE #300
PORTLAND, OR 97204

Collected By: M HINGST
Submitted By: M HINGST

Source of Sample:
ADRIAN TEST WELL

Time of Collection: 14:05
Date of Collection: 6/4/2014
Date Received: 6/4/2014
Report Date: 6/24/2014

Field Temp:
PWS:

Temp Rcvd in Lab: 7.0 °C
PWS Name

Laboratory Analysis Report

Sample Number: 1420344

NO FIELD TEMP RCVD; Methane, Ethane, and Ethene testing were performed by Accutest Mountain States (AMS). EPA Methods 504.1, 505, 515.3, 525.2, 531.2, 547, and 549.2 were performed by Anatek Labs (ATL).

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Calcium Hardness	UR	189	mg/L	1.25	EPA 200.7	6/10/2014	KC
Silica	UR	66.1	mg/L	0.25	EPA 200.7	6/10/2014	KC
Aluminum, Al	UR	0.46	mg/L	0.10	EPA 200.7	6/9/2014	KC
Antimony Low	0.006	< 0.005	mg/L	0.005	EPA 200.8	6/10/2014	JH
Arsenic Low	0.01	0.092	mg/L	0.003	EPA 200.8	6/6/2014	JH
Value Exceeds the MCL of 0.010 mg/L							
Barium, Ba	2	< 0.05	mg/L	0.05	EPA 200.7	6/9/2014	KC
Beryllium Low	0.004	< 0.0005	mg/L	0.0005	EPA 200.8	6/10/2014	JH
Cadmium Low	0.005	< 0.0005	mg/L	0.0005	EPA 200.8	6/10/2014	JH
Calcium, Ca	UR	75.6	mg/L	0.50	EPA 200.7	6/10/2014	KC
Chromium Low	0.1	< 0.002	mg/L	0.002	EPA 200.8	6/10/2014	JH
Copper, Cu	1.30	< 0.01	mg/L	0.01	EPA 200.7	6/9/2014	KC
Iron, Fe	UR	0.29	mg/L	0.05	EPA 200.7	6/6/2014	KC
Lead Low	0.015	< 0.005	mg/L	0.005	EPA 200.8	6/10/2014	JH
Magnesium, Mg	UR	21.3	mg/L	0.50	EPA 200.7	6/10/2014	KC
Manganese, Mn	UR	< 0.05	mg/L	0.05	EPA 200.7	6/6/2014	KC
Mercury, Hg	0.002	< 0.0002	mg/L	0.0002	EPA 245.1	6/6/2014	JMS

MCL = Maximum Contamination Level
MDL = Method Minimum Detection Limit
UR = Unregulated

Date Report Printed: 6/24/2014 8:23:01 A

Laboratory Analysis Report

Sample Number: 1420344

NO FIELD TEMP RCVD; Methane, Ethane, and Ethene testing were performed by Accutest Mountain States (AMS). EPA Methods 504.1, 505, 515.3, 525.2, 531.2, 547, and 549.2 were performed by Anatek Labs (ATL).

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Nickel, Ni	UR	< 0.02	mg/L	0.02	EPA 200.7	6/9/2014	KC
Potassium, K	UR	17.3	mg/L	0.5	EPA 200.7	6/10/2014	KC
Selenium Low	0.05	0.011	mg/L	0.005	EPA 200.8	6/10/2014	JH
Silver, Ag	UR	< 0.010	mg/L	0.010	SM 3111 B	6/17/2014	JH
Sodium, Na	UR	72.7	mg/L	0.50	EPA 200.7	6/10/2014	KC
Thallium Low	0.002	< 0.001	mg/L	0.001	EPA 200.8	6/10/2014	JH
Uranium, U	30	30	ug/L	1	EPA 200.8	6/10/2014	JH
Zinc, Zn	UR	0.02	mg/L	0.01	EPA 200.7	6/9/2014	KC
Ammonia Direct (as N)	UR	< 0.2	mg/L	0.2	EPA 350.1	6/5/2014	CJS
Nitrate + Nitrite (as N)	10	7.96	mg/L	0.02	EPA 353.2	6/10/2014	CJS
Nitrate (as N)	10	8.1	mg/L	0.2	EPA 300.0	6/5/2014	NC
The nitrate concentration is approaching maximum concentration of 10.0 mg/L. Monitoring is recommended.							
Nitrite (as N)	1.00	< 0.01	mg/L	0.01	EPA 353.2	6/6/2014	CJS
Ortho Phosphate (as P)		0.11	mg/L	0.05	EPA 365.1	6/5/2014	CJS
Ethylene Dibromide	0.05	<0.02	ug/L	0.02	EPA 504.1	6/14/2014	ATL
1,2-Dibromo-3-chloropropane	0.20	<0.02	ug/L	0.02	EPA 504.1	6/14/2014	ATL
Endrin	2	<0.02	ug/L	0.02	EPA 505	6/11/2014	ATL
gamma-BHC (Lindane)	0.2	<0.02	ug/L	0.02	EPA 505	6/11/2014	ATL
Methoxychlor	40	<0.1	ug/L	0.1	EPA 505	6/11/2014	ATL
Toxaphene	3	<1	ug/L	1	EPA 505	6/11/2014	ATL
Heptachlor	0.4	<0.04	ug/L	0.04	EPA 505	6/11/2014	ATL
Heptachlor epoxide	0.2	<0.02	ug/L	0.02	EPA 505	6/11/2014	ATL
Total PCB	0.5	<0.10	ug/L	0.1	EPA 505	6/11/2014	ATL
Chlordane(Total)	2	<0.1	ug/L	0.1	EPA 505	6/11/2014	ATL
Aldrin	UR	<0.2	ug/L	0.2	EPA 505	6/11/2014	ATL
Dieldrin	UR	<0.2	ug/L	0.2	EPA 505	6/11/2014	ATL
Dalapon	200	<1	ug/L	1	EPA 515.3	6/13/2014	ATL
Dicamba	UR	<0.2	ug/L	0.2	EPA 515.3	6/13/2014	ATL
2,4-Dichlorophenoxyacetic acid (2,4-D)	70.0	<0.1	ug/L	0.1	EPA 515.3	6/13/2014	ATL
Dinoseb	7.00	<0.2	ug/L	0.2	EPA 515.3	6/13/2014	ATL
Pentachlorophenol	1.00	<0.04	ug/L	0.04	EPA 515.3	6/13/2014	ATL

MCL = Maximum Contamination Level
MDL = Method Minimum Detection Limit
UR = Unregulated

Date Report Printed: 6/24/2014 8:23:01 A

Laboratory Analysis Report

Sample Number: 1420344

NO FIELD TEMP RCVD; Methane, Ethane, and Ethene testing were performed by Accutest Mountain States (AMS). EPA Methods 504.1, 505, 515.3, 525.2, 531.2, 547, and 549.2 were performed by Anatek Labs (ATL).

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Picloram	500	<0.1	ug/L	0.1	EPA 515.3	6/13/2014	ATL
Silvex	50.0	<0.2	ug/L	0.2	EPA 515.3	6/13/2014	ATL
Bis(2-ethylhexyl)adipate	400	<0.2	ug-L	0.2	EPA 525.2	6/15/2014	ATL
Bis(2-ethylhexyl)phthalate	6	<0.6	ug-L	0.6	EPA 525.2	6/15/2014	ATL
Simazine	4	<0.15	ug/L	0.15	EPA 525.2	6/15/2014	ATL
Hexachlorocyclopentadiene	50	<0.2	ug/L	0.2	EPA 525.2	6/15/2014	ATL
Atrazine	3	<0.2	ug/L	0.2	EPA 525.2	6/15/2014	ATL
Alachlor (Lasso)	2	<0.4	ug/L	0.4	EPA 525.2	6/15/2014	ATL
Hexachlorobenzene	1	<0.2	ug/L	0.2	EPA 525.2	6/15/2014	ATL
Benzo(a)pyrene	0.2	<0.02	ug/L	0.02	EPA 525.2	6/15/2014	ATL
Butachlor	UR	<0.4	ug/L	0.4	EPA 525.2	6/15/2014	ATL
Metolachlor	UR	<1	ug/L	1	EPA 525.2	6/15/2014	ATL
Metribuzin	UR	<0.2	ug/L	0.2	EPA 525.2	6/15/2014	ATL
Propachlor	UR	<0.2	ug/L	0.2	EPA 525.2	6/15/2014	ATL
Aldicarb	3.0	<2.0	ug/L	2	EPA 531.2	6/18/2014	ATL
Aldicarb sulfone	2.0	<2.0	ug/L	2	EPA 531.2	6/18/2014	ATL
Aldicarb sulfoxide	4.0	<2.0	ug/L	2	EPA 531.2	6/18/2014	ATL
Carbaryl	UR	<2.0	ug/L	2	EPA 531.2	6/18/2014	ATL
Carbofuran	40	<2.0	ug/L	2	EPA 531.2	6/18/2014	ATL
3-Hydroxycarbofuran	UR	<2.0	ug/L	2	EPA 531.2	6/18/2014	ATL
Methomyl	UR	<2.0	ug/L	2	EPA 531.2	6/18/2014	ATL
Oxamyl	200	<4.0	ug/L	4	EPA 531.2	6/18/2014	ATL
Glyphosate	700	<10.0	ug/L	10	EPA 547	6/12/2014	ATL
Endothall	100	<25	ug/L	10	EPA 548.1	6/10/2014	KB
Diquat	20.0	<0.8	ug/L	0.8	EPA 549.2	6/16/2014	ATL
Benzene	5	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Carbon tetrachloride	5	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Chlorobenzene	100	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
1,2-Dichlorobenzene	600	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
1,4-Dichlorobenzene	75	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
1,2-Dichloroethane	5	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY

MCL = Maximum Contamination Level
MDL = Method Minimum Detection Limit
UR = Unregulated

Date Report Printed: 6/24/2014 8:23:01 A

Laboratory Analysis Report

Sample Number: 1420344

NO FIELD TEMP RCVD; Methane, Ethane, and Ethene testing were performed by Accutest Mountain States (AMS). EPA Methods 504.1, 505, 515.3, 525.2, 531.2, 547, and 549.2 were performed by Anatek Labs (ATL).

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
1,1-Dichloroethene	7	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
cis-1,2-Dichloroethene	70	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
trans-1,2-Dichloroethene	100	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
1,2-Dichloropropane	5	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Ethylbenzene	700	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Styrene	100	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Tetrachloroethene	5	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Toluene	1000	0.8	ug/L	0.5	EPA 524.2	6/6/2014	CY
1,2,4-Trichlorobenzene	70	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
1,1,1-Trichloroethane	200	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
1,1,2-Trichloroethane	200	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Trichloroethene	5	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Vinyl chloride	2	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Total THM's	80	<2.0	ug/L	2	EPA 524.2	6/6/2014	CY
Bromodichloromethane	----	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Bromoform	----	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Chloroform	----	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Dibromochloromethane	----	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Xylene, Total	10000	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Dichloromethane	5	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Methyl-tert-butylether	UR	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Dibromofluoromethane (Surr)		98.4	% 80-120		EPA 524.2	6/6/2014	CY
Toluene-d5 Surrogate		96.6	% 80-120		EPA 524.2	6/6/2014	CY
Bromofluorobenzene Surrogate		91.0	% 80-120		EPA 524.2	6/6/2014	CY
Dissolved Organic Carbon		0.80	mg/L	0.1	EPA 415.1	6/12/2014	MDM
Methane		<0.00040	mg/L	0.0004	RSKSOP 175	6/10/2014	AMS
Ethane		<0.00080	mg/L	0.0008	RSKSOP 175	6/10/2014	AMS
Ethene		<0.0012	mg/L	0.0012	RSKSOP 175	6/10/2014	AMS
Carbon, Total Organic, TOC		11.4	mg/L	0.1	EPA 415.1	6/9/2014	MDM
Radon-222			pCi/L	18	SM7500RN B		
Temperature			C		Thermometer		

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Date Report Printed: 6/24/2014 8:23:01 A

Laboratory Analysis Report

Sample Number: 1420344

NO FIELD TEMP RCVD; Methane, Ethane, and Ethene testing were performed by Accutest Mountain States (AMS). EPA Methods 504.1, 505, 515.3, 525.2, 531.2, 547, and 549.2 were performed by Anatek Labs (ATL).

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Alkalinity		314	mg/L		EPA 310.1	6/6/2014	CJS
pH		7.1	S.U.		SM 4500-H B	6/4/2014	CJS
Corrosivity	UR				Langelier		
Bicarbonate		314	mg/L		SM 2320	6/6/2014	CJS
Carbonate		0.0	mg/L		SM 2320	6/6/2014	CJS
Chloride, Cl	UR	30	mg/L	1	EPA 300.0	6/5/2014	NC
Cyanide, Total	0.20	< 0.005	mg/L	0.005	EPA 335.4	6/6/2014	DS
Fluoride, F	4.0	0.66	mg/L	0.10	EPA 300.0	6/10/2014	EB
Hardness	UR	296	mg/L	5.0	SM 2340	6/6/2014	CJS
Sulfate, SO4	UR	85	mg/L	1	EPA 300.0	6/5/2014	NC
Bromate, BrO3		< 5	ug/L	5	EPA 300.1	6/11/2014	KC
Chlorite, ClO2		< 10	ug/L	10	EPA 300.1	6/11/2014	KC
Chlorine Residual, Total		< 0.10	mg/L	0.10	SM 4500 Cl G	6/4/2014	CJS
Chemical Oxygen Demand		33.8	mg/L	20.0	EPA 410.4	6/6/2014	CJS
Conductivity	UR	861	umhos	2	SM 2510B	6/4/2014	CJS
Turbidity		1.0	NTU	0.5	EPA 180.1	6/4/2014	CJS
Total Dissolved Solids		580	mg/L	25	160.1	6/11/2014	GM
Hydrogen Sulfide	UR	<0.05	mg/L	0.05	SM 4500-S2 D	6/5/2014	GM
Color	UR	<5	C.U.	5	SM 2120	6/6/2014	MDM
Surfactants	UR	<0.01	mg/L	.01	SM 5540	6/13/2014	MDM
Threshold Odor	UR	N.O.O.	T.O.N.		EPA 140.1	6/6/2014	MDM
Total Suspended Solids		4	mg/L	3	SM 2540 D	6/6/2014	GM

MCL = Maximum Contamination Level
MDL = Method Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.
If you have any questions concerning this report,
please contact your client manager: **James Hibbs**

Date Report Printed: 6/24/2014 8:23:01 A

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 6/11/2014 10:57:10 AM
http://www.analyticallaboratories.com
These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1420345

Attn: WALT BURT
GSI
55 SW YAMHILL STE #300
PORTLAND, OR 97204

Collected By: M HINGST
Submitted By: M HINGST

Source of Sample:
ADRIAN TEST WELL (AS DISSOLVED)

Time of Collection: 14:05
Date of Collection: 6/4/2014
Date Received: 6/4/2014
Report Date: 6/6/2014

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab: 7.0 °C

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low	0.01	0.090	mg/L	0.003	EPA 200.8	6/6/2014	JH
Value Exceeds the MCL of 0.010 mg/L							
Iron, Fe	UR	<0.05	mg/L	0.05	EPA 200.7	6/6/2014	KC
Manganese, Mn	UR	<0.05	mg/L	0.05	EPA 200.7	6/6/2014	KC
Metals Filtering		*				6/5/2014	JMS

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.

If you have any questions about this report, or any future analytical needs, please contact your client manager:

James Hibbs

CLIENT CODE= GSI

CHAIN OF CUSTODY RECORD

CLIENT INFORMATION:

Project Manager: Walt Burt
Company: GSI Water Solutions
Address: 55 SW Yamhill St.
Portland, OR 9720
Phone: (971) 200-8508 Fax:
Sampled by: (Please print) Mary Hingst
Transported by: (Please print) Mary Hingst

PROJECT INFORMATION:

Project Name: City of Adrian
PWS Number:
Purchase Order Number:
Required Due Date:
E-mail Address: wburt@gsiws.com

ANALYTICAL LABS, INC.
1804 N. 33rd Street • Boise, ID 83703
(208) 342-5515 • Fax: (208) 342-5591 • 1-800-574-5773
Website: www.analyticallaboratories.com
E-mail: ali@analyticallaboratories.com

TESTS REQUESTED

Lab ID	Date Sampled	Time Sampled	Sample Description (Source)	Sample Matrix	See list	Remarks:
20344	6/4/14	14:05	~~Test well for municipal use~~ Adrian Test Well	H_2O	X	*Did not sample for: Bacteria, THM, HAA, *Rush Fe, As, Mn
20345			Adrian Test Well			
20345						

Invoice to: (If different than above address)

Special Instructions:

ALLOCATIONS OF RISK: Analytical Laboratories, Inc. will perform preparation and testing services, obtain findings and prepare reports in accordance with Good Laboratory Practices (GLP). If, for any reason, Analytical Laboratories, Inc. errors in the conduct of a test or procedure, their liability shall be limited to the cost of the test or procedure completed in error. Under no circumstances will Analytical Laboratories, Inc. be liable for any other cost associated with obtaining a sample or use of data.

Note: Samples are discarded 21 days after results are reported. Hazardous samples will be returned to client or disposed of at client expense.

Relinquished By: (Signature)	Print Name: Mary Hingst	Company: GSI Water Solutions	Date: 6/4/14	Time: 5:00PM
Received By: (Signature)	Print Name:	Company:	Date:	Time:
Relinquished By: (Signature)	Print Name:	Company:	Date:	Time:
Received By: (Signature) Brenda Wright	Print Name: Brenda Wright	Company: ALI	Date: 6-4-14	Time: 1709
SAMPLE RECEIPT Total # of Containers:	Chains of Custody Seals Y / N / NA	Intact: Y / N / NA Temperature Received: 7.0 °C	Condition: good	

REV. 2/19/12 WHITE: STAYS WITH SAMPLE (S) YELLOW: LAB PINK: SAMPLER

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 7/7/2014 10:39:35 AM
http://www.analyticallaboratories.com
These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1420346

Attn: WALT BURT
GSI
55 SW YAMHILL STE #300
PORTLAND, OR 97204

Collected By: M HINGST
Submitted By: M HINGST

Source of Sample:
ADRIAN TEST WELL

Time of Collection: 14:05
Date of Collection: 6/4/2014
Date Received: 6/4/2014
Report Date: 7/7/2014

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab: 7.0 °C

Radiological testing was performed by Summit Environmental (SUM).

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Gross Alpha	15 pCi	33+/-7.1	pCi/L	3	EPA 900.0	6/18/2014	SUM
Gross Beta		7.5+/-4.3	pCi/L	4	EPA 900.0	6/18/2014	SUM
Radium 226	----	<1	pCi/L	1	EPA 903.0	6/16/2014	SUM
Radium 228	----	<1	pCi/L	1	EPA 904.0	6/13/2014	SUM

RECEIVED
JUL 11 2014
By

Thank you for choosing Analytical Laboratories for your testing needs.

If you have any questions about this report, or any future analytical needs, please contact your client manager:

James Hibbs

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Attachment G

Field Water Quality Log

YSI-Pro Plus Multi-Parameter Water Quality Log
Measurements recorded during the last 1.5 hours of the constant-rate test.
City of Arian Well 6

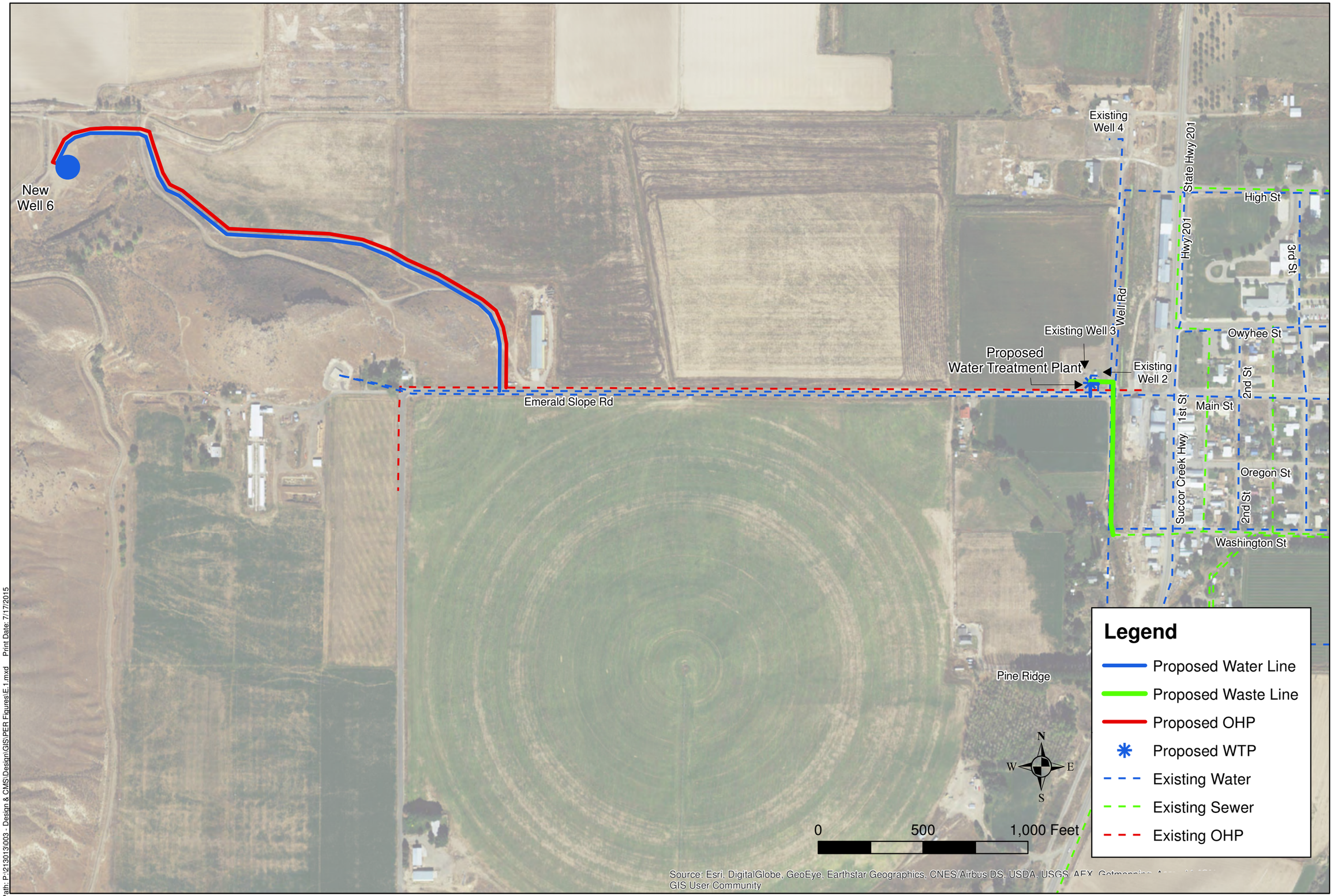
Timestamp	Barometer (PSI)	Specific Conductance (uS/cm)	Dissolved Oxygen (mg/L)	ORP_1 (mV)	pH_1 (Units)	Temperature (C)
1/29/2015 15:40	13.634	808	5.89	242.7	7.48	14.9
1/29/2015 15:45	13.634	788	6.06	145.2	7.48	14.8
1/29/2015 15:50	13.632	788	6.13	180.2	7.48	14.8
1/29/2015 15:55	13.632	786	6.05	172.7	7.48	14.9
1/29/2015 16:00	13.632	783	6.12	151.7	7.48	14.8
1/29/2015 16:05	13.631	773	6.01	142.6	7.48	14.9
1/29/2015 16:10	13.632	784	6.22	143.4	7.48	14.9
1/29/2015 16:15	13.632	783	6.27	154.3	7.48	14.8
1/29/2015 16:20	13.632	784	6.16	151.4	7.47	14.9
1/29/2015 16:25	13.632	781	6.24	159	7.47	14.8
1/29/2015 16:30	13.632	785	6.21	155.8	7.47	14.8
1/29/2015 16:35	13.634	787	6.1	158	7.47	14.8
1/29/2015 16:40	13.631	780	6.05	166.6	7.47	14.8
1/29/2015 16:45	13.631	788	6.26	164.2	7.47	14.8
1/29/2015 16:50	13.631	792	6.14	155.6	7.47	14.9
1/29/2015 16:55	13.631	785	6.01	138	7.47	14.9
1/29/2015 17:00	13.629	780	6.24	171.8	7.47	14.8
1/29/2015 17:05	13.629	781	6.07	170	7.47	14.8
1/29/2015 17:10	13.626	781	6.15	169.7	7.47	14.8

APPENDIX E

PROPOSED ALTERNATIVE

KELLER associates

213013-003/PER/15-373



Path: P:\213013\003 - Design & CMS\Design\GIS\PER Figures\E.1.mxd Print Date: 7/17/2015

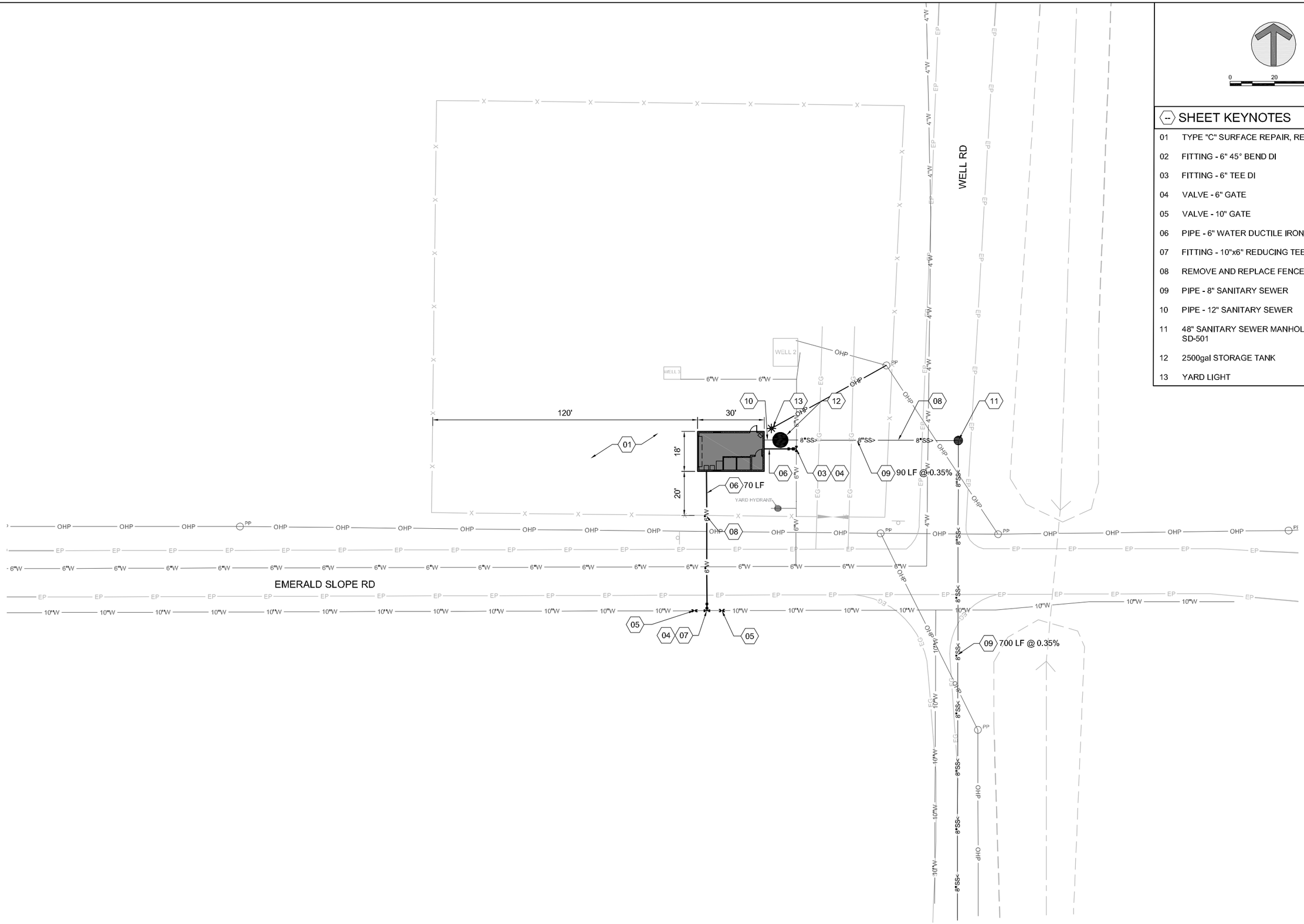
KELLER associates

Prepared for:
CITY of ADRIAN, OREGON

Project :
ADRIAN WATER SYSTEM IMPROVEMENTS

Title:
OVERALL PROJECT PLAN

Figure:
E.1



SHEET KEYNOTES

01	TYPE "C" SURFACE REPAIR, RE: ISPWC SD-303
02	FITTING - 6" 45° BEND DI
03	FITTING - 6" TEE DI
04	VALVE - 6" GATE
05	VALVE - 10" GATE
06	PIPE - 6" WATER DUCTILE IRON
07	FITTING - 10"x6" REDUCING TEE
08	REMOVE AND REPLACE FENCE AS NECESSARY
09	PIPE - 8" SANITARY SEWER
10	PIPE - 12" SANITARY SEWER
11	48" SANITARY SEWER MANHOLE, RE: ISPWC SD-501
12	2500gal STORAGE TANK
13	YARD LIGHT

KELLER associates

CITY OF ADRIAN

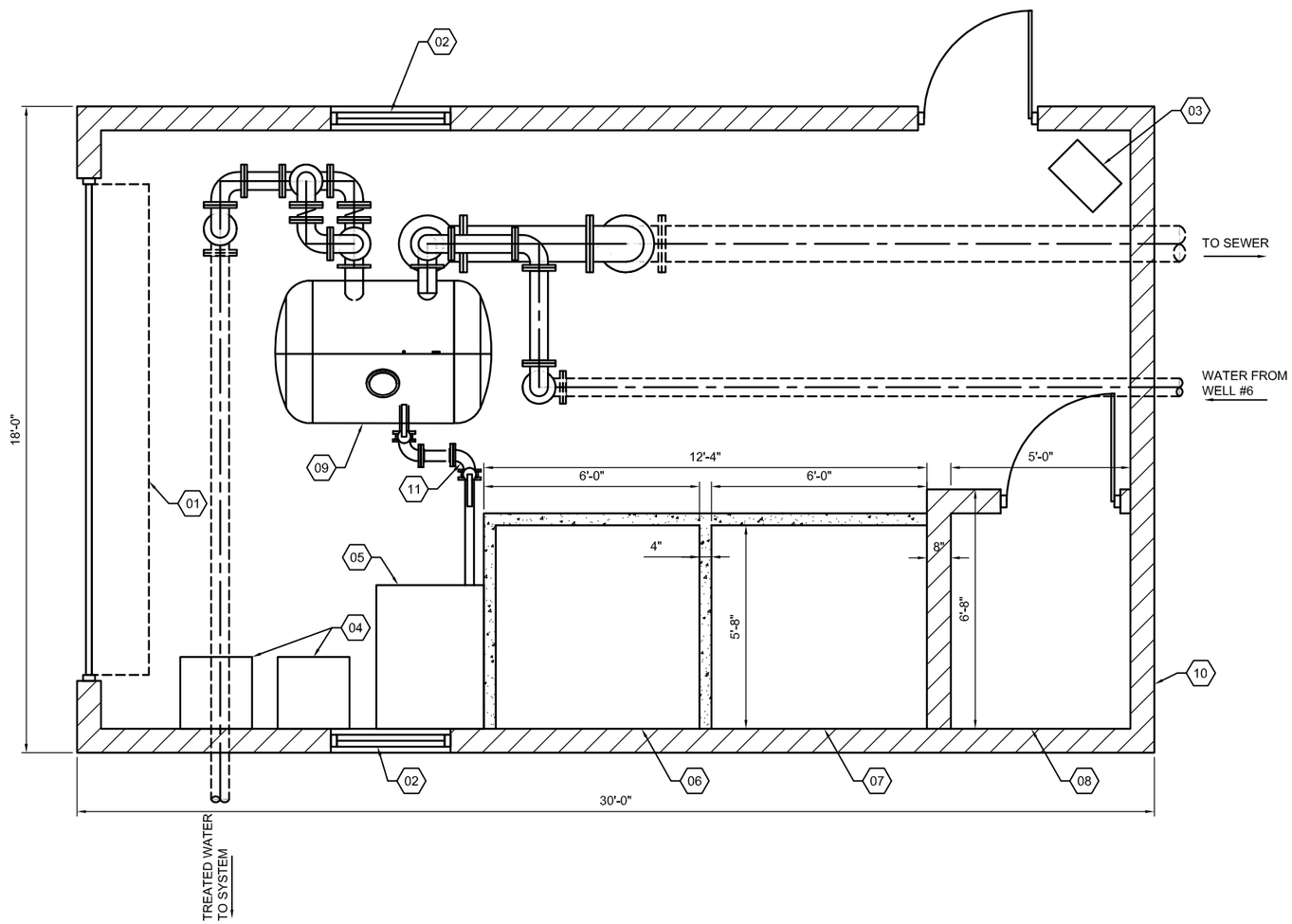
ADRIAN WTP

SITE PLAN

PROJECT NO.

FIGURE NO.
E.2

P:\213013\003 - Design & CMS\Design\CAD\01 PREDESIGN\00 FIGURES\FIGURE 1.dwg DATE: 10/13/2015 TIME: 01:04:42 PM



A1 PRELIMINARY WATER TREATMENT BUILDING LAYOUT

1/2" = 1'-0"

0 1' 2' 4'

GENERAL SHEET NOTES

1. ---
2. ---
3. ---

SHEET KEYNOTES

01	ROLL-UP DOOR
02	LOUVER
03	HEATER
04	CHEMICAL METERING PUMP
05	BLOWER
06	SODIUM HYPOCHLORITE STORAGE
07	FERRIC CHLORIDE STORAGE
08	ELECTRICAL & CONTROL ROOM
09	PRESSURIZED TREATMENT TANK
10	8" CMU WALL
11	AIRWASH INFLUENT

EQUIPMENT KEYNOTES

1001 ---

1002 ---

1003 ---

KELLER associates

CITY OF ADRIAN

ADRIAN WTP

PRELIMINARY WATER TREATMENT BUILDING LAYOUT

PROJECT NO.

FIGURE NO.

E.3

P:\213013\003 - Design & CMS\Design\CAD\01 PREDES\00 FIGURES\FIGURE 2.dwg DATE: 07/17/2015 TIME: 12:38:20 PM

Adrian Sanitary Sewer Capacities

LINE #	IN STREET	FROM STREET	TO STREET	GROUND ELEV AT UP INV	UP INV	DOWN INV	LENGTH (FT)	DIAMETER (FT)	ROUGHNESS	SLOPE (ft/ft)	VELOCITY (FPS)	CAPACITY (CFS)	CAPACITY (GPM)
100	*WTP site*	*WTP discharge*	*Future MH 1 in Well Road*	*2225*	*2222.21*	*2221.89*	*90*	*0.667*	*0.013*	*0.0035*	*2.05*	*0.717*	*322*
101	*Well Road*	*FMH1*	*Future MH 2 in Well Road*	*2224*	*2221.79*	*2220.50*	*370*	*0.667*	*0.013*	*0.0035*	*2.05*	*0.717*	*322*
102	*Well Road*	*FMH2*	*Existing MH A1-1 in Well Road*	*2226*	*2220.40*	*2219.10*	*370*	*0.667*	*0.013*	*0.0035*	*2.05*	*0.717*	*322*
6	Washington	Easement	Between 1st & 2nd	2223	2219.00	2216.08	455.00	0.667	0.013	0.0064	2.78	0.971	436
5	Washington	Between 1st & 2nd	2nd	2220	2214.36	2202.46	175.00	0.667	0.013	0.0680	9.05	3.160	1418
4	Washington	2nd - west side	2nd - east side	2206	2194.70	2194.46	50.00	0.667	0.013	0.0048	2.40	0.839	377
3	Washington	2nd	Between 2nd & 3rd	2204	2194.30	2193.78	120.00	0.667	0.013	0.0043	2.29	0.798	358
2	Washington	Between 2nd & 3rd	Between 3rd & 4th	2200	2193.68	2192.40	320.00	0.667	0.013	0.0040	2.20	0.766	344
1	Washington	Between 3rd & 4th	Pump Station	2200	2192.3	2191.02	320.00	0.667	0.013	0.0040	2.20	0.766	344

Scenario: Peak Day Existing
Current Time Step: 0.000Hr
FlexTable: Junction Table

ID	Label	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
31	J-3	2,207.94	Main Zone	<Collection: 0 items>	(N/A)	(N/A)	(N/A)
50	J-9	2,245.09	Transmission Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
52	J-10	2,290.00	Transmission Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
54	J-11	2,350.00	Transmission Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
56	J-12	2,390.00	Transmission Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
139	J-50	2,206.41	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
148	J-54	2,230.62	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
150	J-55	2,230.89	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
152	J-56	2,228.34	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
154	J-57	2,230.38	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
162	J-61	2,270.16	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
164	J-62	2,272.83	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
166	J-63	2,269.55	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
168	J-64	2,228.61	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
237	Well 2	2,229.80	<None>	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
243	Well 3	2,230.52	<None>	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
245	J-92	2,229.86	<None>	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
252	Well 5	0.00	<None>	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
254	J-94	0.00	<None>	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
315	J-97	2,231.24	Transmission Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
337	J-99	2,227.92	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
339	J-100	2,233.39	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
341	J-101	2,245.69	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
343	J-102	2,254.98	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
345	J-103	2,257.93	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
348	J-104	2,232.53	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
350	J-105	2,243.36	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
354	J-106	2,229.83	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
357	J-107	2,229.65	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
359	J-108	2,233.35	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
361	J-109	2,236.39	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
363	J-110	2,242.22	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
366	J-111	2,237.37	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
368	J-112	2,241.61	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
370	J-113	2,242.39	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
372	J-114	2,257.65	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
374	J-115	2,270.25	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
377	J-116	2,235.59	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
379	J-117	2,224.96	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
381	J-118	2,231.70	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
383	J-119	2,232.42	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
386	J-120	2,230.94	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
388	J-121	2,227.20	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
428	J-123	0.00	Main Zone	<Collection: 2 items>	(N/A)	(N/A)	(N/A)
441	J-125	2,265.90	Main Zone	<Collection: 0 items>	(N/A)	(N/A)	(N/A)
465	J-126	0.00	<None>	<Collection: 0 items>	(N/A)	(N/A)	(N/A)
467	J-127	0.00	<None>	<Collection: 0 items>	(N/A)	(N/A)	(N/A)
474	J-128	2,456.00	<None>	<Collection: 0 items>	0.00	2,454.95	-0.5
60	J-13	2,378.00	Transmission Zone	<Collection: 1 item>	82.29	2,403.86	11.2
62	J-14	2,352.00	Transmission Zone	<Collection: 1 item>	0.00	2,403.88	22.4
64	J-15	2,288.00	Transmission Zone	<Collection: 1 item>	0.00	2,403.95	50.2
439	J-124	2,268.02	Main Zone	<Collection: 0 items>	0.00	2,404.03	58.8
201	J-79	2,267.82	Main Zone	<Collection: 1 item>	1.09	2,404.03	58.9
160	J-60	2,265.61	Main Zone	<Collection: 1 item>	1.09	2,404.03	59.9
196	J-77	2,258.55	Main Zone	<Collection: 1 item>	1.09	2,404.03	62.9

194	J-76	2,254.30	Main Zone	<Collection: 1 item>	1.09	2,404.03	64.8
198	J-78	2,254.15	Main Zone	<Collection: 1 item>	1.09	2,404.03	64.8
178	J-69	2,251.04	Main Zone	<Collection: 1 item>	1.09	2,404.03	66.2
158	J-59	2,250.85	Main Zone	<Collection: 1 item>	1.09	2,404.03	66.3
180	J-70	2,247.70	Main Zone	<Collection: 1 item>	1.09	2,404.03	67.6
66	J-16	2,245.95	Main Zone	<Collection: 1 item>	0.00	2,404.02	68.4
231	J-89	2,245.35	Main Zone	<Collection: 1 item>	1.09	2,404.03	68.7
176	J-68	2,244.83	Main Zone	<Collection: 1 item>	1.09	2,404.03	68.9
191	J-75	2,238.31	Main Zone	<Collection: 1 item>	1.09	2,404.04	71.7
156	J-58	2,236.86	Main Zone	<Collection: 1 item>	1.09	2,404.04	72.3
258	J-95	2,236.29	Main Zone	<Collection: 2 items>	1.09	2,404.03	72.6
392	J-122	2,236.14	Main Zone	<Collection: 0 items>	0.00	2,404.03	72.6
189	J-74	2,235.48	Main Zone	<Collection: 1 item>	1.09	2,404.04	72.9
102	J-34	2,235.32	Main Zone	<Collection: 1 item>	1.09	2,404.03	73.0
116	J-40	2,235.28	Main Zone	<Collection: 1 item>	1.09	2,404.03	73.0
118	J-41	2,234.94	Main Zone	<Collection: 1 item>	1.09	2,404.03	73.2
184	J-72	2,234.89	Main Zone	<Collection: 1 item>	1.09	2,404.04	73.2
186	J-73	2,234.18	Main Zone	<Collection: 1 item>	1.09	2,404.04	73.5
174	J-67	2,233.87	Main Zone	<Collection: 1 item>	1.09	2,404.03	73.6
172	J-66	2,233.61	Main Zone	<Collection: 1 item>	1.09	2,404.03	73.7
228	J-88	2,232.36	Main Zone	<Collection: 1 item>	1.09	2,404.04	74.3
104	J-35	2,232.21	Main Zone	<Collection: 1 item>	1.09	2,404.04	74.3
106	J-36	2,231.76	Main Zone	<Collection: 1 item>	1.09	2,404.04	74.5
318	J-98	2,231.53	Main Zone	<Collection: 1 item>	0.00	2,404.05	74.6
108	J-37	2,231.50	Main Zone	<Collection: 1 item>	1.09	2,404.04	74.7
484	J-132	2,231.23	Main Zone	<Collection: 1 item>	0.00	2,404.05	74.8
70	J-18	2,231.01	Main Zone	<Collection: 1 item>	1.09	2,404.05	74.9
488	J-133	2,231.00	<None>	<Collection: 1 item>	0.00	2,404.33	75.0
170	J-65	2,230.55	Main Zone	<Collection: 1 item>	1.09	2,404.03	75.1
110	J-38	2,230.56	Main Zone	<Collection: 1 item>	1.09	2,404.05	75.1
68	J-17	2,230.48	Main Zone	<Collection: 1 item>	1.09	2,404.05	75.1
80	J-23	2,230.00	Main Zone	<Collection: 1 item>	1.09	2,404.03	75.3
204	J-80	2,229.70	Main Zone	<Collection: 1 item>	1.09	2,404.03	75.4
113	J-39	2,229.62	Main Zone	<Collection: 1 item>	1.09	2,404.03	75.5
225	J-87	2,227.78	Main Zone	<Collection: 1 item>	1.09	2,404.03	76.3
129	J-45	2,227.26	Main Zone	<Collection: 1 item>	1.09	2,404.03	76.5
76	J-21	2,227.27	Main Zone	<Collection: 1 item>	1.09	2,404.05	76.5
100	J-33	2,227.03	Main Zone	<Collection: 1 item>	1.09	2,404.03	76.6
120	J-42	2,225.87	Main Zone	<Collection: 1 item>	1.09	2,404.03	77.1
74	J-20	2,224.89	Main Zone	<Collection: 1 item>	1.09	2,404.05	77.5
131	J-46	2,223.86	Main Zone	<Collection: 1 item>	1.09	2,404.03	78.0
72	J-19	2,223.16	Main Zone	<Collection: 1 item>	1.09	2,404.05	78.3
133	J-47	2,219.97	Main Zone	<Collection: 1 item>	1.09	2,404.03	79.6
98	J-32	2,216.85	Main Zone	<Collection: 1 item>	1.09	2,404.03	81.0
207	J-81	2,215.17	Main Zone	<Collection: 1 item>	1.09	2,404.03	81.7
135	J-48	2,214.98	Main Zone	<Collection: 1 item>	1.09	2,404.03	81.8
82	J-24	2,211.93	Main Zone	<Collection: 1 item>	1.09	2,404.03	83.1
137	J-49	2,211.02	Main Zone	<Collection: 1 item>	1.09	2,404.03	83.5
123	J-43	2,210.10	Main Zone	<Collection: 1 item>	1.09	2,404.03	83.9
219	J-85	2,208.26	Main Zone	<Collection: 1 item>	1.09	2,404.03	84.7
86	J-26	2,207.92	Main Zone	<Collection: 1 item>	1.09	2,404.03	84.8
96	J-31	2,207.80	Main Zone	<Collection: 1 item>	1.09	2,404.03	84.9
84	J-25	2,207.74	Main Zone	<Collection: 1 item>	1.09	2,404.03	84.9
88	J-27	2,206.99	Main Zone	<Collection: 1 item>	1.09	2,404.03	85.2
90	J-28	2,206.11	Main Zone	<Collection: 1 item>	1.09	2,404.03	85.6
216	J-84	2,206.00	Main Zone	<Collection: 1 item>	1.09	2,404.03	85.7
213	J-83	2,206.00	Main Zone	<Collection: 1 item>	1.09	2,404.03	85.7
126	J-44	2,206.00	Main Zone	<Collection: 1 item>	1.09	2,404.03	85.7
210	J-82	2,206.00	Main Zone	<Collection: 1 item>	1.09	2,404.03	85.7
92	J-29	2,205.64	Main Zone	<Collection: 1 item>	1.09	2,404.03	85.8
143	J-52	2,205.25	Main Zone	<Collection: 1 item>	1.09	2,404.03	86.0
94	J-30	2,205.24	Main Zone	<Collection: 1 item>	1.09	2,404.03	86.0
145	J-53	2,205.00	Main Zone	<Collection: 1 item>	1.09	2,404.03	86.1
141	J-51	2,204.33	Main Zone	<Collection: 1 item>	1.09	2,404.03	86.4
481	J-131	2,233.95	<None>	<Collection: 0 items>	0.00	2,450.64	93.8

44	J-6	2,231.00	<None>	<Collection: 1 item>	0.00	2,450.95	95.2
42	Well 4	2,230.58	<None>	<Collection: 1 item>	0.00	2,450.96	95.3
46	J-7	2,230.11	Transmission Zone	<Collection: 1 item>	0.00	2,450.61	95.4

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Scenario: Peak Day Existing
Current Time Step: 0.000Hr
FlexTable: Pipe Table

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)
41	P-6	27	R-4	PMP-4	10	Ductile Iron	130.0	False	0.000	59.85	0.24	0.000	True	10
43	P-7	43	PMP-4	Well 4	10	Ductile Iron	130.0	False	0.000	59.85	0.24	0.000	True	340
45	P-8	21	Well 4	J-6	6	PVC	150.0	False	0.000	59.85	0.68	0.000	False	0
47	P-9	1,118	J-6	J-7	6	PVC	150.0	False	0.000	59.85	0.68	0.000	False	0
49	P-10	71	J-7	PRV-2	6	PVC	150.0	False	0.000	59.85	0.68	0.000	False	0
53	P-12	1,343	J-9	J-10	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
55	P-13	1,285	J-10	J-11	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
57	P-14	278	J-11	J-12	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
59	P-15	76	J-12	T-1	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
61	P-16	92	T-1	J-13	10	Asbestos Cement	140.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
63	P-17	321	J-13	J-14	10	Asbestos Cement	140.0	False	0.000	-82.29	0.34	0.000	False	0
65	P-18	1,274	J-14	J-15	10	Asbestos Cement	140.0	False	0.000	-82.29	0.34	0.000	False	0
67	P-19	1,335	J-15	J-16	10	Asbestos Cement	140.0	False	0.000	-82.29	0.34	0.000	False	0
71	P-21	23	J-17	J-18	6	PVC	150.0	False	0.000	4.37	0.05	0.000	False	0
73	P-22	610	J-18	J-19	6	PVC	150.0	False	0.000	3.28	0.04	0.000	False	0
75	P-23	131	J-19	J-20	6	PVC	150.0	False	0.000	2.18	0.02	0.000	False	0
77	P-24	52	J-20	J-21	6	PVC	150.0	False	0.000	1.09	0.01	0.000	False	0
81	P-26	308	J-19	J-23	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
83	P-27	324	J-23	J-24	6	PVC	150.0	False	0.000	3.32	0.04	0.000	False	0
85	P-28	312	J-24	J-25	6	PVC	150.0	False	0.000	6.08	0.07	0.000	False	0
87	P-29	323	J-25	J-26	6	PVC	150.0	False	0.000	7.33	0.08	0.000	False	0
89	P-30	141	J-26	J-27	6	PVC	150.0	False	0.000	6.38	0.07	0.000	False	0
91	P-31	106	J-27	J-28	6	PVC	150.0	False	0.000	2.01	0.02	0.000	False	0
93	P-32	72	J-28	J-29	6	PVC	150.0	False	0.000	0.92	0.01	0.000	False	0
97	P-34	321	J-30	J-31	6	PVC	150.0	False	0.000	-2.36	0.03	0.000	False	0
101	P-36	317	J-32	J-33	6	PVC	150.0	False	0.000	-9.06	0.10	0.000	False	0
107	P-39	43	J-35	J-36	10	Asbestos Cement	140.0	False	0.000	-58.97	0.24	0.000	False	0
109	P-40	24	J-36	J-37	10	Asbestos Cement	140.0	False	0.000	-60.07	0.25	0.000	False	0
111	P-41	219	J-37	J-38	10	Asbestos Cement	140.0	False	0.000	-61.16	0.25	0.000	False	0
112	P-42	32	J-38	J-17	10	Asbestos Cement	140.0	False	0.000	-62.25	0.25	0.000	False	0
114	P-43	320	J-35	J-39	6	PVC	150.0	False	0.000	12.05	0.14	0.000	False	0
117	P-45	138	J-34	J-40	6	PVC	150.0	False	0.000	8.23	0.09	0.000	False	0
119	P-46	22	J-40	J-41	6	PVC	150.0	False	0.000	7.13	0.08	0.000	False	0
121	P-47	185	J-41	J-42	6	PVC	150.0	False	0.000	6.04	0.07	0.000	False	0
124	P-49	330	J-33	J-43	6	PVC	150.0	False	0.000	4.52	0.05	0.000	False	0
127	P-51	328	J-32	J-44	6	PVC	150.0	False	0.000	2.33	0.03	0.000	False	0
130	P-53	214	J-23	J-45	6	PVC	150.0	False	0.000	5.46	0.06	0.000	False	0
132	P-54	270	J-45	J-46	6	PVC	150.0	False	0.000	4.37	0.05	0.000	False	0
134	P-55	57	J-46	J-47	6	PVC	150.0	False	0.000	3.28	0.04	0.000	False	0
136	P-56	164	J-47	J-48	6	PVC	150.0	False	0.000	2.18	0.02	0.000	False	0
138	P-57	234	J-48	J-49	6	PVC	150.0	False	0.000	1.09	0.01	0.000	False	0
140	P-58	273	J-49	J-50	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
142	P-59	450	J-50	J-51	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
144	P-60	54	J-51	J-52	6	PVC	150.0	False	0.000	-1.09	0.01	0.000	False	0
146	P-61	195	J-52	J-53	6	PVC	150.0	False	0.000	-2.18	0.02	0.000	False	0
147	P-62	246	J-53	J-27	6	PVC	150.0	False	0.000	-3.28	0.04	0.000	False	0
149	P-63	283	J-47	J-54	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
151	P-64	273	J-54	J-55	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
153	P-65	439	J-38	J-56	8	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
157	P-67	265	J-57	J-58	8	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
159	P-68	574	J-58	J-59	6	PVC	150.0	False	0.000	8.64	0.10	0.000	False	0
161	P-69	307	J-59	J-60	6	PVC	150.0	False	0.000	2.19	0.02	0.000	False	0
163	P-70	356	J-60	J-61	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
165	P-71	382	J-61	J-62	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0

167	P-72	102	J-62	J-63	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
169	P-73	410	J-63	J-64	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
171	P-74	356	J-64	J-65	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
173	P-75	103	J-65	J-66	6	PVC	150.0	False	0.000	-1.09	0.01	0.000	False	0
175	P-76	33	J-66	J-67	6	PVC	150.0	False	0.000	-2.18	0.02	0.000	False	0
177	P-77	288	J-67	J-68	6	PVC	150.0	False	0.000	-3.28	0.04	0.000	False	0
179	P-78	326	J-68	J-69	6	PVC	150.0	False	0.000	-4.37	0.05	0.000	False	0
183	P-80	287	J-70	J-72	10	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
185	P-81	18	H-14	J-72	8	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
187	P-82	25	J-72	J-73	8	PVC	150.0	False	0.000	-13.01	0.08	0.000	False	0
188	P-83	321	J-73	J-35	8	PVC	150.0	False	0.000	-14.10	0.09	0.000	False	0
190	P-84	20	J-72	J-74	8	PVC	150.0	False	0.000	11.91	0.08	0.000	False	0
192	P-85	353	J-74	J-75	8	PVC	150.0	False	0.000	10.82	0.07	0.000	False	0
193	P-86	275	J-75	J-58	8	PVC	150.0	False	0.000	9.73	0.06	0.000	False	0
195	P-87	202	J-59	J-76	6	PVC	150.0	False	0.000	5.36	0.06	0.000	False	0
197	P-88	300	J-76	J-77	6	PVC	150.0	False	0.000	4.27	0.05	0.000	False	0
199	P-89	116	J-77	J-78	6	PVC	150.0	False	0.000	3.18	0.04	0.000	False	0
200	P-90	49	J-78	J-69	6	PVC	150.0	False	0.000	2.08	0.02	0.000	False	0
202	P-91	104	J-60	J-79	6	PVC	150.0	False	0.000	1.09	0.01	0.000	False	0
203	P-92	305	J-66	J-3	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
205	P-93	225	J-39	J-80	6	PVC	150.0	False	0.000	10.96	0.12	0.000	False	0
206	P-94	92	J-80	J-23	6	PVC	150.0	False	0.000	9.87	0.11	0.000	False	0
208	P-95	195	J-42	J-81	6	PVC	150.0	False	0.000	4.95	0.06	0.000	False	0
209	P-96	133	J-81	J-24	6	PVC	150.0	False	0.000	3.86	0.04	0.000	False	0
211	P-97	145	J-43	J-82	6	PVC	150.0	False	0.000	3.43	0.04	0.000	False	0
212	P-98	182	J-82	J-25	6	PVC	150.0	False	0.000	2.34	0.03	0.000	False	0
214	P-99	162	J-44	J-83	6	PVC	150.0	False	0.000	1.24	0.01	0.000	False	0
215	P-100	169	J-83	J-26	6	PVC	150.0	False	0.000	0.15	0.00	0.000	False	0
217	P-101	142	J-29	J-84	6	PVC	150.0	False	0.000	-0.17	0.00	0.000	False	0
218	P-102	153	J-84	J-30	6	PVC	150.0	False	0.000	-1.26	0.01	0.000	False	0
220	P-103	31	J-31	J-85	6	PVC	150.0	False	0.000	-3.45	0.04	0.000	False	0
221	P-104	275	J-85	J-32	6	PVC	150.0	False	0.000	-4.54	0.05	0.000	False	0
222	P-105	318	J-69	J-33	6	PVC	150.0	False	0.000	-3.38	0.04	0.000	False	0
224	P-106	297	J-89	J-34	6	PVC	150.0	False	0.000	-2.18	0.02	0.000	False	0
226	P-107	41	J-33	J-87	8	PVC	150.0	False	0.000	-18.05	0.12	0.000	False	0
227	P-108	295	J-87	J-34	8	PVC	150.0	False	0.000	-19.14	0.12	0.000	False	0
229	P-109	279	J-34	J-88	8	PVC	150.0	False	0.000	-30.64	0.20	0.000	False	0
230	P-110	24	J-88	J-35	8	PVC	150.0	False	0.000	-31.73	0.20	0.000	False	0
232	P-111	332	J-69	J-70	10	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
233	P-112	25	J-89	J-70	6	PVC	150.0	False	0.000	1.09	0.01	0.000	False	0
236	P-113	22	R-2	PMP-2	8	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	True	10
238	P-114	39	PMP-2	Well 2	8	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	True	388
242	P-116	22	R-3	PMP-3	8	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	True	10
244	P-117	39	PMP-3	Well 3	8	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	True	362
246	P-118	12	Well 2	J-92	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
248	P-120	52	Well 3	J-92	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	True	0
251	P-121	41	R-5	PMP-5	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
253	P-122	93	PMP-5	Well 5	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
255	P-123	2,338	Well 5	J-94	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
256	P-124	1,227	J-94	T-1	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
259	P-125	208	J-95	J-32	6	PVC	150.0	False	0.000	-1.09	0.01	0.000	False	0
281	P-127	49	H-2	J-58	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
287	P-129	43	H-5	J-76	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
289	P-130	35	H-6	J-33	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
291	P-131	37	H-7	J-30	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
293	P-132	30	H-8	J-31	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
295	P-133	31	H-9	J-42	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
297	P-134	30	H-10	J-88	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
305	P-135	30	H-11	J-23	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
307	P-136	49	H-12	J-78	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
309	P-137	23	H-13	J-124	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
314	P-138	23	J-31	J-3	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
317	P-140	626	J-97	J-9	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
321	P-143	21	J-97	J-98	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
335	P-144	105	J-68	J-95	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
336	P-145	57	J-21	J-55	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0

338	P-146	160	J-54	J-99	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
340	P-147	119	J-99	J-100	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
342	P-148	369	J-100	J-101	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
344	P-149	144	J-101	J-102	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
346	P-150	628	J-102	J-103	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
347	P-151	651	J-103	J-16	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
349	P-152	223	J-19	J-104	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
351	P-153	222	J-104	J-105	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
352	P-154	296	J-105	J-103	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
353	P-155	618	J-104	J-100	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
355	P-156	432	J-56	J-106	8	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
356	P-157	111	J-106	J-57	8	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
358	P-158	505	J-106	J-107	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
360	P-159	273	J-107	J-108	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
362	P-160	403	J-108	J-109	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
364	P-161	421	J-109	J-110	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
365	P-162	58	J-110	J-16	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
367	P-163	347	J-58	J-111	10	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
369	P-164	273	J-111	J-112	10	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
371	P-165	48	J-112	J-113	10	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
373	P-166	553	J-113	J-114	10	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
375	P-167	740	J-114	J-115	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
376	P-168	398	J-115	J-62	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
378	P-169	279	J-111	J-116	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
380	P-170	494	J-116	J-117	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
382	P-171	301	J-117	J-118	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
384	P-172	184	J-118	J-119	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
385	P-173	254	J-119	J-108	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
387	P-174	145	J-57	J-120	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
389	P-175	515	J-120	J-121	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
390	P-176	279	J-121	J-119	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
391	P-177	340	J-114	J-60	10	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
393	P-178	303	J-16	J-122	10	Asbestos Cement	140.0	False	0.000	-82.29	0.34	0.000	False	0
394	P-179	322	J-122	J-98	10	Asbestos Cement	140.0	False	0.000	-82.29	0.34	0.000	False	0
395	P-180	873	J-107	J-122	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
396	P-181	650	J-122	J-105	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
429	P-182	25	J-123	J-98	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
440	P-183	88	J-79	J-124	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
442	P-184	115	J-124	J-125	10	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
443	P-185	369	J-125	J-68	10	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
446	P-186	197	J-120	J-116	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
447	P-187	513	J-49	J-24	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
466	P-188	83	J-51	J-126	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
468	P-189	314	J-126	J-127	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
469	P-190	157	J-127	J-28	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
480	P-193	62	R-6	J-128	6	Ductile Iron	130.0	False	0.000	90.16	1.02	0.001	False	0
482	P-194	5,738	J-128	J-131	6	Ductile Iron	140.0	False	0.000	90.16	1.02	0.001	False	0
483	P-195	76	J-131	PRV-2	6	Ductile Iron	140.0	False	0.000	90.16	1.02	0.001	False	0
485	P-196	63	J-98	J-132	10	Asbestos Cement	140.0	False	0.000	-82.29	0.34	0.000	False	0
486	P-197	51	J-132	J-17	10	Asbestos Cement	140.0	False	0.000	67.71	0.28	0.000	False	0
489	P-199	28	PRV-2	J-133	6	Ductile Iron	110.0	False	0.000	150.00	1.70	0.003	False	0
490	P-200	92	J-133	J-132	6	Ductile Iron	110.0	False	0.000	150.00	1.70	0.003	False	0

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Scenario: Peak Day Existing
Current Time Step: 0.000Hr
FlexTable: Reservoir Table

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
39	R-4	2,229.07	<None>	59.85	2,229.07
234	R-2	2,229.92	<None>	(N/A)	(N/A)
240	R-3	2,230.97	<None>	(N/A)	(N/A)
249	R-5	0.00	<None>	(N/A)	(N/A)
479	R-6	2,455.00	<None>	90.16	2,455.00

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Scenario: Peak Day Existing
Current Time Step: 0.000Hr
FlexTable: Tank Table

ID	Label	Zone	Elevation (Base) (ft)	Elevation (Minimum) (ft)	Elevation (Initial) (ft)	Elevation (Maximum) (ft)	Volume (Inactive) (MG)	Diameter (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
257	T-1	<None>	2,374.00	-	-	-	0.00	50.46	(N/A)	(N/A)

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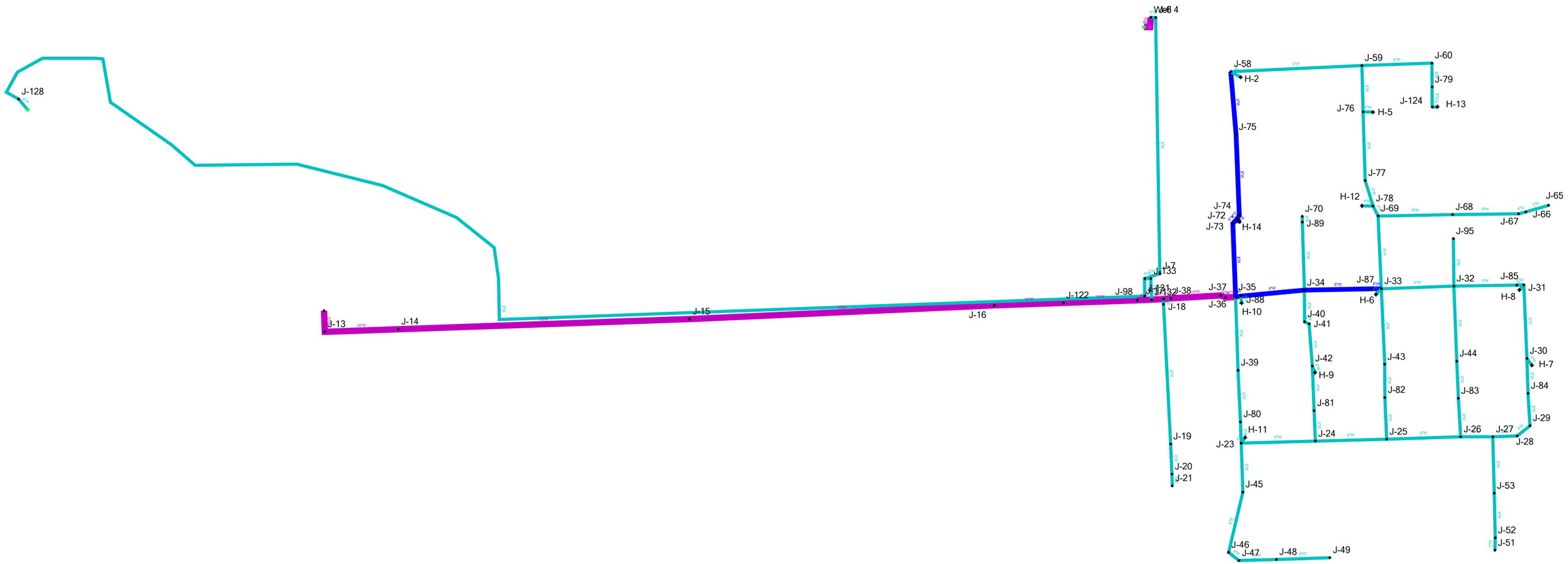
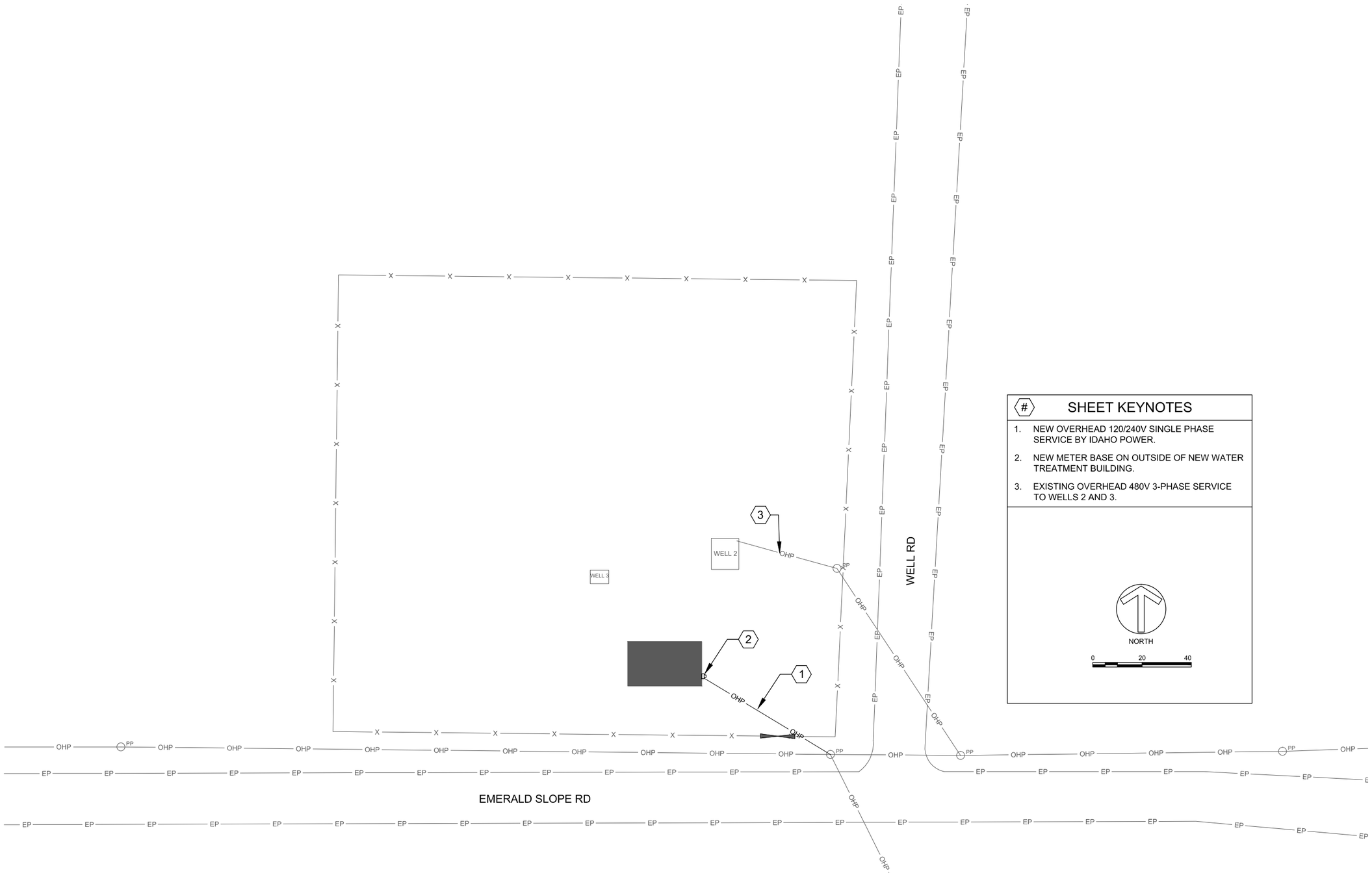
Scenario: Peak Day Existing



Adrian_WaterModel-2015_eval.wtg
7/22/2015

Bentley Systems, Inc. Haestad Methods Solution Center
27 Siemon Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666



#	SHEET KEYNOTES
1.	NEW OVERHEAD 120/240V SINGLE PHASE SERVICE BY IDAHO POWER.
2.	NEW METER BASE ON OUTSIDE OF NEW WATER TREATMENT BUILDING.
3.	EXISTING OVERHEAD 480V 3-PHASE SERVICE TO WELLS 2 AND 3.

KELLER associates

CTA

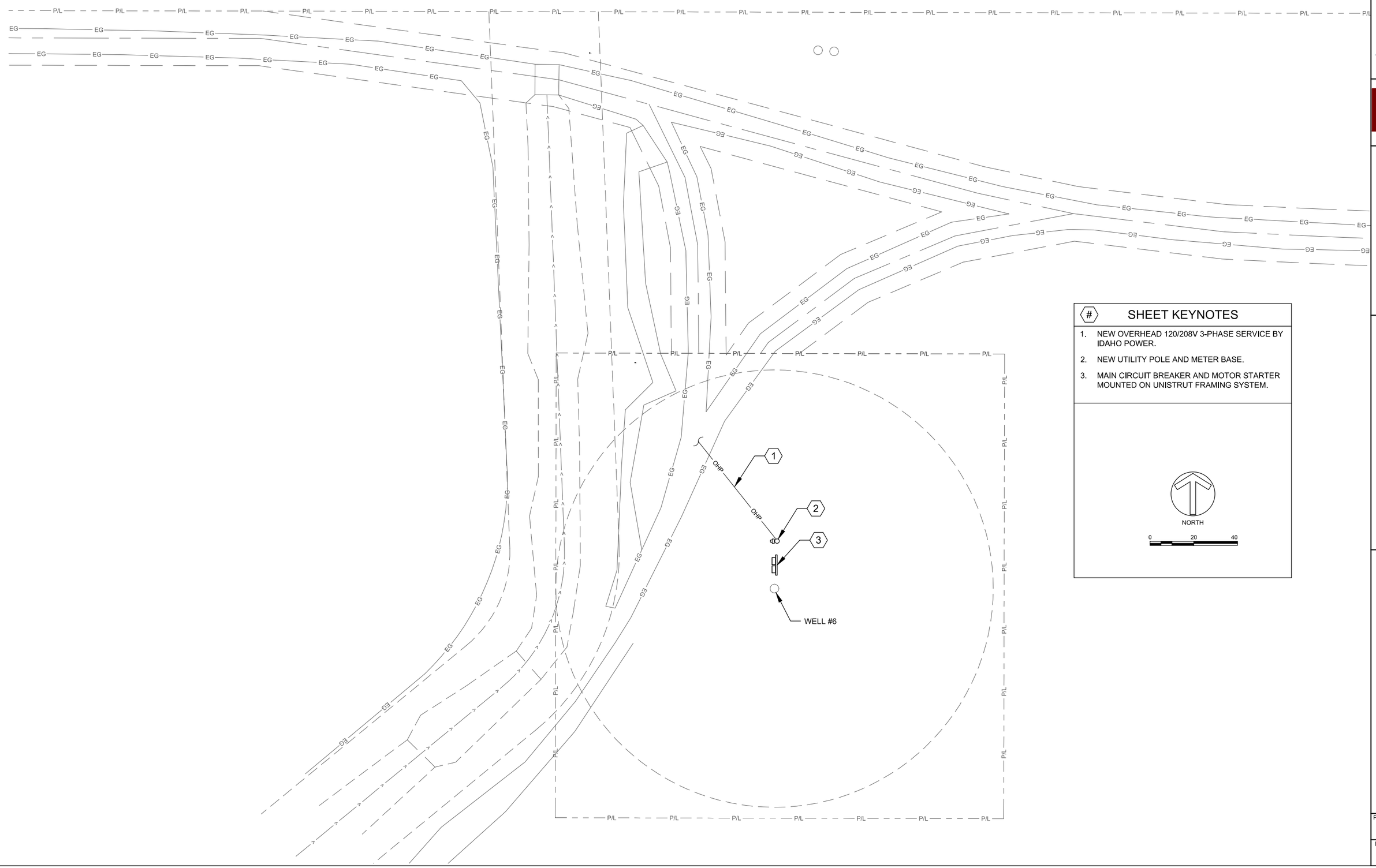
CITY OF ADRIAN

ADRIAN WATER SYSTEM IMPROVEMENTS

WATER TREATMENT FACILITIES BUILDING ELECTRICAL SITE PLAN

PROJECT NO.

FIGURE NO.
E-02



#	SHEET KEYNOTES
1.	NEW OVERHEAD 120/208V 3-PHASE SERVICE BY IDAHO POWER.
2.	NEW UTILITY POLE AND METER BASE.
3.	MAIN CIRCUIT BREAKER AND MOTOR STARTER MOUNTED ON UNISTRUT FRAMING SYSTEM.

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CTA

CITY OF ADRIAN

ADRIAN WATER SYSTEM IMPROVEMENTS

WELL #6 ELECTRICAL SITE PLAN

PROJECT NO.

FIGURE NO.
E-01

APPENDIX F

PILOT STUDY REPORT

KELLER associates

213013-003/PER/15-373

FINAL

ARSENIC REMOVAL
PILOT STUDY REPORT

KELLER ASSOCIATES
131 SW 5TH AVENUE, SUITE A
MERIDIAN, IDAHO 83642

LOPREST JOB NO. 33156

FOR
ADRIAN, CITY OF
PILOT STUDY
SEPTEMBER 21, 2015

Prepared by:

Loprest Water Treatment Company
2825 Franklin Canyon Road
Rodeo, CA 94572

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APPENDIX

A. PILOT TEST DATA LOG

B. PILOT RUN SCHEDULE

LIST OF ACRONYMS AND ABBREVIATIONS

APHA Platinum – Cobalt Standard Method	APHA
Arsenic	As
Chlorine	Cl
Differential Pressure	DP
Gallons per minute	gpm
Iron	Fe
Manganese	Mn
Manganese Dioxide	Mang-Ox
Maximum Contaminant Level	MCL
Milligrams per liter	mg/L
Parts per billion	ppb (= µg/L)
United States Environmental Protection Agency	USEPA

ARSENIC REMOVAL PILOT STUDY REPORT
LOPREST JOB NO. 33156
FOR
ADRIAN PILOT STUDY
SEPTEMBER 21, 2015

0.0 EXECUTIVE SUMMARY

Loprest Water Treatment Company (Loprest) is under contract with Keller Associates to complete a pilot study for treatment of Well 6 in the City of Adrian, Oregon.

The objective of the pilot study was to demonstrate "proof of concept" if coagulation followed by filtration was a viable technology to remove arsenic in water from Well No. 6 when raw water arsenic levels are so high, >70 ppb. Preparations were made to reduce the pH of the raw water if it was required. Also, two unique arsenic adsorptive medias were evaluated as a final polishing step to the effluent of the coagulation/filtration process.

The well also has borderline high uranium and nitrate levels. Although ion exchange is the best available technology, there are published papers [1] that indicate uranium can be removed from drinking water by chemical clarification using ferric chloride as a coagulant. Ferric chloride addition is required for arsenic removal by coagulation/filtration so tests were done to determine if and what levels of uranium could be removed.

The levels of nitrate were also tested to determine if any reduction could be achieved. Because the nitrate ion is stable and highly soluble it is not amenable to removal by coagulation and precipitation or adsorption and filtration. Normally, ion exchange or a chemical reductive treatment is required for nitrate removal.

The first filter run of the study indicated that coagulation with high levels of ferric chloride and then filtration by a manganese dioxide media could produce effluent water below the MCL of arsenic for drinking water from the high levels found in the source water. Further, it showed that with adsorptive media polishing, effluent level could be consistently produced with < 2 ppb of arsenic. With this success it was deemed that acid injection to reduce the pH would not be necessary.

A second filter run was conducted to determine repeatability after a filter backwash had occurred. This second run also produced effluent at less than the MCL from filtration alone, although at higher levels than run one. The initial lower effluent values of run 1 were due to the adsorptive capacity of the filter media. This is used up on the first run and the second run is more typical of the expected results.

Given funding and time constraints, no additional runs were made. However, "proof of concept" that arsenic removal to and below the MCL was demonstrated. Due to the high and variable levels found in the source water from prior testing, polishing of at least 50% of the filter effluent by adsorptive media is recommended. The blended product would give the owner security that effluent levels would remain below the MCL without the need for continual monitoring of filter effluent. Of the two adsorptive medias' evaluated, the NXT-2 product had superior performance. It should be noted that effluent levels of arsenic were below the MCL prior to polishing by absorptive media.

The testing also indicated reduction of uranium with this treatment process, at least initially. If raw water uranium levels do increase to above the 30 ppb MCL then some reduction of uranium may be possible, particularly of ferric chloride dosage levels are increased. There was an initial drop in nitrate levels after treatment by the adsorptive medias. These adsorptive medias can get as anion exchange resins initially but would have very low capacities for nitrate and other anion removal. The level of nitrate reduction decreased over the course of the run.

1.0 BACKGROUND

This report summarizes the results and conclusions of a groundwater treatment pilot test program. This pilot test program was undertaken by Loprest for Keller Associates and the City of Adrian to determine the removal performance for arsenic and/or iron leakage. Chemical treatment processes and estimated dosages required were also studied.

1.1 INTRODUCTION

Iron, manganese, arsenic and hydrogen sulfide are indigenous to numerous groundwater aquifers. With the exception of arsenic, these constituents are more prevalent in deeper aquifers that are devoid of dissolved oxygen.

This pilot test program was conducted between August 10, 2015 and August 14, 2015 at the Adrian jobsite in Adrian, OR. Untreated water for the test was pumped by a temporary well pump from well 6 with a small side-stream feeding the pilot trailer.

f1.2 OVERVIEW OF IRON AND ARSENIC TREATMENT PROCESSES

A brief discussion of iron and arsenic treatment processes follows. A discussion of iron removal is included since arsenic treatment often requires the addition of an iron salt to the water.

1.2.1 Iron Removal

The most common method of removing iron from water involves the oxidation of soluble iron (Fe^{+2}, or ferrous ion) to its insoluble form (Fe^{+3}, ferric ion), and subsequent removal of the precipitates formed by filtration.

Manganese-Oxide (MnO4) media is an 75% pure manganese dioxide ore, mined and screened for potable water use. In waters with a positive oxidation/reduction potential (ORP), it can work without the use of an oxidant. Other manganese dioxide ore materials mixed with a variety of sand materials are available under various trade names.

Mang-Ox (one of the many trade names for manganese-oxide media) enhances the oxidation and removal of iron by adsorbing Fe^{+2} on the surface of the media, and by promoting the exchange of electrons to oxidize soluble Fe^{+2} to insoluble Fe^{+3}. The kinetics of Fe^{+2} uptake and oxidation on MnO_x coated media is a function of the specific concentration of adsorption sites on the media, the oxidation potential and the pH of the water.

The performance of the Mang-Ox was evaluated.

1.2.2 Arsenic Removal

A maximum contaminant level for arsenic of 0.01 mg/L (10 micrograms per liter, or parts per billion) has been established by the USEPA.

Studies and experience at operating plants have shown that significant concentrations of soluble arsenic can be removed by coagulation with naturally occurring iron, or with naturally occurring iron in combination with metal salts such as alum or ferric chloride. Ferric chloride has been demonstrated to be the more effective of these two coagulants. Reduction of pH is often required to increase the efficiency of the coagulation process.

Arsenic is soluble in natural waters in both the As^{+3} and As^{+5} oxidation states. Arsenic in the As^{+5} oxidation state is more easily removed than in the $As+^{3}$ oxidation state. $As+^{3}$ is readily oxidized to As^{+5} in the presence of free chlorine (or other oxidants).

One atom of arsenic reacts with two atoms of chlorine, therefore the stoichiometric amount of chlorine required to oxidize 1 mg/1 of arsenic is equal to twice the atomic weight of chlorine divided by the atomic weight of arsenic, or [2(35.453)/74.922] = 0.95 mg/1 of chlorine.

Metal coagulants such as ferric chloride form insoluble gelatinous floc when added to water. This floc enmeshes the soluble arsenic species. Arsenic is removed by co-precipitation, which is defined as an incorporation of soluble arsenic species into a growing hydroxide phase via inclusion, occlusion, and adsorption.

2.0 DESCRIPTION OF PILOT TEST PROTOCOL

A description of the pilot test protocol follows, including a list of participants, a description of the test site, characteristics of the feed water, raw water analytical data, and a description of the treated water handling facilities used during the pilot study.

2.1 PILOT TEST PARTICIPANTS AND RESPONSIBILITIES

The names, contact information, title and responsibilities of each pilot test participant are provided in Table 1.

TABLE 1
PILOT TEST PARTICIPANTS AND RESPONSIBILITIES

Name and Contact Information	Title and Responsibilities
Thompson Nguyen	Service Engineer, Loprest Water Treatment Company Pilot operation 510-799-3101 Thompson@Loprest.com
Randy L. Richey	President, Loprest Water Treatment Company Pilot supervision 510-799-3101 Randy@Loprest.com

Run 1 was started in the morning of August 10, 2015. The study was completed on August 14, 2015.

2.2 DESCRIPTION OF TEST SITE

The well site was in the City of Adrian located in Malheur County, Oregon. Untreated water was on site, and the pilot equipment was brought to Adrian for testing

2.3 RAW WATER ANALYTICAL DATA

Raw water constituent levels are presented below. Laboratory reports indicate the well contains arsenic levels over 50 ppb. The raw water exceeds the MCL for arsenic

TABLE 2
RAW FEED WATER CHARACTERISTICS

Constituent	Average Values Owner's Lab
Arsenic, mg/L	0.07
Uranium, ug/L	26
Nitrate, mg/L	9.5

2.4 PILOT TEST OBJECTIVE

The purpose of the pilot study was to evaluate coagulation/filtration as a treatment option for the production of drinking quality water from the City of Adrian's source well no. 6. This study was done at the "proof of concept" level. If successful, optimization of chemical feed rates, service run times, plant operation would be done at the full scale level. The ability to remove the contaminants of concern, arsenic and uranium, were reviewed and final effluent samples were tested by a certified lab.

2.5 MEDIA EVAULUATION

Manganese Dioxide can be used to remove arsenic after conversion to its oxidized state and coagulation with iron oxide. It has the highest oxidation potential and capacity for dissolved contaminants when compared to conventional medias such as manganese greensand, filter sand, anthracite and combinations of these medias. So manganese dioxide was selected as the best choice in a one time proof of concept study.

3.0 DESCRIPTION OF PILOT SYSTEM

Loprest pilot filter column utilized mang-ox media with a 36" bed depth. Oxidation was with diluted sodium hypochlorite injected prior to the filter column. Coagulation was with diluted ferric chloride solution also injected prior to filtration.

3.1 PILOT TEST EQUIPMENT DESCRIPTION

Loprest's pilot test equipment is installed in a 5' x 12' trailer, which was parked at the jobsite. The pilot test components were constructed and installed in the trailer by Loprest. The following equipment is installed in the trailer and was utilized during the pilot test:

- Two each Wal-Chem EZ-B10 chlorine metering pumps, maximum flow rate of 0.6 GPH, each with dedicated solution tank and 350 ml calibration chamber. One pump will be used to inject sodium hypochlorite and one pump can be used to inject ferric chloride.
- One vertical pressure filter constructed of clear acrylic pipe, 12 inch outside diameter (11.25" inside diameter) by 65 ½" side shell height, cross sectional area =0.69 square feet, with internals, valves, controls and media as follows:
    - Slotted strainer underdrain laterals
    - Surface wash header
    - 36 inches of mang-ox, 125 pounds per cubic foot
    - Automatically or manually operated valves to control filtration, rinse to waste, surface wash, and backwash
    - Pressure gauges on inlet and outlet
    - Differential pressure gauge connected to inlet and outlet
    - Air release valve
    - Inlet and outlet sample ports
    - Rate of flow indicators for filtration, backwash, and surface wash

- A 10.4 gallon capacity contact chamber for chemical mixing and detention time installed in the trailer but is not typically used.
- A surface wash system with a pump and flowmeter is installed.
- Test equipment recommended but not included is as follows:
    - DR 900 Portable Colorimeter and associated reagent for iron
    - Quick test II for low level arsenic

A 200 gallon polyethylene storage tank and a backwash pump are provided for installation outside of the trailer. The storage tank will store filtered water to be used as backwash supply.

A photo of the interior of the pilot trailer is provided in Figure 1.

PILOT TEST TRAILER
FIGURE 1

The pilot system is equipped with a PLC based control panel, which automatically controls the filter control valves and backwash pump during backwashing. Backwashing can be initiated manually or by differential pressure. Manual initiation is anticipated for this pilot study since the differential pressure is not expected to increase significantly during the planned length of the filter runs.

3.2 DESCRIPTION OF PROPOSED PILOT OPERATION

A source of raw water will be connected to the pilot trailer inlet fitting. If necessary, a pressure reducing valve to limit the pressure delivered to the trailer to 50 psi will be installed on the inlet.

Raw water will pass through the pilot trailer and the filtered water will be directed to two polishing adsorptive media columns (parallel flow) and then to a storage tank. A flow meter and automated flow control valve will be used to maintain constant flow despite pressure drop increases while operating unattended.

When backwashing the filter is required, the filter water hose will be disconnected from the storage tank bottom fitting, and the backwash pump suction hose will be connected to the same tank fitting. Backwash water will be discharged into a temporary tank. After backwash is completed, the filtered water outlet hose will be reconnected to the tank bottom fitting.

4.0 PROPOSED PILOT TEST PROTOCOL

See Appendix B. Adrian pilot run schedule, dated July 30, 2015

4.1 OPERATING PROCEDURES

Prior to the first run, the pilot filter will be backwashed. The source of water for the backwash should be potable water. After the first backwash, the filtered water from the pilot filter will be used for backwashing.

Additional runs (approx. 6 hrs. each) will be done to adjust to the raw water quality and to optimize chemical addition/treatment rate as time allows.

Prior to startup and at the end of each run, the filter will be backwashed. The backwash cycle will be completed in three steps: 1) backwash at a flow of 14 gpm (20 gpm/sf) and surface wash for 4 minutes at a flow rate of 1.4 gpm (2 gpm/sf), 2) backwash only for 4 minutes at a flow rate of 14 gpm and 3) filter to waste for 4 minutes at a flow rate of 4.0 gpm. Effluent water will be accumulated for use as backwash supply water.

During each filter run, the following parameters will be measured and recorded on a Pilot Data Log at one hour intervals for 6 hours each day. Raw water will not be tested on site as Arsenic levels are too high to measure.

1. Chlorine, arsenic, and iron levels in the effluent
2. Differential pressure across the filter media
3. pH
4. Chemical feed pump's injection rate

4.2 SAMPLING PROTOCOL

Effluent water iron, arsenic, and pH will be tested onsite using the instruments and procedures described in the following section. Each filter influent and effluent sample will be taking in sufficient volume to provide the required sample volume for each parameter to be tested. Sample volumes will be sufficient to provide a sample for onsite testing, and for sending to an independent laboratory per owner's sampling plan (attachment B). A chain of custody form provided by others will be completed for each bottle provided to laboratory.

The onsite test equipment, procedures, and methods are described in the following section.

4.3 ONSITE TEST EQUIPMENT, PROCEDURES, AND METHODS

Field testing for iron and manganese will be performed with a DR 900. With this instrument, packets of reagents specific for each constituent are added to a pair of sample cylinders, which are then inserted into the test instrument in two steps. One sample is called the blank, which is inserted into the DR 900 first, and the instrument is zeroed. The DR 900 measures the amount of light passing through the blank sample, and stores the result. Next, the second prepared sample is inserted and the value is read by the DR 900. The instrument compares the stored value for the blank to the value for the prepared sample and displays the results for the constituent being tested. Arsenic field testing will be with a Quick Test II unit.

Pressure drop reading will be recorded manually reading filter media column DP. A sample test log can be provided.

5.0 TREATMENT PERFORMANCE EVALUATION

This section provides a summary of the performance of the equipment during the pilot test. Refer to Section 3.0 and 4.0 for a complete description and specification of the pilot test equipment and field analysis test equipment.

5.1 FILTER HEADLOSS

The pressure differential across the filter during the various runs never increased significantly. Effluent leakage of arsenic rose during the testing, therefore, effluent arsenic quality is indicative of filter performance and run time.

5.2 ARSENIC TREATMENT

A summary of the influent and filtered water values for iron and arsenic is presented in Tables 3 through 5. The test results noted “field” are test results from the DR 900, those noted Lab were provided from Keller Associates. The raw data log is shown in Appendix A.

TABLE 3
IRON, CHLORINE AND ARSENIC TEST RESULTS
RUN #1 Part 1 of 2
August 11, 2015

ANALYTE	Hours of Service					
	1	2	3	4	5	6
Fe into column, mg/L, field	1.36	1.31	1.21	1.39	1.20	1.21
Fe out, mg/L, field	0.01	0.02	0.02	0.02	0.01	0.01
Fe, Lab, mg/L, Lab	<0.05					<0.05
Cl out, mg/L, field	1.11	0.95	0.91	0.98	0.81	0.86
As out, ppb, field	1-2	1-2	1-2	1-2	4-5	4-5
As out, ppb, lab	<3					6
As out NXT, ppb, field	0-1		0-1		0-1	
As out NXT, ppb, lab	<3					<3
Uranium out, NXT, ug/L, lab	<1					<1
Nitrate out, NXT, mg/L, lab	8.3					9.4
As out FO36, ppb, field		1-2		1-2		3-4
As out FO36, ppb, lab	<3					6
Uranium out, FO36, ug/L, lab	<1					16
Nitrate out, FO36, mg/L, lab	7.1					8.9
DP, psi	1.25	0.75	0.5	1.0		1.0
Silica, mg/L, Lab	62.1					66.6
Uranium, ug/L, Lab	<1					16
Vanadium, mg/L, Lab	<0.05					<0.05
Nitrate, mg/L, Lab	9.4					9.5
Phosphate, mg/L, Lab	0.07					<0.05

NOTES: Media = Manganese Dioxide Flow = 4.0 GPM
Chem Feed Rates = Chlorine @ 3.58 ppm, Ferric Chloride @ 5.85 ppm

TABLE 4
IRON, CHLORINE AND ARSENIC TEST RESULTS
RUN #1 Part 2 of 2
August 12, 2015

ANALYTE	Hours of Service					
	7	8	9	10	11	12
Fe into column, mg/L, field	1.4	1.31	1.31	1.36	1.34	1.31
Fe out, mg/L, field	0.02	0.01	0.01	0.00	0.01	0.01
Fe out, mg/L, lab						<0.05
Cl out, mg/L, field	1.1	1.29	1.17	1.18	1.15	1.12
As out, filter column, ppb, field	1-2	3-4	3-4	5-6	5-6	7-8
As out, filter column, ppb, lab						10
As out NXT, ppb, field	0-1		0-1		0-1	
As out FO36, ppb, field		2-3		5-6		6-7
DP, psi	1.0	2.0		2.25	2.5	3.0
Silica, mg/L, lab						66.0
Uranium, ug/L, lab						18
Vanadium, mg/L, lab						<0.05
Nitrate, mg/L, lab						9.5
Phosphate, mg/L, lab						-

NOTES: Media = Manganese Dioxide Flow = 4.0 GPM
Chem Feed Rates = Chlorine @ 3.35 ppm, Ferric Chloride @ 5.85 ppm

TABLE 5
IRON, CHLORINE AND ARSENIC TEST RESULTS
RUN #2
August 13, 2015

ANALYTE	Hours of Service					
	1	2	3	4	5	6
Fe into column, mg/L, field	1.34	1.34	1.39	1.39	1.37	1.4
Fe out, mg/L, field	0.02	0.02	0.01	0.01	0.01	0.01
Fe out, mg/L, lab	<0.05					<0.05
Cl out, mg/L, field	1.29	1.19	1.18	1.19	1.14	1.09
As out, filter column, ppb, field	1-2	2-3	2-3	4-5	5-6	5-6
As out, filter column, ppb, lab	<3					8
As out NXT, ppb, field	0-1		0-1		0-1	
As out FO36, ppb, field		2-3		4-5		4-5
DP, psi	0.75	0.5		0.5	0.25	0.5
Metal Digestion	*					*
Silica, mg/L, lab	62.5					64.2
Uranium, ug/L, lab	6					20
Vanadium, mg/L, lab	<0.05					<0.05
Nitrate, mg/L, lab	9.4					9.3
Phosphate, mg/L, lab	-					-

NOTES: Media = Manganese Dioxide Flow = 4.0 GPM
Chem Feed Rates = Chlorine @ 3.04 ppm, Ferric Chloride @ 5.07 ppm

6.0 PERFORMANCE EVALUATION

Run 1 was conducted at 6 gpm/SF with a ferric chloride dosage of 5-6 ppm to give a filter inlet iron concentration of > 1.2 ppm. Sodium hypochlorite was fed at a rate of 3.35 ppm (calculated) to maintain a chlorine residual of greater than 0.9 ppm as free chlorine. Effluent water quality was measured with field instruments. The differential pressure showed no appreciable rise over the test period.

Run 2 was conducted under the same conditions as run 1 to confirm repeatability of results.

Acid Feed was not used as acceptable results were obtained without it

6.1 BACKWASH WATER QUALITY

Backwash water from the pilot filter was collected after Run 1. Five gallons of backwash water was collected. The collection was taken to provide a sample that is representative of the backwash water anticipated for the full scale plant. The sample collection procedure included five steps in approximately equal volumes (approx. 1 gallon each) every 1.5 minutes of the backwash to waste step.

The water was allowed to settle for 8 hours. After the settling period, samples were taken from the supernatant and analyzed to determine the levels of iron and arsenic. These values are anticipated in the backwash recycle water. The values are presented in Table 6 below.

TABLE 6
SETTLED BACKWASH WATER CHARACTERISTICS
LAB RESULTS

DATE SAMPLED		
	As, µg/l	Fe, mg/l
08/12/15	10-12	0.07

The above values are consistent with backwash recycle water constituent levels of iron, manganese, and arsenic at operating treatment plants. At these other locations, the recycled water rate of flow represents approximately 10% of the raw water rate of flow. At these other operating plants, recycling the settled backwash water caused no increase in the constituent levels in the filtered water outlet.

6.2 BACKWASH VOLUME AND RATIO

Good design practice requires that the ratio of filtered water volume to backwash water volume shall not exceed 5.0%. The ratio achieved in the pilot test was 4.6% based on a 12 hour run calculated as follows:

Waste volume generated based on Mang-Ox:

Backwash – 20 gpm/SF x 0.69 SF for 4 minutes = 14 gpm x 4 = 56 gallons
Surface Wash – 2 gpm/SF x 0.69 SF for 4 minutes = 1.4 gpm x 4 = 5.6 gallons
Backwash Only – 20 gpm/SF x 0.69 SF for 4 minutes = 14 gpm x 4 = 56 gallons
Rinse – 4.0 gpm x 4 minutes = 16.0 gallons
Total waste volume = 133.6 gallons

Backwash ratio based on 12 hour filter run:

Filtered water volume produced in 12 hours = 4.0 gpm x 12 x 60 minutes/hr = 2,880 gallons
Backwash waste to filtered water = 133.6 ÷ 2,880 = 0.046 = 4.6%

6.3 CONCLUSION

Arsenic removal can be achieved using the coagulation filtration process. The effluent level of arsenic will depend on the amount of ferric chloride dosing and the filter run time. Consistent arsenic levels below 8 ppb will likely require high ferric chloride dosages and lead to short filter run times.

Polishing the filter effluent by passing it through a column of NXT-2 adsorptive media consistently produced an effluent arsenic level below field and lab detection limits. The alternate column of FO-36 did not perform as well. The performance of the filter media was better on its initial run when compared to the second run. This was expected as manganese dioxide has some adsorptive characteristics. However, these sites are quickly used up (initial run only) and provided the filter media is getting cleaned by backwashing (evidenced by low initial differential pressure) then subsequent filter runs are expected to perform as in run No 2.

Uranium was initially removed by the coagulation filtration process but reached its MCL limit sooner than arsenic. Published reports [(1)] suggest better removal of uranium at ferric chloride dosage over 15 ppm. However, this level of ferric dosage would be detrimental to filter performance. Some removal of nitrates was observed, at least initially.

For full scale design criteria see accompanying 100 gpm treatment proposal.

References:

[1] “Removal of Uranium from Drinking Water by Ion Exchange and Chemical Clarification”; Steven W. Hanson, Donald B. Wilson, Naren N. Gunaji; Water Engineering Research Laboratory Office of Research and Development; 1986

APPENDIX A

LOPREST WATER TREATMENT COMPANY

Job Name: Adrian — Coag Filter

Job Number: 33156 — ABST CYL.

Pilot Test/ Rinse To Quality Log

RUN NO 1

Date	Time	pH In	pH col out	Fe in mg/l	Cl Free Out mg/l	Fe Out mg/l	As Out ppb	NXT Out ppb	FO36 out ppb	Cl Pump ml/min	Fe Pump ml/min	Acid Pump strokes	Raw Water gpm	Press in psi	Press out psi	DP psi	Notes
8/11/15	10:30	7.3	7.3	1.36	1.11	0.01	1--2	0--1	---	32	30	n/a	3.8--4	17.25	18.5	1.25	$FeCl_2$: 100ml to 5 Gal H_2O Cl_2: 500 ml to 5 Gal H_2O
	11:30	7.4	7.3	1.31	0.95	0.02	1--2	---	1--2	32	30	n/a	3.8--4	17.25	18	0.75	Raw As: >100 ppb
	12:30	7.3	7.2	1.21	0.91	0.02	1--2	0--1	----	32	30	n/a	3.8--4	17.25	17.75	0.5	Well Head Pressure: 41 psi
	13:30	7.3	7.3	1.39	0.98	0.02	1--2	---	1--2	32	30	n/a	3.8--4	17	18	1	
	14:30	7.2	7.2	1.2	0.81	0.01	4--5	0--1	---	32	30	n/a	---	---	---	---	Raw As: 80-100 ppb
	15:30	7.3	7.3	1.21	0.86	0.01	4--5	---	3--4	32	30	n/a	---	17.5	18.5	1	Well Head Pressure: 44 psi
8/12/15	8:30	7.3	7.4	1.4	1.1	0.02	1--2	0--1	---	32	30	n/a	---	21	20	1	$FeCl_2$: 100ml to 5 Gal H_2O Cl_2: 500 ml to 5 Gal H_2O
	9:30	7.4	7.5	1.31	1.29	0.01	3--4	---	2--3	31	30	n/a	---	22	20	2	Flow NXT-2 ~ 2.5 gpm FO-36 ~ 1.4 gpm
	10:30	7.3	7.4	1.31	1.17	0.01	3--4	0--1	---	30	30	n/a	---	----	---	---	Well Head Pressure: 44 psi
	11:30	7.3	7.3	1.36	1.18	0	5--6	---	5--6	29	30	n/a	---	22.25	20	2.25	
	12:30	7.3	7.4	1.34	1.15	0.01	5--6	0--1	---	29	30	n/a	---	23	20.5	2.5	
	13:30	7.4	7.5	1.31	1.12	0.01	7--8	---	6--7	29	30	n/a	---	22.5	19.5	3	Flow NXT-2 ~ 2.5 gpm FO-36 ~ 1.4 gpm
																	BW @ 14 gpm S.W. @ 1.4 gpm

Note: All samples taken from effluent except as noted by "in".

LOPREST WATER TREATMENT COMPANY

Job Name:

Job Number:

Pilot Test/ Rinse To Quality Log

RUN NO 1

Date	Time	pH In	pH col out	Fe in mg/l	Cl Free Out mg/l	Fe Out mg/l	As Out ppb	NXT Out ppb	FO36 out ppb	Cl Pump ml/min	Fe Pump ml/min	Acid Pump strokes	Raw Water gpm	Press in psi	Press out psi	DP psi	Notes
8/13/15	8:30	7.4	7.4	1.34	1.29	0.02	1--2	0--1	---	28	26	n/a	3.8--4	24	24.75	0.75	$FeCl_2$: 100ml to 5 Gal H_2O Cl_2: 500 ml to 5 Gal H_2O
	9:30	7.4	7.3	1.34	1.19	0.02	2--3	---	2--3	28	26	n/a	3.8--4	24.25	24.75	0.5	
	10:30	7.3	7.3	1.39	1.18	0.01	2--3	0--1	----	27	26	n/a	3.8--4	---	---	---	
	11:30	7.3	7.3	1.39	1.19	0.01	4--5	---	4--5	28	26	n/a	3.8--4	26	26.5	0.5	Raw As: > 100 ppb
	12:30	7.3	7.3	1.37	1.14	0.01	5--6	0--1	---	26	26	n/a	---	25.5	25.75	0.25	
	13:30	7.3	7.3	1.4	1.09	0.01	5--6	---	4--5	26	26	n/a	---	26	26.5	0.5	

Note: All samples taken from effluent except as noted by "in".

APPENDIX B

July 30, 2015

Job Note - Job 33156
Adrian Pilot Run Schedule
Media 1 - Mang-Ox

Cl_2: 500 mls of bleach concentrate into 5 gals of water start at 24 mls/min pump rate for 4.0 gals/min raw water flow rate and adjust to get 0.5-1.0 ppm free Cl in effluent

Fe_3Cl_2: 100 mls of Fe_3Cl_2 (neat) into 5 gals of water start at 20 mls/min pump rate for 4.0 gals/min raw water flow rate and adjust to get1.3 ppm Fe at column inlet (3.8 ppm FeCl dosage)

Run 1:

1) Raw water flow 4.0 gals/min (5.8 gpm/SF)

2) Add Cl_2 to get residual desired (media may have some additional chlorine demand)

3) Add FeCl to get iron into column per target above

4) Measure effluent quality

5) Call with results

6) Stop after 6 hours, backwash column per 4.1

Run 2:

1) Reduce the raw water pH feeding the column to approximately 6.5 by injection of diluted sulfuric acid. Without alkalinity data the acid stock solution cannot be calculated. Use trial and error.

2) Repeat run 1 test conditions.

3) Call with results

4) Continue run for 6 hours.

APPENDIX G

COST ESTIMATES

KELLER associates

213013-003/PER/15-373

	PROJECT SUMMARY	**ESTIMATE CLASS:**	PRE-DESIGN
PROJECT :	Adrian Water System Improvements	**DATE :**	7/17/2015
JOB # :	213013-003	**COMPLETED BY:**	CML
LOCATION :	**Adrian, OR**	**REVIEWED BY:**	
ELEMENT :	**PROJECT SUMMARY**		

NO.	DESCRIPTION	ESTIMATED COST	
0	GENERAL CONDITIONS (MOB/DEMOB, BONDS/INSURANCE)	$ 39,250.00	
1	SITEWORK	$ 40,400.00	
2	SITE PIPING	$ 48,600.00	
3	TRANSMISSION PIPING TO WELL	$ 252,800.00	
4	TREATMENT BUILDING	$ 65,000.00	
5	MECHANICAL PIPING	$ 34,100.00	
6	FILTRATION SYSTEM with POLISHING STEP	$ 259,100.00	
7	HVAC	$ 12,000.00	
8	ELECTRICAL & POWER	$ 47,000.00	
9	INSTRUMENTATION & CONTROLS	$ 26,000.00	
10	WELL PUMP, DROP PIPE, AND VFD	$46,200	
	TOTAL DIRECT COST	**$880,000**	
	15% GENERAL CONTRACTOR MARKUP	$130,000	
	TOTAL ESTIMATED CONSTRUCTION COST	**$1,010,000**	
	PERMITTING, LEGAL	$5,000	
	ENGINEERING	$202,000	
	SUBTOTAL	**$1,217,000**	
	20% CONTINGENCY & ALLOWANCES	$243,400	
	TOTAL ESTIMATED PROJECT COST	**$1,460,400**	

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time, and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

UNIT PRICES

ESTIMATE CLASS: PRE-DESIGN

PROJECT : Adrian Water System Improvements

DATE : 7/6/2015

JOB # : 213013-003

COMPLETED BY: CML

LOCATION : Adrian, OR

REVIEWED BY:

ELEMENT : Unit Prices

NO.	DESCRIPTION	UNIT	UNIT PRICE
1	**SITEWORK**		
1.1	GRAVEL SURFACE RESTORATION	LF	$10
1.2	ASPHALT SURFACE RESTORATION	LF	$35
1.3	MISCELLANEOUS SURFACE RESTORATION	LF	$5
1.4			
1.5			
2	**SITE PIPING**		
2.1	8" C900 Waterline - includes fittings, excavation, bedding, and backfill	LF	$60
2.2	8" Sch 35 PVC Waste line - includes fittings, excavation, bedding, and backfill	LF	$60
2.3			
2.4			
2.5			
3	**TRANSMISSION PIPING TO WELL**		
3.1	6" C900 Waterline - includes fittings, excavation, bedding, and backfill	LF	$55
3.2	Canal Crossing	EA	$15,000
3.3	Rock excavation	LF	$36
3.4			
3.5			
4	**TREATMENT BUILDING**		
4.1	Treatment Building	EA	$62,000
4.2	Containment Walls	LS	$3,000
4.3			
4.4			
4.5			
5	**MECHANICAL PIPING**		
5.1	12" Sch 35 PVC Waste line - includes fittings, excavation, bedding, and backfill	LF	$90
5.2	Backwash Storage Tank (2,500 gallons) with concrete pad and fittings	EA	$20,000
5.3	6" DI Waterline - includes fittings, excavation, bedding, and backfill	LF	$70
5.4	3" Airwash line - includes fittings	LF	$130
5.5	Chemical addition line - includes fittings, excavation, bedding, and backfill	LF	$70
5.6	Fittings	EA	$350
5.7	Valves	EA	$950
5.8			
5.9			
6	**FILTRATION SYSTEM**		
6.1	Pressure Filtration Vessels (two 50gpm units)	EA	$199,800
6.2	Chemical Metering Pump	EA	$1,752
6.3	2-3 HP blower 18-22 scfm Pos Disp Blower - extra price only	EA	$10,000
6.4	100 gallon crosslinked poly Sodium Hypochlorite Storage	EA	$400
6.5	50 gallon cross poly Ferric Chloride Storage	EA	$300
6.6	Polishing Step: Adsorptive Media LaOH3 (NXT-2) 3' diameter vessel	EA	$45,000
6.7			
6.8			
6.9			
7	**HVAC**		
7.1	Louver	EA	$2,500
7.2	Heater	EA	$3,500
7.3	Exhaust Fan	EA	$3,500
7.4			
7.5			
8	**ELECTRICAL & POWER**		
8.1	GENERATOR and fuel tank	LS	$31,700
8.2	Well 6 3 phase electrical service extension	LS	$13,550
8.3	WTP 3 phase electrical service	LS	$1,750
8.4			
8.5			
9	**INSTRUMENTATION & CONTROLS**		
9.1	Radio Telmetry	LS	$6,000
9.2	Controls	LS	$20,000
9.3			
9.4			
9.5			

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time, and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

	1-SITEWORK	**ESTIMATE CLASS:**	PRE-DESIGN
PROJECT :	Adrian Water System Improvements	**DATE :**	7/6/2015
JOB # :	213013-003	**COMPLETED BY:**	CML
LOCATION :	**Adrian, OR**	**REVIEWED BY:**	
ELEMENT :	**Sitework**		

NO.	DESCRIPTION	QUANTITY	ESTIMATED COST	
1.1	GRAVEL SURFACE RESTORATION	650	$6,500.00	
1.2	ASPHALT SURFACE RESTORATION	125	$4,375.00	
1.3	MISCELLANEOUS SURFACE RESTORATION	5900	$29,500.00	
	TOTAL COST - Sitework		**$40,400**	

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2-SITE PIPING

ESTIMATE CLASS: PRE-DESIGN

PROJECT : Adrian Water System Improvements

DATE : 7/6/2015

JOB # : 213013-003

COMPLETED BY: CML

LOCATION : Adrian, OR

REVIEWED BY:

ELEMENT : Site Piping

NO.	DESCRIPTION	QUANTITY	ESTIMATED COST	
2.1	8" C900 Waterline - includes fittings, excavation, bedding, and backfill	60	$3,600.00	
2.2	8" Sch 35 PVC Waste line - includes fittings, excavation, bedding, and backfill	750	$45,000.00	
	TOTAL COST - Site Piping		**$48,600**	

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time, and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

2-SITE PIPING

ESTIMATE CLASS: PRE-DESIGN

PROJECT : Adrian Water System Improvements

DATE : 7/6/2015

JOB # : 213013-003

COMPLETED BY: CML

LOCATION : Adrian, OR

REVIEWED BY:

ELEMENT : Site Piping

NO.	DESCRIPTION	QUANTITY	ESTIMATED COST	
3.1	6" C900 Waterline - includes fittings, excavation, bedding, and backfill	2900	$159,500.00	
3.2	Canal Crossing	1	$15,000.00	
3.3	Rock excavation	2175	$78,300.00	
	TOTAL COST - Site Piping		**$252,800**	

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time, and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

	3-TREATMENT BUILDING	**ESTIMATE CLASS:**	PRE-DESIGN
PROJECT :	Adrian Water System Improvements	**DATE :**	7/6/2015
JOB # :	213013-003	**COMPLETED BY:**	CML
LOCATION :	**Adrian, OR**	**REVIEWED BY:**	
ELEMENT :	**Treatment Building**		

NO.	DESCRIPTION	QUANTITY	ESTIMATED COST	
4.1	Treatment Building	1	$62,000.00	
4.2	Containment Walls	1	$3,000.00	
	TOTAL COST - Treatment Building		**$65,000**	

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time, and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

4-MECHANICAL PIPING

ESTIMATE CLASS: PRE-DESIGN

PROJECT : Adrian Water System Improvements

DATE : 7/6/2015

JOB # : 213013-003

COMPLETED BY: CML

LOCATION : Adrian, OR

REVIEWED BY:

ELEMENT : Mechanical Piping

NO.	DESCRIPTION	QUANTITY	ESTIMATED COST	
5.1	12" Sch 35 PVC Waste line - includes fittings, excavation, bedding, and backfill	20	$1,800.00	
5.2	Backwash Storage Tank (2,500 gallons) with concrete pad and fittings	1	$20,000.00	
5.3	6" DI Waterline - includes fittings, excavation, bedding, and backfill	25	$1,750.00	
5.4	3" Airwash line - includes fittings	10	$1,300.00	
5.5	Chemical addition line - includes fittings, excavation, bedding, and backfill	30	$2,100.00	
5.6	Fittings	15	$5,250.00	
5.7	Valves	2	$1,900.00	
	TOTAL COST - Mechanical Piping		**$34,100**	

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time, and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

	5-FILTRATION SYSTEM	**ESTIMATE CLASS:**	PRE-DESIGN
PROJECT :	Adrian Water System Improvements	**DATE :**	7/6/2015
JOB # :	213013-003	**COMPLETED BY:**	CML
LOCATION :	**Adrian, OR**	**REVIEWED BY:**	RR
ELEMENT :	**Filtration System**		

NO.	DESCRIPTION	QUANTITY	ESTIMATED COST	
6.1	Pressure Filtration Vessels (two 50gpm units)	1	$199,800.00	
6.2	Chemical Metering Pump	2	$3,504.00	
6.3	2-3 HP blower 18-22 scfm Pos Disp Blower - extra price only	1	$10,000.00	
6.4	100 gallon crosslinked poly Sodium Hypochlorite Storage	1	$400.00	
6.5	50 gallon cross poly Ferric Chloride Storage	1	$300.00	
6.6	Polishing Step: Adsorptive Media LaOH3 (NXT-2) 3' diameter vessel	1	$45,000.00	
	TOTAL COST - Filtration System		**$259,100**	

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time, and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

	6-HVAC	**ESTIMATE CLASS:**	PRE-DESIGN
PROJECT :	Adrian Water System Improvements	**DATE :**	7/6/2015
JOB # :	213013-003	**COMPLETED BY:**	CML
LOCATION :	**Adrian, OR**	**REVIEWED BY:**	
ELEMENT :	**HVAC**		

NO.	DESCRIPTION	QUANTITY	ESTIMATED COST	
7.1	Louver	2	$5,000.00	
7.2	Heater	1	$3,500.00	
7.3	Exhaust Fan	1	$3,500.00	
	TOTAL COST - HVAC		**$12,000**	

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time, and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

7-ELECTRICAL & POWER

ESTIMATE CLASS: PRE-DESIGN

PROJECT : Adrian Water System Improvements

DATE : 7/6/2015

JOB # : 213013-003

COMPLETED BY: CML

LOCATION : Adrian, OR

REVIEWED BY:

ELEMENT : Electrical & Power

NO.	DESCRIPTION	QUANTITY	ESTIMATED COST	
8.1	GENERATOR and fuel tank	1	$31,700.00	
8.2	Well 6 3 phase electrical service extension	1	$13,550.00	
8.3	WTP 3 phase electrical service	1	$1,750.00	
	TOTAL COST - Electrical & Power		**$47,000**	

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time, and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

8-INSTRUMENTATION & CONTROLS

ESTIMATE CLASS: PRE-DESIGN

PROJECT : Adrian Water System Improvements

DATE : 7/6/2015

JOB # : 213013-003

COMPLETED BY: CML

LOCATION : Adrian, OR

REVIEWED BY:

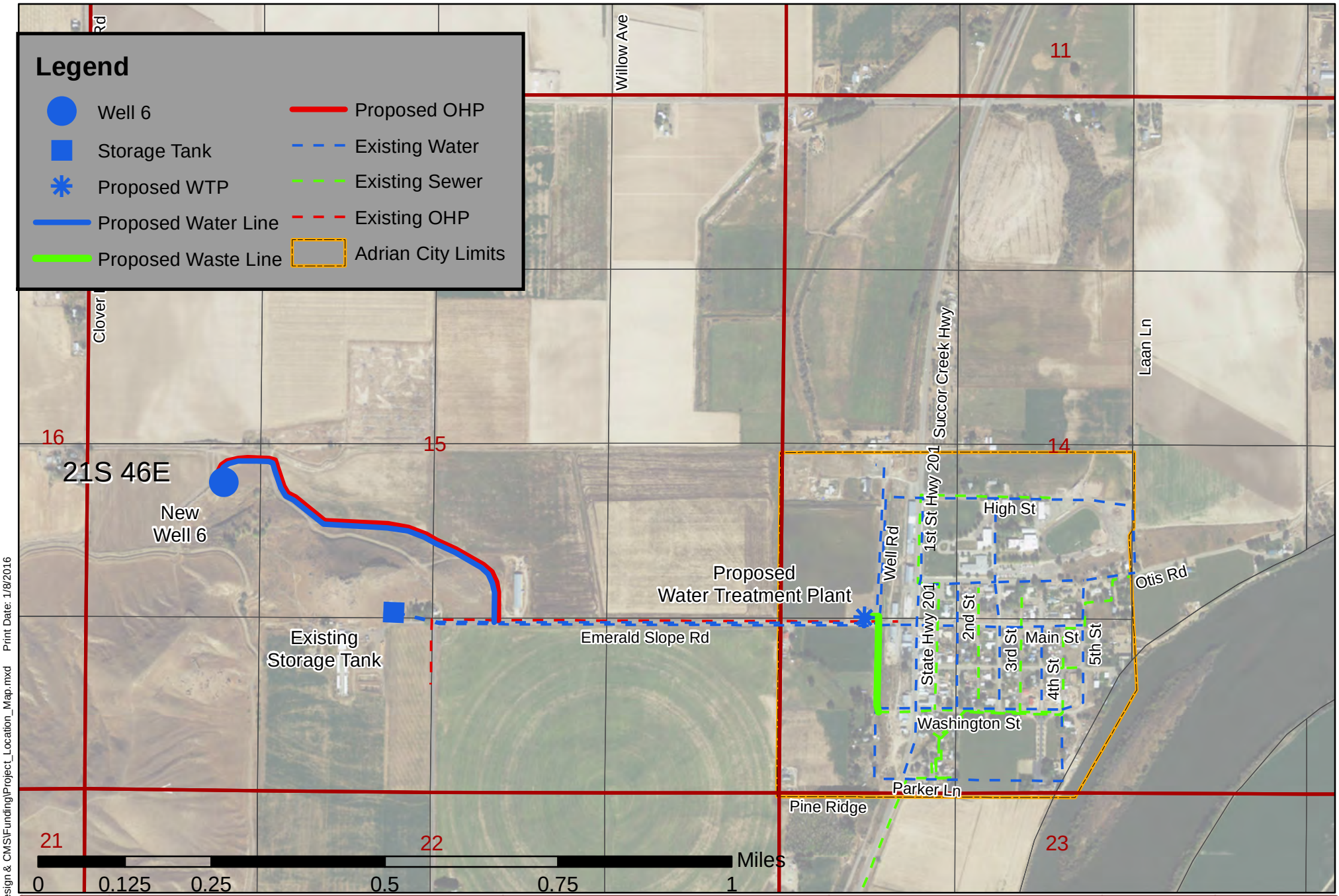
ELEMENT : Instrumentation & Controls

NO.	DESCRIPTION	QUANTITY	ESTIMATED COST	
9.1	Radio Telmetry	1	$6,000.00	
9.2	Controls	1	$20,000.00	
9.3	0		$0.00	
	TOTAL COST - Instrumentation & Controls		**$26,000**	

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time, and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

Attachment 3

Project Location Maps



Path: P:\213013\003 - Design & CMS\Funding\Project_Location_Map.mxd Print Date: 1/8/2016

Figure:	Title:	Project :	Prepared for:
1	Project Location Map	ADRIAN WATER SYSTEM IMPROVEMENTS	CITY of ADRIAN, OREGON

KELLER associates

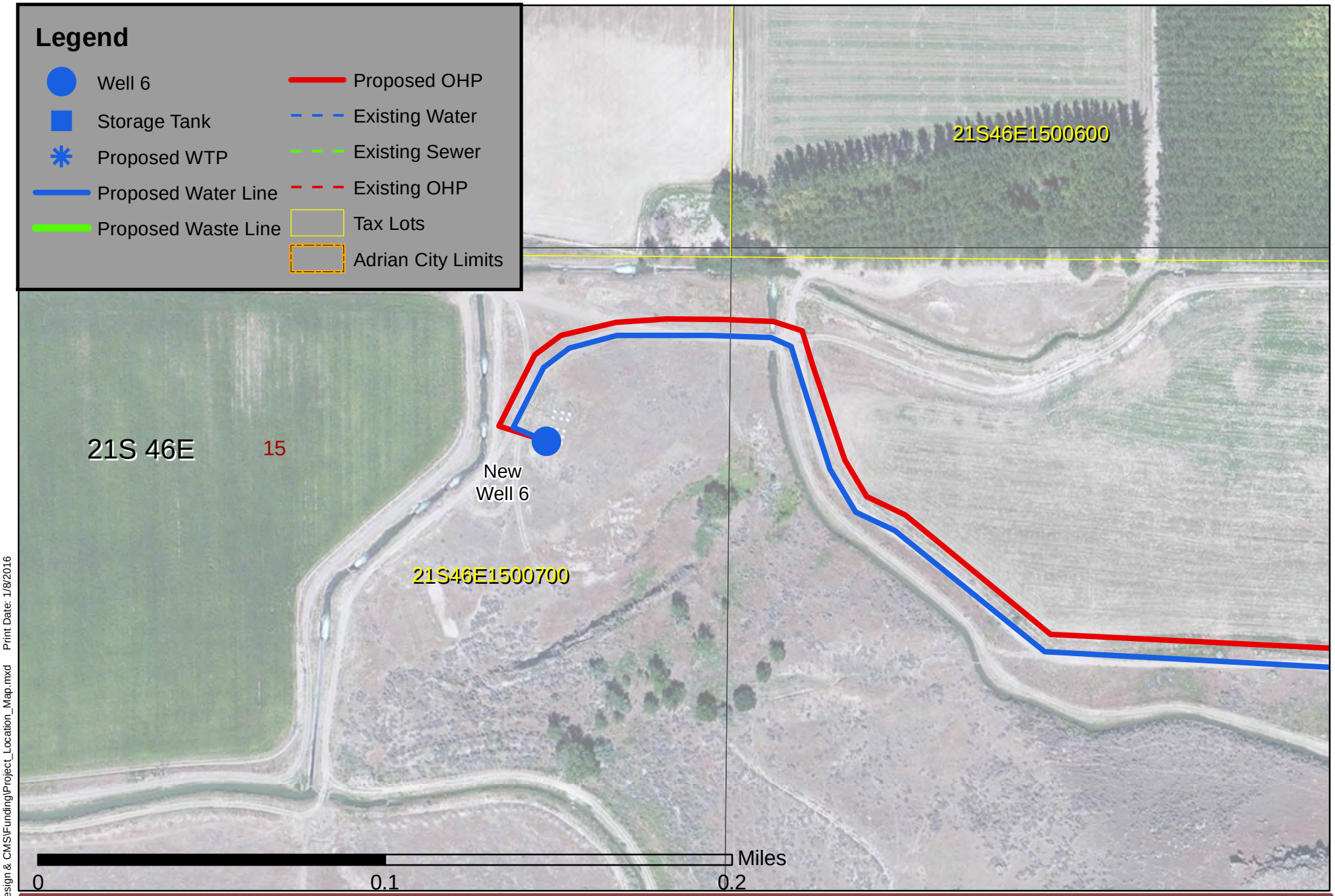
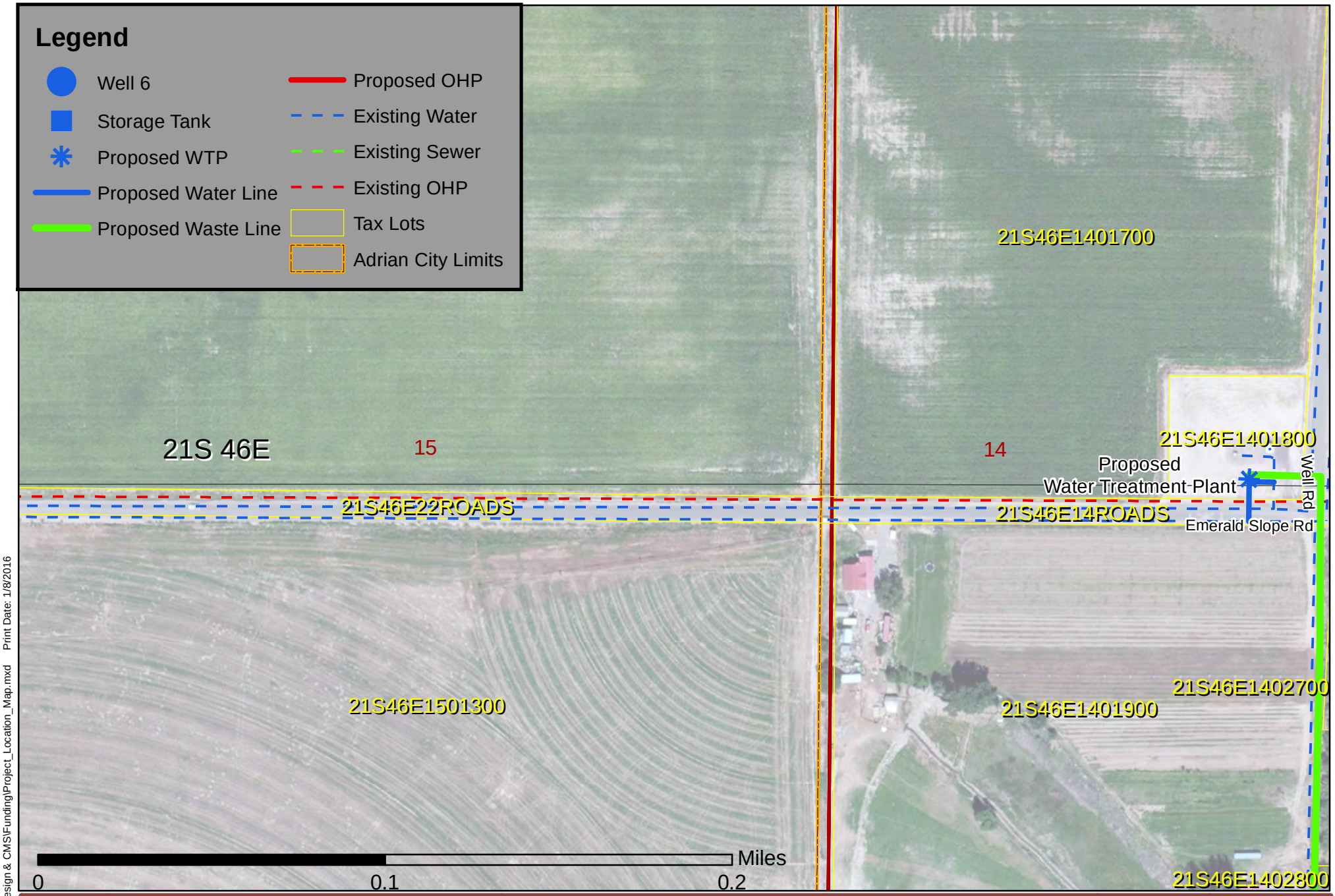


Figure:	Title:	Project :	Prepared for:	
2	Project Location Map Well 6 Area	ADRIAN WATER SYSTEM IMPROVEMENTS	CITY of ADRIAN, OREGON	KELLER associates

Path: P:\213013\003 - Design & CMS\Funding\Project_Location_Map.mxd Print Date: 1/8/2016



Path: P:\213013\003 - Design & CMS\Funding\Project_Location_Map.mxd Print Date: 1/8/2016

Figure:	Title:	Project :	Prepared for:	
3	Project Location Map WTP Area	ADRIAN WATER SYSTEM IMPROVEMENTS	CITY of ADRIAN, OREGON	KELLER associates

Attachment 4

Correspondence with Karen Quigley at LCIS

From:	Quigley Karen M
To:	Jordan Crane
Cc:	Justin Walker; Quigley Karen M
Subject:	Re: Request of Tribes Affected
Date:	Friday, January 08, 2016 11:34:19 AM

Hello Jordan,
Please touch base with the Burns Paiute:
Diane Teeman dlteeman.burns.paiute@gmail.com and Confederated Tribes of Warm Springs:
Bobby Brunoe Robert.brunoe@ctwsbnr.org and Kathleen Sloan Kathleen.sloan@ctwsbnr.org

Thank you,
Karen
Karen Quigley, Executive Director, LCIS

Sent from my Verizon Wireless 4G LTE DROID

Jordan Crane <jcrane@Kellerassociates.com> wrote:

Karen:

Good morning. I am filling out the Oregon Water Resources Department's "Water Supply Development Account Loan and Grant Application." The application directs me to contact you to identify a list of Tribes that will be affected by our project.

The project is located in Adrian OR, in portions of T21S, R46E, S15 and S14 (see attached map).

I would like to finalize my application by next Thursday (1/14/2016), I would greatly appreciate your assistance in identifying which Tribes are affected by this project. Thank you.

Jordan D. Crane, EI
Project Engineer | **Keller Associates, Inc.**

P 208.288.1992 | C 208.421.1440
131 SW 5th Avenue, Suite A | Meridian | Idaho 83642
jcrane@kellerassociates.com | www.kellerassociates.com

Attachment 5

Project Budget

Attachment 5 - Project Budget

Line Items	Cash Match Funds	OWRD Funds	Total Cost
General Conditions (Mob/Demob, Bonds/Insurance)	$ 5,300	$ 33,950	$ 39,250
Sitework	$ 10,900	$ 29,500	$ 40,400
Site Piping	$ 900	$ 2,700	$ 3,600
Transmission Piping to Well	$ 65,700	$ 187,100	$ 252,800
Treatment Building	$ 17,500	$ 47,500	$ 65,000
Mechanical Piping	$ 9,200	$ 24,900	$ 34,100
Filtration System with Polishing Step	$ 69,900	$ 189,200	$ 259,100
HVAC	$ 3,200	$ 8,800	$ 12,000
Electrical and Power	$ 12,500	$ 34,500	$ 47,000
Instrumentation and Controls	$ 7,100	$ 18,900	$ 26,000
Well Pump, Drop Pipe, and VFD	$ 12,000	$ 34,200	$ 46,200
Total Direct Cost			**$ 825,000**
15% Contractor Markup	$ 10,000	$ 114,000	$ 124,000
Total Estimated Construction Cost			**$ 949,000**
Permitting, Legal, Bidding	$ 1,000	$ 4,000	$ 5,000
20% Contingency and Allowances	$ 10,000	$ 179,800	$ 189,800
Subtotal			**$ 1,143,800**
Engineering	$ 108,000	$ 121,000	$ 229,000
Total Estimated Project Cost	**$ 343,200**	**$ 1,029,600**	**$ 1,372,800**

Attachment 6

Water Right Information

STATE OF OREGON

COUNTY OF MALHEUR

PERMIT TO APPROPRIATE THE PUBLIC WATERS

THIS PERMIT IS HEREBY ISSUED TO

CITY OF ADRIAN
PO BOX 226
ADRIAN, OR 97901

The specific limits and conditions of the use are listed below.

APPLICATION FILE NUMBER: G-16386

SOURCE OF WATER: A WELL IN SNAKE RIVER BASIN

PURPOSE OR USE: MUNICIPAL USE

MAXIMUM RATE: 1.0 CUBIC FOOT PER SECOND

PERIOD OF USE: YEAR ROUND

DATE OF PRIORITY: FEBRUARY 10, 2005

WELL LOCATION: SE ¼ NE ¼, SECTION 16, T21S, R46E, W.M.; 2590 FEET SOUTH & 50 FEET WEST FROM NE CORNER, SECTION 16

THE PLACE OF USE IS THE SERVICE AREA OF THE CITY OF ADRIAN.

Measurement, recording and reporting conditions:

A. Before water use may begin under this permit, the water user shall install a meter or other suitable measuring device as approved by the Director. The water user shall maintain the meter or measuring device in good working order, shall keep a complete record of the amount of water used each month and shall submit a report which includes the recorded water use measurements to the Department annually or more frequently as may be required by the Director. Further, the Director may require the water user to report general water use information, including the place and nature of use of water under the permit.

B. The water user shall allow the watermaster access to the meter or measuring device; provided however, where the meter or measuring device is located within a private structure, the watermaster shall request access upon reasonable notice.

STANDARD CONDITIONS

If the number, location, source, or construction of any well deviates from that proposed in the permit application or required by permit conditions, this permit may not be valid.

If substantial interference with a senior water right occurs due to withdrawal of water from any well listed on this permit, then use of water from the well(s) shall be discontinued or reduced and/or the schedule of withdrawal shall be regulated until or unless the Department approves or implements an alternative administrative action to mitigate the interference. The Department encourages junior and senior appropriators to jointly develop plans to mitigate interferences.

The wells shall be constructed in accordance with the General Standards for the Construction and Maintenance of Water Wells in Oregon. The works shall be equipped with a usable access port, and may also include an air line and pressure gauge adequate to determine water level elevation in the well at all times.

Where two or more water users agree among themselves as to the manner of rotation in the use of water and such agreement is placed in writing and filed by such water users with the watermaster, and such rotation system does not infringe upon such prior rights of any water user not a party to such rotation plan, the watermaster shall distribute the water according to such agreement.

Prior to receiving a certificate of water right, the permit holder shall submit the results of a pump test meeting the department's standards, to the Water Resources Department. The Director may require water level or pump test results every ten years thereafter.

Failure to comply with any of the provisions of this permit may result in action including, but not limited to, restrictions on the use, civil penalties, or cancellation of the permit.

This permit is for the beneficial use of water without waste. The water user is advised that new regulations may require the use of best practical technologies or conservation practices to achieve this end.

By law, the land use associated with this water use must be in compliance with statewide land-use goals and any local acknowledged land-use plan.

The use of water shall be limited when it interferes with any prior surface or ground water rights.

The permit holder shall commence and complete the construction of any proposed works within five years from the date of permit issuance. The Department may order and allow an extension of time to complete construction or to perfect a water right beyond five years from the date of permit issuance.

Within one year after complete application of water to the proposed use, the water user shall submit a claim of beneficial use, which includes a map and report, prepared by a Certified Water Rights Examiner (CWRE).

Issued July 20, 2006

E. Timothy Walker

Phillip C. Ward, Director for
Water Resources Department

GSI Water Solutions, Inc.

November 6, 2015

Mr. P. Kelly Starnes
Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem, OR 97301

RE: Application for a Permit Amendment, Permit G-16074 (Application G-16386)

Mr. Starnes:

On behalf of the applicant, City of Adrian (City), please find enclosed an Application for a Permit Amendment involving one water use permit held by the City: Permit G-16074 (Application G-16386). Please also find enclosed a check in the amount of $1,350 for payment of the application filing fee.

The application requests one change for the water use permit, being a change in the point of appropriation from Well 5 (MALH 52787) to Well 6 (MALH 54147).

If you have any questions regarding the enclosed application, you can reach me at (503) 239-8799, ext 106. Please copy me on any correspondence regarding this application.

Sincerely,

Theodore R. Ressler, RG, CWRE
GSI Water Solutions, Inc.

Enclosures: Application for a Permit Amendment
Check in the amount of $1,350

CC: Shawn Snyder – City of Adrian
Justin Walker – Keller Associates, Inc.
Walter Burt – GSI Water Solutions, Inc.

GSI Water Solutions, Inc.

55 SW Yamhill Street, Suite 300 Portland, OR 97204
P: 503.239.8799 F:503.239.8940
info@gsiws.com www.gsiws.com

KEYBANK N.A.
Portland, OR 97204
24-201/1230

017672

DATE

November 6, 2015

PAY One Thousand Three Hundred Fifty and 00/100 Dollars

AMOUNT

1,350.00

TO THE ORDER OF
Oregon Water Resources Department
725 Summer St NE, Suite A
Salem, OR 97301-1271

VOID AFTER 90 DAYS

⑈017672⑈ ⑆123002011⑆ 3704410084 60⑈

GSI WATER SOLUTIONS, INC. Check Date: 11/6/2015 017672

Invoice Number	Date	Voucher	Amount	Discounts	Previous Pay	Net Amount
G-16074 Amendment	11/6/2015	0009439	1,350.00			1,350.00
Oregon Water Resources Department		TOTAL	1,350.00			1,350.00
Key Bank 8460 - GSI Water 1		245				

State of Oregon
Water Resources Department
725 Summer Street NE, Suite A
Salem, Oregon 97301-1266
(503) 986-0900

Application for Permit Amendment

Part 1 of 5 – Minimum Requirements Checklist

This permit amendment application will be returned if Parts 1 through 5 and all required attachments are not completed and included.
For questions, please call (503) 986-0900, and ask for Transfer Section.

Check all items included with this application. (N/A = Not Applicable)

☒ Part 1 – Completed Minimum Requirements Checklist.

☒ Part 2 – Completed Application Map Checklist.

☒ Part 3 – Application Fee, payable by check to the Oregon Water Resources Department, and completed Fee Worksheet, page 3. Try the new online fee calculator at: http://apps.wrd.state.or.us/apps/misc/wrd_fee_calculator. If you have questions, call Customer Service at (503) 986-0801.

☒ Part 4 – Completed Applicant Information and Signature.

☒ Part 5 – Information about Permits to be Amended: **Number of permits to be amended: 1 List them here: G-16074**
Please include a separate Part 5 for each permit. (See instructions on page 6)

☒ Completed Permit Amendment Application Map (Does not have to be prepared by a Certified Water Right Examiner). **See Attachment B**

☐ ☒ N/A Request for Assignment Form and statutory fee. The request for assignment form has to be completed if the applicant is **not** the permit holder of record and needs to be assigned to the permit; **or** the landowner of the proposed place of use is **not** the permit holder of record and needs to be assigned to the permit (the Request for Assignment Form is available online at http://www.oregon.gov/owrd/pubs/docs/forms/req_assign_8_21_09.pdf). Assignment is not needed if the applicant is the permit holder of record.

☐ ☒ N/A Affidavit(s) of Consent are required from all permit holder(s) of record if the permit is not assigned to the applicant, **or** other permit holders of record that are not listed as applicants.

☒ ☐ N/A Land Use Information Form with approval and signature (or signed land use form receipt stub). Land use form is not required if any of the following apply: **See Attachment C**

- ☐ Water is to be diverted, conveyed, and/or used only on federal lands.
- ☐ All of the following apply: a) a change in place of use only, b) no structural changes, c) the use of water is for irrigation only, and d) the use is located within an irrigation district or an exclusive farm use zone.
- ☐ The proposed changes are all located on the property reviewed in Land Use form enclosed in Water Right Application Folder # _____.

☒ ☐ N/A Water Well Report/Well Log for changes in point(s) of appropriation (well(s)) or additional point(s) of appropriation. **See Attachment D**

(For Staff Use Only)

WE ARE RETURNING YOUR APPLICATION FOR THE FOLLOWING REASON(S):

___ Application fee not enclosed/insufficient ___ Map not included or incomplete
___ Land Use Form not enclosed or incomplete ___ Assignment Form and fee not enclosed/insufficient
___ Additional signature(s) required Part _____ is incomplete

Other/Explanation _____

Staff: _____503-986-0___ Date: _____/_____/_____

Your permit amendment application <u>will be returned</u> if any of the map requirements listed below are not met.

Please be sure that the map you submit includes all the items listed below and meets the requirements of OAR 690-380-3100, however, the map does <u>not</u> have to be prepared by a Certified Water Right Examiner. Check all boxes that apply.

☐ ☒ N/A If **more than three** permits are involved, separate maps for each permit.

☒ Permanent quality printed with dark ink on good quality paper.

☒ The size of the map can be 8½ x 11 inches, 8½ x 14 inches, 11 x 17 inches, or up to 30 x 30 inches. For 30 x 30 inch maps, one extra copy is required.

☒ A north arrow, a legend, and scale.

☒ The scale of the map must be: 1 inch = 400 feet, 1 inch = 1,320 feet, the scale of the county assessor map if the scale is not smaller than 1 inch = 1,320 feet, or a scale that has been pre-approved by the Department.

☒ Township, Range, Section, ¼ ¼, DLC, Government Lot, and other recognized public land survey lines.

☒ Tax lot boundaries (property lines) are required. Tax lot numbers are recommended.

☒ Major physical features including rivers and creeks showing direction of flow, lakes and reservoirs, roads, and railroads.

☒ Major water delivery system features from the point(s) of diversion/appropriation such as main pipelines, canals, and ditches.

☒ Existing place of use that includes separate hachuring for each water use permit, priority date, and use including number of acres in each quarter-quarter section, government lot, or in each quarter-quarter section as projected within government lots, donation land claims, or other recognized public land survey subdivisions. If less than the entirety of the permit is being changed, a separate hachuring is needed for the portion of the permit left unchanged.

☐ ☒ N/A If you are proposing a change in place of use, show the proposed place of use with hachuring that includes separate hachuring for each permit, priority date, and use including number of acres in each quarter-quarter section, government lot, or in each quarter-quarter section as projected within government lots, donation land claims, or other recognized public land survey subdivisions.

☒ Existing point(s) of diversion or well(s) with distance and bearing or coordinates from a recognized survey corner. This information can be found in your water use permit.

☒ ☐ N/A If you are proposing a change in point(s) of diversion or well(s), show the proposed location and label it clearly with distance and bearing or coordinates. If GPS coordinates are used, latitude-longitude coordinates may be expressed as either degrees-minutes-seconds with at least one digit after the decimal (example – 42°32’15.5”) or degrees-decimal with five or more digits after the decimal (example – 42.53764°).

FEE WORKSHEET for PERMIT AMENDMENT			
1	Base Fee (includes one type of change to one permit for up to 1 cfs)	*1*	$1,000
2	Types of change proposed: ☐ Place of Use ☒ Point of Diversion/Appropriation Number of above boxes checked = 1 (2a) Subtract 1 from the number in line 2a = 0 (2b) *If only one change, this will be 0* Multiply line 2b by $800 and enter » » » » » » » » » » » » » » »	*2*	$0
3	Number of permits included in Permit Amendment 1 (3a) Subtract 1 from the number in 3a: 0 (3b) *If only one permit this will be 0* Multiply line 3b by $450 and enter » » » » » » » » » » » » » »	*3*	$0
4	Do you propose to add or change a well, or change from a surface water POD to a well? ☐ No: enter 0 » ☒ Yes: enter $350 » » » » » » » » » » » » » » » » » » »	*4*	$350
5	Do you propose to change the place of use? ☒ No: enter 0 on line 5 » » » » » » » » » » » » » » » » » » » ☐ Yes: enter the cfs for the portions of the permits to be amended (see example below*): _____(5a) Subtract 1.0 from the number in 5a above: _____(5b) If 5b is 0, enter 0 on line 5 » » » » » » » » » » » » » » » » » » If 5b is greater than 0, round up to the nearest whole number: _____(5c) and multiply 5c by $300, then enter on line 5 » » » » » » » » »	*5*	$0
6	Add entries on lines 1 through 5 above » » » » » » » » » » Subtotal:	*6*	$1,350
7	Is this permit amendment: ☐ necessary to complete a project funded by the Oregon Watershed Enhancement Board (OWEB) under ORS 541.932? ☐ endorsed in writing by ODFW as a change that will result in a net benefit to fish and wildlife habitat? If one or more boxes is checked, multiply line 6 by 0.5 and enter on line 7 » If no box is applicable, enter 0 on line 7» » » » » » » » » » » » » »	*7*	$0
8	Subtract line 7 from line 6 » » » » » » » » » **Permit Amendment Fee:**	***8***	**$1,350**

*Example for Line 5a calculation to transfer 45.0 acres of Primary Permit S-12345 (total 1.25 cfs for 100 acres) and 45.0 acres of Supplemental Permit S-87654 (1/80 cfs per acre) on the same land:

1. For irrigation calculate cfs for each permit involved as follows:
   a. Divide total authorized cfs by total acres in the permit *(for S-12345, 1.25 cfs ÷100 ac)*; then multiply by the number of acres to be changed to get the application cfs *(x 45 ac= 0.56 cfs)*.
   b. If the water right permit does not list total cfs, but identifies the allowable use as 1/40 or 1/80 of a cfs per acre; multiply number of acres proposed for change by either 0.025 (1/40) or 0.0125 (1/80). *(For S-87654, 45.0 ac x 0.0125 cfs/ac = 0.56 cfs)*
2. Add cfs for the portions of permits on all the land included in the application; however **do not count cfs for supplemental permits on acreage for which you have already calculated the cfs fee for the primary permit on the same land**. The fee should be assessed only once for each "on the ground" acre included in the application. *(In this example, blank 5a would be only 0.56 cfs, since both permits serve the same 45.0 acres. Blank 5b would be 0 and Line 5 would then also become 0).*

Applicant Information

APPLICANT/BUSINESS NAME			PHONE NO.	ADDITIONAL CONTACT NO.
City of Adrian ATTN: Shawn Snyder			(541) 372-2179	
ADDRESS PO Box 226				FAX NO.
CITY Adrian	STATE OR	ZIP 97901	E-MAIL cityofadrian@hotmail.com	
BY PROVIDING AN E-MAIL ADDRESS, CONSENT IS GIVEN TO RECEIVE ALL CORRESPONDENCE FROM THE DEPARTMENT ELECTRONICALLY. COPIES OF THE FINAL ORDER DOCUMENTS WILL ALSO BE MAILED.				

Agent Information – The agent is authorized to represent the applicant in all matters relating to this application.

AGENT/BUSINESS NAME			PHONE NO.	ADDITIONAL CONTACT NO.
GSI Water Solutions, Inc. ATTN: Owen McMurtrey			(541) 753-0745	
ADDRESS 1600 SW Western Blvd., Suite 240				FAX NO.
CITY Corvallis	STATE OR	ZIP 97333	E-MAIL omcmurtrey@gsiws.com	
BY PROVIDING AN E-MAIL ADDRESS, CONSENT IS GIVEN TO RECEIVE ALL CORRESPONDENCE FROM THE DEPARTMENT ELECTRONICALLY. COPIES OF THE FINAL ORDER DOCUMENTS WILL ALSO BE MAILED.				

Explain in your own words what you propose to accomplish with this permit amendment; and why:
The City's existing authorized well on Permit G-16074 (Well 5) is located on property no longer accessible to the City. The City has drilled a new well, Well 6, to replace Well 5 under Permit G-16074.

If you need additional space, continue on a separate piece of paper and attach to the application as "Attachment 1".

☐ Check this box if this project is fully or partially funded by the American Recovery and Reinvestment Act. (Federal stimulus dollars)

Is the applicant the permit holder of record? ☒ Yes ☐ No

If NO, include either:

☐ A completed assignment form (with required statutory assignment fee), assigning all or a portion of the permit to the applicant(s), **OR**

☐ An affidavit of consent from the permit holder(s) of record that gives permission for the applicant to amend the permit.

I understand that prior to Department approval of the permit amendment, I may be required to submit payment to the Department for publication of a notice in a newspaper with general circulation in the area where the permit is located, once per week for two consecutive weeks. If more than one qualifying newspaper is available, I suggest publishing the notice in the following newspaper: Argus Observer.

I (we) affirm that the information contained in this application is true and accurate.

M. Adele Dockter	M. Adele Dockter	09-24-15
Applicant Signature	Print Name (and Title if applicable)	Date
Applicant Signature	Print Name (and Title if applicable)	Date

Check one of the following:

☒ The applicant is responsible for completion of change(s). Notices and correspondence should continue to be sent to the applicant.

☐ The permit holder(s) of record will be responsible for completing the proposed change(s) after the final order is issued. Copies of notices and correspondence should be sent to the permit holder(s) of record.

Check the appropriate box, if applicable:

☐ Check here if any of the permits proposed for amendment are or will be located within or served by an irrigation or other water district.

IRRIGATION DISTRICT NAME	ADDRESS	
CITY	STATE	ZIP

☐ Check here if water for any of the permits supplied under a water service agreement or other contract for stored water with a federal agency or other entity.

ENTITY NAME	ADDRESS	
CITY	STATE	ZIP

To meet State Land Use Consistency Requirements, you must list all local governments (each county, city, municipal corporation, or tribal government) within whose jurisdiction water will be diverted, conveyed or used.

ENTITY NAME **City of Adrian**	ADDRESS **PO Box 226**	
CITY **Adrian**	STATE **OR**	ZIP **97901**

ENTITY NAME **Malheur County**	ADDRESS **251 "B" St. West #12**	
CITY **Vale**	STATE **OR**	ZIP **97918**

PERMIT # G-16074

Table 1. Location of Authorized and Proposed Point(s) of Diversion (POD) or Appropriation (POA)
(Note: If the POD/POA name is not specified in the permit, assign it a name or number here.)

POD/POA Name or Number	Is this POD/POA Authorized by the permit or is it Proposed?	If POA, OWRD Well Log ID# (or Well ID Tag # L-____)	Twp		Rng		Sec	¼ ¼		Tax Lot, DLC or Gov't Lot	Measured Distances (from a recognized survey corner)
Well 5	☒ Authorized ☐ Proposed	**MALH 52787**	**21**	**S**	**46**	**E**	**16**	**SE**	**NE**	**4500**	**2,590 feet South & 50 feet West from the NE corner of Section 16**
Well 6	☐ Authorized ☒ Proposed	**MALH 54147**	**21**	**S**	**46**	**E**	**15**	**NW**	**SW**	**700**	**2,370 feet North and 1,045 feet East from the SW corner of Section 15**
	☐ Authorized ☐ Proposed										
	☐ Authorized ☐ Proposed										

Check all type(s) of change(s) proposed below (change "CODES" are provided in parentheses):

☐ Place of Use (POU)
☒ Point of Appropriation/Well (POA)
☐ Point of Diversion (POD)
☐ Additional Point of Appropriation (APOA)
☐ Additional Point of Diversion (APOD)
☐ Surface water POD to Ground Water POA (SW/GW)

Will all of the proposed changes affect the entire water use permit?

☒ Yes Complete only the proposed ("to" lands) section of Table 2 on the next page. Use the "CODES" listed above to describe the proposed changes.

☐ No Complete all of Table 2 to describe the portion of the permit to be changed.

For a change in place of use: N/A – No change in place of use proposed.

Does the permit holder of record own or control the land TO which the place of use is being moved?
☐ Yes ☐ No

If NO, the landowner of the land TO which the place of use is being **moved must be assigned to the permit as a permit holder of record** by submitting a completed Request for Assignment form and the required statutory fee for an assignment.

Is the proposed place of use contiguous to the authorized place of use? ☐ Yes ☐ No

The permitted place of use can be moved only to lands that are contiguous to the authorized place of use **unless** the change to non-contiguous lands is in furtherance of mitigation or conservation efforts undertaken for the purposes of benefiting a species listed as sensitive, threatened, or endangered under ORS 496.171 to 496.192 or the federal Endangered Species Act of 1973 (16 U.S.C. 1531 to 1544), as determined by the listing agency. Contiguous land being either adjacent land or land separated from the land to which a permit is authorized by roads, utility corridors, irrigation ditches or publicly owned rights of way.

Please use and attach additional pages of Table 2 as needed. See page 6 for instructions.	Do you have questions about how to fill-out the tables? Contact the Department at 503-986-0900 and ask for Transfer Staff.

Table 2. Description of Changes to Water Use Permit # G-16074

List the change proposed for the acreage in each ¼ ¼. If more than one change is proposed, specify the acreage associated with each change.
If there is more than one POD/POA involved in the proposed changes, specify the acreage associated with each POD/POA.

AUTHORIZED (the "from" or "off" lands) The listing that appears on the certificate BEFORE PROPOSED CHANGES List only that part or portion of the water right that will be changed.												Proposed Changes (see "CODES" from previous page)	PROPOSED (the "to" or "on" lands) The listing as it would appear AFTER PROPOSED CHANGES are made.											
Twp	Rng	Sec	¼ ¼		Tax Lot	Gvt Lot or DLC	Acres (if applicable)	POD(s) or POA(s) (name or number from Table 1)	Priority Date				Twp	Rng	Sec	¼ ¼		Tax Lot	Gvt Lot or DLC	Acres (if applicable)	POD(s) or POA(s) to be used (from Table 1)	Priority Date	
EXAMPLE																								
2	**S**	**9**	**E**	**15**	**NE**	**NW**	**100**		**15.0**	**POD #1 POD #2**		**POU/POD**	**2**	**S**	**9**	**E**	**15**	**NW**	**NW**	**100**	**1**	**10.0**	**POD #5**	
"	**"**	**"**	**"**	**"**	**"**	**"**	**"**	**"**	**EXAMPLE**	**"**		**"**	**2**	**S**	**9**	**E**	**15**	**SW**	**NW**	**200**		**5.0**	**POD #6**	
												POA	**Service Area of the City of Adrian**										**Well 6**	**2/10/2005**
TOTAL ACRES													TOTAL ACRES											

Additional remarks: **The place of use listed on the permit is "Service Area of the City of Adrian." No change in the place of use is proposed.**

Are there other water rights certificates, water use permits or ground water registrations associated with the "from" or "to" lands? ☐ Yes ☐ No

If YES, list the other certificate, permit, or ground water registration numbers: **N/A – This permit is for municipal use.**

If the permit(s) are for irrigation or supplemental irrigation use, other water rights existing on the same land for irrigation that are subject to transfer must either change concurrently or be cancelled. Any change to a water right certificate or ground water registration must be filed separately in a water right transfer application or ground water registration modification application, respectively.

For a change in point(s) of appropriation (well(s)) or additional point(s) of appropriation:

☒ Well log(s) are attached for each authorized and proposed well(s) that are clearly labeled and associated with the corresponding well(s) in Table 1 above and on the accompanying application map. (**Tip**: You may search for well logs on the Department's web page at: http://apps2.wrd.state.or.us/apps/gw/well_log/Default.aspx)

AND/OR

☐ Describe the construction of the authorized and proposed well(s) in Table 3 for any wells that do not have a well log. For *proposed wells not yet constructed or built*, provide "a best estimate" for each requested information element in the table. The Department recommends you consult a licensed well driller, geologist, or certified water right examiner to assist with assembling the information necessary to complete Table 3.

Table 3. Construction of Point(s) of Appropriation

Any well(s) in this listing must be clearly tied to corresponding well(s) described in Table 1 and shown on the accompanying application map. Failure to provide the information will delay the processing of your transfer application until it is received. The information is necessary for the department to assess whether the proposed well(s) will access the same source aquifer as the authorized point(s) of appropriation (POA). The Department is prohibited by law from approving POA changes that do not access the same source aquifer.

Proposed or Authorized POA Name or Number	Is well already built? (Yes or No)	If an existing well, OWRD Well ID Tag No. L-____	Total well depth	Casing Diameter	Casing Intervals (feet)	Seal depth(s) (intervals)	Perforated or screened intervals (in feet)	Static water level of completed well (in feet)	Source aquifer (sand, gravel, basalt, etc.)	Well - specific rate (cfs or gpm). If less than full rate of water right

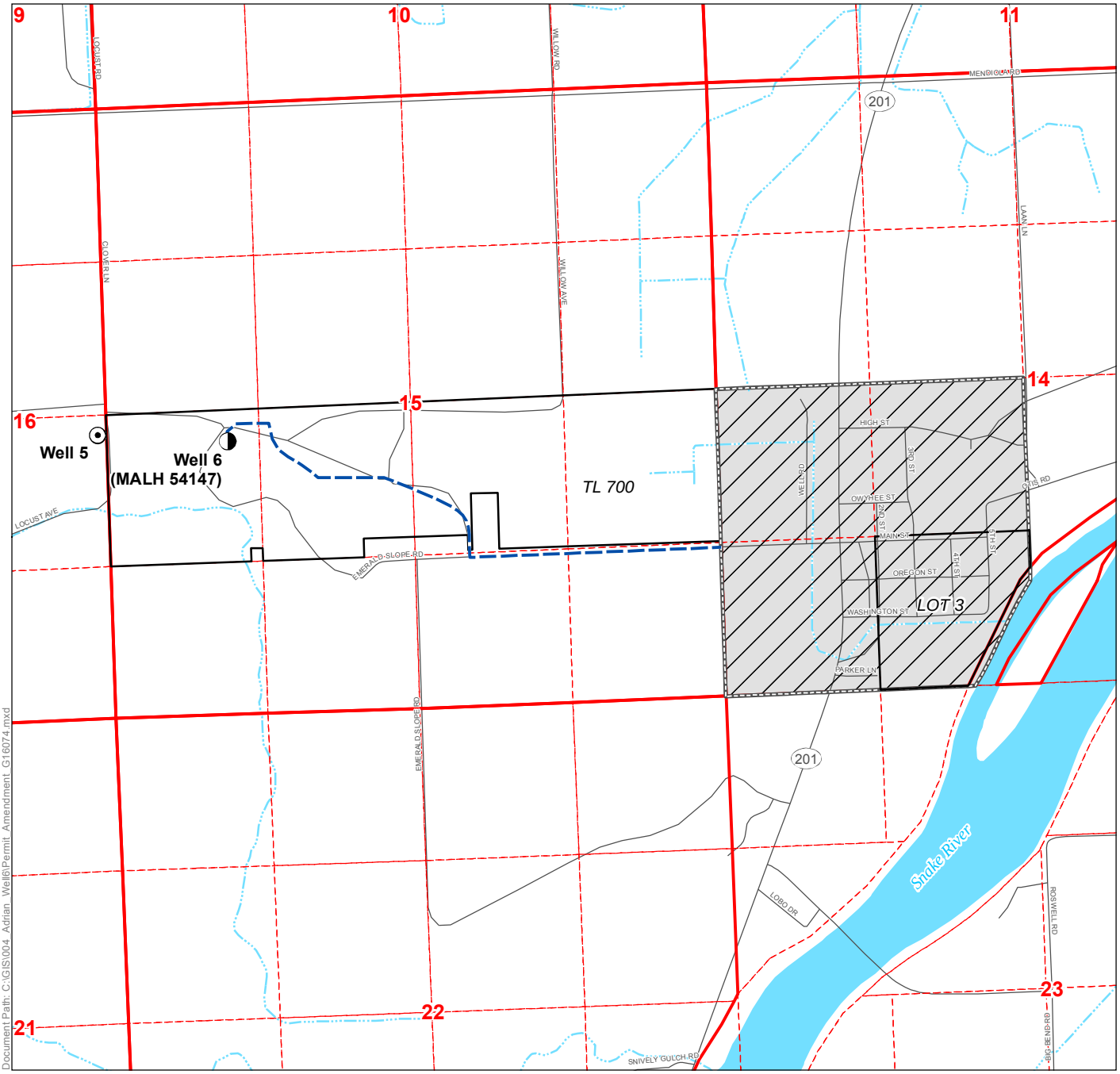
Attachment A

Permit Amendment Application Maps

Permit Amendment Application – City of Adrian

Application for a Permit Amendment
A Water Right in the Name of City of Adrian

Permit G-16074, Application G-16386
Township 21 South, Range 46 East (W.M.)
County of Malheur



LEGEND

- Proposed Point of Appropriation (POA)
- Authorized POA
- Authorized Place of Use (POU)
- City of Adrian City Limits
- Tax Lots and Government Lots
- Water Conveyance Pipeline
- Roads
- Watercourses
- Waterbodies

DISCLAIMER

This map was prepared for the purpose of identifying the location of a water right only and it is not intended to provide legal dimensions or location of property ownership lines.

MAP NOTES

Date: July 9, 2015
Data Sources: OWRD, ORMAP, OGIC, USGS, US BLM, ESRI
Prepared By: GSI Water Solutions, Inc.

POA LOCATION DESCRIPTIONS

Well 5
Located 2,590 feet South and 50 feet West from the NE corner of Section 16, Township 21 South, Range 46 East (W.M.)
Well 6 (MALH 54147)
Located 2,370 feet North and 1,045 feet East from the SW corner of Section 15, Township 21 South, Range 46 East (W.M.)

N

0 660 1,320
1 inch = 660 feet

GSI Water Solutions, Inc.

Attachment B

Permit G-16074

Permit Amendment Application – City of Adrian

Oregon Water Resources Department
Water Right Services Division

Water Rights Application
Number G-16386

Final Order
Extension of Time for Permit Number G-16074
Permit Holder: City of Adrian

Permit Information
Application File G-16386/ Permit G-16074
Basin 11 – Owyhee Basin / Watermaster District 9
Date of Priority: February 10, 2005

Authorized Use of Water

Source of Water:	One well within the Snake River Basin
Purpose or Use:	Municipal
Maximum Rate:	1.0 cubic feet per second (cfs)

This Extension of Time request is being processed in accordance with Oregon Revised Statute 537.630 and 539.010(5), and Oregon Administrative Rule Chapter 690, Division 315

Appeal Rights
This final order is subject to judicial review by the Court of Appeals under ORS 183.482. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.482(1). Pursuant to ORS 536.075 and OAR 137-003-0675, you may petition for judicial review or petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

Application History
Permit G-16074 was issued by the Department on July 20, 2006. The permit called for completion of construction by July 20, 2011, and complete application of water to beneficial use by July 20, 2011. On July 10, 2013, the City of Adrian submitted an application to the Department for an extension of time for Permit G-16074. In accordance with OAR 690-315-0050(2), on May 12, 2015, the Department issued a Proposed Final Order proposing to extend the time to complete construction to October 1, 2059 and to extend the time to fully apply

water to beneficial use to October 1, 2059. The protest period closed June 26, 2015, in accordance with OAR 690-315-0060(1). No protest was filed.

FINDINGS OF FACT

The Department adopts and incorporates by reference the findings of fact in the Proposed Final Order dated May 12, 2015.

At time of issuance of the Proposed Final Order the Department concluded that, based on the factors demonstrated by the applicant, the permit may be extended subject to the following conditions:

CONDITIONS

1. **Development Limitations**

   No appropriation of water is currently allowed under this permit. Appropriation of any water up to 1.0 cfs under Permit G-16074 shall only be authorized upon issuance of a final order approving a Water Management and Conservation Plan (WMCP) under OAR Chapter 690, Division 86 that authorizes access to a greater rate of appropriation of water under the permit consistent with OAR 690-086-0130(7). The required WMCP shall be submitted to the Department within 3 years of this Final Order. The amount of water used under Permit G-16074 must be consistent with this and subsequent WMCP's approved under OAR Chapter 690, Division 86 on file with the Department.

   The deadline established in this Extension Final Order for submittal of a WMCP shall not relieve a permit holder of any existing or future requirement for submittal of a WMCP at an earlier date as established through other orders of the Department. A WMCP submitted to meet the requirements of this final order may also meet the WMCP submittal requirements of other Department orders.

CONCLUSION OF LAW

The applicant has demonstrated good cause for the permit extension pursuant to ORS 537.630, 539.010(5) and OAR 690-315-0080(3).

ORDER

The extension of time for Application G-16386, Permit G-16074, therefore, is approved subject to conditions contained herein. The deadline for completing construction is extended from July 20, 2011 to October 1, 2059. The deadline for applying water to full beneficial use within the terms and conditions of the permit is extended from July 20, 2011 to October 1, 2059.

DATED: July 2, 2015

Dwight French
Water Right Services Division Administrator, for
Thomas M. Byler, Director
Oregon Water Resources Department

If you have any questions about statements contained in this document, please contact Machelle Bamberger at (503) 986-0802.

If you have other questions about the Department or any of its programs, please contact our Water Resources Customer Service Group at (503) 986-0900.

STATE OF OREGON

COUNTY OF MALHEUR

PERMIT TO APPROPRIATE THE PUBLIC WATERS

THIS PERMIT IS HEREBY ISSUED TO

CITY OF ADRIAN
PO BOX 226
ADRIAN, OR 97901

The specific limits and conditions of the use are listed below.

APPLICATION FILE NUMBER: G-16386

SOURCE OF WATER: A WELL IN SNAKE RIVER BASIN

PURPOSE OR USE: MUNICIPAL USE

MAXIMUM RATE: 1.0 CUBIC FOOT PER SECOND

PERIOD OF USE: YEAR ROUND

DATE OF PRIORITY: FEBRUARY 10, 2005

WELL LOCATION: SE ¼ NE ¼, SECTION 16, T21S, R46E, W.M.; 2590 FEET SOUTH & 50 FEET WEST FROM NE CORNER, SECTION 16

THE PLACE OF USE IS THE SERVICE AREA OF THE CITY OF ADRIAN.

Measurement, recording and reporting conditions:

A. Before water use may begin under this permit, the water user shall install a meter or other suitable measuring device as approved by the Director. The water user shall maintain the meter or measuring device in good working order, shall keep a complete record of the amount of water used each month and shall submit a report which includes the recorded water use measurements to the Department annually or more frequently as may be required by the Director. Further, the Director may require the water user to report general water use information, including the place and nature of use of water under the permit.

B. The water user shall allow the watermaster access to the meter or measuring device; provided however, where the meter or measuring device is located within a private structure, the watermaster shall request access upon reasonable notice.

STANDARD CONDITIONS

If the number, location, source, or construction of any well deviates from that proposed in the permit application or required by permit conditions, this permit may not be valid.

If substantial interference with a senior water right occurs due to withdrawal of water from any well listed on this permit, then use of water from the well(s) shall be discontinued or reduced and/or the schedule of withdrawal shall be regulated until or unless the Department approves or implements an alternative administrative action to mitigate the interference. The Department encourages junior and senior appropriators to jointly develop plans to mitigate interferences.

The wells shall be constructed in accordance with the General Standards for the Construction and Maintenance of Water Wells in Oregon. The works shall be equipped with a usable access port, and may also include an air line and pressure gauge adequate to determine water level elevation in the well at all times.

Where two or more water users agree among themselves as to the manner of rotation in the use of water and such agreement is placed in writing and filed by such water users with the watermaster, and such rotation system does not infringe upon such prior rights of any water user not a party to such rotation plan, the watermaster shall distribute the water according to such agreement.

Prior to receiving a certificate of water right, the permit holder shall submit the results of a pump test meeting the department's standards, to the Water Resources Department. The Director may require water level or pump test results every ten years thereafter.

Failure to comply with any of the provisions of this permit may result in action including, but not limited to, restrictions on the use, civil penalties, or cancellation of the permit.

This permit is for the beneficial use of water without waste. The water user is advised that new regulations may require the use of best practical technologies or conservation practices to achieve this end.

By law, the land use associated with this water use must be in compliance with statewide land-use goals and any local acknowledged land-use plan.

The use of water shall be limited when it interferes with any prior surface or ground water rights.

The permit holder shall commence and complete the construction of any proposed works within five years from the date of permit issuance. The Department may order and allow an extension of time to complete construction or to perfect a water right beyond five years from the date of permit issuance.

Within one year after complete application of water to the proposed use, the water user shall submit a claim of beneficial use, which includes a map and report, prepared by a Certified Water Rights Examiner (CWRE).

Issued July 20, 2006

E. Timothy Walker

Phillip C. Ward, Director for
Water Resources Department

Attachment C

Land Use Information Forms

Permit Amendment Application – City of Adrian

Land Use Information Form

Oregon Water Resources Department
725 Summer Street NE, Suite A

Salem, Oregon 97301-1266

Applicant: City of Adrian ATTN: Shawn Snyder _____
First Last

Mailing Address: PO Box 226

Adrian OR 97901 Daytime Phone: (541) 372-2179
City State Zip

A. Land and Location

Please include the following information for all tax lots where water will be diverted (taken from its source), conveyed (transported), and/or used or developed. Applicants for municipal use, or irrigation uses within irrigation districts may substitute existing and proposed service-area boundaries for the tax-lot information requested below.

Township	Range	Section	¼ ¼	Tax Lot #	Plan Designation (e.g., Rural Residential/RR-5)	Water to be	Proposed Land Use
Service Area of the City of Adrian						☐ Diverted ☒ Conveyed ☒ Used	No Change
21 S	46 E	15	NW SW	700	EF	☒ Diverted ☒ Conveyed ☐ Used	No Change
21 S	46 E	15	NW SW NE SW NW SE NE SE	700	EF	☐ Diverted ☒ Conveyed ☐ Used	No Change

List all counties and cities where water is proposed to be diverted, conveyed, and/or used or developed:

City of Adrian, OR
County of Malheur, OR

B. Description of Proposed Use

Type of application to be filed with the Water Resources Department:

☐ Permit to Use or Store Water ☐ Water Right Transfer ☒ Permit Amendment or Ground Water Registration Modification
☐ Limited Water Use License ☐ Allocation of Conserved Water ☐ Exchange of Water

Source of water: ☐ Reservoir/Pond ☒ Ground Water ☐ Surface Water (name) _____

Estimated quantity of water needed: 1.0 ☒ cubic feet per second ☐ gallons per minute ☐ acre-feet

Intended use of water: ☐ Irrigation ☐ Commercial ☐ Industrial ☐ Domestic for _____ household(s)
☒ Municipal ☐ Quasi-Municipal ☐ Instream ☐ Other _____

Briefly describe:

The City proposes to change the point of appropriation from its existing well, Well 5, to Well 6 (see attached map)

Note to applicant: If the Land Use Information Form cannot be completed while you wait, please have a local government representative sign the receipt at the bottom of the next page and include it with the application filed with the Water Resources Department.

See bottom of Page 3. →

For Local Government Use Only

The following section must be completed by a planning official from each county and city listed unless the project will be located entirely within the city limits. In that case, only the city planning agency must complete this form. This deals only with the local land-use plan. Do not include approval for activities such as building or grading permits.

Please check the appropriate box below and provide the requested information

☒ Land uses to be served by the proposed water uses (including proposed construction) are allowed outright or are not regulated by your comprehensive plan. Cite applicable ordinance section(s): ____. Title 6 ch 6-5A-2-5

☐ Land uses to be served by the proposed water uses (including proposed construction) involve discretionary land-use approvals as listed in the table below. (Please attach documentation of applicable land-use approvals which have already been obtained. Record of Action/land-use decision and accompanying findings are sufficient.) **If approvals have been obtained but all appeal periods have not ended, check "Being pursued."**

Type of Land-Use Approval Needed (e.g., plan amendments, rezones, conditional-use permits, etc.)	Cite Most Significant, Applicable Plan Policies & Ordinance Section References	Land-Use Approval	
		☐ Obtained ☐ Denied	☐ Being Pursued ☐ Not Being Pursued
		☐ Obtained ☐ Denied	☐ Being Pursued ☐ Not Being Pursued
		☐ Obtained ☐ Denied	☐ Being Pursued ☐ Not Being Pursued
		☐ Obtained ☐ Denied	☐ Being Pursued ☐ Not Being Pursued
		☐ Obtained ☐ Denied	☐ Being Pursued ☐ Not Being Pursued

Local governments are invited to express special land-use concerns or make recommendations to the Water Resources Department regarding this proposed use of water below, or on a separate sheet.

Name: ____ Title: ____ W. ALVIN Scott PLANNING Director

Signature: W. Alvin Scott 541-473-5185 Phone: ____ Date: NOV 3, 2015

Government Entity: ____ PLANNING Department

Note to local government representative: Please complete this form or sign the receipt below and return it to the applicant. If you sign the receipt, you will have 30 days from the Water Resources Department's notice date to return the completed Land Use Information Form or WRD may presume the land use associated with the proposed use of water is compatible with local comprehensive plans.

Receipt for Request for Land Use Information

Applicant name: _____

City or County: _____ Staff contact: _____

Signature: _____ Phone: _____ Date: _____

Attachment D

Well logs for MALH 52787 and MALH 54147

Permit Amendment Application – City of Adrian

RECEIVED MALH 52787

NOV 16 2005

WATER RESOURCES DEPT
SALEM, OREGON

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

Instructions for completing this report are on the back of this form.

WELL I.D. # L 66040

START CARD # 172219

(1) LAND OWNER Well Number

Name CITY OF ADRIAN
Address P.O. BOX 226
City ADRIAN State OR Zip 97901

(2) TYPE OF WORK ☒ New Well
☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment ☐ Conversion

(3) DRILL METHOD
☐ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger ☐ Cable Mud
☒ Other REVERSE

(4) PROPOSED USE
☐ Domestic ☒ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☐ Other

(5) BORE HOLE CONSTRUCTION Special Construction: ☐ Yes ☒ No
Depth of Completed Well 225 ft.
Explosives used: ☐ Yes ☒ No Type Amount

BORE HOLE Diameter	From	To	SEAL Material	From	To	Sacks or Pounds
18	0	225	BENTONITE	0	15	3200#
			CEMENT	15	155	9 yrds

How was seal placed: Method ☐ A ☐ B ☒ C ☐ D ☐ E
☐ Other
Backfill placed from ft. to ft. Material
Gravel placed from 155 ft. to 190 ft. Size of gravel #8-12 SAND
190 225 #10-20 SAND

(6) CASING/LINER

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	8	+2	165	.322	☒	☐	☒	☐
	8	215	225	.322	☒	☐	☒	☐
Liner:					☐	☐	☐	☐

Drive Shoe used ☐ Inside ☐ Outside ☒ None
Final location of shoe(s) N/A

(7) PERFORATIONS/SCREENS
☐ Perforations Method
☒ Screens Type WIRE WRAP Material S.S.

From	To	Slot Size	Number	Diameter	Tele/pipe size	Casing	Liner
165	190	.030		8		☒	☐
190	215	.030		8		☒	☐

(8) WELL TESTS: Minimum testing time is 1 hour
☒ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
150 gpm	32	188	4 hrs

Temperature of water 61 Depth Artesian Flow Found
Was a water analysis done? ☐ Yes By whom
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other
Depth of strata:

(9) LOCATION OF WELL (legal description)
County MALHEUR
Tax Lot DONATED TO CITY 450 Lot
Township 21 N or S Range 46 E or W WM
Section 16 NE 1/4 SE 1/4

Lat ___°___'___" or ____.____ (degrees or decimal)
Long ___°___'___" or ____.____ (degrees or decimal)

Street Address of Well (or nearest address) 1/2 MILE SOUTH ON CLOVER LANE OFF MENDIOLA

(10) STATIC WATER LEVEL
135'8" ft. below land surface. Date 10/18/05
ft. below land surface. Date
Artesian pressure lb. per square inch Date

(11) WATER BEARING ZONES
Depth at which water was first found 135'

From	To	Estimated Flow Rate	SWL
ALL SAND + GRAVELS BELOW 135'			

(12) WELL LOG Ground Elevation

Material	From	To	SWL
TOP SOIL	0	3	
HARD CLAY	3	14	
SAND, SM GRAVEL	14	32	
FINE-COARSE SAND	32	109	
FINE-COARSE SAND, PEA GRAVEL	109	141	
BROWN CLAY	141	153	
BRN CLAY, FINE SAND	153	161	
SAND, GRAVEL	161	180	
FINE SAND, SOFT SANDSTONE	180	183	
FINE-COARSE SAND, PEA GRAVEL	183	221	
BLUE SAND, SANDSTONE	221	225	

Date Started 9-26-05 Completed 10-20-05

(unbonded) Water Well Constructor Certification
I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

WWC Number 1673 Date 11-09-05
Signed [signature]

(bonded) Water Well Constructor Certification
I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

WWC Number 1500 Date 11-09-05
Signed [signature]

MALH 54147

MAIH 54147

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765 & OAR 690-205-0210)

WELL LABEL # L 85263

START CARD # 1023167

(1) LAND OWNER

Owner Well I.D. _____

First Name _____ Last Name _____

Company City of Adrian

Address P.O. Box 226

City Adrian State OR Zip 97901

(2) TYPE OF WORK

[X] New Well [ ] Deepening [ ] Conversion
[ ] Alteration (repair/recondition) [ ] Abandonment

(3) DRILL METHOD

[ ] Rotary Air [ ] Rotary Mud [ ] Cable [ ] Auger [ ] Cable Mud
[X] Reverse Rotary [ ] Other _____

(4) PROPOSED USE

[ ] Domestic [ ] Irrigation [X] Community
[ ] Industrial/ Commericial [ ] Livestock [ ] Dewatering
[ ] Thermal [ ] Injection [ ] Other _____

(5) BORE HOLE CONSTRUCTION

Special Standard [ ] (Attach copy)

Depth of Completed Well 250 ft.

BORE HOLE Dia	From	To	SEAL Material	From	To	Amt	sacks/ lbs
20	0	250	Cement	0	190	20	yards

How was seal placed: Method [ ] A [ ] B [X] C [ ] D [ ] E
[ ] Other _____

Backfill placed from 190 ft. to 195 ft. Material Bentonite

Filter pack from 195 ft. to 250 ft. Material Sand Size 8/12

Explosives used: [ ] Yes Type _____ Amount _____

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
(•)	( )	12	[X]	2	207	.375	(•)	( )	[X]	[ ]
(•)	( )	12	[ ]	247	250	.375	(•)	( )	[X]	[ ]
( )	( )		[ ]				( )	( )	[ ]	[ ]
( )	( )		[ ]				( )	( )	[ ]	[ ]
( )	( )		[ ]				( )	( )	[ ]	[ ]

Shoe [ ] Inside [ ] Outside [ ] Other Location of shoe(s) _____

Temp casing [ ] Yes Dia _____ From _____ To _____

(7) PERFORATIONS/SCREENS

Perforations Method _____

Screens Type Wire Wrap Material Stainless Steel

Perf/Screen	Casing/Liner	Screen Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size
Screen	Casing	12	207	237	.035			
Screen	Casing	12	237	247	.025			

(8) WELL TESTS: Minimum testing time is 1 hour

(•) Pump ( ) Bailer ( ) Air ( ) Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
50	9	205	12

Temperature 62 °F Lab analysis [ ] Yes By _____

Water quality concerns? [ ] Yes (describe below)

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County MALHEUR Twp 21 S N/S Range 46 E E/W WM

Sec 15 NW 1/4 of the SW 1/4 Tax Lot 700

Tax Map Number _____ Lot _____

Lat ° ' " or 43.74366 DMS or DD

Long ° ' " or -117.091796 DMS or DD

( ) Street address of well (•) Nearest address

East of Clover Lane 1000'

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Predeepening			[ ]	
Completed Well	07-01-2014		[ ]	151

Flowing Artesian? [ ] Dry Hole? [ ]

WATER BEARING ZONES Depth water was first found 174

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
06-16-2014	150	151	2		[ ]	151
06-17-2014	174	186	10		[ ]	151
06-17-2014	186	200	10		[ ]	151
06-18-2014	207	250	50		[ ]	151

(11) WELL LOG

Ground Elevation _____

Material	From	To
Sandy Loam	0	15
Medium to coarse sand	15	105
Soft sandstone, clay mix	105	115
Soft and hard brown clay	115	150
Coarse sand	150	151
Hard brown clay	151	174
Coarse sand, pea gravel	174	186
Fine sand, sandy clay mix	186	198
Coarse sand, pea gravel	198	200
Brown sandy clay	200	207
Coarse sand, pea gravel	207	235
Pea gravel to 1" rock, coarse sand	235	240
Fine - coarse brown sand	240	250

RECEIVED BY OWRD RECEIVED BY OW

AUG 21 2014 JUL 21 2014

SALEM, OR SALEM, OR

Date Started 06-16-2014 Completed 07-02-2014

(unbonded) Water Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number _____ Date _____

Password : (if filing electronically) _____

Signed _____

(bonded) Water Well Constructor Certification

I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

License Number 1505 Date 07-14-2014

Password : (if filing electronically)

Signed

Contact Info (optional)

ORIGINAL - WATER RESOURCES DEPARTMENT

THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK

Form Version: 0.96

Oregon Water Resources Department
Water Right Services Division

Water Rights Application
Number G-16386

Final Order
Extension of Time for Permit Number G-16074
Permit Holder: City of Adrian

Permit Information
Application File G-16386/ Permit G-16074
Basin 11 – Owyhee Basin / Watermaster District 9
Date of Priority: February 10, 2005

Authorized Use of Water

Source of Water:	One well within the Snake River Basin
Purpose or Use:	Municipal
Maximum Rate:	1.0 cubic feet per second (cfs)

This Extension of Time request is being processed in accordance with Oregon Revised Statute 537.630 and 539.010(5), and Oregon Administrative Rule Chapter 690, Division 315

Appeal Rights
This final order is subject to judicial review by the Court of Appeals under ORS 183.482. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.482(1). Pursuant to ORS 536.075 and OAR 137-003-0675, you may petition for judicial review or petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

Application History
Permit G-16074 was issued by the Department on July 20, 2006. The permit called for completion of construction by July 20, 2011, and complete application of water to beneficial use by July 20, 2011. On July 10, 2013, the City of Adrian submitted an application to the Department for an extension of time for Permit G-16074. In accordance with OAR 690-315-0050(2), on May 12, 2015, the Department issued a Proposed Final Order proposing to extend the time to complete construction to October 1, 2059 and to extend the time to fully apply

water to beneficial use to October 1, 2059. The protest period closed June 26, 2015, in accordance with OAR 690-315-0060(1). No protest was filed.

FINDINGS OF FACT

The Department adopts and incorporates by reference the findings of fact in the Proposed Final Order dated May 12, 2015.

At time of issuance of the Proposed Final Order the Department concluded that, based on the factors demonstrated by the applicant, the permit may be extended subject to the following conditions:

CONDITIONS

1. **Development Limitations**

   No appropriation of water is currently allowed under this permit. Appropriation of any water up to 1.0 cfs under Permit G-16074 shall only be authorized upon issuance of a final order approving a Water Management and Conservation Plan (WMCP) under OAR Chapter 690, Division 86 that authorizes access to a greater rate of appropriation of water under the permit consistent with OAR 690-086-0130(7). The required WMCP shall be submitted to the Department within 3 years of this Final Order. The amount of water used under Permit G-16074 must be consistent with this and subsequent WMCP's approved under OAR Chapter 690, Division 86 on file with the Department.

   The deadline established in this Extension Final Order for submittal of a WMCP shall not relieve a permit holder of any existing or future requirement for submittal of a WMCP at an earlier date as established through other orders of the Department. A WMCP submitted to meet the requirements of this final order may also meet the WMCP submittal requirements of other Department orders.

CONCLUSION OF LAW

The applicant has demonstrated good cause for the permit extension pursuant to ORS 537.630, 539.010(5) and OAR 690-315-0080(3).

ORDER

The extension of time for Application G-16386, Permit G-16074, therefore, is approved subject to conditions contained herein. The deadline for completing construction is extended from July 20, 2011 to October 1, 2059. The deadline for applying water to full beneficial use within the terms and conditions of the permit is extended from July 20, 2011 to October 1, 2059.

DATED: July 2, 2015

Dwight French
Water Right Services Division Administrator, for
Thomas M. Byler, Director
Oregon Water Resources Department

If you have any questions about statements contained in this document, please contact Machelle Bamberger at (503) 986-0802.

If you have other questions about the Department or any of its programs, please contact our Water Resources Customer Service Group at (503) 986-0900.

Attachment 7

Letters of Support

T.L.C. BEAUTY & BARBER

503 First St. Adrian, Or. 97901

Owner

(541) 372-2653

TO WHOM IT MAY CONCERN,

Why do we need a new water system in Adrian? There are many reasons. First the water with the chemicals we have in it now makes it smell so bad that we cannot even drink it. It tastes awful. It has been known to burn up the lawns in the area when we have to over treat it if it does not meet code. It ruins the hot water heaters. We are constantly having issues with our heater I have replaced it 3 times more than what I did when I had another salon that was not in Adrian. I had to replace the whole plumbing system in my building when we had a pipe burst due to the water eating through the pipes. It flooded the building causing damage that was over $10,000.00 to replace. I have the paperwork to provide proof if you need it. I still need to replace fixtures but I am afraid to even touch them until we get a better system.

I own the only Beauty salon in town. We have to be careful with the different chemicals we work with on our clients that come into the salon. We have to do extra steps to make sure that the hair is clean from mineral build up from the water. We also have to be careful of the cleaning products we use. I found out the hard way that muriatic acid in the toilet causes caustic fumes. We can't keep the toilets clean without using it. Our sinks get calcium build up also. When State Board comes in, we are checked for that kind of buildup. We have been warned in the past because of it. Once we turn the water on and they smell the fumes they understand but still give us a warning. We are constantly applying products to help remove the build up.

The water smell and condition is something that people look at when buying homes or businesses. If we don't get a better system we will not be able to grow or sustain the population we currently have.

Tammy Cleaver

TLC Beauty and Barber

503 First St. Adrian, Or. 97901

[Pick the Date]

TO WHOM IT MAY CONCERN;

I OWN THE MIRAGE IN ADRIAN ,AND I LIVE IN TOWN ALSO, GETTING THIS WATER ISSUE COMPLETED WOULD BE VERY HELPFUL TO MAY BUISSINESS, HAVING WATER MY CUSTOMER COULD DRINK WITH OUT US HAVING TO SET WATER OVER NIGHT TO GET THE MINERALS TO SETTLE , AND MAKESS IT TASTE BETTER.

THE MINERALS ARE HAD ON ANY EQUIPMENT THAT USES WATER, DISHWASHERS, ICE MACHINES AND MY STEAM TABLE. SO PLEASE LETS GET THIS PROJECT COMPLETED AS SOON AS POSIBLE.

KATHLEEN LEA

Kathleen Lea

"Expecting Success"

ADRIAN PUBLIC SCHOOLS

School District #61 ♦ PO Box 108 ♦ Adrian, OR 97901 ♦ Fax (541) 372-5380

Superintendent	High School Principal	K-8 Principal
Gene Mills	Kevin Purnell	William Ellsworth
(541) 372-2335	(541) 372-2335	(541) 372-2337

January 11, 2016

To: The Oregon Department of Resources
Subject: City of Adrian, Water Project

Dear Resource Board,

The Adrian School District has a very good working relationship with the City of Adrian. We have supported the city in its many attempts to secure a better source of quality water for our community.

Help completing the current project is needed. The value of a complete working system cannot be over-stated. We are desperate for quality water available at an acceptable quantity. Please do all that you can to help the city complete the water project. There cannot be a more worthy and deserving entity in our state.

The Adrian School District has been up-dated and moved forward significantly in recent years. An improvement in the city's water quality will put us in great shape.

Thank you sincerely,

Gene Mills
Superintendent

CITY OF ADRIAN, OREGON

Water System Improvements

PRELIMINARY ENGINEERING REPORT

Final – December 2015

REGISTERED PROFESSIONAL ENGINEER
84116PE
OREGON
MARCH 9, 2010
ROLAND ROCHA
EXPIRES: 12/31/2016

KELLER associates

213013-003/PER/15-373

PUBLIC HEALTH DIVISION
Drinking Water Services

Kate Brown, Governor

Oregon Health Authority

800 SE Emigrant Ave., Suite 240
Pendleton, OR 97801
(541) 276-8006
FAX (541) 276-4778
www.healthoregon.org/dwp

November 19, 2015

Roland Rocha, P.E.
Keller Associates
131 SW 5th Avenue, Suite A
Meridian, Idaho 83642

Re: Preliminary Engineering Report for City of Adrian, PWS ID: 4100002

Thank you for your submittal of the Preliminary Engineering Report for the City of Adrian's Water System Improvements to the Oregon Health Authority's Drinking Water Services (DWS), which was received on October 15, 2015.

DWS concurs that the recommended alternative be option 3, which would include a polishing filter with NXT-2 media in addition to coagulation/pressure filtration for arsenic and uranium removal. The estimated cost of this option is $1.46 million.

I also have the following comments:

- I note that although sample results indicate nitrate concentrations in water from well 6 are above 9 mg/l but less than the maximum contaminant level (MCL) of 10 mg/l, there are no plans at present to treat the water for nitrate removal. Should nitrate concentrations exceed the MCL in the future, treatment for nitrate removal will likely be required. I recommend taking the possibility of adding another treatment train into consideration in the final design of the treatment facility.
- Section 5.1 #6 states that there have been 8 violations for total coliform in the last 7 years. The city has received 13 violations for total coliform and one violation for *E. coli* in the last five years as shown here: https://yourwater.oregon.gov/violsum.php?pwsno=00002
- The third paragraph on page 13 states that an operator with higher certification would be required once the treatment plant is operating. As Adrian has less than 150 service connections, the current requirement of having a Small Groundwater System Operator would remain the same, although additional training on operation of the plant would be needed.

If you have any questions or need this information in an alternate format please call me at 541-966-0900, or by email at william.h.goss@state.or.us .

Sincerely,

William Goss, P.E.
Regional Engineer

c. File, OHA - Drinking Water Services, Portland
Shawn Snyder, City of Adrian
Shanna Bailey, Infrastructure Finance Authority

ADRIAN, OREGON
WATER SYSTEM IMPROVEMENTS
PRELIMINARY ENGINEERING REPORT

1. Executive Summary

The 2013 Adrian Water Master Plan identified the need for an additional potable water source to continue to provide water to the residents of Adrian. Since the completion of the master plan, the City drilled a new well (Well 6) and found that it has the yield to meet Adrian's projected needs far beyond the next 20 years. The water quality of Well 6, however, is extremely poor. The well site is roughly a mile outside of town and has no pump or ancillary facilities and utilities needed to make the well operational. The City enlisted the help of Keller Associates to address these challenges.

A water treatment pilot test completed by the City and Keller Associates in August 2015 demonstrated coagulation, pressure filtration, and adsorption to be an effective treatment technology to bring Well 6 water up to State and Federal water quality standards.

This preliminary engineering report provides supporting technical details regarding the proposed well pumping facilities, transmission pipeline, and treatment system.

2. Introduction

The City of Adrian has been working to improve their water supply and quality for many years. Most recently, the City commissioned Keller Associates to complete a Water Master Plan, which was finalized in October 2013. The priority improvements recommended in the Water Master Plan included drilling a new well, equipping the well with treatment facilities to meet water quality standards, constructing necessary transmission pipelines to connect the new well to the water system, and equipping the storage tank with a mixing system to improve the water quality. The City of Adrian began implementing these priority improvements by drilling a new well (Well 6) in 2014.

While the production capacity from Well 6 was excellent, the water quality was much worse than anticipated. Water quality samples from Well 6 were taken at various times in 2015 after the well was developed (see Appendix B for testing results). Each of the tests revealed arsenic concentrations seven times higher than the maximum contaminant level (MCL) established by EPA. Such high levels are difficult and expensive to treat.

Moreover, one out of the five tests showed uranium to be at 31.7 micrograms per liter (µg/L), which is over the MCL of 30 µg/L. The remaining four tests showed uranium consistently below 26 µg/L. As with arsenic, uranium is also difficult and expensive to treat. Because uranium is radioactive, disposal of the treatment waste can be one of the most significant difficulties and expenses of the treatment process. The allowable method of disposal depends greatly upon the concentration of the uranium in the treatment waste.

In addition to high levels of arsenic and uranium, the nitrate levels in Well 6 were at 9.5 milligrams per liter (mg/L) and the MCL is 10 mg/L. None of the tests showed nitrates to exceed the MCL, but it is mentioned here specifically because of its relatively high level.

After considering the options, the City council decided to pursue treatment technologies that addressed arsenic and any uranium that my get removed with the arsenic treatment system, but not nitrates due to the high operational costs associated with nitrate removal technologies (reverse osmosis and ion exchange). With groundwater as the source, wide variations in pollutant concentrations are not anticipated; however, gradual changes over time are possible. If nitrate concentrations ever increase to exceed the MCL, additional treatment will be required, which could include a polishing step at the end of the existing treatment train.

The purpose of this preliminary engineering report is to document the water treatment alternatives evaluated to meet federal water quality standards in Well 6, report findings of a pilot test of the alternatives, and identify the recommended alternative to integrate Well 6 into the existing water system.

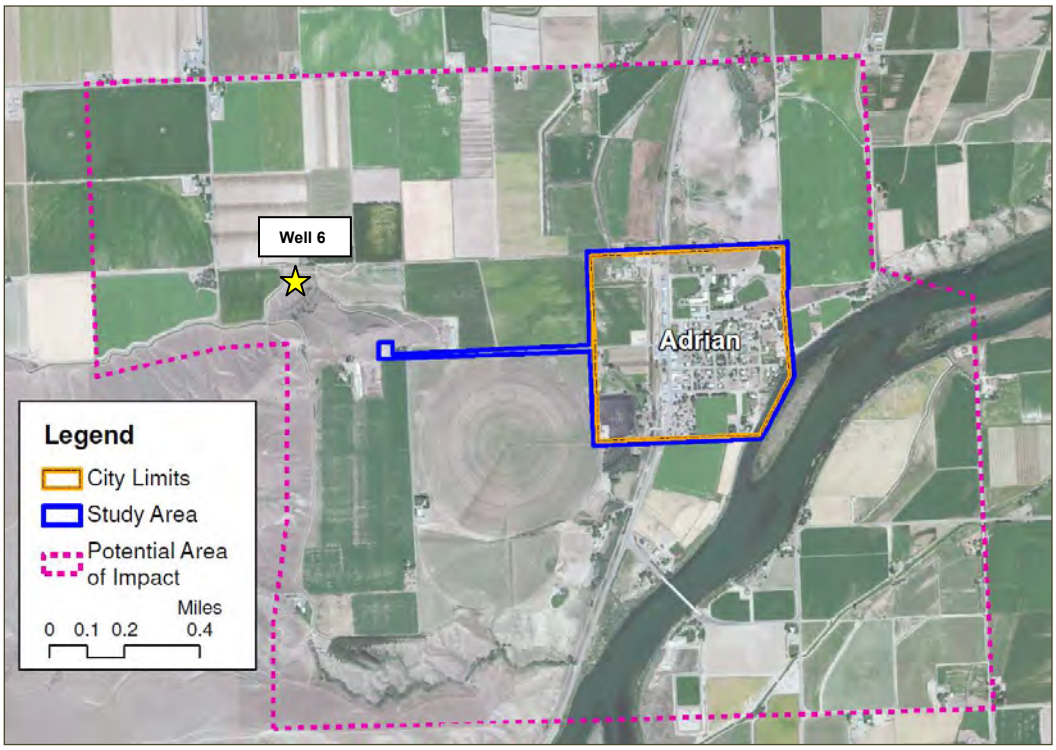
3. Project Planning Area

The project planning area correlates to the region inside the current city limits (illustrated in Figure 3.1 below), along with the new Well 6 site and its access road. The project is adjacent to farmland and commercial lands.

3.1 Study Area Location

The study area includes Malheur County roadways, public rights of way, easements dedicated to the City of Adrian, and waters of the United States. Figure A.1 (Appendix A) shows legal boundaries, key elevations, roads, and other key features in the study area. Figures A.2 and A.3 (Appendix A) are photographs of the area surrounding the well site.

Figure 3.1: Adrian Water Project Area



3.2 Physical Environment

This section provides information on important land resources, historic sites, endangered species/critical habitats, etc. within the project area.

3.2.1 Land Use

a. General Land Use: As shown in Figure A.4 (Appendix A), the proposed water treatment site is currently in a City land use area. The waste line from the treatment plant will be constructed along the border of a residential land use zone, and all other aspects of the project are in an agricultural zone.

b. Prime and Important Farmland, Prime Rangeland, and Prime Forest land: As discussed in the 2013 Water Master Plan, some areas outside of the city limits are zoned Exclusive Farm Use (EFU); however, this project will not affect the use of such lands or restrict property owners' abilities to farm. Easements have already been granted for all EFU land in the project area. There is no prime rangeland or prime forest land in the project area.

c. Formally Classified Lands: There are no formally classified lands within the project area.

3.2.2 Floodplains

Although Adrian is adjacent to the Snake River, the majority of the City is located outside the designated floodplain. Figures A.5 and A.6 (Appendix A) are FEMA flood insurance rate maps for the project area. These figures show that the project does not involve any land within the 100- or 500-year floodplains.

3.2.3 Wetlands

Some designated wetlands exist south of Adrian, but the project area does not include any of these wetlands (see Figure A.7, Appendix A, for a wetlands map).

3.2.4 Cultural Resources

The project improvements will occur in previously-disturbed areas, which include the Well 2/3 site, Well 6 site, and existing access roads to Well 6. This project is not anticipated to impact cultural resources.

3.2.5 Biological Resources

a. Flora and Fauna: As this project will be constructed on land that has existing improvements (roads, well sites), no flora or fauna will be affected by the project.

b. Threatened and Endangered Species: Due to existing improvements in the project area, no threatened or endangered species will be impacted during this project. Species listed in the project location as endangered, threatened, proposed, or candidate species by the U.S. Fish and Wildlife Service (as of 7/24/2015) are listed below:

- Endangered: (None)
- Threatened: (None)
- Proposed: (None)
- Candidate: Greater Sage-grouse

3.2.6 Water Quality

The water quality of the project area is discussed in Section 5 of this report. In summary, the project improvements will improve groundwater quality to comply with Environmental Protection Agency (EPA) standards. No impacts are proposed to surface water.

3.2.7 Water Quantity

The water quantity in the project area is discussed in Section 5 of this report. In summary, the project improvements will increase groundwater supply for the City of Adrian residents.

3.2.8 Coastal Resources

There are no coastal resources in the project area.

3.2.9 Miscellaneous Issues

a. Air Quality: No existing air quality issues have been identified for Adrian, nor are any expected to be created from the project. The finished project will have zero emissions under normal operations. However, in the case of power loss a backup diesel generator will provide power to the treatment building, which will emit exhaust during operation.

b. Transportation: Due to the remote location of the project, it will not have an impact on the transportation of goods or people.

c. Noise: No existing noise restrictions or issues have been identified in Adrian. This project will not create any noise issues.

3.2.10 Environmental Justice

The project will uniformly benefit and meaningfully involve all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

3.3 Socio-Economic Environment

Refer to the 2013 Water Master Plan for all Socio-Economic Environment information relevant to this preliminary engineering report.

3.3.1 Economic Conditions and Trends

Refer to Section 2.8.8 of the 2013 Water Master Plan for more information.

3.3.2 Population Trends and Growth Projection

Refer to Section 2.9 of the 2013 Water Master Plan for more information.

4. Existing Water System Facilities

The City of Adrian currently has three functioning wells, 16,500 feet of water mains, and one storage tank, which service a population of 180 through 104 water connections. For more detailed information, refer to Chapter 3 of the 2013 Water Master Plan.

4.1 Location Map

An overview of the existing water system facilities is shown in Figure A.8 (Appendix A).

4.2 History

Historically, the City of Adrian has depended on the three existing wells shown in Figure A.8 (Appendix A). As discussed in the Water Master Plan, Wells 2 and 3 were constructed in 1978, and Well 4 was constructed in 1982. Well 4 has been the City's primary drinking water source for a number of years. However, all three existing wells have poor water quality, in addition to being insufficient to meet peak water demands. While the water quality problems do not technically violate national primary water standards, they do exceed secondary standards, which leads to very poor taste and odor.

4.3 Condition of Facilities

Wells 2, 3, and 4 were completed with open (not lined or screened) boreholes. All three wells have antiquated control and electrical gear with primitive building enclosures, and they all experience significant drawdown and declining pump capacity when operated for sustained periods. Additionally, Wells 2 and 3 create drawdown conflicts when operated simultaneously, which prevents running both wells at the same time. The City suffers from poor water quality, aging infrastructure, and declining pumping capacity from all three wells. Well 4 pumps significant amounts of sand, which accelerates pump wear and increases maintenance and replacement costs. Currently, water from Well 4 is disinfected with 12.5% liquid chlorine dosed by an injection pump located at the well. The pumping facility's' enclosure is very rudimentary and dilapidated. The theoretic pumping capacities of the existing facilities are summarized in Table 4.1. However, the pumping rate drops by more than half after extended pumping for all three wells. It is assumed that this drop in capacity is due to aquifer drawdown and depletion. The City has struggled to keep up with system demands in recent years because the combined capacity of the wells during the peak demand months drops to 65 gpm. The concern is that this a pattern that will ultimately leave the city without a water supply.

Table 4.1: Water Supply of Existing System

	Pumping Capacity (gpm)[1]
Well 4	100
Well 2 or 3 [2]	30
Total Capacity	<130 (drawdown influence)
Firm Capacity (largest well out of service)	30
Max Day Demand	**66**
Firm Capacity Deficiency	**36**

1. As reported in previous study

2. Well 2 and 3 cannot be operated simultaneously due to drawdown conflicts

The water storage tank was constructed in 1978 and is the only water storage for the City. The approximate useable storage of the tank is 200,000 gallons. However, due to poor circulation in the tank and water quality problems described in previous sections, only half of the storage tank volume can be used during winter months.

The water distribution system consists of approximately 3.1 miles of pipe ranging from 6 to 10 inches in diameter. There are approximately 20 triple-port fire hydrants throughout the city. It was recommended in the 2013 Water Master Plan that the dead-end lines be looped, and that a yearly maintenance and replacement schedule be implemented.

Currently, the City water is in compliance with the Safe Drinking Water Act and all applicable State requirements other than the intermittent bacteria violations.

4.4 Financial Status of any Operating Central Facilities

The rate schedule, annual operating and maintenance cost, recommended user rate, and all other financial data available was discussed in the 2013 Water Master Plan. In summary, historical operating revenue has been sufficient to cover operating expenditures. However, it has not been adequate to fund depreciation and system replacement. In addition, the proposed project improvements will increase operating costs, require more sophisticated operators, and incur debt, which will create an additional loan payment. All of these conditions will require an increase in the monthly user charge to offset these additional operating costs.

5. Basis of Planning

This section will describe why the project is needed, give the regulations that must be met with the project, describe the basis for the cost estimate, and discuss the capacity of the proposed improvements.

5.1 Need for Project

The project need is discussed in full detail in the 2013 Water Master Plan. As a summary, system deficiencies include the following:

1. A declining water table in the existing wells reduces their production capacity below summer water demands.
2. The existing operational wells (2, 3, and 4) are not able to meet the maximum day demands with redundancy.
3. There is insufficient backup power for the water supply.
4. The existing system does not provide mechanical redundancy for fire flows with the largest pump offline.
5. All wells have significant water quality problems that affect taste and odor, and cause disinfection byproducts in the water storage tank. This, in turn, prevents use of the full storage volume.
6. The City has received 13 violations for total coliform and one violation for E. coli in the last 5 years.

5.1.1 Health and Safety

As part of implementing a solution to the water supply deficiencies, the City drilled and developed Well 6. The well has not been equipped with a pump, nor has it been piped to the distribution system. Unfortunately, Well 6's water supply presents potential health and safety concerns if not properly treated prior to serving to the public. Water quality reports (Appendix B) show that water from Well 6 needs to be treated based on federal drinking water standards, as the arsenic concentration exceeded the maximum contaminant levels of 0.010 mg/L, and other constituents (including uranium and nitrates) were near the MCLs. In one test, Uranium was shown to be over the MCL.

5.1.2 System Operation, Maintenance, and Replacement

These elements are discussed in length in Chapters 4 and 6 of the 2013 Water Master Plan. In summary, the proposed project will require more sophisticated and qualified water system operators. Furthermore, the City's current operator desires to retire. Consequently, the City needs to start now to identify a new qualified operator and incorporate this operator's salary costs into system operating expenditures. Historically, the City has not been able to budget for a consistent replacement program. Additional revenue should be budgeted and set aside for a replacement program.

5.1.3 Growth

The current population is around 190, and the annual population growth for the last 20 years has been 1.45%. Based on this rate, the 20-year population projection would be 240 people. The proposed project is expected to provide sufficient water supply for the next 20 years.

5.2 Basis for Design

5.2.1 Regulatory Requirements

The project design will be submitted to the Oregon Department of Environmental Quality for an environmental impact analysis in accordance with the National Environmental Policy Act and United States Department of Agriculture-Rural Utilities Service (USDA-RUS) procedures. The project will be designed to minimize adverse environmental impacts while complying with Federal and State drinking water standards.

5.2.2 Design Criteria

As stated, Well 6 has already been drilled and developed. Water quality testing has been completed (see Appendix B for testing results) and is the basis of the design criteria for the well pumping and treatment facilities. The pump for Well 6 will need to be capable of pumping at least the 20-year maximum day demand estimated at 90 gpm through the water treatment plant (WTP) and into the City's potable distribution system. A new power service/supply will be required at the

Well 6 site for the new pump and motor. A 6-inch transmission pipeline from Well 6 to the treatment plant will be required.

The water treatment facility will be designed for compliance with Safe Drinking Water Act standards. The design criteria for the water supply and treatment facility are summarized in Table 5.1.

Table 5.1: Water Supply and Treatment Criteria

Item	Units	Criteria
Well 6 Pumping Facilities		
Ground Elevation at Well 6	ft	2453
Static Groundwater Level	ft-bgs	153
Estimated Well 6 Yield	gpm	350
Target Production Rate	gpm	100
Estimated Drawdown at 100 gpm Pumping Rate	ft	9
Estimated Drawdown from Neighboring Wells	ft	10
Existing Storage Tank Hydraulic Grade	ft	2389
Pump/Motor Pumping Rate Target	gpm	100
Pump Total Dynamic Head Target	ft	136
Pump / Motor Horsepower Minimum	hp	5
Raw Water Concentrations for Pollutants of Concern		
Uranium	mg/L	0.026-0.032
Arsenic	mg/L	0.073
Nitrate	mg/L	9.5
Treatment Plant Effluent Concentration Limits		
Uranium	mg/L	< 0.030
Arsenic	mg/L	< 0.010
Nitrate	mg/L	< 10.0

A geotechnical investigation of the proposed WTP site location was conducted in July 2015. The findings of the investigation are included in Appendix C and summarized in Table 5.2.

Table 5.2: Geotechnical Design Criteria

Item	Units	Criteria
Seismic Classification	N/A	ASCE/SEI 7-10
Groundwater Depth Below Ground Surface	ft	>8
Infiltration Rate	in/hr	4
Depth of Undisturbed, Native Soils Below Ground Surface	ft	3-4
Recommended Subgrade Compaction	%	95
Net Allowable Soil Bearing Capacity [1]	psf	2,000

1. Upper 1-2' of soil across site is in disturbed condition and not suitable for support of foundation elements.

The transmission pipeline improvements from Well 6 to the WTP site shall be aligned inside existing recorded easements (see the appendix to the well completion report in Appendix D) and/or inside existing public right of ways.

5.3 Basis for Cost Estimate

Cost estimates for construction, engineering, legal, and administrative services are based on 2015 dollars. A contingency of 20% has been incorporated into the cost estimate to account for unanticipated costs or fluctuations in bid prices. It is recommended that the City set aside a 5% contingency fund after the project is awarded to the apparent low bidder for change orders that may occur during construction.

5.4 Water System Design Capacity

See Section 5.2.2 of this report. No modifications are proposed to the existing storage tank or Wells 2-4. While the Well 6 pump and motor will be sized to provide a pumping capacity of 100 gpm, the WTP facilities will be sized to treat as little as 50 gpm and as much as 100 gpm at any given time. An optional lower treatment capacity will allow the City flexibility in how much water is treated and consequently stored under various demand scenarios. This not only improves operations and water quality, but also affords a cost savings by extending the life of the treatment media and reducing waste production rates.

6. Development and Evaluation of Alternatives

Three water treatment options were evaluated to meet national drinking water standards for Well 6. Option 1 is the no-action alternative. Options 2 and 3 are different treatment technologies that were pilot tested at Well 6 to confirm their viability. Pilot test results (Appendix F) showed both of the alternatives to be effective at bringing Well 6 water into conformance with drinking water standards.

Membrane filtration methods (such as nanofiltration and reverse osmosis) and ion exchange methods were also considered early in the evaluation process and are all considered to be more stringent and thorough treatment methods than coagulation-filtration. However, these methods also carry a relatively higher lifetime cost, increased operational complexity, and significantly higher treatment waste volumes, which made coagulation-filtration the preferred option for Adrian. While less stringent, the pilot test indicated that coagulation-filtration is still capable of producing safe drinking water.

If, in the future, the groundwater concentrations of nitrates ever increase in Well 6, more advanced treatment (such as reverse osmosis or ion exchange) would need to be incorporated to some degree.

6.1 Description

Option #1: No-Action Alternative

The first alternative is to make no system improvements. By selecting no action, the water system would remain out of compliance with current public drinking water standards. In addition, the City would not be able to utilize the new Well 6 for public consumption. This alternative would represent an abandonment of the significant investment the City has made into Well 6.

Option #2: New Well 6 with Pressure Filtration Treatment, No Adsorptive Polishing Media

This option would include the following project elements:

1. Extension of electrical power service to Well 6.
2. Installation of submersible pump/motor in Well 6 with a pitless adaptor.
3. Construction of 6-inch water transmission pipeline from Well 6 to existing 6-inch water main in Emerald Slope Road.
4. Construction of new ground water treatment facility (WTP). The WTP would include coagulation and pressure filtration, but no adsorptive media.
5. Construction of 8-inch sewer collection line from the WTP to the existing 8-inch sewer main at the intersection of Well Road and Washington Street.
6. Completion of liner repairs in Cell B of the existing wastewater lagoons.

Option #3: New Well 6 with Pressure Filtration Treatment and Adsorptive Polishing Media

Implement Option #2 and add a polishing step at the end of the treatment process. This extra step would take a portion of the filtered water through a 3-foot diameter vessel in the WTP building. Minor additional piping and valving would be required.

This polishing step would consist of passing water through an adsorptive media coated with lanthanum hydroxide [$La(OH)_3$,], which would permanently bind and concentrate arsenic and possibly some uranium, but no nitrate, on the media.

The media is not typically regenerated through chemical reconditioning, but rather is replaced when the adsorptive capacity is filled. The piloted media – NXT-2, made by EP Minerals Co. – is expected to treat 15 MG of water before replacement is needed.

After having passed through the adsorptive media, this side-stream of higher quality water would be blended back in with the remainder of the coagulation filtration water to produce an effluent with an overall greater level of pollutant removal. The current projection is that a side-stream equal to 25-50% of the total filtered flow would be sufficient to produce consistently safe drinking water. However, this percentage would need to be fine-tuned once the equipment was in place.

The polishing step would serve as an assurance for adequate arsenic removal. A side-stream treatment setup is recommended to extend the life of the adsorptive media, and therefore, reduce operating costs for the City. The piping would be configured to allow the polishing media to be bypassed if its use it not required to meet the MCLs.

6.2 Map

A map of the existing system (Figure A.8, Appendix A) illustrates Option #1. The site map (Figure E.1, Appendix E) illustrates the general configuration of the alternatives. The only variance between Options #2 and #3 is different equipment inside the WTP building.

6.3 Environmental Impacts

Option #1: No-Action Alternative

There are no negative environmental impacts with Option #1.

Option #2 New Well 6 with Pressure Filtration Treatment, No Adsorptive Polishing Media

The transmission line from the well, the sewer discharge line from the WTP, and the new WTP building would all be constructed in existing roadways or previously-disturbed and developed sites. There are no anticipated long-term environmental impacts from their construction. Temporary dust, noise, and heavy machinery exhaust during construction are expected with this option.

The waste generated by the treatment process would consist of backwash water and solid media; the media would consist of sand-like material. Both the backwash water and treatment waste would be discharged to the City's wastewater lagoons.

Option #3: New Well 6 with Pressure Filtration Treatment and Adsorptive Polishing Media

Because Option #3 is a variation of Option #2, the environmental considerations are identical with one exception: The adsorptive media would need to be disposed of after reaching the end of its useful life.

If the media treats a side-stream equal to 25-50% of the filtered flow, it is estimated to last 3-5 years. At the end of its useful life, the adsorptive media would be discharged to the wastewater lagoons and settled with the wastewater sludge.

6.4 Land Requirements

Option #1: No-Action Alternative

There are no land requirements for Option #1.

Option #2 and Option #3

As shown in Figure A.1 (Appendix A), the existing Well 6 is located on private property. The landowner previously granted an easement that authorizes the use of the property for operation and maintenance of the municipal Well 6. This same property owner has also granted an access and utility easement for conveyance of water and electricity to/from Well 6 and public rights of way, and ultimately to the WTP. (See Appendix D for easement)

The WTP will be constructed on a portion of a City-owned lot, which currently houses the existing Well 4 facilities. The lot is large enough to house the proposed WTP.

6.5 Construction Problems

Option #1: No-Action Alternative

There are no construction problems for Option #1.

Option #2 & Option #3

The remote location of Well 6 could present access challenges for large equipment and vehicles. In addition, subsurface basalt rock could be encountered when constructing the transmission line illustrated in Figure E.1 (Appendix E). There is an existing, large-diameter underground siphon that would require crossing with the new transmission line (illustrated on Figure E.1). Performing this crossing could require directional drilling or jack/bore technology rather than open-cut trenching.

6.6 Cost Estimates

6.6.1 Construction

Construction cost estimates for each option are presented in Table 6.1. Backup details for Options #2 and #3 can be found in Appendix G.

Table 6.1: Construction Cost Estimates (2015 Dollars)

Option #1	Option #2	Option #3
$0	$1.37M	$1.46M

6.6.2 Non-Construction and Other Project Costs

Option #1: No-Action Alternative

While difficult to quantify and predict, the City would be subject to significant regulatory violation assessments, and would likely experience significant economic losses under this alternative.

Option #2 & Option #3

Depending on the funding source used to complete construction, the City may incur some legal or financing costs. Those costs are expected to be similar for both Options #2 and #3.

6.6.3 Annual Operation, Maintenance, and Replacement

Option #1: No-Action Alternative

Although difficult to quantify, no action may have a significant cost in terms of increased electrical power, chemical, or repair expenses necessary for water treatment and maintenance to keep aging or inefficient components operating.

Option #2: New Well 6 with Pressure Filtration Treatment, No Adsorptive Polishing Media

Operation of Well 6 would generate a cost savings in power since it would replace Wells 2, 3, and 4. The older wells use 10-hp pumps, while the new well pump is anticipated to be 5 hp and more efficient.

Well 6 would generate a cost savings in chemicals because high quantities of chlorine are currently required to mitigate poor water quality problems in Wells 2, 3, and 4. The cost savings in using less chlorine are estimated to more than cover all the chemical costs for treating Well 6.

Approximately 250 gallons of ferric chloride (used as a coagulant) and 350 gallons of Sodium Hypochlorite would be consumed on an annual basis as part of the treatment process. These two chemical costs are anticipated to be just under $2,000/yr, while the current chemical costs are estimated at $3,000/yr.

Operation and maintenance of the treatment facility would create additional operating costs, including personnel, building power, and treatment media replacement.

The proposed water treatment system would require an operator with a higher training and expertise than the current system requires, which is expected to cost more in terms of salary. This additional cost is estimated at $10,000/yr.

Additional power costs would come from the operation of new equipment such as a positive displacement blower (used for filter backwash), electrical controls and valves, chemical metering pumps, a building alarm system, and typical lighting and HVAC power loads. The additional power cost to operate the building and ancillary equipment is estimated at $3,200/yr.

The manganese dioxide (filtration media) has an estimated life of 15 years before it would need to be replaced. It is recommended that the City budget $150 per year to save for the replacement cost of the media at the end of its useful life.

When the filter media has reached its useful life, the recommended method of disposal would be to the City's wastewater lagoons. When the lagoon solids are dredged, the solids would be tested and the best disposal method determined at that time. It is recommended that the City set aside $2,000/yr as part of the regular operations and maintenance budget to cover potential additional disposal charges of the lagoon sludge that would arise as a result of water treatment waste. This annual budget should also be earmarked for any miscellaneous unexpected water treatment expenses that may arise.

Furthermore, it is recommended that the City budget approximately $4,600/yr for replacement of the pumping and treatment equipment when it reaches its useful life after 15-20 years. The net additional operational, maintenance, and replacement costs are summarized in Table 6.2.

Option #3: New Well 6 w/ Pressure Filtration Treatment/Adsorptive Polishing Media

The operation, maintenance, and replacement costs of the water system under Options #3 would have all of the costs under Option #2, with the added cost of the adsorptive media in the polishing step of the treatment process.

The adsorptive media (lanthanum hydroxide) is estimated to treat approximately 15 million gallons before needing replacement. It is recommended that the City set aside $2,000/yr to cover media replacement if 25% of the filtered flow is polished. The cost would increase or decrease based the amount of flow diverted to the polishing media.

The net additional operational, maintenance, and replacement costs are summarized in Table 6.2

Table 6.2: Net Additional Water Treatment O&M&R Costs

Component	Option #2	Option #3
Additional O&M per year [1]	$ 14,200	$ 16,300
Recommended Replacement per year	$ 4,600	$ 4,600
Total Additional O&M&R per year	**$ 18,800**	**$ 20,900**

1. Includes additional $10,000 cost for operator per year

6.7 Advantages/Disadvantages of Alternatives

Option #1: No-Action Alternative

Advantages:

- No increase to the user cost or debt load.

Disadvantages:

- The City would continue to struggle with a declining water table in the existing well
- City residents would continue to be plagued by low-quality water or pay for bottled water delivery

Option #2: New Well 6 with Pressure Filtration Treatment, No Adsorptive Polishing Media

Advantages:

- Well 6 should be able to meet the City's water needs over the 20-year planning horizon.
- This treatment option has been tested at Well 6 and would be effective at bringing the water into compliance with safe drinking water standards.
- The cost and complexity is the least of other viable treatment options considered.

Disadvantages:

- Consistency of effluent quality is a concern. A single pilot test has proven the concept, but long-term operations introduce additional variables. The pilot test outcome recommended a polishing step for assurance of consistent effluent quality.
- While it could meet basic safe drinking water standards, it could not remove water contaminants to such low levels as those obtainable by membranes or ion exchange.

Option #3: New Well 6 with Pressure Filtration Treatment and Adsorptive Polishing Media

Advantages:

- This option would provide greater removal of contaminants in Well 6 water and better assurance of consistent results.
- Lower capital and operating costs than membranes or ion exchange.

Disadvantages:

- Higher capital and operating costs than Option #2 due to the addition of adsorptive media.
- While it could meet basic safe drinking water standards, it could not remove water contaminants to such low levels as those obtainable by membranes or ion exchange.

Recommendation

Option #3 is the recommended alternative. This option provides adequate water supply for the City of Adrian for well beyond the 20-year planning horizon. It also provides better assurance of consistently providing safe drinking water than Option #2, but without the added complexity and cost of other more stringent methods, such as ion exchange or membranes. This option is discussed in more detail below.

7. Recommended Alternative

The proposed project improvements include installation of a well pump for Well 6, a transmission pipeline, a new groundwater treatment plant at the intersection of Emerald Slope Road and Well Road, and a waste disposal line form the treatment facility to an existing sewer main. These improvements are illustrated graphically in Figure E.1 (Appendix E). The treatment facility will house equipment designed to remove arsenic and uranium to drinking water standards.

7.1 Project Design

7.1.1 Water Supply

The water supply source for the project has already been determined (Well 6), and is shown in Figure E.1 (Appendix E). A new submersible well pump and motor with a pitless adaptor will be installed in Well 6 with a target pumping rate of 100 gpm. There will be no well building at the well site.

7.1.2 Treatment

The water treatment facility (WTP) will be located on the City-owned property on the corner of Well Road and Emerald Slope Road. Wells 2 and 3 are also on this site, as shown in Figure E.2 (Appendix E). The treatment process will include oxidation, coagulation, pressure filtration, and side-stream polishing. A schematic drawing of the WTP building is included in Appendix E (Figure E.3).

The oxidation will be achieved with a 12.5% concentration of sodium hypochlorite (SH), and the coagulation will be provided by 38% ferric chloride (FC). One new 100-gallon crosslinked polyethylene storage container will hold a 30-day supply of SH, and a separate 50-gallon crosslinked polyethylene storage container will hold a 30-day supply of FC. Both storage containers will be located in the treatment building. The storage tanks will be housed in 115%-volume secondary-containment with venting, and will meet chemical storage requirements stipulated by applicable building, fire, and safety codes.

The backwash water will be conveyed from the WTP to the existing sewer lagoons. A new waste line will be installed from the WTP to the existing sewage collection system at the west end of Washington Street. These improvements are shown in Figures E.1 and E.2 (Appendix E). A backwash recovery tank may also be considered as a means of reducing backwash water volumes being sent to the lagoons.

Proposed design criteria for the water treatment system is outlined in Table 7.1

Table 7.1: Water Treatment System Design Criteria

Item	Units	Criteria
WTP – Oxidation, Coagulation, Pressure Filtration, Adsorption Polishing		
Oxidant	Chemical	Sodium Hypochlorite
Coagulant	Chemical	Ferric Chloride
Filter Media	Media	Manganese Dioxide
Number of Filters	No.	2
Production Rate Per Filter	gpm	50
Total Plant Production	gpm	100
Cells/Filter	No.	1
Filtration Rate (maximum)	gpm/sqft	6
Filter Area	sqft	8.4
Filter Media Depth	in	36
Gravel Depth	in	15
Adsorptive Media – Polishing Step	Media	lanthanum hydroxide
Adsorptive Media – Side-Stream Flow % of Total Flow	%	25-50
Adsorptive Media – Minimum Life	MG	15
WTP Filter Backwash		
Backwash Type	Method	Simultaneous Air/Water
Approximate Simultaneous Air Rate	scfm/sqft	2.2
Approximate Simultaneous Water Rate	gpm/sqft	9.0
WTP Settled Wastewater		
Arsenic in Supernatant	mg/L	0.011
Uranium in Supernatant	mg/L	0.004
Nitrate in Supernatant	mg/L	9.0
Backwash Wastewater Volume per Backwash	gal	1,050
Volume Filtered Between Backwashes	gal	36,000
Backwash Wastewater Peak Flow Rate	gpm	150
Disposal Method	Method	Municipal Sanitary Sewer
Excess Available Capacity of Receiving Sewer System	gpm	250
Disposal Line Pipe Size	in	8
Disposal Line Slope	ft/ft	0.0035

7.1.3 Transmission Layout

The water transmission line improvements will be as shown in Figures E.1 and E.2 (Appendix E). The pipes will be 6-inch diameter PVC pipes. The WTP will tie into the existing 10-inch diameter waterline in Emerald Slope Road. This 10-inch line will divert water to the City if there is a demand; otherwise, it will be used to fill the storage reservoir.

7.1.4 Hydraulic Calculations

A hydraulic model of the existing water system was developed during the 2013 Water Master Plan. The improvements included in this project have been added to the model to appropriately size the transmission line from Well 6 to the WTP. Water model output reports can be found in Appendix E.

Hydraulic calculations were also performed on the sewer system collection system to determine allowable discharge rates from the water treatment process. A summary of the sewer capacity calculations can be found in Appendix E.

7.1.5 Treatment Wastewater Impacts

Filters used to remove contaminants from the drinking water will need to be washed. The wash-water will reverse flow through the filters from the drinking water system and will be discharged to the City's collection system, which ultimately discharges to two evaporative wastewater lagoon cells. This section presents the potential impacts from this disposal method of the treatment waste.

Treatment Wastewater Volume and Storage

The projected backwash volumes represent an estimated average annual 6% increase to the existing sewer flows by volume. During the summer – when the lagoons are at their lowest levels – the backwash flows could average as much as 11%; during the winter, they could be as low as 3%.

Adrian's wastewater treatment consists of two separate evaporative lagoon cells (A and B) that have no discharge and no land application sites. Cell B is presently empty and only used as an emergency overflow since its liner is compromised.

A water balance analysis on Adrian's wastewater inflows shows that Cell A currently encroaches on the existing 3-ft freeboard space during high times, but is generally balanced at the upper end of the cell's storage capacity given the estimated amount of precipitation, evaporation, and leakage. Leakage estimates on Cell A are roughly 1/8 of an inch per day.

It is estimated that adding the treatment backwash water to Cell A will cause it to overflow to Cell B. However, if Cell B were operational, the lagoons would readily handle both the domestic wastewater and treatment backwash water, while using less than 20% of their combined capacity now, and 70% twenty years from now.

The solids from the treatment waste are so minimal that they are not likely to appreciably accumulate in the lagoons within the next 50 years.

In light of these estimates, it is recommended that the City repair Cell B to accommodate the increased wastewater flows from the Well 6 treatment process. The City has already initiated efforts to evaluate the second lagoon cell and develop repair options.

Treatment Wastewater Peak Flow Rates

The projected peak instantaneous backwash rate discharged to the City's sewer collection system is 220 gpm for 10 minutes. A hydraulic evaluation of the existing sewer collection system from the proposed point of backwash discharge to the City's lift station (which collects all wastewater from the city and pumps it directly to the lagoons) suggests the sewer system has 250 gpm of available excess capacity (see Appendix E for sewer capacity calculations). In light of this information, the existing collection system will be capable of conveying the water treatment backwash water. Programmable logic control could also be established to stagger the backwash cycles of the filtration media and the polishing media. This would drop the peak waste discharge rate to 150 gpm for 10 minutes.

Treatment Wastewater Pollutant Loads

In addition to concerns over backwash wastewater volumes and flow rates, there is also pollutant loading to consider. Specific pollutants of concern are arsenic and uranium, since these contaminants from the raw well water become concentrated on the filters and in the resulting backwash water. Nitrates in the raw water are below the MCL and will not be treated; therefore, they are not concentrated in the backwash water.

During the pilot test, the backwash water was first settled for 8 hours, after which the supernatant was sampled to provide an estimated concentration of the pollutants in the wastewater lagoons after settling. Because the contaminants primarily concentrate on the coagulant and settle out, the supernatant from the lagoons could be evaporated or land-applied to nearby farmland. The concentration of arsenic and uranium in the settled sludge solids of the lagoons will need to be tested once the lagoons are dredged. The disposal method of the dredged sludge will need to be determined at that time since the method will depend on pollutant concentrations. However, a dredging is not anticipated to occur in the next 50 years. The estimated supernatant concentrations of arsenic and uranium are listed in Table 7.2.

Table 7.2: Projected Arsenic and Uranium Concentrations in Settled Backwash Wastewater

Pollutant	Concentration (mg/L)
Arsenic	0.011
Uranium	0.004

Once the backwash water mixes with wastewater coming into the lagoons from the rest of the city – as well as wastewater already in the lagoons – these pollutant concentrations will be substantially lower. For example, the arsenic concentration drops to 0.00069 mg/L when mixed with average daily wastewater flow into the lagoon.

The arsenic concentrations in the wastewater lagoons must be less than 5 mg/L; otherwise, the wastewater will be classified as hazardous waste.

OAR 333-117-0040(1) specifies the requirements for disposal of naturally-occurring radioactive material. Uranium concentrations less than 0.05% by weight are specifically exempt. At a concentration of 0.004 mg/L in settled backwash water, the uranium concentration is less than 0.0000004% by weight, and even less once it mixes with the other incoming and existing lagoon wastewater.

The filter media is anticipated to have a 15-year life, and the adsorptive media is anticipated to have about a 3- to 5-year life. Both will have trace amounts of arsenic and uranium accumulated on the surface. The adsorptive media is also coated with lanthanum hydroxide. When the filter and adsorptive media have reached the end of their useful life, the sand-like solids will be discharged to the lagoons and settled with the wastewater sludge.

In summary, the supernatant from the backwash water is expected to be non-hazardous waste with extremely low concentrations of arsenic and uranium. The proposed method of disposal is to discharge to the wastewater lagoons, where it will be evaporated. The solids portion of water-treatment waste will settle in the lagoon sludge. These solids will be comprised of the coagulated filtrate from the backwash water, the filter media, and the polishing media. These solids are expected to contain stable and bound arsenic and uranium concentrations. The lagoon sludge will need tested prior to dredging in order to determine the best disposal method. However, the lagoons are not anticipated to need a dredging within the next 50 years.

7.1.6 Electrical and Control Upgrades

Well 6 is approximately 1,600 feet northwest of the existing water storage reservoir. To power the new well pump, a new electrical service from Idaho Power will be installed near the well site.

The water treatment system improvements include construction of a new treatment facilities building, located on City-owned property at the corner of Well Road and Emerald Slope Road. A new electrical service from Idaho Power will be installed to provide power to the building.

Well 6 Power Supply

Idaho Power is the local electrical utility and has existing overhead distribution lines running along Clover Lane approximately 1,000 feet west of Well 6, and along Emerald Slope Road approximately 2,000 feet southeast of Well 6. After a brief on-site investigation with Mike Negri of Idaho Power, it was determined that extending power with overhead conductors from Clover Lane would be the least costly option. The exact route of the service extension has not yet been finalized; however, Idaho Power indicated the existing well easement could be used to reach Well 6 if a canal crossing is obtained.

To meet the pumping requirements for Well 6, a 5-hp pump will be required. Normally, Idaho Power will not serve motor loads larger than 7.5 hp with single-phase power, as they can cause numerous power quality problems. Since the power needs are less than 7.5 hp, the new electrical service to Well 6 could potentially be single phase. Triple phase may be desirable depending on future potential for additional power needs at the site. See the site electrical plan in Appendix E.

Water Treatment Building Power Supply

Electrical requirements for the process equipment in the water treatment facilities building are minimal; the total connected load is expected to be approximately 5 kW. Lighting and HVAC loads are anticipated to be another 5 to 10 kW, bringing the total load in the building to roughly 15 kW. A standard 200A, 120/240V single-phase service can easily accommodate this size load, while having ample spare capacity for future additional loads. The new electrical service will be run overhead from the existing Idaho Power utility pole at the northwest corner of Well Road and Emerald Slope Road. See the site electrical plan in Appendix E.

Controls

The existing water storage reservoir has five float switches that provide High Level, Low Level, Stop, Start Lead Pump, and Start Lag Pump indications. These float switches are hardwired to a relay panel in the well house for Well 2. The relay panel controls the starters for Wells 2 and 3.

Depending on the existing route of the float signals from the reservoir to the well house, they could be intercepted by, or extended to, the water treatment facilities building, which would become the central control point. A new control panel in the building would control nearby Wells 2 and 3 with discrete start/stop signals run in underground conduit.

To establish a communication link with Well 6, radio antennas would be installed at the water treatment facilities building and at Well 6. An unlicensed spread spectrum radio telemetry system would provide start/stop control and other communication as needed. The path between the water treatment facilities building and Well 6 is generally free of obstructions and should be favorable for radio communication. A radio path study will need to be conducted to confirm the reliability of the proposed radio telemetry link.

Establishing a direct controls link between the existing water storage reservoir and Well 6 would be difficult and costly due to the nature of the terrain and available conduit route; therefore, it is not recommended.

7.2 Opinion of Probable Cost

An opinion of cost for the recommended project is provided in Table 7.3. The actual cost will vary depending on final bid prices.

Table 7.3: Recommended Alternative Opinion of Probable Cost[1]

Description	Probable Cost
General Conditions (Mob/Demob, Bonds/Insurance)	$ 39,250
Sitework	$ 40,400
Site Piping	$ 48,600
Transmission Piping to Well	$ 252,800
Treatment Building	$ 65,000
Mechanical Piping	$ 34,100
Filtration System with Polishing Step	$ 259,100
HVAC	$ 12,000
Electrical and Power	$ 47,000
Instrumentation and Controls	$ 26,000
Well Pump, Drop Pipe, and VFD	$ 46,200
Total Direct Cost	**$ 880,000**
15% General Contractor Markup	$ 130,000
Total Estimated Construction Cost	**$ 1,010,000**
Permitting, Legal	$ 5,000
20% Contingency and Allowances	$ 202,000
Subtotal	**$ 1,217,000**
Engineering	$ 243,400
Total Estimated Project Cost	**$ 1,460,400**

1. This opinion of probable cost does not include wastewater lagoon improvements.
2. The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

7.3 Annual Operating Budget

7.3.1 Existing Income and Operation and Maintenance Costs

A summary of the Fiscal Year 2012 income and operation and maintenance costs are summarized in Table 7.4. The values are from the recently-completed Water Master Plan.

Table 7.4: Fiscal Year 2013-2014 Adrian Water Fund Summary

Component	Value
Average Monthly Residential Water Rates	$ 33.75
Number of Accounts	105
Annual Water System Income	$ 49,032
Annual Water System O&M Expenses	$ 37,030
Safe DW Loan payment[1]	$ 15,000
Water Fund Balance (end of FY)	$ 375,602

1. City estimates an annual principal and interest loan payment near $15,000 once loan is finalized.

7.3.2 Debt Repayments

The City of Adrian currently earmarks $15,000 each year to repay a Safe Drinking Water Act Loan.

Additional grant and loan funds will be required to implement the proposed project improvements. The 2013 Water Master Plan discusses four IFA funding programs. These funding programs are described briefly below; more detail is available in the master plan.

Special Public Works Fund

The Special Public Works Fund program was established by the Legislature in 1985 to provide primarily loan funding for municipally-owned infrastructure and other facilities that support economic and community development in Oregon. Loans and grants are available to municipalities for planning, designing, purchasing, improving and constructing municipally-owned facilities.

For design and construction projects, loans are primarily available; however, grants are available for projects that will create and/or retain traded-sector jobs. A traded-sector industry sells its goods or services into nationally- or internationally-competitive markets. Loans range in size from less than $100,000 to $10 million. The department is able to offer very attractive interest rates that reflect tax-exempt market rates for very good quality creditors. Loan terms can be up to 25 years or the useful life of the project, whichever is less. Grants are limited to projects associated with job creation/retention. The maximum grant award is $500,000 or 85% of the project cost, whichever is less. The grant amount per project is based on up to $5,000 per eligible job created or retained.

Water/Wastewater Financing Program

This is a loan and grant program that provides for the design and construction of public infrastructure when needed to ensure compliance with the Safe Drinking Water Act or the Clean Water Act. To be eligible a system must have received, or is likely to soon receive, a Notice of Non-Compliance from the appropriate regulatory agency, associated with the Safe Drinking Water Act or the Clean Water Act.

While primarily a loan program, grants and reduced interest rates are available for municipalities who meet the eligibility criteria for subsidies. The loan/grant amounts are determined by a financial analysis of the applicant's ability to afford a loan (debt capacity, repayment sources, current and projected utility rates, and other factors). The maximum loan term is 25 years or the useful life of the infrastructure financed, whichever is less. Loan amounts are determined by financial review and may be offered through a combination of direct and/or bond-funded loans. Loans are typically repaid with utility revenues, or for some larger loans, voter-approved bond issues. A limited tax general obligation pledge may also be required to secure the loan. Borrowers that meet "healthy" credit quality standards may be included in a pooled loan program for longer-term financing, funded through the sale of State revenue bonds. The maximum grant is $750,000 per project and is based on a financial analysis. An applicant is not eligible for grant funds or reduced interest subsidy if the applicant's annual median household income is equal to or greater than 100% of the statewide median household income for the same year.

Community Development Block Grant Program

The primary objective of the program is the development of viable (livable) urban communities by expanding economic opportunities and providing decent housing and a suitable living environment principally for persons of low and moderate income.

This is a grant program that only non-metropolitan (non-entitlement) cities and counties in rural Oregon can apply for. The State receives an annual allocation from HUD for the CDBG program. Grant funding is subject to the applicant's need, availability of funds, and any other restrictions in the State's *Method of Distribution* (i.e., program guidelines). It is not possible to determine how much, if any, grant funds may be awarded prior to an analysis of the application and financial information.

Safe Drinking Water Revolving Loan Fund

This is primarily a loan program for the construction and/or improvement of public and private water systems to address regulatory compliance issues. This is accomplished through two separate programs:

Safe Drinking Water Revolving Loan Fund (SDWRLF) for collection, treatment, distribution and related infrastructure; and Drinking Water Protection Loan Fund (DWPLF) for protection of sources of drinking water prior to system intake.

The SDWRLF program normally lends up to $6 million per project. Loan amounts greater than $6 million may be available. The standard SDWRLF loan term is 20 years or the useful life of project assets, whichever is less. Loan terms up to 30 years may be available for "Disadvantaged Communities." This program offers subsidized interest rates for all successful projects. Interest rates for a standard loan start at only 80% of State/local bond rate. Interest rates for loans to disadvantaged communities are based on a sliding scale between the interest rate for a standard loan and 1%. Communities may be eligible for some

of the principal on their SDWRLF loan to be "forgiven." This Forgivable Loan feature is similar to a grant and is offered to disadvantaged communities.

The DWPLF program normally lends up to $100,000 per project. Loan amounts greater than $100,000 may be available. A grant may be available from the DWPLF depending on funds available.

IFA Programs (Contact Regional Coordinator)

Since program eligibility and funds availability may change from year to year, potential applicants are encouraged to contact their respective Regional Coordinator to obtain the most accurate and up-to-date information for each program.

The user rate increase needed to finance the proposed water project will depend on the interest rate, loan life, amount of grant fund secured, and other loan terms. Many of these factors change continuously based on current interest rates. However, in general, a monthly water user rate increase of $2.60 per connection for every $100,000 of loan money is needed for repayment of the loan only (based on a 30-year loan at 1% interest, which are the apparent best loan terms available to the City). Moreover, the user rate increase is required to cover the costs of operating, maintaining, and eventually replacing the proposed water treatment improvements. The potential impact to user rates for the recommended improvements is illustrated in Table 7.5. The projected rates assume the City will not receive grant funds, but is able to secure the apparent best possible loan terms.

United States Department of Agriculture-Rural Development (USDA-RD)

USDA-RD offers a grant and loan program for improvements to water systems serving rural communities, which are defined as populations less than 10,000. Priority is given to communities smaller than 5,500 residents. Grants up to 75% of the project cost are eligible depending on user rates. Applicants can apply for USDA-RD funds any time during the year. Funds have many program requirements, including but not limited to the completion of a short-lived assets inventory, approved engineering report, and limited funding for fire protection water storage volumes. Interest rates are set periodically based on current market yields for municipal obligations. Interim construction financing is required since USDA-RD funds are only available once facilities are constructed.

Potential Rate Impacts:

We recommend the City seek the funding package that is most advantageous to them. This package might include a combination of multiple funding sources and agencies. The City should work with Tawni Bean with the Infrastructure Financing Authority (IFA) to arrange a One-Stop Financing Meeting as soon as possible.

Table 7.5 compares the existing water system costs and rates to estimates if the City were required to secure a loan to finance the total cost of the proposed

project. The City's current annual median household income is around $41,000. Consequently, its water rate affordability index calculates to around $43/month. The projected rate in Table 7.5 is more than double the affordable rate if the City were to secure a loan for the entire project cost plus fully fund an asset replacement program. The last column shows the estimated minimum annual operation, maintenance, and replacement costs which excludes funding an asset replacement program. Because of this difference, the City qualifies as a disadvantaged community, which will likely qualify it for financial assistance in the form of grants and favorable loan terms.

Table 7.5: Projected Rate Impacts for Recommended Water System Improvements

Annual O&M&R Costs	Fiscal Year 2013-2014	With Project (Ideal Values)	With Project (Minimum Values)
Cost Breakdown for Overall System Total			
Existing O&M	$ 37,030	$ 40,500[1]	$ 40,500[1]
Existing Infrastructure Replacement Fund	-	$ 13,600[2]	
Existing SDWR Loan Payment (assumed)	$ 15,000	$ 15,000	$ 15,000
New Improvements O&M&R	-	$ 20,900[3]	$ 16,400[3]
New Bond/Loan Payment	-	$ 56,588[4]	$ 56,588[4]
Total O&M&R	**$ 52,030**	**$ 146,588**	**$ 128,488**
Cost Breakdown per EDU			
Existing O&M	$ 24.69	$ 26.98	$ 26.98
Existing Infrastructure Replacement Fund	-	$ 8.65	
Existing SDWR Loan Payment	$ 10.00	$ 10.00	$ 10.00
New Improvements O&M&R	-	$ 13.30	$ 10.43
New Bond/Loan Payment	-	$ 36.56	$ 36.56
Total Recommended Rate (rounded)	**$ 35[5]**	**$ 95**	**$ 84**

1. Existing O&M costs increase to account for 3% inflation.
2. Infrastructure replacement is recommended to cover the cost of replacing the existing water. infrastructure such as transmission pipelines, storage, distribution pipelines, valves, and fire hydrants.
3. New Improvements O&M&R covers the cost of operating, maintaining, and replacing the proposed water treatment improvements.
4. New Bond/Loan Payment is to cover the cost of financing the proposed water treatment improvements ($1.46M over 30 years at 1% interest).
5. Based on 125 EDUs.

7.3.3 Reserve

The City needs to maintain a reserve fund of one-tenth of the annual debt payment for the loan that is incurred to complete this project.

8. Conclusions and Recommendations

It is recommended that Adrian utilize the remaining loan fund from the drinking water loan to commence with final design of the recommended Well 6 project. **At the same time, the City should aggressively pursue loan and grant funds for project implementation by arranging a One-Stop Financing Meeting with funding agencies.** Once a funding package is confirmed, the City should reach out to the public for input on financial and rate implications. In addition, it is recommended that the City begin increasing monthly water rates incrementally to a level closer to the anticipated monthly user rate required to finance the project. Gradual rate increases are more acceptable to the public than abrupt, large increases. Lastly, it is recommended that the City begin now to seek a qualified, competent operator to assume operation of the new and existing water infrastructure.

APPENDIX A

FIGURES

KELLER associates

213013-003/PER/15-373

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KELLER associates

Prepared for:
CITY of ADRIAN, OREGON

Project :
ADRIAN WATER SYSTEM IMPROVEMENTS

Title:
STUDY AREA LOCATION

Figure:
A.1

FIGURE A.2: AREA SURROUNDING THE WELL SITE

FIGURE A.3: AREA SURROUNDING THE WELL SITE

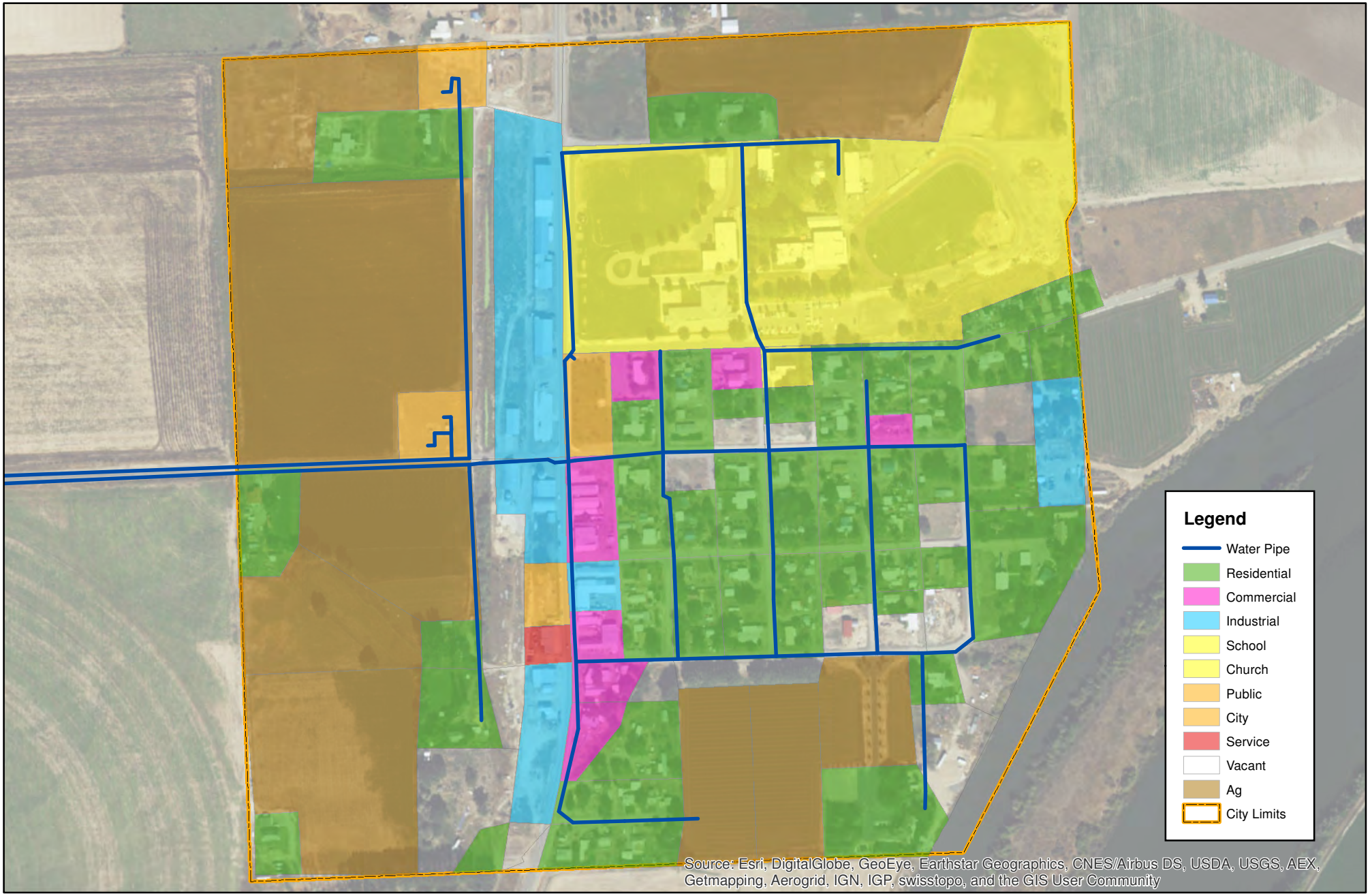


Figure:	Title:	Project :	Prepared for:		
A.4	Existing Land Use	ADRIAN WATER SYSTEM IMPROVEMENTS	CITY of ADRIAN, OREGON		KELLER associates

FIGURE A.5

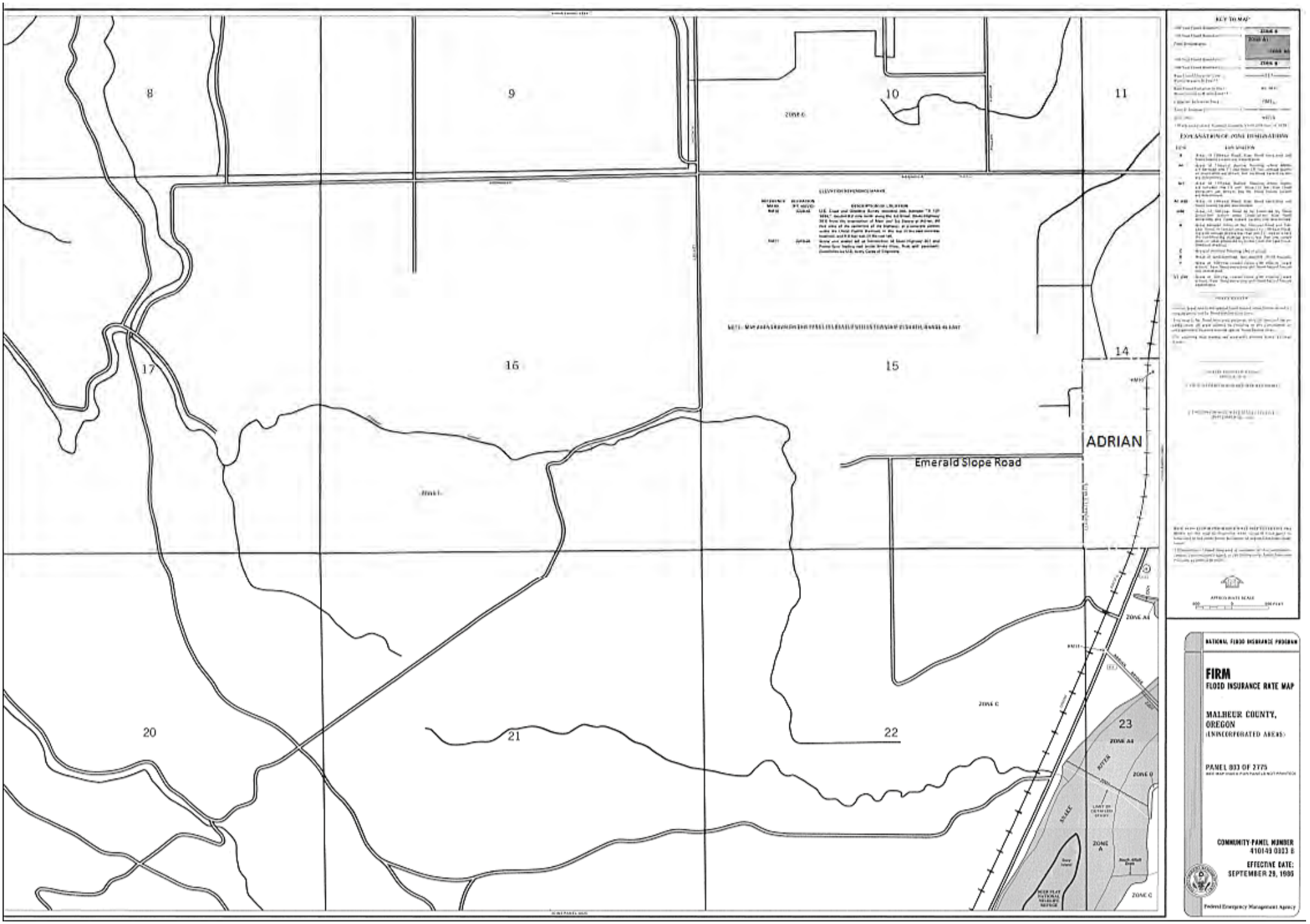

8
9
10
11
17
16
15
14
ADRIAN
Emerald Slope Road
20
21
22
23
ZONE C
ZONE A
ZONE AE
ZONE D
KEY TO MAP
EXPLANATION OF ZONE DESIGNATIONS
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
MALHEUR COUNTY, OREGON
(UNINCORPORATED AREAS)
PANEL 803 OF 2775
COMMUNITY-PANEL NUMBER
410149 0803 B
EFFECTIVE DATE:
SEPTEMBER 29, 1986
Federal Emergency Management Agency

FIGURE A.6

KEY TO MAP

100-Year Flood Boundary	
500-Year Flood Boundary	ZONE B
Zone Designations*	ZONE A1 ZONE AE
100-Year Flood Boundary	
500-Year Flood Boundary	ZONE C
Base Flood Elevation Line With Elevation in Feet**	~~~~~~~~~~ 513 ~~~~~~~~~~
Base Flood Elevation in Feet Where Uniform Within Zone**	514 NGVD
Elevation Reference Mark	RM2 x
Zone D Boundary	
River Mile	• M1.5

** Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
AE	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
AR/A	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTE TO USER

Enclosure areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all potential flood hazards.

INITIAL IDENTIFICATION:
June 26, 1979

FLOOD HAZARD BOUNDARY MAP REVISIONS:

FLOOD INSURANCE RATE MAP EFFECTIVE:
SEPTEMBER 18, 1984

FLOOD INSURANCE RATE MAP REVISIONS:

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

APPROXIMATE SCALE
200 0 200 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
ADRIAN,
OREGON
MALHEUR COUNTY

ONLY PANEL PRINTED

COMMUNITY-PANEL NUMBER
410285 0001 B

EFFECTIVE DATE:
SEPTEMBER 18, 1984

Federal Emergency Management Agency

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION (FT. NGVD)	DESCRIPTION OF LOCATION
RM1	2006.85	U.S. Coast and Geodetic Survey standard disk, stamped "A 131 1934", located 0.2 mile north along the Nyssa-Adrian-Danielle Chain Highway 201 from the intersection of Main Street, 42 feet east of the centerline of the highway, at a concrete culvert under the Union Pacific Railroad, in the top of the east concrete headwall, and 0.6 feet east of the east rail.
RM2*	2010.28	Brass cap marker located at intersection of State Highway 201 and Pacific Spur leading east across Snake River, flush with pavement. Established by U.S. Army Corps of Engineers.

*LOCATED OUTSIDE OF CORPORATE LIMITS

FIGURE A.7

U.S. Fish and Wildlife Service

National Wetlands Inventory

Adrian Wetlands Map

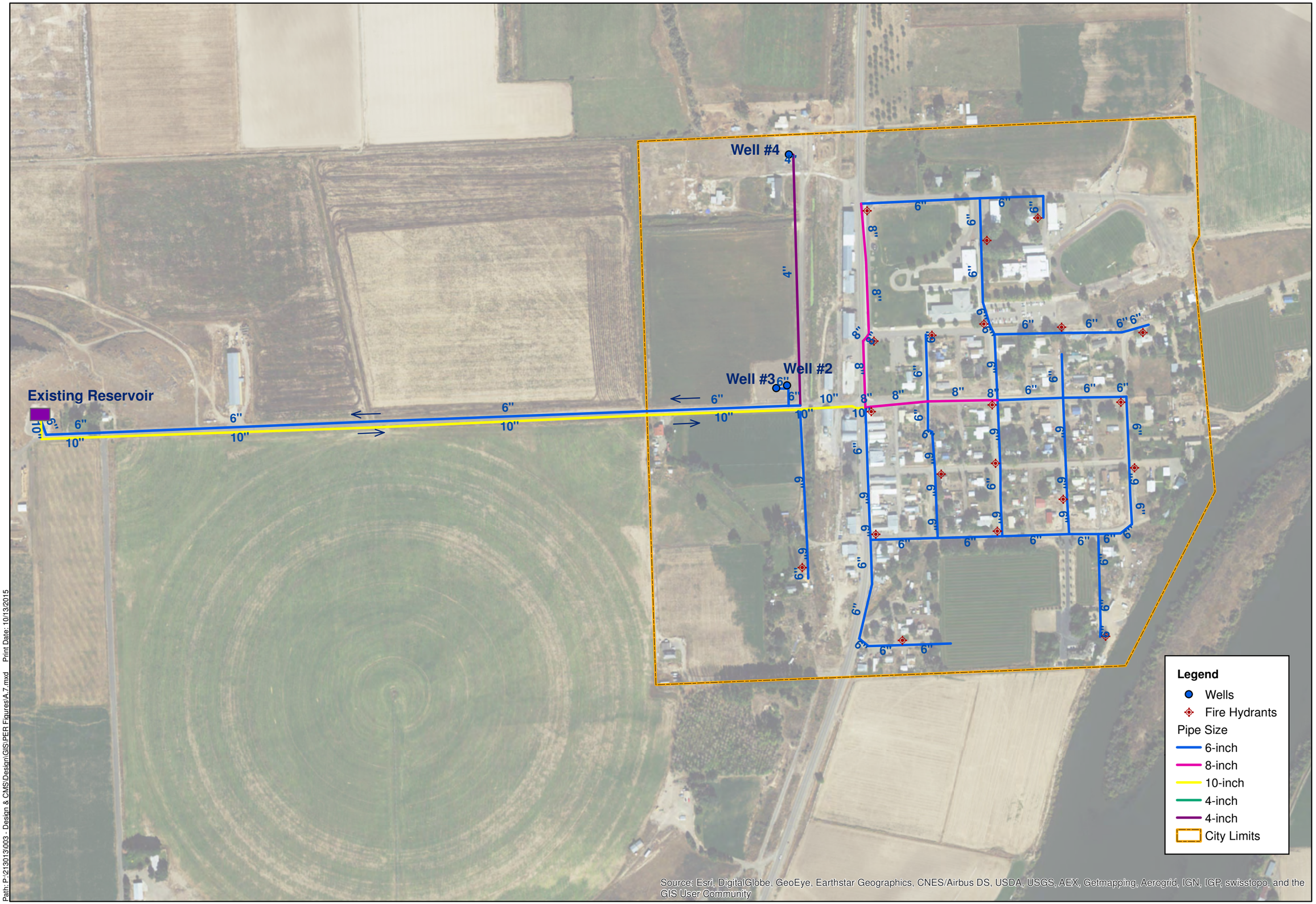
Jul 24, 2015

Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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KELLER associates

Prepared for: CITY of ADRIAN, OREGON

Project : ADRIAN WATER SYSTEM IMPROVEMENTS

Title: Existing Water System

Figure: A.8

APPENDIX B

SUPPLY EVALUATION

KELLER associates

213013-003/PER/15-373

MAGIC VALLEY LABS
210 Addison Ave / PO Box 1867
Twin Falls ID 83303-1867
Phone: (208) 733-4250
Fax: (208) 734-2539

JUSTIN WALKER
PRIVATE
KELLER ASSOCIATES
131 SW 5TH AVE, STE A
MERIDIAN, ID 83642

Collection Date 5/21/2015 **Received Date** 5/21/2015 **Location**
Collection Time 1 :10 PM **Received Time** 4 :48 PM ADRIAN WELL 6 AQUIFER

Sample #	Test / Method Code	Results in mg/L	Date Analyzed	Analyst
1496911	URANIUM EPA 200.8	0.0317	6/10/2015	SET
1496912	NITRATE/N EPA300.0	9.65	5/22/2015	JJ
1496913	VANADIUM EPA 200.8	0.0190	6/10/2015	SET
1496914	TOTAL ARSENIC EPA 200.8	0.0742	6/14/2015	SVL
1496915	ARSENIC III EPA 200.8	<0.0030	6/12/2015	SVL
1496916	ARSENIC V EPA 200.8	0.0742	6/14/2015	SVL

Signature

Report Date: Tuesday, June 16, 2015

Table 1
Summary of Water Quality Testing Results
City of Adrian Well 6

Analyte	State Standards MCL	State Standards SMCL	Units	*Test Boring (220'-235' Interval)* 5-Jun-14	*Production Well* 29-Jan-15
Inorganic Constituents					
Ammonia (as N)			mg/L	<0.02	NT
Antimony	0.006		mg/L	<0.005	<0.001
Arsenic	0.01		mg/L	0.092	0.0734
Asbestos[1]	7		MFL	NT	<0.066
Barium	2		mg/L	<0.05	0.0251
Beryllium	0.004		mg/L	<0.0005	<0.0003
Bicarbonate			mg/L	314	302
Calcium			mg/L	75.6	81.6
Carbonate			mg/L	0.0	<5
Cadmium	0.005		mg/L	<0.0005	<0.001
Chromium (total)	0.1		mg/L	<0.002	0.00163
Copper[2]	1.3		mg/L	<0.01	0.00106
Cyanide (as free cyanide)	0.2		mg/L	<0.005	<0.01
Flouride	4	2	mg/L	0.66	0.519
Lead[2]	0.015		mg/L	<0.005	<0.001
Mercury (inorganic)	0.002		mg/L	<0.0002	<0.0001
Magnesium			mg/L	21.3	22.9
Molybdenum			mg/L	NT	0.00787
Nickel			mg/L	<0.02	<0.001
Nitrate (as N)	10		mg/L	8.1	8.83
Nitrite (as N)	1		mg/L	<0.01	<0.5
Total Nitrate + Nitrite (as N)	10		mg/L	7.96	8.83
Ortho Phosphate			mg/L	0.11	NT
Potassium			mg/L	17.3	NT
Selenium	0.05		mg/L	0.011	0.00858
Sodium			mg/L	NT	64.0
Thallium	0.002		mg/L	<0.001	<0.001
Organic Chemicals (SOCs and VOCs)	**MCL**	**SMCL**			
Acrylamide	0.05% dosed at 1ppm		mg/L	NT	NT
Alachlor	0.002		mg/L	<0.0004	<0.0004
Aldicarb			mg/L	<0.003	NT
Aldicarb sulfone			mg/L	<0.002	NT
Aldicarb sulfoxide			mg/L	<0.004	NT
Adrin			mg/L	<0.0002	NT
Atrazine	0.003		mg/L	<0.0002	<0.0002
Benzene	0.005		mg/L	<0.0005	<0.0005
Benzo(a)pyrene (PAHs)	0.0002		mg/L	<0.00002	<0.00004
Butachlor			mg/L	<0.0004	NT
Carbaryl			mg/L	<0.002	NT
Carbofuran	0.04		mg/L	<0.002	<0.002
Carbon, Total Organic (TOC)			mg/L	11.4	NT
3-Hydroxycarbofurn			mg/L	<0.002	NT
Carbon tetrachloride	0.005		mg/L	<0.0005	<0.0005
Chlordane	0.002		mg/L	<0.0001	<0.0005
Chlorobenzene			mg/L	<0.0005	<0.0005
2,4-Dichlorophenoxyacetic acid (2,4-D)	0.07		mg/L	<0.0001	<0.0001
Dalapon	0.2		mg/L	<0.0001	<0.001
1,2-Dibromo-3-chloropropane (DBCP)	0.0002		mg/L	<0.00002	<0.00004
o-Dichlorobenzene	0.6		mg/L	<0.0005	<0.0005
p-Dichlorobenzene	0.075		mg/L	<0.0005	<0.0005
1,2-Dichloroethane	0.005		mg/L	<0.0005	<0.0005
1,1-Dichloroethylene	0.007		mg/L	<0.0005	<0.0005
cis-1,2-Dichloroethylene	0.07		mg/L	<0.0005	<0.0005
trans-1,2-Dichloroethylene	0.1		mg/L	<0.0005	<0.0005
Dichloromethane	0.005		mg/L	<0.0005	<0.0005
1,2-Dichloropropane	0.005		mg/L	<0.0005	<0.0005
Di(2-ethylhexyl)adipate	0.04		mg/L	<0.0002	<0.0002
Di(2-ethylhexyl)phthalate	0.006		mg/L	<0.0006	<0.0006
Dieldrin			mg/L	<0.0002	NT
Dinoseb	0.007		mg/L	<0.0002	<0.0002
Dioxin (2,3,7,8-TCDD)	0.00000003		mg/L	NT	<0.000000005
Dissolved Organic Carbon			Mg/L	0.8	NT
Diquat	0.02		mg/L	<0.0008	<0.0008
Endothall	0.1		mg/L	<0.025	<0.01
Endrin	0.002		mg/L	<0.00002	<0.00002
Ethane			mg/L	<0.00080	NT
Ethene			mg/L	<0.0012	NT
Ethylbenzene	0.7		mg/L	<0.0005	<0.0005
Ethylene Dibromide (EDB)	0.00005		mg/L	<0.00002	<0.00002
Glyphosate	0.7		mg/L	<0.01	<0.01
Heptachlor	0.0004		mg/L	<0.00004	<0.00008
Heptachor epoxide	0.0002		mg/L	<0.00002	<0.00004
Hexachlorobenzene	0.001		mg/L	<0.0002	<0.0002
Hexchlorocyclopentadiene (C-56)	0.05		mg/L	<0.0002	<0.0002
Lindane	0.0002		mg/L	<0.00002	<0.00004
Methane			mg/L	<0.00040	NT
Methyl-tert-butylether (MTBE)			mg/L	<0.0005	NT
Methoxychlor	0.04		mg/L	<0.0001	<0.0002
Methomyl			mg/L	<0.002	NT
Metolachlor			mg/L	<0.001	NT
Metribuzin			mg/L	<0.0002	NT

Table 1 (Con't)
Summary of Water Quality Testing Results
City of Adrian Well 6

Analyte	State Standards MCL	State Standards SMCL	Units	*Test Boring (220'-235' Interval)* 5-Jun-14	*Production Well* 29-Jan-15
Monochlorobenzene	0.1		mg/L	<0.0005	<0.0005
Oxamyl (Vydate)	0.2		mg/L	<0.004	<0.004
Pentachlorophenol (PCP)	0.001		mg/L	<0.00004	<0.00004
Picloram	0.5		mg/L	<0.0001	<0.0001
Polychlorinated Biphenyls (PCBs)	0.0005		mg/L	<0.00010	<0.0005
Propachlor			mg/L	<0.0002	NT
Silica			mg/L	66.1	NT
Simazine	0.004		mg/L	<0.00015	<0.00015
Styrene	0.1		mg/L	<0.0005	<0.0005
Tetrachloroethylene (PCE)	0.005		mg/L	<0.0005	<0.0005
Toluene	1		mg/L	0.0008	<0.0005
Toxaphene	0.003		mg/L	<0.001	<0.002
2,4,5-TP Silvex	0.05		mg/L	<0.0002	<0.0002
1,2,4-Trichlorobenzene	0.07		mg/L	<0.0005	<0.0005
1,1,1-Trichloroethane	0.2		mg/L	<0.0005	<0.0005
Trichloroethylene (TCE)	0.005		mg/L	<0.0005	<0.0005
1,1,2-Trichloroethane	0.005		mg/L	<0.0005	<0.0005
Vinyl chloride	0.002		mg/L	<0.0005	<0.0005
Xylenes (total)	10		mg/L	<0.0005	<0.0005
Disinfection Byproducts	**MCL**	**SMCL**			
Total Trihalomethanes (TTHM)	0.08		mg/L	<0.0005	<0.0003
Haloacetic acids (five)(HAA5)	0.06		mg/L	NT	NT (untreated)
Bromate	0.01		mg/L	<0.005	NT (untreated)
Chlorite	1		mg/L	<0.010	NT (untreated)
Radionuclides	**MCL**	**SMCL**			
Gross Alpha	15		pCi/L	33 ± 7.1	18.7 ± 2.83
Combined Radium-226 and Radium-228	5		pCi/L	<1	0.272 ± 0.646
Uranium	30		ug/L	30	22.2
Beta/Photon emitters	4 mrem/yr		pCi/L	7.5 ± 4.3	14.2 ± 1.67
Secondary Contaminants	**MCL**	**SMCL**			
Color		15	CU	<5	<5
Corrosivity		non-corrosive	LI	NT	0.423 (non-corrosive)*
Foaming Agents		0.5	mg/L	<0.01	<0.05
pH (laboratory)		6.5-8.5	SU	7.1	7.62
Hardness (as CaCO3)		250	mg/L	189	204
Odor		3	TON	<1	<1
Total dissolved solids (TDS)		500	mg/L	580	576
Aluminum		0.05-0.2	mg/L	0.46	<0.01
Chloride		250	mg/L	30	25.9
Iron (total)		0.3	mg/L	0.29	0.0311
Iron (dissolved)			mg/L	<0.05	NT
Manganese		0.05	mg/L	<0.05	<0.01
Silver		0.1	mg/L	<0.010	<0.001
Sulfate		250	mg/L	85	80.5
Zinc		5	mg/L	0.02	0.00146
Microbiological	**MCL**	**SMCL**			
Total Coliforms			mg/L	NT	NT
Turbidity	5		NTU	1	NT
Iron Bacteria				NT	Present
Sulfate reducing bacteria				NT	Not Present
Miscellaneous	**MCL**	**SMCL**			
Hardness			mg/L	296	298
Alkalinity			mg/L	314	302
Conductivity (laboratory)			µS/cm	861	NT
Hydrogen Sulfide			mg/L	<0.05	NT
Chemical Oxygen Demand			mg/L	33.8	NT
Total Suspended Solids			mg/L	4	NT
Field Parameters	**MCL**	**SMCL**			
pH			SU	7.1	7.5
Temperature			°C	16.6	14.8
Specific Conductance			µS/cm	798	785
Dissolved Oxygen			mg/L	8.0	6.1
ORP			mV	126	163

NOTES

Units are in milligrams per liter (mg/L) unless otherwise noted.

MFL = million fibers per liter	SU = standard unit
CU = color units	µS/cm = micro siemens per centimeter
TON = threshold odor number	mV = millivolt
pCi/L = picocuries per liter	°C = degrees celsius
mrem/yr = millirems per year	NTU = nephelometric turbidity unit
LI = Langlier Index	ug/L = micrograms per liter
*Slight tendency towards precipitation	Exceeds MCL or SMCL

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These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1533822

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT AFTER COAG/FILT.

Time of Collection: 13:25
Date of Collection: 8/12/2015
Date Received: 8/12/2015
Report Date: //

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		0.010	mg/L	0.003	EPA 200.8	8/17/2015	JH
Iron, Fe		<0.05	mg/L	0.05	EPA 200.7	8/20/2015	KC
Silica		66.0	mg/L	0.25	EPA 200.7	8/18/2015	KC
Uranium, U		18	ug/L	1	EPA 200.8	8/17/2015	JH
Vanadium, V		<0.05	mg/L	0.05	EPA 200.7	8/19/2015	KC
Nitrate (as N)		9.5	mg/L	0.2	EPA 300.0	8/13/2015	NC
Total Phosphate (as P)			mg/L	0.05	EPA 365.4		

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.
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manager: Brian M. McGovern

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Laboratory Analysis Report

Sample Number: 1534038

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT AFTER COAG/FILT.

Time of Collection: 7:47
Date of Collection: 8/13/2015
Date Received: 8/13/2015
Report Date: //

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		<0.003	mg/L	0.003	EPA 200.8	8/20/2015	JH
Iron, Fe		<0.05	mg/L	0.05	EPA 200.7	8/17/2015	KC
Metals Digestion		*			EPA 200.9-11	8/14/2015	JMS
Silica		62.5	mg/L	0.25	EPA 200.7	8/20/2015	KC
Uranium, U		6	ug/L	1	EPA 200.8	8/20/2015	JH
Vanadium, V		<0.05	mg/L	0.05	EPA 200.7	8/19/2015	KC
Nitrate (as N)		9.4	mg/L	0.2	EPA 300.0	8/14/2015	NC
Total Phosphate (as P)			mg/L	0.05	EPA 365.4		

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

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Laboratory Analysis Report

Sample Number: 1534041

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT AFTER COAG/FILT.

Time of Collection: 13:25
Date of Collection: 8/13/2015
Date Received: 8/13/2015
Report Date: //

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		0.008	mg/L	0.003	EPA 200.8	8/20/2015	JH
Iron, Fe		<0.05	mg/L	0.05	EPA 200.7	8/17/2015	KC
Metals Digestion		*			EPA 200.9-11	8/14/2015	JMS
Silica		64.2	mg/L	0.25	EPA 200.7	8/20/2015	KC
Uranium, U		20	ug/L	1	EPA 200.8	8/20/2015	JH
Vanadium, V		<0.05	mg/L	0.05	EPA 200.7	8/19/2015	KC
Nitrate (as N)		9.3	mg/L	0.2	EPA 300.0	8/14/2015	NC
Total Phosphate (as P)			mg/L	0.05	EPA 365.4		

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

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Laboratory Analysis Report

Sample Number: 1533584

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT TEST RAW INFLUENT

Time of Collection: 9:30
Date of Collection: 8/11/2015
Date Received: 8/11/2015
Report Date: 8/17/2015

PWS#:

Field Temp: Temp Rcvd in Lab: **PWS Name:**

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		0.070	mg/L	0.003	EPA 200.8	8/13/2015	JH
Uranium, U		26	ug/L	1	EPA 200.8	8/13/2015	JH
Nitrate (as N)		9.5	mg/L	0.2	EPA 300.0	8/12/2015	NC

MCL = Maximum Contamination Level
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UR = Unregulated

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Laboratory Analysis Report

Sample Number: 1533585

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT TEST AFTER COAG/FILT

Time of Collection: 9:32
Date of Collection: 8/11/2015
Date Received: 8/11/2015
Report Date: 8/24/2015

PWS#:

Field Temp: Temp Rcvd in Lab: **PWS Name:**

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		<0.003	mg/L	0.003	EPA 200.8	8/13/2015	JH
Iron, Fe		<0.05	mg/L	0.05	EPA 200.7	8/14/2015	JH
Silica		62.1	mg/L	0.25	EPA 200.7	8/17/2015	KC
Uranium, U		<1	ug/L	1	EPA 200.8	8/13/2015	JH
Vanadium, V		<0.05	mg/L	0.05	EPA 200.7	8/19/2015	KC
Nitrate (as N)		9.4	mg/L	0.2	EPA 300.0	8/12/2015	NC
Total Phosphate (as P)		0.07	mg/L	0.05	EPA 365.4	8/20/2015	DS

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

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Laboratory Analysis Report

Sample Number: 1533586

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT TEST NXT-2

Time of Collection: 9:36
Date of Collection: 8/11/2015
Date Received: 8/11/2015
Report Date: 8/18/2015

PWS#:

Field Temp: Temp Rcvd in Lab: **PWS Name:**

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		<0.003	mg/L	0.003	EPA 200.8	8/14/2015	JH
Uranium, U		<1	ug/L	1	EPA 200.8	8/14/2015	JH
Nitrate (as N)		8.3	mg/L	0.2	EPA 300.0	8/12/2015	NC

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

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Laboratory Analysis Report

Sample Number: 1533587

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT TEST FO36

Time of Collection: 9:38
Date of Collection: 8/11/2015
Date Received: 8/11/2015
Report Date: 8/18/2015

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		<0.003	mg/L	0.003	EPA 200.8	8/14/2015	JH
Uranium, U		<1	ug/L	1	EPA 200.8	8/14/2015	JH
Nitrate (as N)		7.1	mg/L	0.2	EPA 300.0	8/12/2015	NC

MCL = Maximum Contamination Level
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UR = Unregulated

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Laboratory Analysis Report

Sample Number: 1533588

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT TEST AFTER COAG/FILT.

Time of Collection: 15:18
Date of Collection: 8/11/2015
Date Received: 8/11/2015
Report Date: 8/24/2015

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		0.006	mg/L	0.003	EPA 200.8	8/14/2015	JH
Iron, Fe		<0.05	mg/L	0.05	EPA 200.7	8/17/2015	KC
Silica		66.6	mg/L	0.25	EPA 200.7	8/18/2015	KC
Uranium, U		16	ug/L	1	EPA 200.8	8/14/2015	JH
Vanadium, V		<0.05	mg/L	0.05	EPA 200.7	8/19/2015	KC
Nitrate (as N)		9.5	mg/L	0.2	EPA 300.0	8/12/2015	NC
Total Phosphate (as P)		<0.05	mg/L	0.05	EPA 365.4	8/20/2015	DS

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MDL = Method/Minimum Detection Limit
UR = Unregulated

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Laboratory Analysis Report

Sample Number: 1533589

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT TEST NXT-2

Time of Collection: 15:21
Date of Collection: 8/11/2015
Date Received: 8/11/2015
Report Date: 8/18/2015

PWS#:

Field Temp: Temp Rcvd in Lab: **PWS Name:**

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		<0.003	mg/L	0.003	EPA 200.8	8/14/2015	JH
Uranium, U		<1	ug/L	1	EPA 200.8	8/14/2015	JH
Nitrate (as N)		9.4	mg/L	0.2	EPA 300.0	8/12/2015	NC

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Laboratory Analysis Report

Sample Number: 1533590

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT TEST FO36

Time of Collection: 15:20
Date of Collection: 8/11/2015
Date Received: 8/11/2015
Report Date: 8/18/2015

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		0.006	mg/L	0.003	EPA 200.8	8/14/2015	JH
Uranium, U		16	ug/L	1	EPA 200.8	8/14/2015	JH
Nitrate (as N)		8.9	mg/L	0.2	EPA 300.0	8/12/2015	NC

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These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1533821

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT RAW INFLUENT

Time of Collection: 13:23
Date of Collection: 8/12/2015
Date Received: 8/12/2015
Report Date: 8/18/2015

PWS#:

Field Temp: Temp Rcvd in Lab: **PWS Name:**

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		0.073	mg/L	0.003	EPA 200.8	8/17/2015	JH
Uranium, U		23	ug/L	1	EPA 200.8	8/17/2015	JH
Nitrate (as N)		9.4	mg/L	0.2	EPA 300.0	8/13/2015	NC

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
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Date Report Printed: 8/25/2015 9:37:28 AM
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These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1533823

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT FO-36

Time of Collection: 13:28
Date of Collection: 8/12/2015
Date Received: 8/12/2015
Report Date: 8/18/2015

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		0.009	mg/L	0.003	EPA 200.8	8/17/2015	JH
Uranium, U		17	ug/L	1	EPA 200.8	8/17/2015	JH
Nitrate (as N)		8.3	mg/L	0.2	EPA 300.0	8/13/2015	NC

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MDL = Method/Minimum Detection Limit
UR = Unregulated

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http://www.analyticallaboratories.com

These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1533824

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT NXT-2

Time of Collection: 13:30
Date of Collection: 8/12/2015
Date Received: 8/12/2015
Report Date: 8/18/2015

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		<0.003	mg/L	0.003	EPA 200.8	8/17/2015	JH
Uranium, U		<1	ug/L	1	EPA 200.8	8/17/2015	JH
Nitrate (as N)		9.4	mg/L	0.2	EPA 300.0	8/13/2015	NC

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MDL = Method/Minimum Detection Limit
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Laboratory Analysis Report

Sample Number: 1534037

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT RAW INFLUENT

Time of Collection: 7:45
Date of Collection: 8/13/2015
Date Received: 8/13/2015
Report Date: 8/24/2015

PWS#:

Field Temp: Temp Rcvd in Lab: **PWS Name:**

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		0.068	mg/L	0.003	EPA 200.8	8/20/2015	JH
Metals Digestion		*			EPA 200.9-11	8/14/2015	JMS
Uranium, U		25	ug/L	1	EPA 200.8	8/20/2015	JH
Nitrate (as N)		9.4	mg/L	0.2	EPA 300.0	8/14/2015	NC

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.
If you have any questions about this report, or any
future analytical needs, please contact your client
manager: Brian M. McGovern

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 8/25/2015 9:37:29 AM
http://www.analyticallaboratories.com

These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1534039

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT NXT-2

Time of Collection: 7:49
Date of Collection: 8/13/2015
Date Received: 8/13/2015
Report Date: 8/24/2015

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		<0.003	mg/L	0.003	EPA 200.8	8/20/2015	JH
Metals Digestion		*			EPA 200.9-11	8/14/2015	JMS
Uranium, U		<1	ug/L	1	EPA 200.8	8/20/2015	JH
Nitrate (as N)		9.3	mg/L	0.2	EPA 300.0	8/14/2015	NC

MCL = Maximum Contamination Level
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1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 8/25/2015 9:37:29 AM
http://www.analyticallaboratories.com

These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1534040

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT FO-36

Time of Collection: 7:51
Date of Collection: 8/13/2015
Date Received: 8/13/2015
Report Date: 8/24/2015

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		<0.003	mg/L	0.003	EPA 200.8	8/20/2015	JH
Metals Digestion		*			EPA 200.9-11	8/14/2015	JMS
Uranium, U		5	ug/L	1	EPA 200.8	8/20/2015	JH
Nitrate (as N)		8.3	mg/L	0.2	EPA 300.0	8/14/2015	NC

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

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future analytical needs, please contact your client
manager: Brian M. McGovern

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 8/25/2015 9:37:29 AM
http://www.analyticallaboratories.com

These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1534042

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT NXT-2

Time of Collection: 13:26
Date of Collection: 8/13/2015
Date Received: 8/13/2015
Report Date: 8/24/2015

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		<0.003	mg/L	0.003	EPA 200.8	8/20/2015	JH
Metals Digestion		*			EPA 200.9-11	8/14/2015	JMS
Uranium, U		<1	ug/L	1	EPA 200.8	8/20/2015	JH
Nitrate (as N)		9.3	mg/L	0.2	EPA 300.0	8/14/2015	NC

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

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future analytical needs, please contact your client
manager: Brian M. McGovern

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 8/25/2015 9:37:29 AM
http://www.analyticallaboratories.com

These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1534043

Attn: JUSTIN WALKER
KELLER ASSOCIATES, INC
131 S W 5TH AVE STE A
MERIDIAN, ID 83642

Collected By: C. LORDS
Submitted C. LORDS

Source of Sample:
ADRIAN WELL 6 PILOT FO-36

Time of Collection: 13:27
Date of Collection: 8/13/2015
Date Received: 8/13/2015
Report Date: 8/24/2015

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low		0.012	mg/L	0.003	EPA 200.8	8/20/2015	JH
Metals Digestion		*			EPA 200.9-11	8/14/2015	JMS
Uranium, U		16	ug/L	1	EPA 200.8	8/20/2015	JH
Nitrate (as N)		8.2	mg/L	0.2	EPA 300.0	8/14/2015	NC

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

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future analytical needs, please contact your client
manager: Brian M. McGovern

APPENDIX C

GEOTECHNICAL REPORT

KELLER associates

213013-003/PER/15-373

Mr. Justin Walker
Keller & Associates
131 SW 5th Ave.
Meridian, Idaho 83642
208-859-2932

Re: Geotechnical Engineering Report
Adrian Water System Improvements
Well House 2 & 3 – Emerald Slope and Well Rd
Adrian, Oregon

Dear Mr. Walker:

In compliance with your instructions, MTI has conducted a limited soils exploration and foundation evaluation for the above referenced development. Fieldwork for this investigation was conducted on 6 July 2015. The proposed building site is in the northwestern portion of the City of Adrian, Malheur County, Oregon, and occupies a portion of the NW¼SW¼ of Section 14, Township 21 South, Range 46 East, Boise Meridian. This project will consist of construction of one single-story structure to be developed on the City of Adrian enclosure at location of Well 2 and 3. MTI has not been informed of the proposed grading plan.

Authorization

Authorization to perform this exploration and analysis was given in the form of a written authorization to proceed from Mr. Justin Walker of Keller Associates to Charles D. Walker of Materials Testing and Inspection, Inc. (MTI), on 23 June 2015. Said authorization is subject to terms, conditions, and limitations described in the Professional Services Contract entered into between Keller Associates and MTI. Our scope of services for the proposed development has been provided in our proposal dated 2 July 2015 and repeated below.

Scope of Investigation

The scope of this investigation included review of geologic literature and existing available geotechnical studies of the area, visual site reconnaissance of the immediate site, subsurface exploration of the site, field and laboratory testing of materials collected, and engineering analysis and evaluation of foundation materials. Our scope of work did not include foundation design, pavement design, or earthwork recommendations. The scope of work did not include design recommendations specific to individual residences.

Regional Geology

The subject site is located within the Western Snake River Flood Plain. This geomorphological feature, within this region, consists of a broad, deeply floored, thick sequence of alluvial silts, clays, sands and gravel. These sediments typically have been deposited on Miocene (24 to 5 million years ago) basalt flows and tuffaceous sediments, the eastern most reaches of the Columbia Plateau. This thick sequence of generally

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fine-grained sediments, predominately derived from the Idaho Batholith, contains minor intercalated tuffs and basalt flows within the earliest deposits. Most of these sediments were placed during the latter part of the Miocene and are predominately of lacustrine origin. Lakes were created within this area as a result of basalt flow impoundments formed to the west along the ancestral Columbia River. Many of the fossil leaf forms uncovered in these lacustrine plain sediments indicate the presence of a wet tropical climate that prevailed at this time. Early Quaternary age (1.6 million years ago to present) sediments deposited on top of the lacustrine plain were apparently deposited during a time of extremely dry climactic conditions in which little water was present for removal, sorting, and deposition of the debris.

General Site Characteristics

This proposed development consists of approximately one half acre of enclosed relatively flat terrain. The enclosure consists of an 8 foot security fence with one gated entry point located at the South East corner. Throughout the majority of the site, surficial soils consist of fine-grained sandy-silt mixtures. Vegetation is limited across the area proposed for the structure. Two well houses that supply the city of Adrian are situated inside the fenced enclosure.

The project site is bisected by farm ground that has a west to east trending drainage. This drainage slopes downwards from the west to the east at approximately 25 feet horizontal to 1 foot vertical (25:1) and represents the most gently sloping portion of the site. Slopes that are west of the enclose that are outside the acreage are steepest on hillsides above the drainage floor at approximately 2:1.

Regional drainage is east toward a drainage canal approximately 75 feet east of the enclosure. Stormwater drainage for the site is achieved by both sheet runoff and percolation through surficial soils. Runoff predominates off of the adjacent farm ground and is channeled into the aforementioned drainage canal while percolation prevails across the gently sloping enclosure and near level areas. Stormwater drainage collection and retention systems are not in place on the project site and do not currently exist within the vicinity of the project site.

Geoseismic Setting

Soils on site are classed as Site Class D in accordance with Chapter 20 of the American Society of Civil Engineers (ASCE) publication ASCE/SEI 7-10. Structures constructed on this site should be designed per IBC requirements for such a seismic classification. Our investigation did not reveal hazards resulting from potential earthquake motions including: slope instability, liquefaction, and surface rupture caused by faulting or lateral spreading. Incidence and anticipated acceleration of seismic activity in the area is low.

Exploration and Sampling Procedures

Field exploration conducted to determine engineering characteristics of subsurface materials included a reconnaissance of the project site and investigation by test pit. Test pit sites were located in the field by means of visual approximation from on-site features or known locations and are presumed to be accurate to within a few feet. Upon completion of investigation, each test pit was backfilled with loose excavated

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materials. Re-excavation and compaction of these test pit areas are required prior to construction of overlying structures.

In addition, samples were obtained from representative soil strata encountered. Samples obtained have been visually classified in the field by professional staff, identified according to test pit number and depth, placed in sealed containers, and transported to our laboratory for additional testing. Subsurface materials have been described in detail on logs provided in the **Enclosures** section. Results of field and laboratory tests are also presented in the **Enclosures** section. MTI recommends that these logs **not** be used to estimate fill material quantities.

Laboratory Testing Program

Along with our field investigation, a supplemental laboratory testing program was conducted to determine additional pertinent engineering characteristics of subsurface materials necessary in an analysis of anticipated behavior of the proposed structures. Laboratory tests were conducted in accordance with current applicable American Society for Testing and Materials (ASTM)) specifications and results of these tests are to be found on the accompanying logs located in the **Enclosures** section. The laboratory testing program for this report included: Atterberg Limits Testing and ASTM D4318, Grain Size Analysis

Soil and Sediment Profile

The profile below represents a generalized interpretation for the project site. Note that on site soils strata, encountered between test pit locations, may vary from the individual soil profiles presented in the logs, which can be found in the **Enclosures** section.

The materials encountered during exploration were quite typical for the geologic area. Surficial soils were predominately silts and sandy silts. Clays were not encounter at either of the two test pit locations. Silts were more often a light to medium brown. These fine grained soils generally exhibited moisture contents of dry, slightly moist to moist. Consistencies commonly ranged from stiff to hard, with some of the firmer soil horizons containing some degree of calcium carbonate cementation (hardpan). No Organic materials were present and disturbed materials, as a result of plowing activities prior to the wells 1985 existence were not encountered.

In many of the more deeply developed soils, silt with sand sediments were encountered, and in a few cases, poorly graded sand were present. Silt with sands were most often classified as light brown, moist, and varied in relative density from medium dense to dense. Hardpan cementation also extended through portions of these horizons. The occurrence of poorly graded sands was limited, and usually consisted of brown to light brown, slightly moist to moist.

Competency of test pit walls varied little across the site. In general, fine grained soils remained stable. However, moisture contents will also affect wall competency with saturated soils having a tendency to readily slough when under load and unsupported.

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Groundwater

During this field investigation, groundwater was encountered in test pits at depths ranging from 9.0 to 10.0 feet bgs. Actual groundwater depths varied because of soil type and ground elevation. Soil moistures in the test pits were generally dry to slightly moist within surficial soils. Within the poorly graded sands, soil moistures graded from moist to saturated as the water table was approached and penetrated.

In the vicinity of the project site, groundwater levels are controlled in large part by residential and commercial irrigation activity. Maximum groundwater elevations likely occur during late spring to early summer runoff season. Based on evidence of this investigation and background knowledge of the area, MTI estimates groundwater depths to remain approximately 8 feet bgs throughout the year. This depth can be confirmed through long-term groundwater monitoring.

It is recommended that if infiltration facilities are constructed on the site they should be extended into native poorly graded sand sediments. Excavation depths of approximately 7 to 8 feet bgs should be anticipated to expose these poorly graded sand sediments. Because of the soil permeability, ASTM C33 filter sand, or equivalent, should be incorporated into design for the infiltration facilities. An infiltration rate of 4 inches per hour should be used in design. If infiltration facilities are expected to be part of the project construction then actual infiltration rates would need to be confirmed at the time of construction.

Foundation Design Recommendations

Based on data obtained from the site and test results from various laboratory tests performed, MTI recommends the following guidelines for the net allowable soil bearing capacity:

Soil Bearing Capacity

Footing Depth	ASTM D1557 Subgrade Compaction	Net Allowable Soil Bearing Capacity
Footings must bear on competent, undisturbed, native sandy silt soils or compacted structural fill. Excavation depths ranging from roughly 3 to 4 feet bgs should be anticipated to expose proper bearing soils.[1]	95% for Native Soils & Structural Fill	2,000 lbs/ft^2 A ⅓ increase is allowable for short-term loading, which is defined by seismic events or designed wind speeds.

[1]It will be required for MTI personnel to verify the bearing soil suitability for each structure at the time of construction. It is noted that the upper couple of feet across the site is in a disturbed condition and is not suitable for support of foundation elements.

Footings should be proportioned to meet either the stated soil bearing capacity or the 2012 IBC minimum requirements. Total settlement should be limited to approximately 1 inch, and differential settlement should be limited to approximately ½ inch. Objectionable soil types encountered at the bottom of footing excavations should be removed and replaced with structural fill. Excessively loose or soft areas that are encountered in the footings subgrade will require over-excavation and backfilling with structural fill. To minimize the effects of slight differential movement that may occur because of variations in the character of supporting soils and seasonal moisture content, MTI recommends continuous footings be suitably reinforced

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to make them as rigid as possible. For frost protection, the bottom of external footings should be 30 inches below finished grade.

Warranty and Limiting Conditions

MTI warrants that findings and conclusions contained herein have been formulated in accordance with generally accepted professional engineering practice in the fields of foundation engineering, soil mechanics, and engineering geology only for the site and project described in this report. These engineering methods have been developed to provide the client with information regarding apparent or potential engineering conditions relating to the site within the scope cited above and are necessarily limited to conditions observed at the time of the site visit and research. Field observations and research reported herein are considered sufficient in detail and scope to form a reasonable basis for the purposes cited above.

Exclusive Use

This report was prepared for exclusive use of the property owner(s), at the time of the report, and their retained design consultants ("Client"). Conclusions and recommendations presented in this report are based on the agreed-upon scope of work outlined in this report together with the Contract for Professional Services between the Client and Materials Testing and Inspection, Inc. ("Consultant"). Use or misuse of this report, or reliance upon findings hereof, by parties other than the Client is at their own risk. Neither Client nor Consultant make representation of warranty to such other parties as to accuracy or completeness of this report or suitability of its use by such other parties for purposes whatsoever, known or unknown, to Client or Consultant. Neither Client nor Consultant shall have liability to indemnify or hold harmless third parties for losses incurred by actual or purported use or misuse of this report. No other warranties are implied or expressed.

Report Recommendations are Limited and Subject to Misinterpretation

There is a distinct possibility that conditions may exist that could not be identified within the scope of the investigation or that were not apparent during our site investigation. Findings of this report are limited to data collected from noted explorations advanced and do not account for unidentified fill zones, unsuitable soil types or conditions, and variability in soil moisture and groundwater conditions. To avoid possible misinterpretations of findings, conclusions, and implications of this report, MTI should be retained to explain the report contents to other design professionals as well as construction professionals.

Since actual subsurface conditions on the site can only be verified by earthwork, note that construction recommendations are based on general assumptions from selective observations and selective field exploratory sampling. Upon commencement of construction, such conditions may be identified that require corrective actions, and these required corrective actions may impact the project budget. Therefore, construction recommendations in this report should be considered preliminary, and MTI should be retained to observe actual subsurface conditions during earthwork construction activities to provide additional construction recommendations as needed.

Since geotechnical reports are subject to misinterpretation, **do not** separate the soil logs from the report. Rather, provide a copy of, or authorize for their use, the complete report to other design professionals or

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contractors. Locations of exploratory sites referenced within this report should be considered approximate locations only. For more accurate locations, services of a professional land surveyor are recommended.

This report is also limited to information available at the time it was prepared. In the event additional information is provided to MTI following publication of our report, it will be forwarded to the client for evaluation in the form received.

Environmental Concerns

Comments in this report concerning either onsite conditions or observations, including soil appearances and odors, are provided as general information. These comments are not intended to describe, quantify, or evaluate environmental concerns or situations. Since personnel, skills, procedures, standards, and equipment differ, a geotechnical investigation report is not intended to substitute for a geoenvironmental investigation or a Phase II/III Environmental Site Assessment. If environmental services are needed, MTI can provide, via a separate contract, those personnel who are trained to investigate and delineate soil and water contamination.

General Comments

Often, questions arise concerning soil conditions because of design and construction details that occur on a project. MTI would be pleased to continue our role as geotechnical engineers during project implementation. Additionally, MTI can provide materials testing and special inspection services during construction of this project. If you will advise us of the appropriate time to discuss these engineering services, we will meet with you at your convenience.

MTI appreciates this opportunity to be of service to you and looks forward to working with you in the future. If you have questions, please call «Office_Phone_Number».

Respectfully Submitted,
Materials Testing & Inspection, Inc.

Charles D. Walker
Regional Manager

Reviewed by: David O. Cram, P.E.
General Manager

Enclosures:
Geotechnical General Notes
Geotechnical Investigation Test Pit Logs
Vicinity Map
Site Map

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Geotechnical General Notes

RELATIVE DENSITY AND CONSISTENCY CLASSIFICATION			
Coarse-Grained Soils	**SPT Blow Counts (N)**	**Fine-Grained Soils**	**SPT Blow Counts (N)**
Very Loose:	< 4	Very Soft:	< 2
Loose:	4-10	Soft:	2-4
Medium Dense:	10-30	Medium Stiff:	4-8
Dense:	30-50	Stiff:	8-15
Very Dense:	>50	Very Stiff:	15-30
		Hard:	>30

Moisture Content	
Description	**Field Test**
Dry	Absence of moisture, dusty, dry to touch
Moist	Damp but not visible moisture
Wet	Visible free water, usually soil is below water table

Cementation	
Description	**Field Test**
Weakly	Crumbles or breaks with handling or slight finger pressure
Moderately	Crumbles or beaks with considerable finger pressure
Strongly	Will not crumble or break with finger pressure

PARTICLE SIZE					
Boulders:	>12 in.	Coarse-Grained Sand:	5 to 0.6 mm	Silts:	0.075 to 0.005 mm
Cobbles:	12 to 3 in.	Medium-Grained Sand:	0.6 to 0.2 mm	Clays:	<0.005 mm
Gravel:	3 in. to 5 mm	Fine-Grained Sand:	0.2 to 0.075 mm		

UNIFIED SOIL CLASSIFICATION SYSTEM			
Major Divisions		**Symbol**	**Soil Descriptions**
Coarse-Grained Soils <50% passes No.200 sieve	Gravel & Gravelly Soils <50% coarse fraction passes No.4 sieve	GW	Well-graded gravels; gravel/sand mixtures with little or no fines
		GP	Poorly-graded gravels; gravel/sand mixtures with little or no fines
		GM	Silty gravels; poorly-graded gravel/sand/silt mixtures
		GC	Clayey gravels; poorly-graded gravel/sand/clay mixtures
	Sand & Sandy Soils >50% coarse fraction passes No.4 sieve	SW	Well-graded sands; gravelly sands with little or no fines
		SP	Poorly-graded sands; gravelly sands with little or no fines
		SM	Silty sands; poorly-graded sand/gravel/silt mixtures
		SC	Clayey sands; poorly-graded sand/gravel/clay mixtures
Fine Grained Soils >50% passes No.200 sieve	Silts & Clays LL < 50	ML	Inorganic silts; sandy, gravelly or clayey silts
		CL	Lean clays; inorganic, gravelly, sandy, or silty, low to medium-plasticity clays
		OL	Organic, low-plasticity clays and silts
	Silts & Clays LL > 50	MH	Inorganic, elastic silts; sandy, gravelly or clayey elastic silts
		CH	Fat clays; high-plasticity, inorganic clays
		OH	Organic, medium to high-plasticity clays and silts

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Highly Organic Soils	PT	Peat, humus, hydric soils with high organic content

FRACTURING	
SPACING	**DISCRIPTION**
6 ft.	Very widely
2 – 6 ft.	Widely
8 – 24 in.	Moderately
2 ½ - 8 in.	Closely
¾ - 2 ½ in.	Very Closely

ROCK QUALITY DESIGNATION (RQD)	
RQD (%)	**ROCK QUALITY**
90 – 100	Excellent
75 – 90	Good
50 – 75	Fair
25 – 50	Poor
0 - 25	Very Poor

COMPETENCY			
STRENGTH	**CLASS**	**FIELD TEST**	**APPROXIMATE RANGE OF UNCONFINED COMPRESSIVE STRENGTH (tsf)**
Extremely Strong	I	Many blows with geologic hammer required to break intact specimen.	>2000
Very Strong	II	Hand-held specimen breaks with pick end of hammer under more than one blow.	2000 - 1000
Strong	III	Cannot be scraped or peeled with knife, hand-held specimen can be broken with single moderate blow with pick end of hammer.	1000 - 500
Moderately Strong	IV	Can just be scraped or peeled with knife. Indentations 1 mm to 3 mm show in specimen with moderate blow with pick end of hammer.	500 - 250
Weak	V	Material crumbles under moderate blow with pick end of hammer and can be peeled with a knife, but is hard to hand-trim for tri-axial test specimen.	250 - 10
Friable	VI	Material crumbles in hand.	N/A

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GEOTECHNICAL INVESTIGATION TEST PIT LOG

Test Pit Log #: TP-1 **Date Advanced:** 6 July 2015 **Logged by:** Charles D. Walker
Excavated by: David Durham Gravel Works **Location:** See Site Map Plates
Latitude: 43.740761 **Longitude:** -117.073571
Depth to Water Table: 10.0 feet bgs **Total Depth:** 10.5 Feet bgs

Depth (Feet bgs)	Field Description and USCS Soil and Sediment Classification	Sample Type	Sample Depth (Feet bgs)	Qp	Lab Test ID
0.0-2.1	Silt (ML): *Brown to dark brown, dry, loose to medium dense, with fine to coarse-grained sand. Note that near surface materials were in a disturbed condition.*	Bulk	0.5-1.0		A
2.1-4.3	Sandy Silt (ML): *Brown, moist, very stiff to hard, with fine-grained sand.*	Bulk	2.5-3.0		B
4.3-7.5	Silt with Sand (ML): *Light brown, slightly moist to moist, medium dense to dense, with fine to medium-grained sand.*	Bulk	5.0-7.0		C
7.5-10.5	Sandy Silt (ML): *Light brown, slightly moist to moist, medium dense to dense, with medium to coarse-grained sand.*	Bulk	8.0-9.5		D

Lab Test ID	M	LL	PI	Sieve Analysis				
-	%	-	-	#4	#10	#40	#100	#200
A	12.3	NP	NP	100	99	98	95	82.0
B		NP	NP	100	100	98	93	70.4
C		NP	NP	100	100	100	99	76.4
D	18.6	NP	NP	100	100	99	95	64.9

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GEOTECHNICAL INVESTIGATION TEST PIT LOG

Test Pit Log #: TP-2 **Date Advanced:** 6 July 2015 **Logged by:** Charles D. Walker
Excavated by: David Durham Gravel Works **Location:** See Site Map Plates
Latitude: 43.740995 **Longitude:** -117.073331
Depth to Water Table: 9.0 feet bsg **Total Depth:** 9.5 Feet bgs

Depth (Feet bgs)	Field Description and USCS Soil and Sediment Classification	Sample Type	Sample Depth (Feet bgs)	Qp	Lab Test ID
0.0-3.4	Silt (ML): *Brown to dark brown, dry, loose to medium dense, with fine to coarse-grained sand. Note that near surface materials were in a disturbed condition.*				
3.4-7.6	Sandy Silt (ML): *Brown, moist, very stiff to hard, with fine-grained sand.*				
7.6-9.5	Sandy Silt (ML): *Light brown, slightly moist to moist, medium dense to dense, with medium to coarse-grained sand.*	Bulk	8.0-9.0		A

Lab Test ID	M	LL	PI	Sieve Analysis				
-	%	-	-	#4	#10	#40	#100	#200
A	20.1	NP	NP	100	100	99	95	66.1

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APPENDIX D

WELL 6 DEVELOPMENT

KELLER associates

213013-003/PER/15-373

March 17, 2015

Mr. Justin Walker, PE
Keller Associates, Inc.
131 S.W. 5th Ave., Suite A
Meridian, ID 83642

Subject: Summary of City of Adrian Well 6 Drilling, Construction and Testing

Justin:

This letter report summarizes the results of drilling, construction and testing of Well 6 for the City of Adrian (City). The City installed Well 6 to develop a new higher quality groundwater source to increase the reliability and capacity of the City's water supply. GSI Water Solutions, Inc. (GSI) provided well design, permitting, construction observation and pre-design hydrogeologic services for the Well 6 project under subcontract to Keller Associates, Inc. (Keller). Our services for this project were authorized by Keller on January 19, 2015 in Addendum No. 1 to the February 12, 2013 Agreement for Engineering Services between Keller and GSI.

General

The City contracted Riverside Inc. (Riverside) of Parma, Idaho to drill, construct and test Well 6. The Well 6 project was completed in two phases: (1) Riverside initially drilled a large diameter test boring at the Well 6 location and completed zonal testing of the boring in May 2014; (2) on the basis of the zonal testing, Riverside installed a production well in the boring in June 2014, and subsequently developed and tested the well in January 2015. The remainder of this document summarizes the following information:

- Permitting and authorizations for Well 6
- Summary of test boring drilling and testing
- Production well screen and filterpack design
- Well development
- Pumping test results
- Water quality sampling results

Authorization and Permitting

Well Site Easements

Well 6 is located in the NW¼ of SW¼ of Section 15, Township 21 South, Range 46 East, (Lat. 43.74366 Long. -117.091796) on an unirrigated parcel of property owned by DeHoog Properties, LLC (DeHoog), an Idaho limited liability corporation. DeHoog provided the City access to the site to drill a test well in spring 2014. DeHoog subsequently granted the City permanent easements for the well and access to the site for operation of the well. A copy of the recorded easements is provided in Attachment A.

Water Rights

Well 6 will be added as a new point of appropriation under Permit G-16074, with a maximum allowed instantaneous rate of 1.0 cubic feet per second (cfs), or approximately 448 gpm (Attachment B). Application for the amendment to the permit to add Well 6 is pending approval of an extension of the completion date for the permit by Oregon Water Resources Department (OWRD). The City has submitted an application for the extension, which is pending approval by OWRD.

Oregon Health Authority (OHA) Drinking Water Program (DWP) Plan Review

The City submitted initial requirements for plan review of a new supply well to the OHA DWP in June 2014 per Oregon Administrative Rules (OAR) 333-061-0060. Plan review materials submitted to the DWP included a general site plan, geologic log, well design, Land Use Compatibility Statement (LUCS) signed by a representative of Malheur County, Oregon, and the required plan review fee. DWP provided initial approval of the well in a June 17, 2014 letter to the City (Plan Review #94-2014). A copy of the letter is provided in Attachment C.

This letter report provides several required elements of the final plan review, including an as-built of the well, OWRD well report, including a geologic log, pumping test results and data, and water quality testing results.

Well Drilling, Construction and Development

Test Boring Drilling and Testing

Riverside began drilling of a test boring at the Well 6 site on May 28, 2014 and completed the boring on June 4. Interval testing of the boring was completed on June 5 and 6, 2014. The purpose of the test boring was to evaluate whether the unconfined aquifer hosted by alluvial terrace deposits under the parcel owned by DeHoog was suitable for construction of a water supply well to serve the City's long-term future needs. Objectives of the test boring were to evaluate the productivity and water quality of the alluvial terrace deposits. The sequencing of the test boring was as follows:

1. Riverside drilled a 20-inch diameter borehole to 250 feet below ground surface (bgs) with flooded and mud rotary reverse circulation techniques.
2. Riverside lost circulation while drilling the interval from 233 - 237 feet bgs, which drained the mud pit. Some sloughing of the borehole occurred with the

loss of hydrostatic pressure. Riverside restored circulation with addition of water and a thicker and heavier drilling mud mixture, cleaned out the lower 50 feet borehole and resumed drilling to the total borehole depth of 250 feet bgs.

3. Riverside completed testing of two intervals within the borehole to assess productivity and water quality. The tested intervals were (1) 220 – 235 feet bgs and (2) 170 – 185 feet bgs. Interval testing was completed as follows:
    a. Attached a 15-foot length of 6-inch diameter temporary screen on the end of the drill stem and lowering it into the borehole to the desired test depth
    b. Isolated the screened interval by placing a bentonite plug below the screen, filling the annulus with filterpack between the screen and the borehole, and placing bentonite pellets above the screen. Development and testing was completed after the bentonite pellets were allowed to hydrate for several hours.
    c. Installed a submersible pump in the drill stem, developed the interval and then completed a pumping test.
4. The City decided to construct a production well in the test boring on the basis of the interval testing, rather than to decommission the test boring and complete a separate production well. Riverside backfilled the borehole with pea gravel to stabilize it while waiting for the screen design to be completed and well materials to be delivered to the site.

Production Well Construction

Riverside began construction of the production well on June 25, 2014 and completed the well on July 2, 2014. Development and testing of the well was completed in January 2015. The general sequencing of well completion activities is summarized below:

1. A single 12-inch diameter riser, screen, and sump string was assembled and lowered into the 20-inch-diameter borehole. Riverside set the bottom of the assembly at a total depth of 250 feet bgs. The filterpack was immediately installed to stabilize the formation.
2. The filterpack was installed by pouring the filterpack material into the annulus between the screen assembly and borehole.
3. A 5-foot bentonite plug was installed over the top of the filterpack and allowed to completely hydrate before installing the grout seal.
4. Riverside installed a cement grout seal from the top of the bentonite plug to ground surface using a tremie pipe and grout pump. Installation of the grout seal was completed on July 2, 2014.
5. Riverside developed the well and completed an aquifer test in January 2015 (described in subsequent sections).
6. Riverside completed well video survey on February 23, 2015.

As-Built Well Specifications

General

Well 6 consists of a single 12-inch-diameter (ID) production casing and screen assembly, which extends from +2.3 above ground surface to a depth of 250 feet bgs. The production casing consists of 0.375-inch diameter low carbon steel from +2.3 ft above ground surface to a depth of 207 feet bgs. A benchmark has been etched around the

casing 1.0 feet below the top of the casing to establish a common reference for measurements.

The top and bottom of the screen assembly are approximately 207 feet bgs and 247 feet bgs, respectively. A 3-foot sump consisting of blank casing with a welded end cap extends below the screen to the depth of 250 feet. A schematic as-built diagram of the well is provided in Figure 1. Copies of the start card and well report submitted by Riverside to OWRD are provided in Attachment D**.**

Screen and Filter Pack

The screen assembly consists of Type 304 stainless steel Johnson Free Flow wire-wrap screen including:

- 30 feet of 12-inch ID, 0.035-inch (35-slot) slot opening from 207 to 237 ft bgs
- 10 feet of 12-inch ID, 0.025-inch (25-slot) slot opening from 237 to 247 ft bgs.

The total open area of the 40-foot screen interval is 23.2 ft^2 (18.9 percent). This configuration provides an approximate entrance velocity of 0.03 feet per second at a pumping rate of 300 gpm, well below the entrance velocity criterion of 0.1 feet/second cited by Johnson Screens (Groundwater and Wells, 2007).

The filter pack is composed of 8-12 Colorado Silica Sand from 195 to 250 ft bgs. The filter pack is topped by 5 feet of bentonite from 190 to 195 ft bgs. The bentonite was topped with 19.5 cubic yards of cement grout tremied in the annulus from 190 ft bgs to surface.

Development

Riverside developed Well 6 between January 26 and 27, 2015 by pumping and rawhiding (surging) the well. Riverside added one gallon of Aqua-Clear PFD (phosphate-free dispersant) to the well one hour before the start of development to break up the mud cake on the borehole walls. The development process involved pumping the well for a period of time at a rate of approximately 325 gpm and then shutting off the pump briefly to surge the well. This cycle was repeated numerous times over a duration of 15 hours. Development was terminated after drawdown at the development pumping rate stabilized, visual inspection of development water indicated minimal and temporary turbidity after successive rawhiding cycles, and no apparent sand generated during pumping and rawhiding.

Well Testing

Well testing included interval testing of the borehole, and step-rate and constant-rate testing of the finished production well. The interval testing was completed between June 3 and 5, 2015. The step-rate test was completed on January 28, 2015. The constant rate test was initiated in the late afternoon of January 28, 2015 after recovery criteria from the step-rate test were met.

Water levels were measured during testing using a pressure transducer and data logger, which were supplemented with manual measurements using an electronic water level indicator. Water level data recorded by the transducer and data logger for the background, step-rate test, recovery, constant-rate test, and recovery are plotted on Figure

2. Flow from the well was measured with a calibrated analog totalizing flow meter and/or a circular orifice weir.

Borehole Interval Testing

Two intervals were tested in the test borehole: The first interval (220 – 235 feet bgs) was developed by pumping for 5 hours before testing and then allowed to recover for 9.5 hours. The interval was then pumped at a rate of 50 gpm for 24 hours. The tested specific capacity of the interval at the end of 24 hours of pumping was 13.2 gpm/ft. A water sample was obtained from the first interval after 6 hours of pumping and submitted to Analytical Laboratories, Inc. of Boise, Idaho for analysis of metals, general chemistry (common ions) and synthetic organic compounds.

For the second interval test, the screen was set 170 to 185 ft bgs and isolated with bentonite seals. The second interval would not produce enough water to support the test and so a water quality sample was not obtained from this interval. The estimated capacity of the interval is less than 25 gpm.

Step-Rate and Constant-Rate Testing

Step-rate and constant-rate tests were conducted in January 2015. The step-rate test included pumping the well at four different pumping rates, each of 1-hour duration. The approximate discharge rates for each step of the test were 119 gpm, 175 gpm, 251 gpm and 323 gpm. The approximate 1-hour specific capacity (SC) at these different flow rates ranged from 19 to 12.7 gpm/foot of drawdown. Figure 3 shows the step-rate test hydrograph.

The constant-rate test was initiated on January 28, 2015. The well was pumped at a rate of 323 gpm (60 inches on the circular orifice weir) for a 26.7 hour pumping period. Total drawdown at the end of the pumping period was 26.8 feet. The 24-hour specific capacity for the well is 12.0 gpm/foot. Figure 4 shows the constant-rate test and recovery hydrograph. Review of data from the pumping and recovery phases (Figures 5 and 6) indicate the presence of a negative (low permeability) boundary in the aquifer. The most likely nearby feature bounding the aquifer is bedrock forming the hills south of the well. Analysis of test data yields aquifer transmissivity estimates of 65,000 gpd/ft (early time, pre-boundary). Analysis of late time data indicates an effective (post-boundary) transmissivity of 37,000 gallons per day per foot (gpd/ft).

Sand content was measured using a Rossum Sand Tester, which operated throughout the step-rate and constant-rate aquifer tests. The amount of sand generated during the aquifer tests was less than 0.1 milligram (mg). The small amount of sand generated during the aquifer tests indicate adequate development of the well.

Water Quality

GSI collected a water sample from the 220-foot to 235-foot interval in the test boring on June 4, 2014 for preliminary water quality analyses. The sample was analyzed for general water quality and the Safe Drinking Water Act (SDWA) parameters. Additionally, field measurements of water quality including pH, temperature, dissolved oxygen, conductivity, and oxidation-reduction potential (ORP) were taken. Subsequently, GSI collected a water sample from the completed production well on

January 29, 2015, approximately 19 hours after commencing the constant rate test. This sample was submitted to Table Rock Analytical, an Oregon-certified laboratory for SDWA analyses. The samples was analyzed for general water quality and SDWA parameters and the presence of iron-related bacteria. Field water quality parameters, including pH, temperature, dissolved oxygen, conductivity, and ORP, were logged every 5 minutes during the duration of the pumping test. The results of the water quality analyses are presented in Table 1. The constant-rate test water quality analyses report is provided in Attachment E. The interval test water quality analyses report is provided in Attachment F. The field water quality parameters logged during the last 1.5 hours of the constant-rate test are tabulated in Attachment G.

With a few exceptions, concentrations of most detected constituents in the samples collected from the test boring and production well generally were comparable, though concentrations of some inorganic constituents in the test boring sample were slightly greater than in the production well sample. The differences in constituent concentrations between the test boring and production well samples could reflect slightly higher suspended solids in the test boring sample, or could be a result of seasonal changes in the aquifer (e.g., changes in pH, redox potential and temperature).

Concentrations of the following analytes in one or both of the test borehole or production well samples exceeded state and federal primary Maximum Contaminant Levels (MCLs):

- Arsenic (test boring and production well)
- Uranium (test boring) – the concentration of uranium detected in the sample from the completed production well was less than the MCL.
- Gross alpha particles (test boring and production well) – alpha particles are emitted by members of the uranium decay series, including radium and uranium and are likely related to the uranium and minor radium detected in the samples.

The concentrations of the remainder of regulated constituents were either not detected or were less than the MCL, although nitrate concentrations in both samples were greater than one half the MCL.

Concentrations of the following analytes exceeded secondary MCLs (non-enforceable aesthetic standards):

- Aluminum (test boring) – aluminum was not detected in the production well sample. We believe that the production well sample result is likely more representative.
- Total dissolved solids (test boring and production well)

The concentration of total (unfiltered) iron detected in the test boring sample (0.29 mg/L) was slightly less than the SMCL, whereas the concentration detected in the production well sample (0.0311 mg/L) was approximately an order-of-magnitude less. The reason for the difference in total iron concentrations between the test boring and production samples is unknown. The higher concentration in the test boring sample may be because (1) the presence of higher suspended solids content in the test boring sample, or (2) the solubility of iron is sensitive to pH and the increased pH measured in the production well

sample reflect reduced iron solubility in the aquifer at the time the sample was obtained from the production well.

Iron bacteria also were detected in the production well sample. The analysis for iron bacteria is purely qualitative and the types and aggressiveness of the iron-related bacteria is unknown.

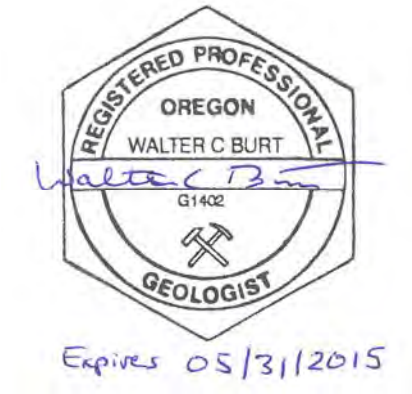
Production Rates and Pumping Levels

The results of well testing were used to estimate projected pumping levels over a range of pumping rates and durations in the well for use in sizing and designing the production pump and motor. The analysis included consideration of drawdowns under longer-term pumping scenarios and potential interference from nearby proposed irrigation wells. For the purposes of this analysis, we have assumed a total of 10 feet of combined interference and water level declines. Current estimates suggest approximately 6 to 7 feet of interference due to nearby proposed irrigation supply pumping. Additional pumping will further decrease available drawdown and could potentially impact the maximum well capacity. The results of this analysis are plotted on Figure 7. Estimates for pumping levels over a range of rates are also provided in Table 2.

We recommend setting the pump intake near the top of the screen to maximize available drawdown and pump submergence. Assuming a static water level of 153 feet bgs, an intake setting of 200 feet and a minimum pump submergence of 10 feet, the maximum projected pumping rate that can be sustained by the well is approximately 300 gpm. This estimate accounts for up to 10 feet of combined well interference and overall aquifer level declines. A slightly higher rate may be possible during periods where interference is less. A higher pump intake setting or greater water level declines will correspondingly reduce the maximum well yield.

Thank you for this opportunity to work with you on this project. Please contact us at (503) 239-8799 if you have any questions regarding this report.

Sincerely,
Groundwater Solutions, Inc. dba
GSI Water Solutions, Inc.,



Walter Burt, RG, LHG
Principal Hydrogeologist

Attachments

Table 1
Summary of Water Quality Testing Results
City of Adrian Well 6

Analyte	State Standards MCL	State Standards SMCL	Units	*Test Boring (220'-235' Interval)* 5-Jun-14	*Production Well* 29-Jan-15
Inorganic Constituents					
Ammonia (as N)			mg/L	<0.02	NT
Antimony	0.006		mg/L	<0.005	<0.001
Arsenic	0.01		mg/L	0.092	0.0734
Asbestos[1]	7		MFL	NT	<0.066
Barium	2		mg/L	<0.05	0.0251
Beryllium	0.004		mg/L	<0.0005	<0.0003
Bicarbonate			mg/L	314	302
Calcium			mg/L	75.6	81.6
Carbonate			mg/L	0.0	<5
Cadmium	0.005		mg/L	<0.0005	<0.001
Chromium (total)	0.1		mg/L	<0.002	0.00163
Copper[2]	1.3		mg/L	<0.01	0.00106
Cyanide (as free cyanide)	0.2		mg/L	<0.005	<0.01
Flouride	4	2	mg/L	0.66	0.519
Lead[2]	0.015		mg/L	<0.005	<0.001
Mercury (inorganic)	0.002		mg/L	<0.0002	<0.0001
Magnesium			mg/L	21.3	22.9
Molybdenum			mg/L	NT	0.00787
Nickel			mg/L	<0.02	<0.001
Nitrate (as N)	10		mg/L	8.1	8.83
Nitrite (as N)	1		mg/L	<0.01	<0.5
Total Nitrate + Nitrite (as N)	10		mg/L	7.96	8.83
Ortho Phosphate			mg/L	0.11	NT
Potassium			mg/L	17.3	NT
Selenium	0.05		mg/L	0.011	0.00858
Sodium			mg/L	NT	64.0
Thallium	0.002		mg/L	<0.001	<0.001
Organic Chemicals (SOCs and VOCs)	**MCL**	**SMCL**			
Acrylamide	0.05% dosed at 1ppm		mg/L	NT	NT
Alachlor	0.002		mg/L	<0.0004	<0.0004
Aldicarb			mg/L	<0.003	NT
Aldicarb sulfone			mg/L	<0.002	NT
Aldicarb sulfoxide			mg/L	<0.004	NT
Adrin			mg/L	<0.0002	NT
Atrazine	0.003		mg/L	<0.0002	<0.0002
Benzene	0.005		mg/L	<0.0005	<0.0005
Benzo(a)pyrene (PAHs)	0.0002		mg/L	<0.00002	<0.00004
Butachlor			mg/L	<0.0004	NT
Carbaryl			mg/L	<0.002	NT
Carbofuran	0.04		mg/L	<0.002	<0.002
Carbon, Total Organic (TOC)			mg/L	11.4	NT
3-Hydroxycarbofurn			mg/L	<0.002	NT
Carbon tetrachloride	0.005		mg/L	<0.0005	<0.0005
Chlordane	0.002		mg/L	<0.0001	<0.0005
Chlorobenzene			mg/L	<0.0005	<0.0005
2,4-Dichlorophenoxyacetic acid (2,4-D)	0.07		mg/L	<0.0001	<0.0001
Dalapon	0.2		mg/L	<0.0001	<0.001
1,2-Dibromo-3-chloropropane (DBCP)	0.0002		mg/L	<0.00002	<0.00004
o-Dichlorobenzene	0.6		mg/L	<0.0005	<0.0005
p-Dichlorobenzene	0.075		mg/L	<0.0005	<0.0005
1,2-Dichloroethane	0.005		mg/L	<0.0005	<0.0005
1,1-Dichloroethylene	0.007		mg/L	<0.0005	<0.0005
cis-1,2-Dichloroethylene	0.07		mg/L	<0.0005	<0.0005
trans-1,2-Dichloroethylene	0.1		mg/L	<0.0005	<0.0005
Dichloromethane	0.005		mg/L	<0.0005	<0.0005
1,2-Dichloropropane	0.005		mg/L	<0.0005	<0.0005
Di(2-ethylhexyl)adipate	0.04		mg/L	<0.0002	<0.0002
Di(2-ethylhexyl)phthalate	0.006		mg/L	<0.0006	<0.0006
Dieldrin			mg/L	<0.0002	NT
Dinoseb	0.007		mg/L	<0.0002	<0.0002
Dioxin (2,3,7,8-TCDD)	0.00000003		mg/L	NT	<0.000000005
Dissolved Organic Carbon			Mg/L	0.8	NT
Diquat	0.02		mg/L	<0.0008	<0.0008
Endothall	0.1		mg/L	<0.025	<0.01
Endrin	0.002		mg/L	<0.00002	<0.00002
Ethane			mg/L	<0.00080	NT
Ethene			mg/L	<0.0012	NT
Ethylbenzene	0.7		mg/L	<0.0005	<0.0005
Ethylene Dibromide (EDB)	0.00005		mg/L	<0.00002	<0.00002
Glyphosate	0.7		mg/L	<0.01	<0.01
Heptachlor	0.0004		mg/L	<0.00004	<0.00008
Heptachor epoxide	0.0002		mg/L	<0.00002	<0.00004
Hexachlorobenzene	0.001		mg/L	<0.0002	<0.0002
Hexchlorocyclopentadiene (C-56)	0.05		mg/L	<0.0002	<0.0002
Lindane	0.0002		mg/L	<0.00002	<0.00004
Methane			mg/L	<0.00040	NT
Methyl-tert-butylether (MTBE)			mg/L	<0.0005	NT
Methoxychlor	0.04		mg/L	<0.0001	<0.0002
Methomyl			mg/L	<0.002	NT
Metolachlor			mg/L	<0.001	NT
Metribuzin			mg/L	<0.0002	NT

Table 1 (Con't)
Summary of Water Quality Testing Results
City of Adrian Well 6

Analyte	State Standards MCL	State Standards SMCL	Units	*Test Boring (220'-235' Interval)* 5-Jun-14	*Production Well* 29-Jan-15
Monochlorobenzene	0.1		mg/L	<0.0005	<0.0005
Oxamyl (Vydate)	0.2		mg/L	<0.004	<0.004
Pentachlorophenol (PCP)	0.001		mg/L	<0.00004	<0.00004
Picloram	0.5		mg/L	<0.0001	<0.0001
Polychlorinated Biphenyls (PCBs)	0.0005		mg/L	<0.00010	<0.0005
Propachlor			mg/L	<0.0002	NT
Silica			mg/L	66.1	NT
Simazine	0.004		mg/L	<0.00015	<0.00015
Styrene	0.1		mg/L	<0.0005	<0.0005
Tetrachloroethylene (PCE)	0.005		mg/L	<0.0005	<0.0005
Toluene	1		mg/L	0.0008	<0.0005
Toxaphene	0.003		mg/L	<0.001	<0.002
2,4,5-TP Silvex	0.05		mg/L	<0.0002	<0.0002
1,2,4-Trichlorobenzene	0.07		mg/L	<0.0005	<0.0005
1,1,1-Trichloroethane	0.2		mg/L	<0.0005	<0.0005
Trichloroethylene (TCE)	0.005		mg/L	<0.0005	<0.0005
1,1,2-Trichloroethane	0.005		mg/L	<0.0005	<0.0005
Vinyl chloride	0.002		mg/L	<0.0005	<0.0005
Xylenes (total)	10		mg/L	<0.0005	<0.0005
Disinfection Byproducts	**MCL**	**SMCL**			
Total Trihalomethanes (TTHM)	0.08		mg/L	<0.0005	<0.0003
Haloacetic acids (five)(HAA5)	0.06		mg/L	NT	NT (untreated)
Bromate	0.01		mg/L	<0.005	NT (untreated)
Chlorite	1		mg/L	<0.010	NT (untreated)
Radionuclides	**MCL**	**SMCL**			
Gross Alpha	15		pCi/L	33 ± 7.1	18.7 ± 2.83
Combined Radium-226 and Radium-228	5		pCi/L	<1	0.272 ± 0.646
Uranium	30		ug/L	30	22.2
Beta/Photon emitters	4 mrem/yr		pCi/L	7.5 ± 4.3	14.2 ± 1.67
Secondary Contaminants	**MCL**	**SMCL**			
Color		15	CU	<5	<5
Corrosivity		non-corrosive	LI	NT	0.423 (non-corrosive)*
Foaming Agents		0.5	mg/L	<0.01	<0.05
pH (laboratory)		6.5-8.5	SU	7.1	7.62
Hardness (as CaCO3)		250	mg/L	189	204
Odor		3	TON	<1	<1
Total dissolved solids (TDS)		500	mg/L	580	576
Aluminum		0.05-0.2	mg/L	0.46	<0.01
Chloride		250	mg/L	30	25.9
Iron (total)		0.3	mg/L	0.29	0.0311
Iron (dissolved)			mg/L	<0.05	NT
Manganese		0.05	mg/L	<0.05	<0.01
Silver		0.1	mg/L	<0.010	<0.001
Sulfate		250	mg/L	85	80.5
Zinc		5	mg/L	0.02	0.00146
Microbiological	**MCL**	**SMCL**			
Total Coliforms			mg/L	NT	NT
Turbidity	5		NTU	1	NT
Iron Bacteria				NT	Present
Sulfate reducing bacteria				NT	Not Present
Miscellaneous	**MCL**	**SMCL**			
Hardness			mg/L	296	298
Alkalinity			mg/L	314	302
Conductivity (laboratory)			µS/cm	861	NT
Hydrogen Sulfide			mg/L	<0.05	NT
Chemical Oxygen Demand			mg/L	33.8	NT
Total Suspended Solids			mg/L	4	NT
Field Parameters	**MCL**	**SMCL**			
pH			SU	7.1	7.5
Temperature			°C	16.6	14.8
Specific Conductance			µS/cm	798	785
Dissolved Oxygen			mg/L	8.0	6.1
ORP			mV	126	163

NOTES

Units are in milligrams per liter (mg/L) unless otherwise noted.

MFL = million fibers per liter	SU = standard unit
CU = color units	µS/cm = micro siemens per centimeter
TON = threshold odor number	mV = millivolt
pCi/L = picocuries per liter	°C = degrees celsius
mrem/yr = millirems per year	NTU = nephelometric turbidity unit
LI = Langlier Index	ug/L = micrograms per liter
*Slight tendency towards precipitation	Exceeds MCL or SMCL

Table 2
Pumping Level Estimates
Adrian Well 6
City of Adrian, Oregon

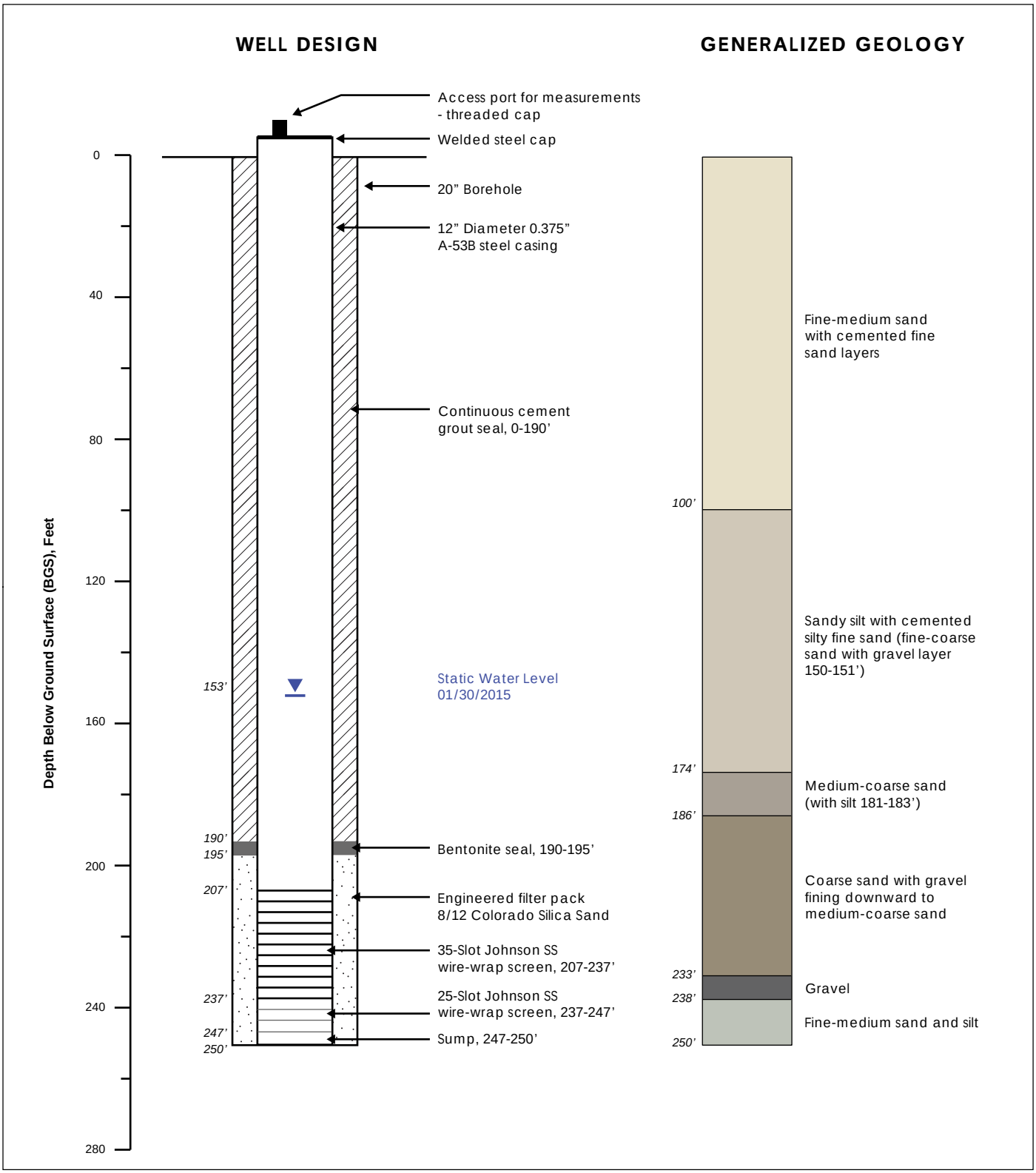
		Time (Days)			
Q (gpm)		0.5	1	7	30
150	EstimatedDrawdown (ft)[1]	9.0	9.0	10.0	10.0
	Estimated Max. Interference (ft)[2]	10	10	10	10
	SWL (bgs)[3]	153	153	153	153
	Pumping Level (bgs)	**172.0**	**172.0**	**173.0**	**173.0**
200	Drawdown (ft)[1]	15.0	16.0	16.0	17.0
	Interference (ft)[2]	10	10	10	10
	SWL (bgs)[3]	153	153	153	153
	Pumping Level (bgs)	**178.0**	**179.0**	**179.0**	**180.0**
250	Drawdown (ft)[1]	19.0	19.0	20.0	21.0
	Interference (ft)[2]	10	10	10	10
	SWL (bgs)[3]	153	153	153	153
	Pumping Level (bgs)	**182.0**	**182.0**	**183.0**	**184.0**
300	Drawdown (ft)[1]	23.0	23.0	25.0	26.0
	Interference (ft)[2]	10	10	10	10
	SWL (bgs)[3]	153	153	153	153
	Pumping Level (bgs)	**186.0**	**186.0**	**188.0**	**189.0**
350	Drawdown (ft)[1]	30.0	30.0	32.0	33.0
	Interference (ft)[2]	10	10	10	10
	SWL (bgs)[3]	153	153	153	153
	Pumping Level (bgs)	**193.0**	**193.0**	**195.0**	**196.0**

Notes:

1 Drawdowns estimated from semi-log plot extrapolations of constant rate test data.

2 Estimated interference from local irrigation wells.

3 Water level prior to constant rate test. Antecedent water level in aquifer was rising; thus, water level reflects dynamic conditions characteristic of regular cycling of the well.



NOTES:

1. Drilled to total depth of 250' bgs using flooded reverse circulation mud rotary.
2. First water-bearing zone encountered at 174' bgs.
3. Completed well July 2, 2014.
4. Developed well January 27, 2015.
5. Completed step-rate test January 28, 2015.
6. Completed constant rate test January 29, 2015.

FIGURE 1

Well 6 AS-Built

City of Adrian, Oregon

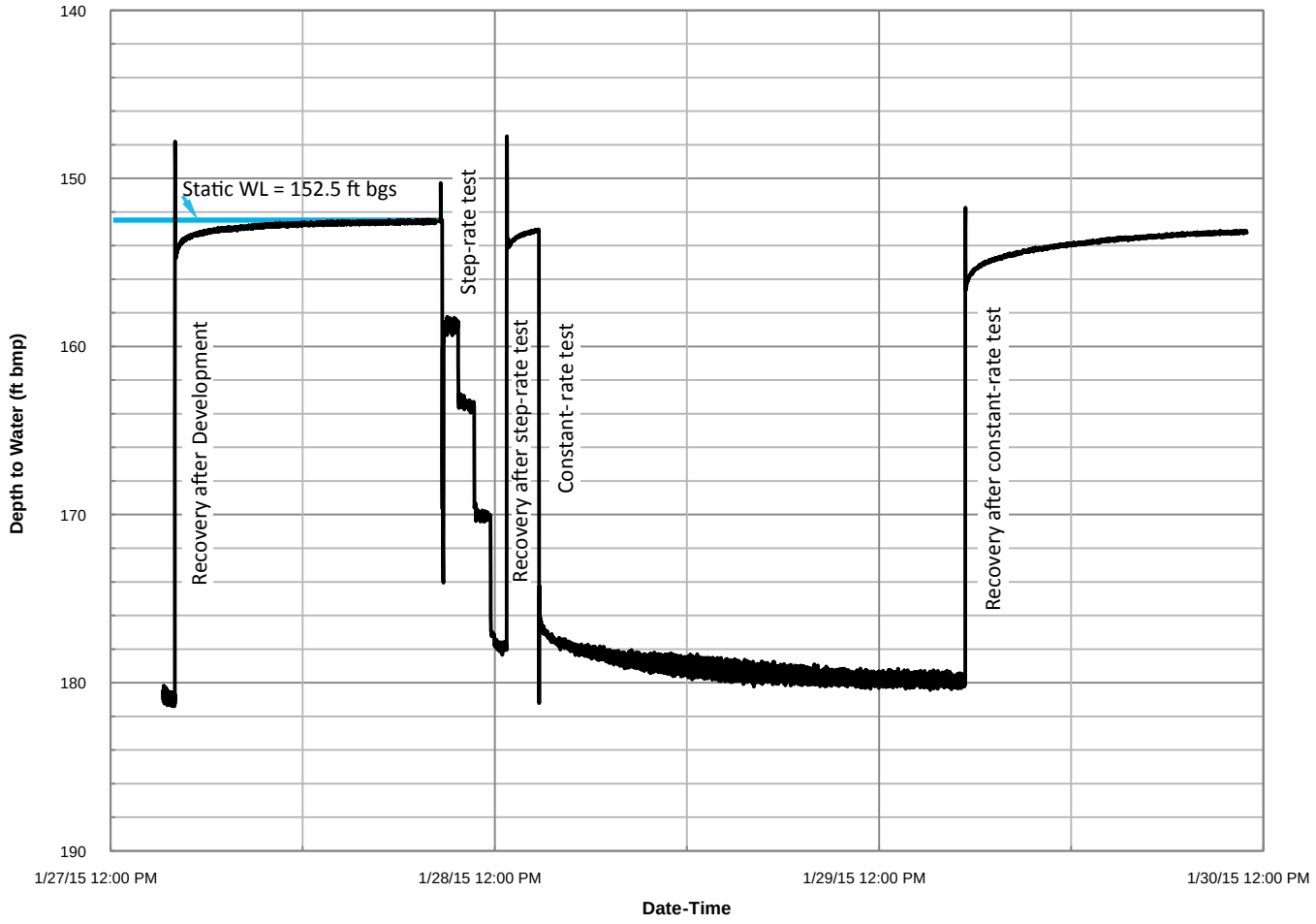
Date: February 11, 2015

P:\Portland\464-Keller_Assoc\004-Adrian Well 6\Figures

FIGURE 2

Well 6 Pumping Test Hydrograph

City of Adrian, Oregon



LEGEND

- Well 6 Pressure Transducer Water Level data
- Manual Static Water Level = 152.5 ft bgs Measured 01/28/15 08:37 am

Date: February 18, 2014

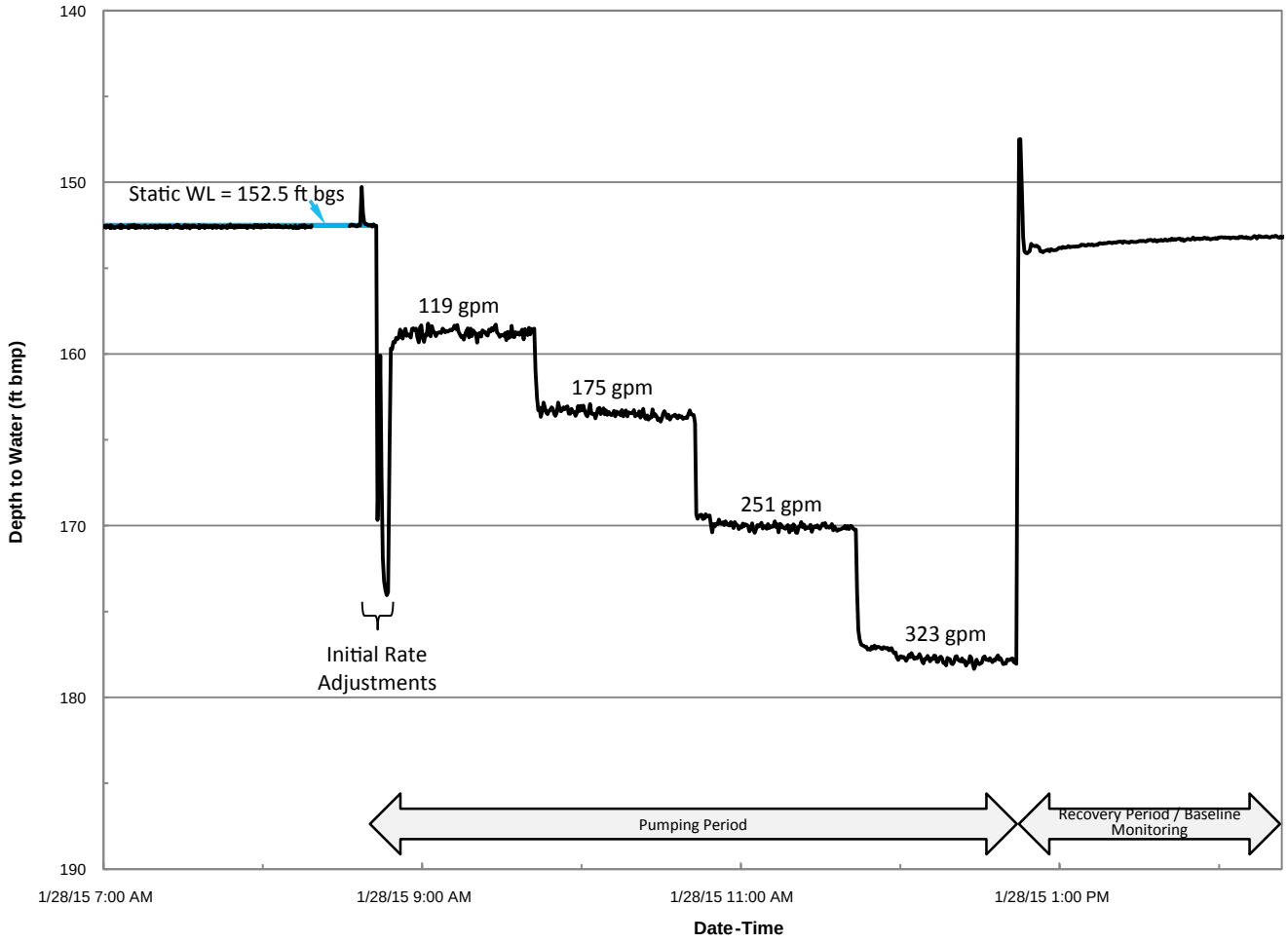
GSI Water Solutions, Inc.

P:\Portland\464-Keller_Assoc\002 - Adrian WMP\Figures

FIGURE 3

Step-Rate Test

City of Adrian, Oregon



LEGEND

Well 6 Pressure Transducer
Water Level data

Manual Static Water Level = 152.5 ft bgs
Measured 01/28/15 08:37 am

Date: February 18, 2014

GSI Water Solutions, Inc.

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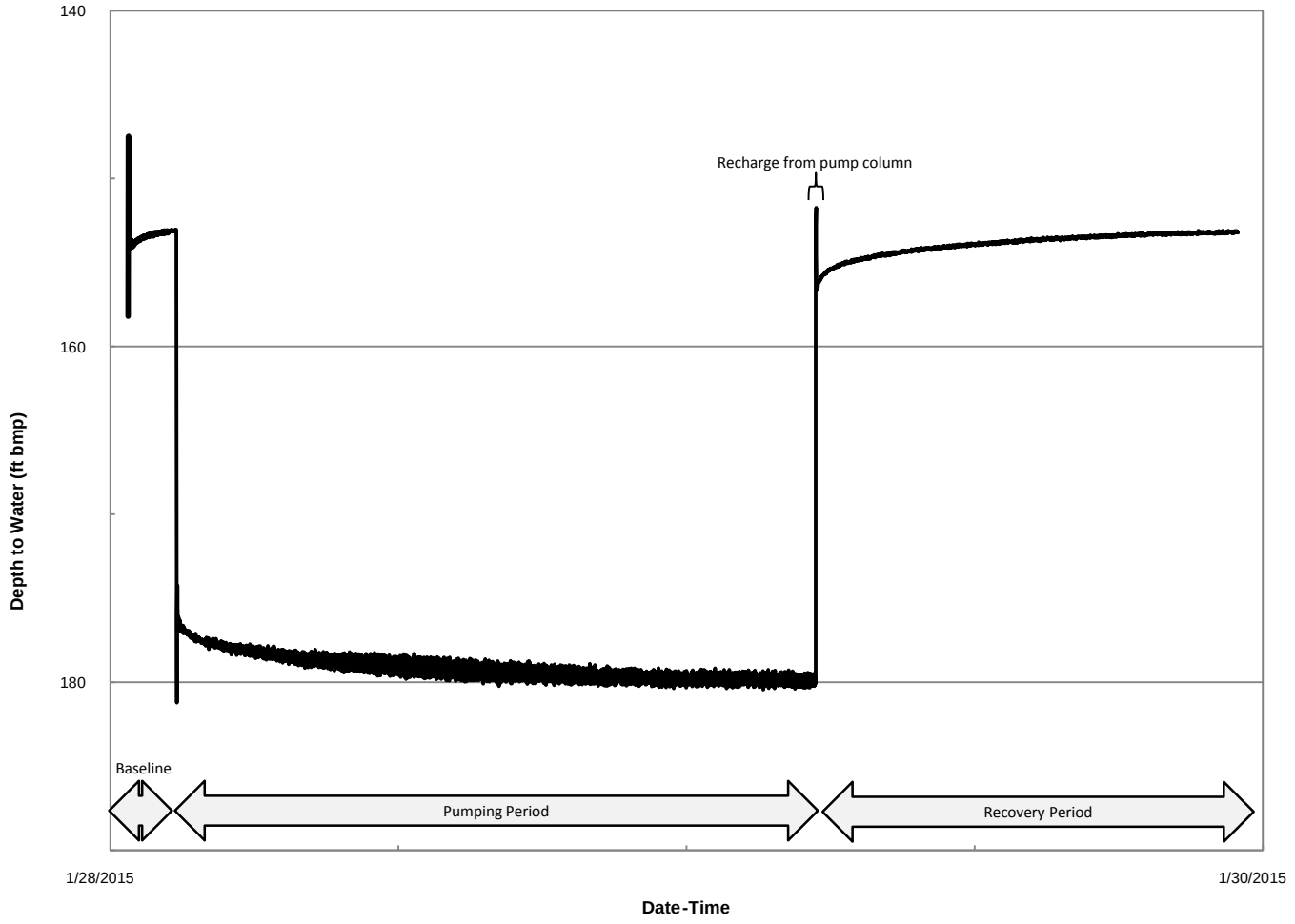


FIGURE 4

Constant-Rate Test

City of Adrian, Oregon

LEGEND

Well 6

Date: February 18, 2014

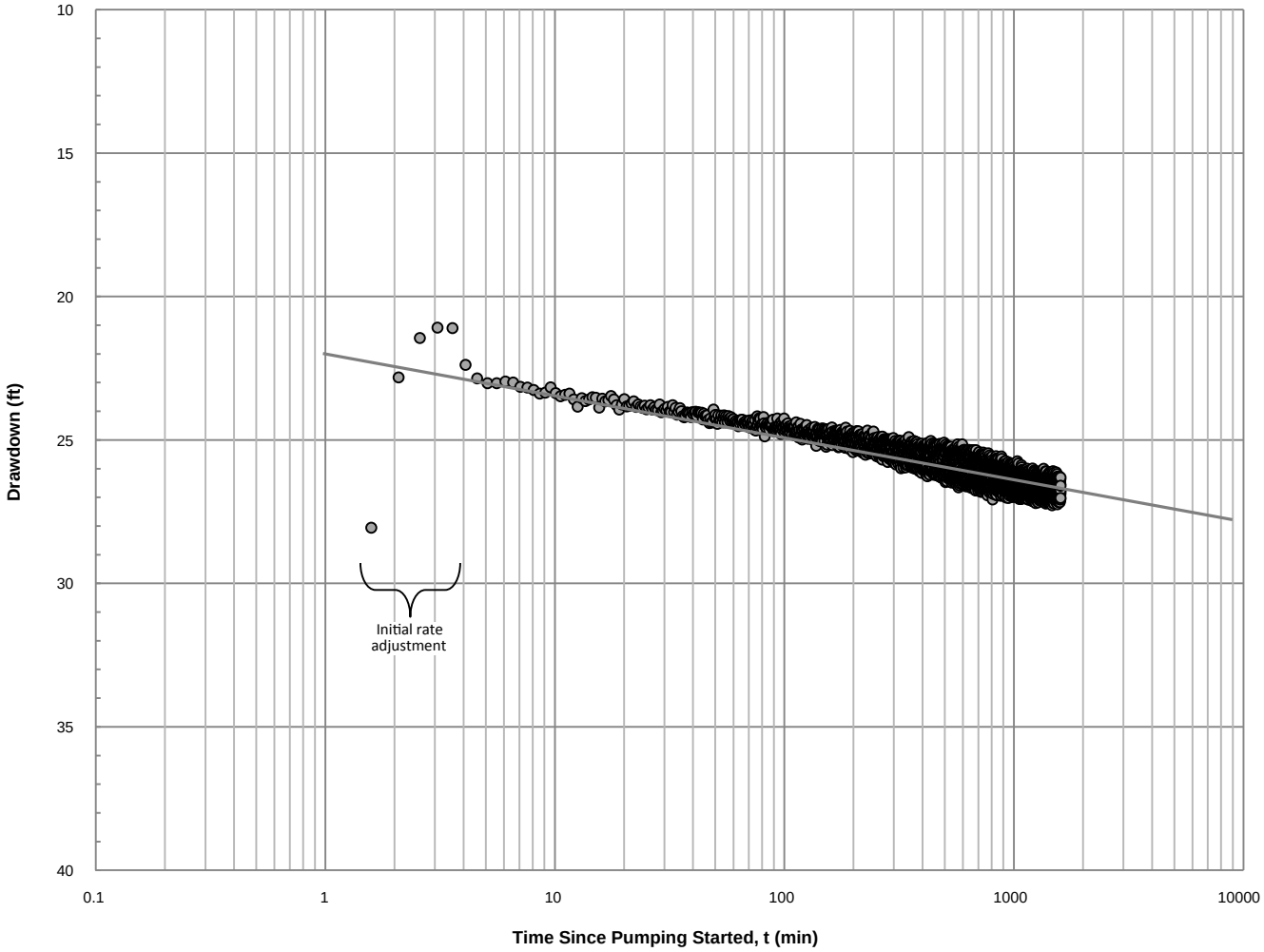
GSI Water Solutions, Inc.

P:\Portland\464-Keller_Assoc\002 - Adrian WMP\Figures

FIGURE 5

Semi-Log Drawdown

City of Adrian, Oregon



LEGEND

Well 6

Cooper - Jacob Analysis

T = (264•Q)/Δs

Q = 323 gpm

Δs = 1.75 feet

T = (264•323) / 1.75 = **48,700 gpd/ft**

Date: February 18, 2014

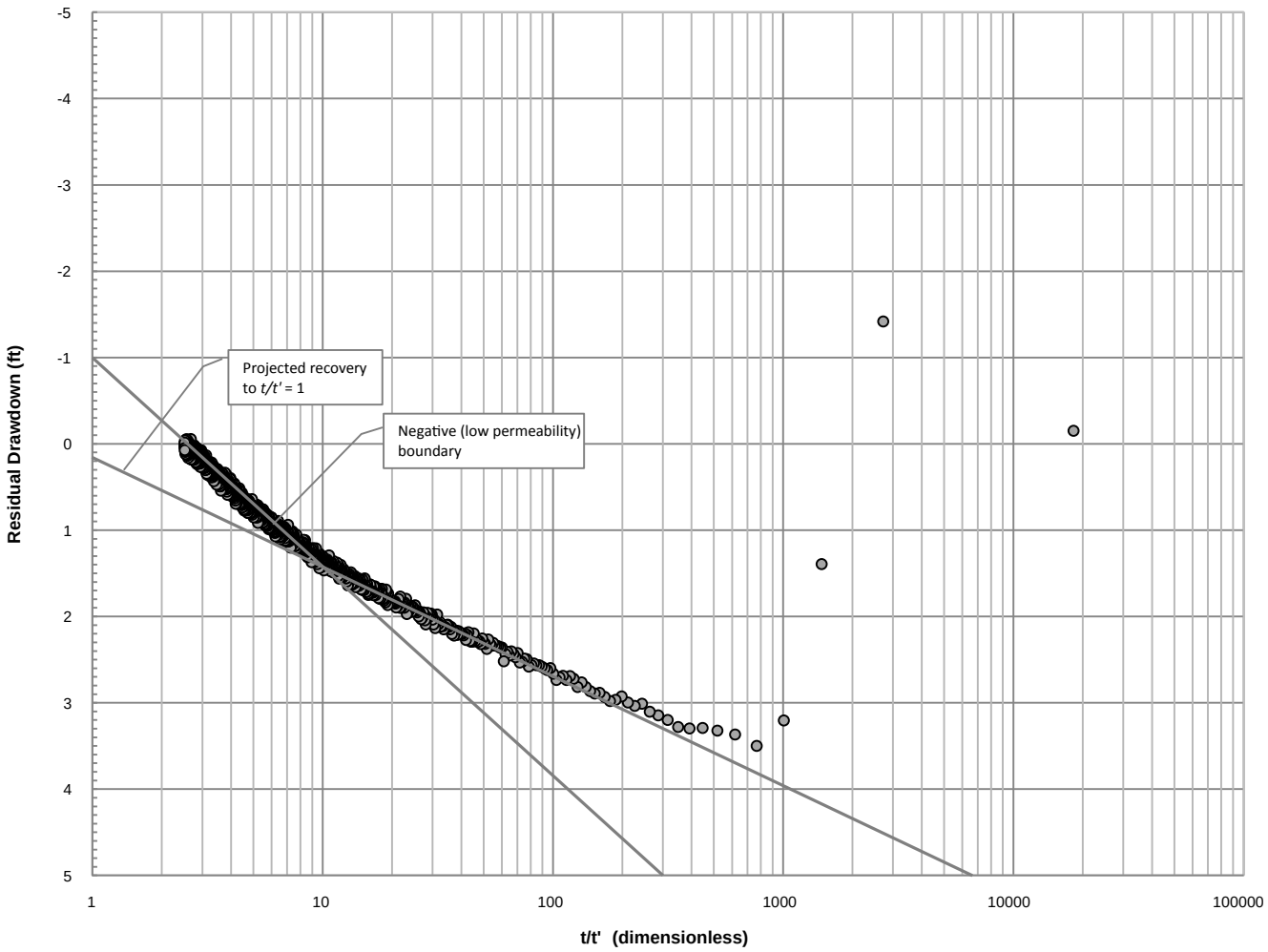
GSI Water Solutions, Inc.

P:\Portland\464-Keller_Assoc\002 - Adrian WMP\Figures

FIGURE 6

Residual Drawdown

City of Adrian, Oregon



LEGEND

● Well 6

Theis Recovery Analysis - Early Time

T = (264•Q)/Ds
Q = 323 gpm
Ds = 1.3 feet per log cycle
T = (264•323) / 1.3 = **65,500 gpd/ft**

Theis Recovery Analysis - Late Time (Post-Boundary)

T = (264•Q)/Ds
Q = 323 gpm
Ds = 1.3 feet per log cycle
Effective T = (264•323) / 2.3 = **37,000 gpd/ft**

Date: February 18, 2014

GSI Water Solutions, Inc.

P:\Portland\464-Keller_Assoc\002 - Adrian WMP\Figures

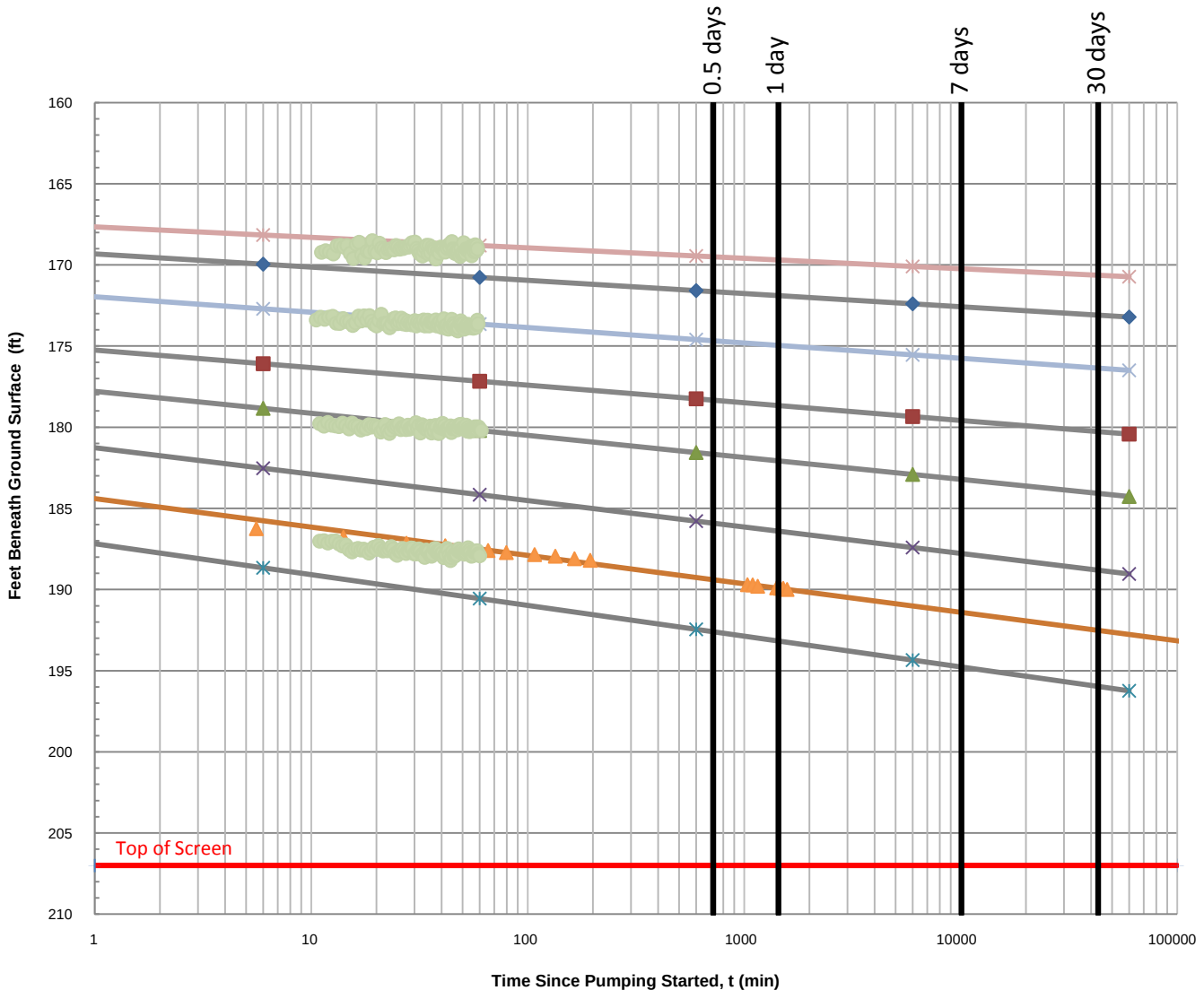


FIGURE 7

Semi-Log Predicted Water Level with 10 Feet of Interference

City of Adrian, Oregon

LEGEND

- 119 gpm
- 150 gpm
- 175 gpm
- 200 gpm
- 250 gpm
- 300 gpm
- 323 gpm
- Manuals 323 gpm Constant Rate
- 350 gpm
- Step-Rate Test Transducer Data

Cooper - Jacob Analysis

$T = (264 \cdot Q)/\Delta s$

Q = 323 gpm

Δs = 1.75 feet per log cycle

T = (264•323) / 1.75 = **48,700 gpd/ft**

Date: February 18, 2014

GSI Water Solutions, Inc.

P:\Portland\464-Keller_Assoc\002 - Adrian WMP\Figures

Attachment A

Wellsite Easement

MALHEUR COUNTY, OR 2014-4000
DEASEMENT
12/18/2014 09:46 AM
Cnt=2 Pgs=8
Total:$92.00

0002715820140004000080081

I, Deborah R. DeLong, County Clerk for Malheur County, Oregon certify that the instrument identified herein was recorded in the Clerk records.
Deborah R. DeLong - County Clerk

After recording return to:

Larry A. Sullivan
PO Box 220
Vale, OR 97918

EASEMENTS AND COVENANT

DEHOOG PROPERTIES, LLC, an Idaho Limited Liability Company, is the Grantor. The CITY OF ADRIAN, OREGON, a municipal corporation and political subdivision of the State of Oregon, is the Grantee. Grantor hereby grants to Grantee a municipal well easement on Grantor's real property described in Exhibit "1" attached hereto, and for access to said well on Grantor's real property described in Exhibit "2" attached hereto. Both easements are permanent easements. Both easements are granted in gross. Both easements are for the exclusive benefit of the Grantee and its successors and assigns and are binding on Grantor's heirs, successors and assigns.

The consideration for the grant of both easements is the sum of THREE HUNDRED FIFTEEN DOLLARS ($315.00).

The easements are more particularly described as follows:

1. Municipal Well Easement. The municipal well easement authorizes Grantee to construct and maintain a well and public water system, including pumps, power and utility lines and other equipment and accessories related thereto, on the real property described in Exhibit "1". For the consideration set forth herein, Grantor covenants that Grantor, its heirs, successors and assigns shall not use pesticides or herbicides within a 100 foot perimeter of the real property described in Exhibit "1" or allow other sanitary hazards listed in Oregon Administrative Rule ("OAR") 333-061-0050(2)(a)(E) to be used within said perimeter. OAR 333-061-0050(2)(a)(E) reads as follows:

> The following sanitary hazards are not allowed within 100 feet of a well which serves a public water system unless waived by the Authority; any existing or proposed pit privy, subsurface sewage disposal drain field; cesspool; solid waste disposal site; pressure sewer line; buried fuel storage tank; animal yard, feedlot or animal waste storage; untreated storm water or gray water disposal; chemical (including solvents, pesticides and fertilizers) storage, usage or application; fuel transfer or storage; mineral resource extraction, vehicle or machinery maintenance or long term storage; junk/auto/scrap yard; cemetery; unapproved well; well that has not been properly abandoned or of unknown or suspect construction; source of pathogenic organisms or any other similar public health hazards. No gravity sewer line or septic tank shall be permitted within50 feet of a well which serves a public water system. Clearances greater than indicated above shall be provided when it is determined by the Authority that the aquifer sensitivity and degree of hazard require a greater degree of protection. Above ground fuel storage tanks provided for emergency water pumping equipment may be exempted from this requirement by the Authority provided that a secondary containment system is in place that

will accommodate 125 percent of the fuel tank storage.

2. Access to Municipal Well. The access easement is 25 feet in width and is located on the real property described in Exhibit "2" . The easement includes the right to use the access easement above, below and on the surface of said real property for the installation and maintenance of power lines and utilities extending to and from the well and public water system.

DATED this 10 day of DECEMBER, 2014.

DEHOOG PROPERTIES, LLC
By:

AMY DEHOOG, Member

JAKE DEHOOG, Member

STATE OF IDAHO)
) ss.
County of CANYON)

Personally appeared the above named AMY DEHOOG as a member of DeHoog Properties, LLC, and acknowledged the foregoing instrument to be her voluntary act and deed before me this 10 day of DECEMBER, 2014.

MIGUEL VICTORIO
NOTARY PUBLIC
STATE OF IDAHO

Notary Public for CANYON COUNTY
My Commission Expires: 9/12/18

STATE OF IDAHO)
) ss.
County of CANYON)

Personally appeared the above named JAKE DEHOOG as a member of DeHoog Properties, LLC, and acknowledged the foregoing instrument to be his voluntary act and deed before me this 10 day of DECEMBER, 2014.

MIGUEL VICTORIO
NOTARY
PUBLIC
STATE OF IDAHO

Notary Public for CANYON COUNTY
My Commission Expires: 9/12/18

*Accepted by THE CITY OF ADRIAN
By:

Attest:

Vince Bingham, Mayor

Shawn Snyder, Adrian City Recorder

*by THE CITY OF

Exhibit 1

CK3, LLC

CIVIL-STRUCTURAL-ELECTRICAL
ENGINEERING-SURVEYING & PLANNING
368 SW 5TH AVENUE, ONTARIO, OR 97914
945 W. ORCHARD, HERMISTON, OR 97838

Exhibit "A"
Well Site Easement

Land in the NW1/4SE1/4, Section 15, T. 21 S., R. 46 E., W.M. Malheur County Oregon, more particularly described as follows:

Commencing at the one quarter (1/4) corner common to Sections 15 and 16;
thence S. 89° 52' 53" E., 958.55 feet;
thence S. 02° 13' 50" E., 116.22 feet to the Point of Beginning;
thence N. 87° 46' 10" E., 172.50 feet;
thence S. 02° 13' 50" E., 252.50 feet;
thence S. 87° 46' 10" W., 172.50 feet;
thence N. 02° 13' 50" W., 252.50 feet to the Point of Beginning.

TOGETHERWITH an Easement for Ingress and Egress and Utilities over and across a strip of land 25 feet wide being 12.50 feet of both sides of the following described centerline:

Commencing at the one quarter (1/4) corner common to Sections 15 and 16;
thence S. 0° 19' 15" W., 12.50 feet to the Point of Beginning;
thence S. 89° 52' 53" E., 804.22 feet;
thence S. 82° 04' 44" E., 137.56 feet;
thence S. 74° 50' 54" E., 42.71 feet;
thence S. 26° 05' 40" E., 37.21 feet;
thence S. 10° 45' 53" E., 31.37 feet;
thence S. 0° 32' 08" E., 89.54 feet to the Point of Terminus.

REGISTERED
PROFESSIONAL
LAND SURVEYOR

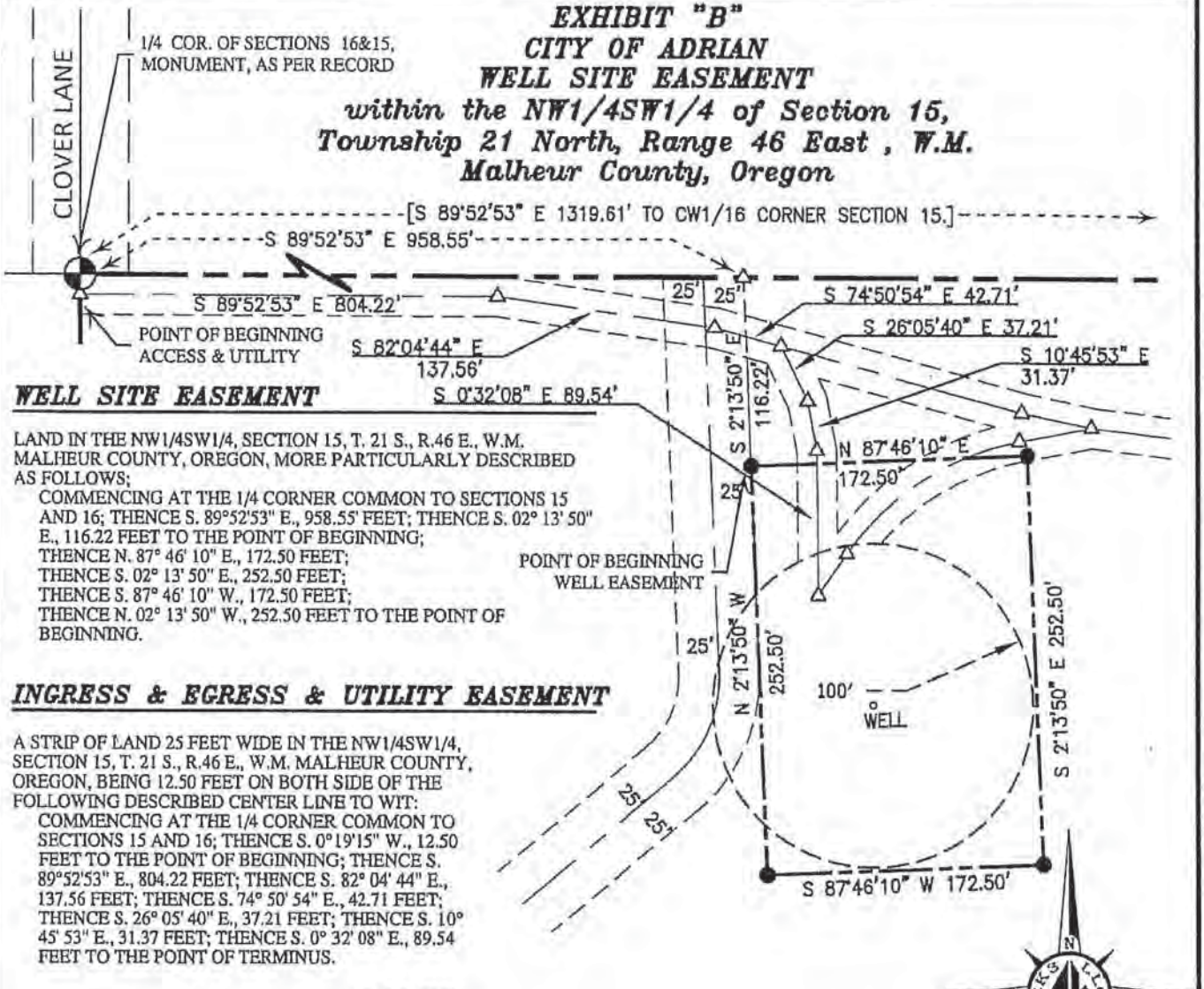
Danny Cummings

OREGON
JAN. 21, 1988
DANNY K. CUMMINGS
2316

RENEWS: 12/31/2014

Ontario Phone (541) 889-5411 Fax (541) 889-2074 Web Address: ck3llc.net
Hermiston Phone (541) 567-2345 Fax (541) 567-2305
Visit us at www.CK3LLC.net

EXHIBIT "B"
CITY OF ADRIAN
WELL SITE EASEMENT
within the NW1/4SW1/4 of Section 15, Township 21 North, Range 46 East , W.M. Malheur County, Oregon



WELL SITE EASEMENT

LAND IN THE NW1/4SW1/4, SECTION 15, T. 21 S., R.46 E., W.M. MALHEUR COUNTY, OREGON, MORE PARTICULARLY DESCRIBED AS FOLLOWS;

COMMENCING AT THE 1/4 CORNER COMMON TO SECTIONS 15 AND 16; THENCE S. 89°52'53" E., 958.55' FEET; THENCE S. 02° 13' 50" E., 116.22 FEET TO THE POINT OF BEGINNING; THENCE N. 87° 46' 10" E., 172.50 FEET; THENCE S. 02° 13' 50" E., 252.50 FEET; THENCE S. 87° 46' 10" W., 172.50 FEET; THENCE N. 02° 13' 50" W., 252.50 FEET TO THE POINT OF BEGINNING.

INGRESS & EGRESS & UTILITY EASEMENT

A STRIP OF LAND 25 FEET WIDE IN THE NW1/4SW1/4, SECTION 15, T. 21 S., R.46 E., W.M. MALHEUR COUNTY, OREGON, BEING 12.50 FEET ON BOTH SIDE OF THE FOLLOWING DESCRIBED CENTER LINE TO WIT:

COMMENCING AT THE 1/4 CORNER COMMON TO SECTIONS 15 AND 16; THENCE S. 0°19'15" W., 12.50 FEET TO THE POINT OF BEGINNING; THENCE S. 89°52'53" E., 804.22 FEET; THENCE S. 82° 04' 44" E., 137.56 FEET; THENCE S. 74° 50' 54" E., 42.71 FEET; THENCE S. 26° 05' 40" E., 37.21 FEET; THENCE S. 10° 45' 53" E., 31.37 FEET; THENCE S. 0° 32' 08" E., 89.54 FEET TO THE POINT OF TERMINUS.

LEGEND

PROPERTY LINE (PL)	( )	DATA OF RECORD
WELL EASEMENT AREA	[ ]	CALCULATED DATA
ACCESS / UTILITY EASTMENT	⊕	MONUMENT AS NOTED
RIGHT-OF-WAY LINE (R-O-W)	●	SET 5/8"x30" REBAR WITH 2316 YELLOW PLASTIC CAP
CENTERLINE	△	CALCULATED POINT
SECTION LINE		

REGISTERED PROFESSIONAL LAND SURVEYOR

OREGON
JAN. 21, 1988
DANNY K. CUMMINGS
2316

RENEWS: 12/31/2015

SCALE 1"=100'

CK3, LLC
CIVIL-STRUCTURAL-ELECTRICAL ENGINEERING, SURVEYING & PLANNING

ONTARIO
368 SW 5TH AVE.
ONTARIO, OR 97914
PHONE (541) 889-5411
FAX (541) 889-2074

HERMISTON
945 W. ORCHARD AVE.
HERMISTON, OR 97838
PHONE (541) 567-2345
FAX (541) 567-2305

WEB: CK3LLC.NET

EXHIBIT FOR
CITY OF ADRIAN

CHECKED BY: LCK	FIELDBOOK No.:	PAGE(S): 0-
DRAWN BY: DKC	DWG FILE No.: N/A	
APPROVED BY: DCK	FILENAME: EXH WELL.dwg	JOB No.VO-14046
DATE: 9/17/2014	REVISED: --	SHEET: 1 of 1

Exhibit 2

CK3, LLC

CIVIL-STRUCTURAL-ELECTRICAL
ENGINEERING-SURVEYING & PLANNING

368 SW 5TH AVENUE, ONTARIO, OR 97914
945 W. ORCHARD, HERMISTON, OR 97838

Exhibit "A"

Easement

Line "A":

A strip of land 25 feet wide in the N1/2S1/2, Section 15, T. 21 S., R. 46 E., W.M. Malheur County Oregon, being 12.5 feet on both sides of the following described centerline to wit:

Commencing at the Center south one sixteenth (CS1/16) corner of Sections 15; thence S. 89° 45' 34" E., 462.45 feet to the Point of Beginning (Sta. 0+00.00); thence along said centerline the following 34 courses

L1:	N 00° 15'39" E.	218.53';
L2:	N 07° 36' 16" W.	51.10';
L3:	N 20° 00' 26" W,	50.82';
L4:	N 28° 21' 27" W.	50.25';
L5:	N 43° 37' 36" W.	54.44';
L6:	N 55° 58' 39" W.	98.41';
L7:	N 59° 42' 14" W.	56.99';
L8:	N 63° 00' 45" W.	94.89';
L9:	N 65° 53' 11" W.	161.07';
L10:	N 60° 12' 20" W.	100.30';
L11:	N 63° 41' 23" W.	54.25';
L12:	N 71° 06' 36" W.	99.59';
L13:	N 78° 10' 01" W.	54.85';
L14:	N 81° 39' 33" W.	55.29';
L15:	N 85° 06' 26" W.	92.26';
L16:	N 88° 37' 37" W.	65.68';
L17:	N 89° 54' 04" W.	243.40';
L18:	N 87° 30' 49" W.	64.68';
L19:	N 76° 05' 22" W.	50.96';
L20:	N 59° 36' 26" W.	46.55';
L21:	N 46° 05' 20" W.	98.19';
L22:	N 52° 13' 15" W.	54.02';
L23:	N 54° 32' 03" W.	148.52';
L24:	N 47° 47' 35" W.	54.75';
L25:	N 31° 04' 44" W.	49.70';
L26:	N 16° 13' 08" W.	48.43';
L27:	N 12° 39' 33" W.	55.47';
L28:	N 08° 05' 55" W.	49.84' to the beginning of a curve to the left;

Thence along said curve as follows

C1 62.59 feet, whose radius is 45.00 feet, with a central angle of 62° 59' 38" and a long chord that bears N 47° 56' 50" W for 57.67 feet;

L29:	N 87° 47' 44" W.	92.45';

Ontario Phone (541) 889-5411 Fax (541) 889-2074 Web Address: ck3llc.net
Hermiston Phone (541) 567-2345 Fax (541) 567-2305
Visit us at www.CK3LLC.net

L30:	N 87° 14' 40" W.	44.65';
L31:	N 83° 06' 31" W	69.43' to centerline Sta. 25+92.36;
L32:	N 78° 01' 00" W.	44.68';
L33:	N 74° 50' 54" W.	155.69' to the Point of Terminus of Line "A" Sta. 27+92.73.

TOGETHERWITH;

Line "B":

A strip of land 25 feet wide in the N1/2S1/2, Section 15, T. 21 S., R. 46 E., W.M. Malheur County Oregon, being 12.5 feet on both sides of the following described centerline to wit:

Beginning at the Centerline Station 25+92.36 of the above described Line "A", which is centerline Station, 0+00 of this line "B";

thence along said centerline the following 3 courses

L34:	S 79° 18' 52" W.	45.97' to the beginning of a curve to the left;

Thence along said curve as follows

C2	131.49 feet, whose radius is 170.00 feet, with a central angle of 44° 19' 02" and a long chord that bears N 57° 09' 21" W for 128.24 feet;
L35:	S 34° 59' 50" W. 31.41' to the Point of Terminus of Line "B" Sta. 2+08.87.

This Easement is also shown on the attached Exhibit "B" which by this reference is made a part hereof.

REGISTERED
PROFESSIONAL
LAND SURVEYOR

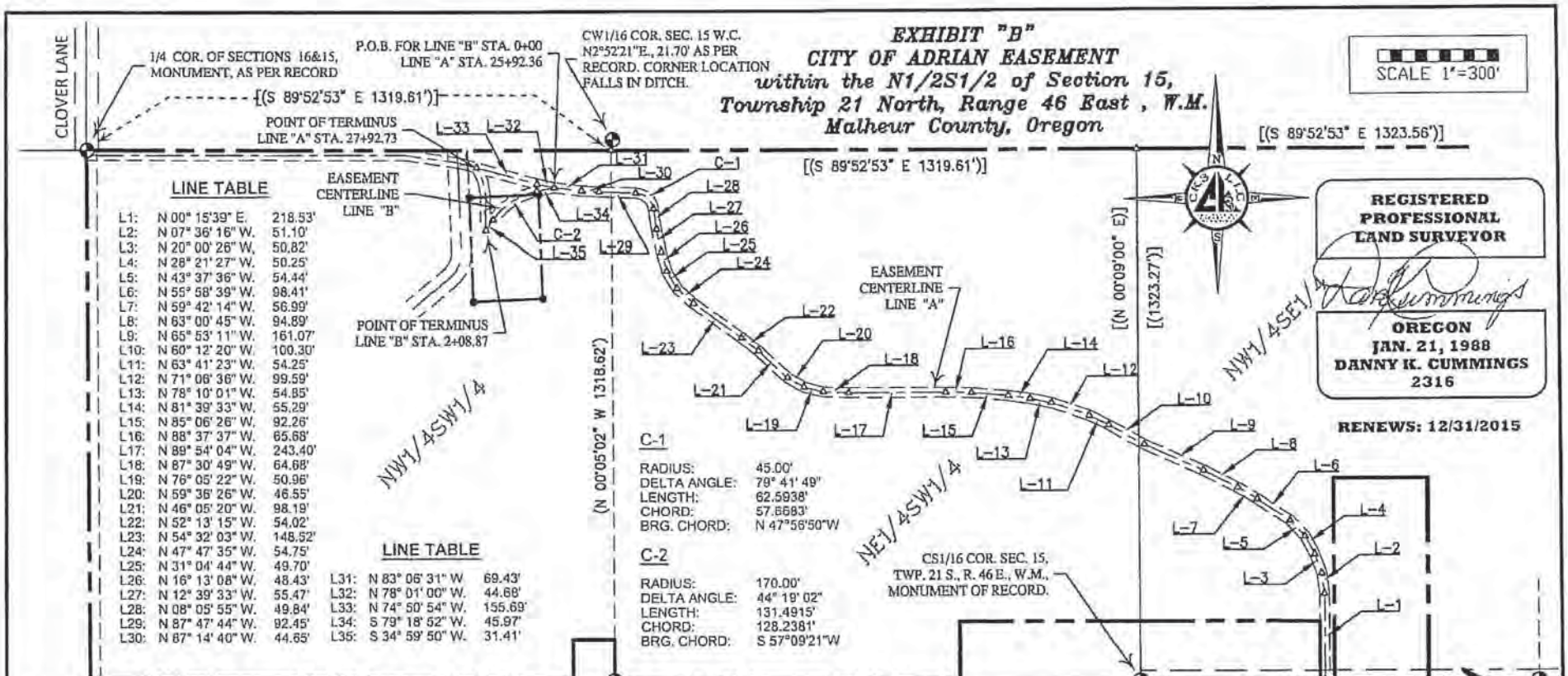
OREGON
JAN. 21, 1988
DANNY K. CUMMINGS
2316

RENEWS:12/31/2014

Ontario Phone (541) 889-5411 Fax (541) 889-2074 Web Address: ck3llc.net
Hermiston Phone (541) 567-2345 Fax (541) 567-2305

EXHIBIT "B"
CITY OF ADRIAN EASEMENT
within the N1/2S1/2 of Section 15, Township 21 North, Range 46 East, W.M. Malheur County, Oregon

SCALE 1"=300'



REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
JAN. 21, 1988
DANNY K. CUMMINGS
2316
RENEWS: 12/31/2015

LINE TABLE

L1:	N 00° 15'39" E.	218.53'
L2:	N 07° 36' 16" W.	51.10'
L3:	N 20° 00' 26" W.	50.82'
L4:	N 28° 21' 27" W.	50.25'
L5:	N 43° 37' 36" W.	54.44'
L6:	N 55° 58' 39" W.	98.41'
L7:	N 59° 42' 14" W.	56.99'
L8:	N 63° 00' 45" W.	94.89'
L9:	N 65° 53' 11" W.	161.07'
L10:	N 60° 12' 20" W.	100.30'
L11:	N 63° 41' 23" W.	54.25'
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L14:	N 81° 39' 33" W.	55.29'
L15:	N 85° 06' 26" W.	92.26'
L16:	N 88° 37' 37" W.	65.68'
L17:	N 89° 54' 04" W.	243.40'
L18:	N 87° 30' 49" W.	64.68'
L19:	N 76° 05' 22" W.	50.96'
L20:	N 59° 36' 26" W.	46.55'
L21:	N 46° 05' 20" W.	98.19'
L22:	N 52° 13' 15" W.	54.02'
L23:	N 54° 32' 03" W.	148.52'
L24:	N 47° 47' 35" W.	54.75'
L25:	N 31° 04' 44" W.	49.70'
L26:	N 16° 13' 08" W.	48.43'
L27:	N 12° 39' 33" W.	55.47'
L28:	N 08° 05' 55" W.	49.84'
L29:	N 87° 47' 44" W.	92.45'
L30:	N 87° 14' 40" W.	44.65'

LINE TABLE

L31:	N 83° 06' 31" W	69.43'
L32:	N 78° 01' 00" W.	44.68'
L33:	N 74° 50' 54" W.	155.69'
L34:	S 79° 18' 52" W.	45.97'
L35:	S 34° 59' 50" W.	31.41'

C-1

RADIUS:	45.00'
DELTA ANGLE:	79° 41' 49"
LENGTH:	62.5938'
CHORD:	57.6683'
BRG. CHORD:	N 47°56'50"W

C-2

RADIUS:	170.00'
DELTA ANGLE:	44° 19' 02"
LENGTH:	131.4915'
CHORD:	128.2381'
BRG. CHORD:	S 57°09'21"W

LEGEND

PROPERTY LINE (PL)	( )	DATA OF RECORD
WELL EASEMENT AREA	[ ]	CALCULATED DATA
ACCESS / UTILITY EASTMENT	◕	MONUMENT AS NOTED
RIGHT-OF-WAY LINE (R-O-W)	⊙	SET 5/8"x30" REBAR WITH 2316 YELLOW PLASTIC CAP
CENTERLINE	△	CALCULATED POINT
SECTION LINE		

NOTE;

SURVEY CONTROL AND BASIS OF BEARINGS ARE FROM RECORD OF SURVEY FILED UNDER COUNTY SURVEY No. 21-46-0058.

CK3, LLC
CIVIL-STRUCTURAL-ELECTRICAL ENGINEERING, SURVEYING & PLANNING

ONTARIO
368 SW 5TH AVE.
ONTARIO, OR 97914
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945 W. ORCHARD AVE.
HERMISTON, OR 97838
PHONE (541) 567-2345
FAX (541) 567-2305

WEB: CK3LLC.NET

EXHIBIT FOR
CITY OF ADRIAN

CHECKED BY: LCK	FIELDBOOK No.:		PAGE(S): 0-
DRAWN BY: DKC	DWG FILE No.:	N/A	
APPROVED BY: DCK	FILENAME:	EXH WELL.dwg	JOB No.V0-14046
DATE: 9/17/2014	REVISED:	--	SHEET: 1 of 1

Attachment B

Permit To Appropriate The Public Waters

STATE OF OREGON

COUNTY OF MALHEUR

PERMIT TO APPROPRIATE THE PUBLIC WATERS

THIS PERMIT IS HEREBY ISSUED TO

CITY OF ADRIAN
PO BOX 226
ADRIAN, OR 97901

The specific limits and conditions of the use are listed below.

APPLICATION FILE NUMBER: G-16386

SOURCE OF WATER: A WELL IN SNAKE RIVER BASIN

PURPOSE OR USE: MUNICIPAL USE

MAXIMUM RATE: 1.0 CUBIC FOOT PER SECOND

PERIOD OF USE: YEAR ROUND

DATE OF PRIORITY: FEBRUARY 10, 2005

WELL LOCATION: SE ¼ NE ¼, SECTION 16, T21S, R46E, W.M.; 2590 FEET SOUTH & 50 FEET WEST FROM NE CORNER, SECTION 16

THE PLACE OF USE IS THE SERVICE AREA OF THE CITY OF ADRIAN.

Measurement, recording and reporting conditions:

A. Before water use may begin under this permit, the water user shall install a meter or other suitable measuring device as approved by the Director. The water user shall maintain the meter or measuring device in good working order, shall keep a complete record of the amount of water used each month and shall submit a report which includes the recorded water use measurements to the Department annually or more frequently as may be required by the Director. Further, the Director may require the water user to report general water use information, including the place and nature of use of water under the permit.

B. The water user shall allow the watermaster access to the meter or measuring device; provided however, where the meter or measuring device is located within a private structure, the watermaster shall request access upon reasonable notice.

STANDARD CONDITIONS

If the number, location, source, or construction of any well deviates from that proposed in the permit application or required by permit conditions, this permit may not be valid.

If substantial interference with a senior water right occurs due to withdrawal of water from any well listed on this permit, then use of water from the well(s) shall be discontinued or reduced and/or the schedule of withdrawal shall be regulated until or unless the Department approves or implements an alternative administrative action to mitigate the interference. The Department encourages junior and senior appropriators to jointly develop plans to mitigate interferences.

The wells shall be constructed in accordance with the General Standards for the Construction and Maintenance of Water Wells in Oregon. The works shall be equipped with a usable access port, and may also include an air line and pressure gauge adequate to determine water level elevation in the well at all times.

Where two or more water users agree among themselves as to the manner of rotation in the use of water and such agreement is placed in writing and filed by such water users with the watermaster, and such rotation system does not infringe upon such prior rights of any water user not a party to such rotation plan, the watermaster shall distribute the water according to such agreement.

Prior to receiving a certificate of water right, the permit holder shall submit the results of a pump test meeting the department's standards, to the Water Resources Department. The Director may require water level or pump test results every ten years thereafter.

Failure to comply with any of the provisions of this permit may result in action including, but not limited to, restrictions on the use, civil penalties, or cancellation of the permit.

This permit is for the beneficial use of water without waste. The water user is advised that new regulations may require the use of best practical technologies or conservation practices to achieve this end.

By law, the land use associated with this water use must be in compliance with statewide land-use goals and any local acknowledged land-use plan.

The use of water shall be limited when it interferes with any prior surface or ground water rights.

The permit holder shall commence and complete the construction of any proposed works within five years from the date of permit issuance. The Department may order and allow an extension of time to complete construction or to perfect a water right beyond five years from the date of permit issuance.

Within one year after complete application of water to the proposed use, the water user shall submit a claim of beneficial use, which includes a map and report, prepared by a Certified Water Rights Examiner (CWRE).

Issued July 20, 2006

E. Timothy Walker

Phillip C. Ward, Director for
Water Resources Department

Attachment C

OAH Plan Review Submittal Letter and Approval

PUBLIC HEALTH DIVISION
Drinking Water Services

John A. Kitzhaber, MD, Governor

Oregon Health Authority

800 SE Emigrant Avenue, Suite 240
Pendleton, OR 97801
Phone: 541-276-8006
Fax: 541-276-4778
http://healthoregon.org/dwp

June 17, 2014

Chuck Mickelson
852 Red Top Road
Adrian, Oregon 97901

Re: New Well; Plan Review #94-2014; City of Adrian, PWS ID #4100002
Conditional Approval

Dear Chuck:

Thank you for the submittal of plan review information for the new well for the City of Adrian to the Oregon Health Authority's Drinking Water Services (DWS). On June 10, 2014, our office received a sketch of the proposed design for well #6 and a map showing the general location of the well. On June 11, 2014 a copy of the "Agreement for Well Easement" was received from the city's attorney. On June 12, 2014 a revised well design sketch was received. On June 13, 2014 a signed Land Use Compatibility Statement was received. It is my understanding that the $600 plan review fee was delivered to the Portland office today.

The project includes drilling a new well #6 and a transmission line to the existing city reservoir. It is my understanding plans for the transmission line, well head appurtenances, and any treatment system will be provided by others.

The proposed well construction meets Oregon Water Resources Department minimum well construction standards and is approved. I have enclosed a copy of the geologist's evaluation.

The plans are approved for construction with the following conditions:

1. The final easement agreement with the property owners must include restrictions not to use pesticides, herbicides, or allow other sanitary hazards listed in OAR 333-061-0050(2)(a)(E) within 100 feet of the well.

2. The irrigation district must agree not to use herbicides within 100 feet of the well.
3. One set of microbiological, inorganic (IOC), synthetic organic (SOC), volatile organic (VOC), and radionuclide (Gross Alpha, Combined Radium 226/228, Uranium) chemical test results must be submitted for review. It is expected the well will need to be treated for arsenic removal in order to meet water quality standards.
4. The driller's well log and pump test results must be submitted when they become available.

I also have the following comments:

- Due to the proximity of the irrigation canal, coliform samples will be required from the new well monthly for twelve months once the well is placed into service.
- The final restrictive easement for the well should be created in a manner such that it coordinates with the irrigation district's easement.

If you have any questions or would like this in an alternate format, please feel free to call me at (541) 966-0900.

Sincerely,

William Goss

William Goss, PE
Regional Engineer

enclosure

cc: Julie Wray, OHA/DWS, Portland
Russ Kazmierczak, RG, OHA/DWS, Springfield
Walter Burt, RG. GSI Water Solutions, Inc.
Justin Walker, PE, Keller Associates
Shawn Snyder, City of Adrian
Larry Sullivan
Ron Jacobs, Oregon Water Resources Department, Vale
Gary Viehdorfer, Infrastructure Finance Authority

Evaluation Results From Regional Hydrogeologist:

Proposed Well Construction Recommendations:

Estimated depth to water–bearing zone: 193 ft
Estimated aquifer nature: ☒ Confined ☐ Unconfined
Estimated depth of casing seal: ~205
Comments: Proposed design construction for Well #6 is approved (see attached preliminary design documents for additional information on bore hole and casing diameter).

As Built Well Construction Evaluation for Plan Review and/or Setback Waiver:

☐ Well construction is adequate, approved for use.
  ☐ WRD special construction standards, see well log or Comments.
☐ Well construction is inadequate.
  ☐ Not sealed to appropriate depth. Recommended depth: _____
  ☐ Not appropriate seal materials
  ☐ Open to more than one aquifer
  ☐ Seal info missing or unknown
  ☐ Seal not constructed properly (☐ Insufficient sealant volume ☐ Insufficient annular space)
☐ Susceptible well construction, but approved for use. Triggered source sample required if total coliform detected in distribution system. Consider for reconstruction if nitrate ≥ 5mg/L or confirmed *E. coli* at source.
☐ Susceptible well construction, **not approved for use**.

Comments: _____

Nature of Aquifer Evaluation:

Aquifer Nature: ☐ Confined aquifer ☐ Semi-confined aquifer ☐ Unconfined aquifer
Comments: _____

Construction Setback Waiver Results:

☐ Facility Profiler review for additional contamination info:
  ☐ Not applicable, Facility Profiler doesn't track releases from this type of contaminant source.
  ☐ Facility Profiler does not indicate a spill or chemical release related to the sanitary setback violation.
  ☐ Facility Profiler indicates that there **is** a spill or chemical release related to the sanitary setback violation.
☐ Approved
☐ Denied, proceed to Formal Waiver from Construction Standards Request as per OAR 333-061-0055

Comments and/or suggested "alternate measures" that could be considered for a Formal Waiver from Construction Standards Request: Private access roads are located 55 feet and 70 feet from well. Public or private roadways may be allowed within 100 feet of a confined well, provided the well is protected against contamination from surface runoff or hazardous liquids which may be spilled on the roadway and is protected from unauthorized access. If the well cannot be protected from surface runoff or hazardous liquids which may be spilled on the roadway or if the well cannot be protected from unauthorized access, then the City of Adrian will need to apply for a formal wiaver from construction standards.

The test well recently drilled on the site indicates that the aquifer is confined. Final approval of the well construction and confinement cannot be completed until a final well log has been submitted and approved by DWS.

GWUDI Review Results:

☒ New system/source **or** surface water is inside sanitary setback, initiate **monthly source assessment monitoring when source goes into production or as soon as possible.**
- ☐ Fractured bedrock, < 500 ft to surface water
- ☐ Coarse sand, gravel, and boulders, < 200 ft to surface water
- ☒ Sand and gravel, < 100 ft to surface water
- ☐ Sand, < 75 ft to surface water

☐ Pre-existing source, initiate **monthly source assessment monitoring as part of annually generated monthly assessment monitoring list.**
- ☐ Fractured bedrock, < 500 ft to surface water
- ☐ Coarse sand, gravel, and boulders, < 200 ft to surface water
- ☐ Sand and gravel, < 100 ft to surface water
- ☐ Sand, < 75 ft to surface water

☒ Source may be sensitive to GWUDI but approved for use. Source must be included as one of repeat coliform sampling sites, consider for GWUDI if *E. coli* ever confirmed in the source.

☐ Do not need to consider for GWUDI.

Comments: If E. coli is confirmed in the source or monthly assessment monitoring indicates the repeated presence of total coliform, the water system may be required to collect samples for MPA.

Monitoring Reduction Determination Results:

☐ Qualifies for initial chemical monitoring reduction as part of existing Wellfield – one round of chemical testing is sufficient.
- ☐ Source is on existing entry point – future monitoring required at entry point.
- ☐ Source is on a separate entry point – future monitoring includes nitrate at all entry points & source monitoring at entry point designated by geologist in comments below.

☐ Qualifies for initial chemical monitoring reduction based on historical data from nearby public water supply well(s) sharing the same aquifer – one round of chemical testing is sufficient. Future monitoring required at entry point.

☐ Qualifies for Common Aquifer designation for DBP monitoring – additional DBP sample sites not required.

☐ Does not qualify for monitoring reduction.

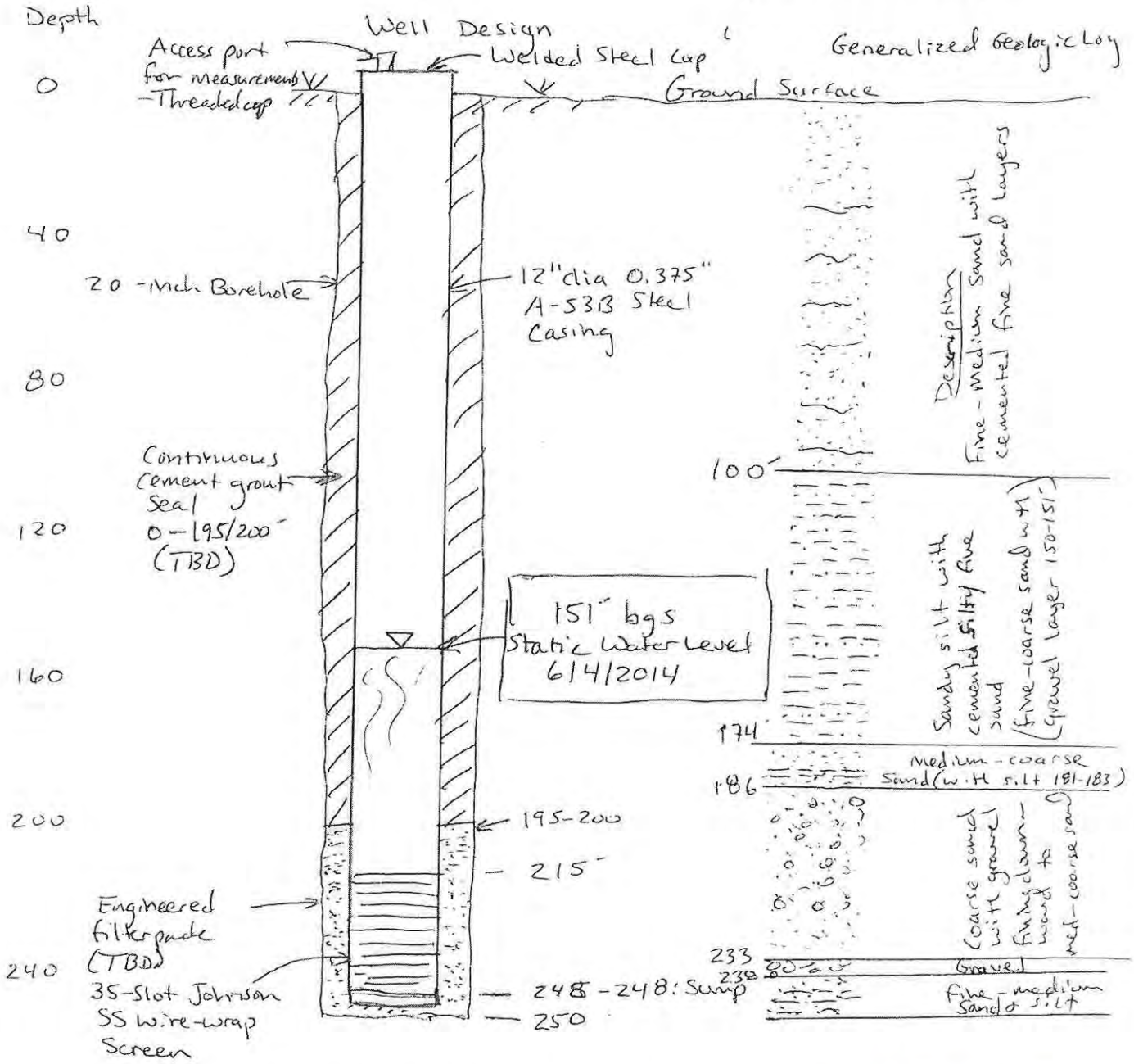
☒ Other: _____

Comments: Initial chemical monitoring reduction cannot be completed until the intial plan review monitoring is completed and submitted for review.

Reviewed by: Russ Kazmierczak Date: 6/12/14

City of Adrian Well 6 Design June 12, 2014

By: Walter Burt, RG



Drilled to total depth of 250' bgs using flooded reverse circulation and mud rotary

First water-bearing zone encountered at 174'

Lost circulation at 233'

Tested 220-235' interval - 50gpm for 24 hours

Total drawdown = 4'

RECEIVED
JUN 12 2014
Drinking Water Program
Pendleton Office

Attachment D

Start Card and Well Report

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765 & OAR 690-205-0210)

WELL LABEL # L 85263

START CARD # 1023167

(1) LAND OWNER

Owner Well I.D. _____

First Name _____ Last Name _____

Company City of Adrian

Address P.O. Box 226

City Adrian State OR Zip 97901

(2) TYPE OF WORK

[X] New Well [ ] Deepening [ ] Conversion [ ] Alteration (repair/recondition) [ ] Abandonment

(3) DRILL METHOD

[ ] Rotary Air [ ] Rotary Mud [ ] Cable [ ] Auger [ ] Cable Mud [X] Reverse Rotary [ ] Other _____

(4) PROPOSED USE

[ ] Domestic [ ] Irrigation [X] Community [ ] Industrial/ Commericial [ ] Livestock [ ] Dewatering [ ] Thermal [ ] Injection [ ] Other _____

(5) BORE HOLE CONSTRUCTION

Special Standard [ ] (Attach copy)

Depth of Completed Well 250 ft.

BORE HOLE Dia	From	To	SEAL Material	From	To	Amt	sacks/ lbs
20	0	250	Cement	0	190	20	6 yrds

How was seal placed: Method [ ] A [ ] B [X] C [ ] D [ ] E

[ ] Other _____

Backfill placed from 190 ft. to 195 ft. Material Bentonite

Filter pack from 195 ft. to 250 ft. Material Sand Size 8/12

Explosives used: [ ] Yes Type _____ Amount _____

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
(•)	( )	12	[X]	2	207	.375	(•)	( )	[X]	[ ]
(•)	( )	12	[ ]	247	250	.375	(•)	( )	[X]	[ ]
( )	( )		[ ]				( )	( )	[ ]	[ ]
( )	( )		[ ]				( )	( )	[ ]	[ ]
( )	( )		[ ]				( )	( )	[ ]	[ ]

Shoe [ ] Inside [ ] Outside [ ] Other Location of shoe(s) _____

Temp casing [ ] Yes Dia _____ From _____ To _____

(7) PERFORATIONS/SCREENS

Perforations Method _____

Screens Type Wire Wrap Material Stainless Steel

Perf/Screen	Casing/ Liner	Screen Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size
Screen	Casing	12	207	237	.035			
Screen	Casing	12	237	247	.025			

(8) WELL TESTS: Minimum testing time is 1 hour

(•) Pump ( ) Bailer ( ) Air ( ) Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
50	9	205	12

Temperature 62 °F Lab analysis [ ] Yes By _____

Water quality concerns? [ ] Yes (describe below)

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County MALHEUR Twp 21 S N/S Range 46 E E/W WM

Sec 15 NW 1/4 of the SW 1/4 Tax Lot 700

Tax Map Number _____ Lot _____

Lat ° ' " or 43.74366 DMS or DD

Long ° ' " or -117.091796 DMS or DD

( ) Street address of well (•) Nearest address

East of Clover Lane 1000'

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Predeepening			[ ]	
Completed Well	07-01-2014		[ ]	151

Flowing Artesian? [ ] Dry Hole? [ ]

WATER BEARING ZONES Depth water was first found 174

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
06-16-2014	150	151			[ ]	151
06-17-2014	174	186			[ ]	151
06-17-2014	186	200			[ ]	151
06-18-2014	207	250			[ ]	151
					[ ]	

(11) WELL LOG

Ground Elevation _____

Material	From	To
Sandy Loam	0	15
Medium to coarse sand	15	105
Soft sandstone, clay mix	105	115
Soft and hard brown clay	115	150
Coarse sand	150	151
Hard brown clay	151	174
Coarse sand, pea gravel	174	186
Fine sand, sandy clay mix	186	198
Coarse sand, pea gravel	198	200
Brown sandy clay	200	207
Coarse sand, pea gravel	207	235
Pea gravel to 1" rock, coarse sand	235	240
Fine - coarse brown sand	240	250

Date Started 06-16-2014 Completed 07-02-2014

(unbonded) Water Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number _____ Date _____

Password : (if filing electronically) _____

Signed _____

(bonded) Water Well Constructor Certification

I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

License Number 1505 Date 07-14-2014

Password : (if filing electronically)

Signed

Contact Info (optional)

ORIGINAL - WATER RESOURCES DEPARTMENT

THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK

Form Version: 0.96

Attachment E

Constant-Rate Laboratory Report

Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: GROUNDWATER SOLUTIONS, INC - PORTLAND
Address: 55 SW YAMHILL ST STE. 400
PORTLAND, OR 97204
Attn: TABLE ROCK ANALYTICAL LAB

Batch #: 150130004
Project Name: 150129D

Analytical Results Report

Sample Number	150130004-001	**Sampling Date**	1/29/2015	**Date/Time Received**	10/30/2015 11:00 AM
Client Sample ID	150129D1 / ADRIAN #6	**Sampling Time**	10:50 AM		
Matrix	Drinking Water	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Carbofuran	ND	mg/L	0.002	2/4/2015	JWC	EPA 531.2	
Oxamyl	ND	mg/L	0.004	2/4/2015	JWC	EPA 531.2	
Diquat	ND	mg/L	0.0008	2/2/2015	JWC	EPA 549.2	
1,2-Dibromo-3-chloropropane(DBCP)	ND	mg/L	4e-005	2/6/2015	MAH	EPA 504.1	
1,2-Dibromoethane (EDB)	ND	mg/L	2e-005	2/6/2015	MAH	EPA 504.1	
Endothall	ND	mg/L	0.01	2/3/2015	JMI	EPA 548.1	
Glyphosate	ND	mg/L	0.01	2/10/2015	JWC	EPA 547	
2,4,5-TP (Silvex)	ND	mg/L	0.0002	2/10/2015	MAH	EPA 515.4	
2,4-D	ND	mg/L	0.0001	2/10/2015	MAH	EPA 515.4	
Dalapon	ND	mg/L	0.001	2/10/2015	MAH	EPA 515.4	
Dinoseb	ND	mg/L	0.0002	2/10/2015	MAH	EPA 515.4	
Pentachlorophenol	ND	mg/L	4e-005	2/10/2015	MAH	EPA 515.4	
Picloram	ND	mg/L	0.0001	2/10/2015	MAH	EPA 515.4	
Alachlor	ND	mg/L	0.0004	2/9/2015	BMM	EPA 525.2	
Atrazine	ND	mg/L	0.0002	2/9/2015	BMM	EPA 525.2	
Benzo[a]pyrene	ND	mg/L	2e-005	2/9/2015	BMM	EPA 525.2	
bis(2-Ethylhexyl)phthalate	ND	mg/L	0.0006	2/9/2015	BMM	EPA 525.2	
bis-2(ethylhexyl)adipate	ND	mg/L	0.0002	2/9/2015	BMM	EPA 525.2	
Hexachlorobenzene	ND	mg/L	0.0002	2/9/2015	BMM	EPA 525.2	
Hexachlorocyclopentadiene	ND	mg/L	0.0002	2/9/2015	BMM	EPA 525.2	
Simazine	ND	mg/L	0.00015	2/9/2015	BMM	EPA 525.2	

Authorized Signature

John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: GROUNDWATER SOLUTIONS, INC - PORTLAND
Address: 55 SW YAMHILL ST STE. 400
PORTLAND, OR 97204
Attn: TABLE ROCK ANALYTICAL LAB

Batch #: 150130004
Project Name: 150129D

Analytical Results Report

Sample Number 150130004-002
Client Sample ID 150129D2 / ADRIAN #6
Matrix Drinking Water
Comments

Sampling Date 1/29/2015
Sampling Time 10:50 AM
Sample Location

Date/Time Received 10/30/2015 11:00 AM

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,1,1-Trichloroethane	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,1,2-Trichloroethane	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,1-Dichloroethene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,2,4-Trichlorobenzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,2-Dichlorobenzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,2-Dichloroethane	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,2-Dichloropropane	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,4-Dichlorobenzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Benzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Carbon Tetrachloride	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Chlorobenzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
cis-1,2-dichloroethene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Ethylbenzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Methylene chloride	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Styrene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Tetrachloroethene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Toluene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Total Xylene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
trans-1,2-Dichloroethene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Trichloroethene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Vinyl Chloride	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: GROUNDWATER SOLUTIONS, INC - PORTLAND
Address: 55 SW YAMHILL ST STE. 400
PORTLAND, OR 97204
Attn: TABLE ROCK ANALYTICAL LAB

Batch #: 150130004
Project Name: 150129D

Analytical Results Report

Sample Number 150130004-010
Client Sample ID Trip Blank
Matrix Drinking Water
Comments

Sampling Date 1/29/2015
Sampling Time
Sample Location

Date/Time Received 10/30/2015 11:00 AM

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,1,1-Trichloroethane	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,1,2-Trichloroethane	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,1-Dichloroethene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,2,4-Trichlorobenzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,2-Dichlorobenzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,2-Dichloroethane	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,2-Dichloropropane	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
1,4-Dichlorobenzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Benzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Carbon Tetrachloride	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Chlorobenzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
cis-1,2-dichloroethene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Ethylbenzene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Methylene chloride	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Styrene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Tetrachloroethene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Toluene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Total Xylene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
trans-1,2-Dichloroethene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Trichloroethene	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Vinyl Chloride	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	

Authorized Signature

John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

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The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C585
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	GROUNDWATER SOLUTIONS, INC - PORTLAND	**Batch #:**	150130004
Address:	55 SW YAMHILL ST STE. 400 PORTLAND, OR 97204	**Project Name:**	150129D
Attn:	TABLE ROCK ANALYTICAL LAB		

Analytical Results Report

Sample Number	150130004-002	**Sampling Date**	1/29/2015	**Date/Time Received**	1/30/2015	11:00 AM
Client Sample ID	150129D2 / ADRIAN #6	**Sampling Time**	10:50 AM			
Matrix	Drinking Water	**Sample Location**				
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Bromodichloromethane	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Bromoform	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Chloroform	ND	mg/L	0.0003	2/6/2015	SAT	EPA 524.3	
Dibromochloromethane	ND	mg/L	0.0005	2/6/2015	SAT	EPA 524.3	
Total Trihalomethane	ND	mg/L	0.0003	2/6/2015	SAT	EPA 524.3	

Authorized Signature

John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

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Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client:	GROUNDWATER SOLUTIONS, INC - PORTLAND		
Address:	55 SW YAMHILL ST STE. 400	**Batch #:**	150130004
	PORTLAND, OR 97204	**Project Name:**	150129D
Attn:	TABLE ROCK ANALYTICAL LAB		

Analytical Results Report

Sample Number	150130004-003	**Sampling Date**	1/29/2015	**Date/Time Received**	10/30/2015 11:00 AM
Client Sample ID	150129D3 / ADRIAN #6	**Sampling Time**	10:50 AM		
Matrix	Drinking Water	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Mercury-ICPMS	ND	mg/L	0.0001	2/4/2015	HSW	EPA 200.8	

Authorized Signature

John Coddington, Lab Manager

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Client:	GROUNDWATER SOLUTIONS, INC - PORTLAND		
Address:	55 SW YAMHILL ST STE. 400	**Batch #:**	150130004
	PORTLAND, OR 97204	**Project Name:**	150129D
Attn:	TABLE ROCK ANALYTICAL LAB		

Analytical Results Report

Sample Number	150130004-004	**Sampling Date**	1/29/2015	**Date/Time Received**	10/30/2015 11:00 AM
Client Sample ID	150129D4 / ADRIAN #6	**Sampling Time**	10:15 AM		
Matrix	Drinking Water	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Chlordane	ND	mg/L	0.0004	2/11/2015	MAH	EPA 505	
Endrin	ND	mg/L	2e-005	2/11/2015	MAH	EPA 505	
gamma-BHC (Lindane)	ND	mg/L	4e-005	2/11/2015	MAH	EPA 505	
Heptachlor	ND	mg/L	8e-005	2/11/2015	MAH	EPA 505	
Heptachlor epoxide	ND	mg/L	4e-005	2/11/2015	MAH	EPA 505	
Methoxychlor	ND	mg/L	0.0002	2/11/2015	MAH	EPA 505	
PCBs	ND	mg/L	0.0005	2/11/2015	MAH	EPA 505	
Toxaphene	ND	mg/L	0.002	2/11/2015	MAH	EPA 505	

Authorized Signature

John Coddington, Lab Manager

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Client: GROUNDWATER SOLUTIONS, INC - PORTLAND
Address: 55 SW YAMHILL ST STE. 400
PORTLAND, OR 97204
Attn: TABLE ROCK ANALYTICAL LAB

Batch #: 150130004
Project Name: 150129D

Analytical Results Report

Sample Number	150130004-005	**Sampling Date**	1/29/2015	**Date/Time Received**	10/30/2015 11:00 AM
Client Sample ID	150129D5 / ADRIAN #6	**Sampling Time**	10:15 AM		
Matrix	Drinking Water	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Gross Alpha	18.7 +/- 2.83	pCi/L	2.83	2/9/2015	SUB	EPA 900.0	
Gross Beta	14.2 +/- 1.67	pCi/L	2.15	2/9/2015	SUB	EPA 900.0	
Radium 226	0.297 +/- 0.356	pCi/L	0.546	2/10/2015	SUB	EPA 903.0	
Radium 228	-0.0251 +/- 0.290	pCi/L	0.685	2/20/2015	SUB	EPA 904.0	
Total Radium	0.272 +/- 0.646	pCi/L	1.23	2/27/2015	SUB	Calculation	

Authorized Signature

John Coddington, Lab Manager

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Client: GROUNDWATER SOLUTIONS, INC - PORTLAND
Address: 55 SW YAMHILL ST STE. 400
PORTLAND, OR 97204
Attn: TABLE ROCK ANALYTICAL LAB

Batch #: 150130004
Project Name: 150129D

Analytical Results Report

Sample Number	150130004-006	**Sampling Date**	1/29/2015	**Date/Time Received**	10/30/2015 11:00 AM
Client Sample ID	150129D6 / ADRIAN #6	**Sampling Time**	10:15 AM		
Matrix	Drinking Water	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	ND	mg/L	0.01	2/9/2015	CRW	EPA 335.4	

Authorized Signature

John Coddington, Lab Manager

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Client: GROUNDWATER SOLUTIONS, INC - PORTLAND
Address: 55 SW YAMHILL ST STE. 400
PORTLAND, OR 97204
Attn: TABLE ROCK ANALYTICAL LAB

Batch #: 150130004
Project Name: 150129D

Analytical Results Report

Sample Number 150130004-007
Client Sample ID 150129D7 / ADRIAN #6
Matrix Drinking Water
Comments

Sampling Date 1/29/2015
Sampling Time 10:15 AM
Sample Location

Date/Time Received 1/30/2015 11:00 AM

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	302	mg CaCO3/L	2	2/5/2015	KJS	SM2320B	
Aluminum	ND	mg/L	0.01	2/4/2015	AMC	EPA 200.7	
Antimony	ND	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Arsenic	0.0734	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Barium	0.0251	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Beryllium	ND	mg/L	0.0003	2/10/2015	HSW	EPA 200.8	
Bicarbonate	302	mg CaCO3/L	2	2/5/2015	KJS	SM2320B	
Cadmium	ND	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Carbonate	ND	mg CaCO3/L	5	2/5/2015	KJS	SM2320B	
Chloride	25.9	mg/L	0.5	1/30/2015	CRW	EPA 300.0	
Chromium	0.00163	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Color	ND @ pH 7.43	Color Units	5	2/3/2015	KJS	SM 2120B	
Copper	0.00106	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Corrosivity	0.423			3/2/2015	JWC	Calculation	
Fluoride	0.519	mg/L	0.5	1/30/2015	CRW	EPA 300.0	
Calcium	81.6	mg/L	0.5	2/4/2015	AMC	EPA 200.7	
Hardness	298	mg/L	1	2/4/2015	AMC	EPA 200.7	
Magnesium	22.9	mg/L	0.1	2/4/2015	AMC	EPA 200.7	
Iron	0.0311	mg/L	0.02	2/4/2015	AMC	EPA 200.7	
Lead	ND	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Manganese	ND	mg/L	0.01	2/4/2015	AMC	EPA 200.7	
Molybdenum	0.00787	mg/L	0.001	3/4/2015	HSW	EPA 200.8	
Nickel	ND	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
NO3/N	8.83	mg/L	0.5	1/30/2015 5:00:00 PM	CRW	EPA 300.0	
NO3/N+NO2/N	8.83	mg/L	0.5	1/30/2015 5:00:00 PM	CRW	EPA 300.0	
NO2/N	ND	mg/L	0.5	1/30/2015 5:00:00 PM	CRW	EPA 300.0	
Odor	ND	Ton	1	2/3/2015	KJS	SM2150B	
pH	7.62	ph Units		2/4/2015	KJS	SM 4500pH-B	
Selenium	0.00858	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Silver	ND	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Sodium	64.0	mg/L	1	2/4/2015	ETL	EPA 200.7	
TDS	576	mg/L	50	2/3/2015	KJS	SM 2540C	
Sulfate	80.5	mg/L	0.5	1/30/2015	CRW	EPA 300.0	
MBAS	ND	mg/L	0.05	2/10/2015	KJS	SM5540C	

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Client:	GROUNDWATER SOLUTIONS, INC - PORTLAND	**Batch #:**	150130004
Address:	55 SW YAMHILL ST STE. 400 PORTLAND, OR 97204	**Project Name:**	150129D
Attn:	TABLE ROCK ANALYTICAL LAB		

Analytical Results Report

Sample Number	150130004-007	**Sampling Date**	1/29/2015	**Date/Time Received**	1/30/2015	11:00 AM	
Client Sample ID	150129D7 / ADRIAN #6	**Sampling Time**	10:15 AM				
Matrix	Drinking Water	**Sample Location**					
Comments							

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Thallium	ND	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Uranium	0.0222	mg/L	0.001	2/4/2015	HSW	EPA 200.8	
Uranium Activity	14.9	pCi/L	0.67	2/4/2015	HSW	EPA 200.8	
Zinc	0.00146	mg/L	0.001	2/4/2015	HSW	EPA 200.8	

Authorized Signature

John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
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Client: GROUNDWATER SOLUTIONS, INC - PORTLAND
Address: 55 SW YAMHILL ST STE. 400
PORTLAND, OR 97204
Attn: TABLE ROCK ANALYTICAL LAB

Batch #: 150130004
Project Name: 150129D

Analytical Results Report

Sample Number	150130004-008	**Sampling Date**	1/29/2015	**Date/Time Received**	10/30/2015 11:00 AM
Client Sample ID	150129D8 / ADRIAN #6	**Sampling Time**	10:15 AM		
Matrix	Drinking Water	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2,3,7,8-TCDD	ND	pg/L	5	2/6/2015	SUB	EPA 1613B	

Authorized Signature

John Coddington, Lab Manager

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ND Not Detected
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Client:	GROUNDWATER SOLUTIONS, INC - PORTLAND		
Address:	55 SW YAMHILL ST STE. 400	**Batch #:**	150130004
	PORTLAND, OR 97204	**Project Name:**	150129D
Attn:	TABLE ROCK ANALYTICAL LAB		

Analytical Results Report

Sample Number	150130004-009	**Sampling Date**	1/29/2015	**Date/Time Received**	10/30/2015 11:00 AM
Client Sample ID	150129D9 / ADRIAN #6	**Sampling Time**	10:50 AM		
Matrix	Drinking Water	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Iron bacteria	PRESENT			2/9/2015	KAS	SM9240A	

Authorized Signature

John Coddington, Lab Manager

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ND Not Detected
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Login Report

Customer Name: GROUNDWATER SOLUTIONS, INC - PORTLAND
55 SW YAMHILL ST STE. 400
PORTLAND OR 97204

Order ID: 150130004
Order Date: 1/30/2015

Contact Name: TABLE ROCK ANALYTICAL LAB
Project Name: 150129D

Comment:

Sample #: 150130004-001 **Customer Sample #:** 150129D1 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 10 **Date Received:** 1/30/2015 11:00:00 AM **Time Collected:** 10:50 AM
Comment:

Test	Lab	Method	Due Date	Priority
CARBAMATE 531.2 OR	M	EPA 531.2	2/11/2015	Normal (~10 Days)
DIQUAT 549.2 OR	M	EPA 549.2	2/11/2015	Normal (~10 Days)
EDB 504.1 OR	M	EPA 504.1	2/11/2015	Normal (~10 Days)
ENDOTHALL 548.1 OR	M	EPA 548.1	2/11/2015	Normal (~10 Days)
GLYPHOSATE 547 OR	M	EPA 547	2/11/2015	Normal (~10 Days)
HERBICIDES 515.4 OR	M	EPA 515.4	2/11/2015	Normal (~10 Days)
SEMIVOLATILES 525.2 OR	M	EPA 525.2	2/11/2015	Normal (~10 Days)

Sample #: 150130004-002 **Customer Sample #:** 150129D2 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 3 **Date Received:** 1/30/2015 11:00:00 AM **Time Collected:** 10:50 AM
Comment:

Test	Lab	Method	Due Date	Priority
THM - TOTAL 524.3 OR	M	EPA 524.3	3/6/2015	Normal (~10 Days)
VOLATILES 524.3 OR	M	EPA 524.3	2/11/2015	Normal (~10 Days)

Sample #: 150130004-003 **Customer Sample #:** 150129D3 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 2 **Date Received:** 1/30/2015 11:00:00 AM **Time Collected:** 10:50 AM
Comment:

Test	Lab	Method	Due Date	Priority
MERCURY-ICPMS	M	EPA 200.8	2/11/2015	Normal (~10 Days)

Customer Name: GROUNDWATER SOLUTIONS, INC - PORTLAND
55 SW YAMHILL ST STE. 400
PORTLAND OR 97204

Order ID: 150130004
Order Date: 1/30/2015

Contact Name: TABLE ROCK ANALYTICAL LAB
Project Name: 150129D
Comment:

Sample #: 150130004-004 **Customer Sample #:** 150129D4 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 1 **Date Received:** 1/30/2015 11:00:00 AM **Time Collected:** 10:15 AM
Comment:

Test	Lab	Method	Due Date	Priority
PESTICIDES 505 OR	M	EPA 505	2/11/2015	***Normal (~10 Days)***

Sample #: 150130004-005 **Customer Sample #:** 150129D5 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 4 **Date Received:** 1/30/2015 11:00:00 AM **Time Collected:** 10:15 AM
Comment:

Test	Lab	Method	Due Date	Priority
GROSS ALPHA		EPA 900.0	2/11/2015	***Normal (~10 Days)***
GROSS BETA		EPA 900.0	2/11/2015	***Normal (~10 Days)***
RADIUM 226		EPA 903.0	2/11/2015	***Normal (~10 Days)***
RADIUM 228		EPA 904.0	2/11/2015	***Normal (~10 Days)***
RADIUM TOTAL		Calculation	2/11/2015	***Normal (~10 Days)***

Sample #: 150130004-006 **Customer Sample #:** 150129D6 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 1 **Date Received:** 1/30/2015 11:00:00 AM **Time Collected:** 10:15 AM
Comment:

Test	Lab	Method	Due Date	Priority
CYANIDE IN DW MOSCOW EPA	M	EPA 335.4	2/11/2015	***Normal (~10 Days)***

Sample #: 150130004-007 **Customer Sample #:** 150129D7 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 3 **Date Received:** 1/30/2015 11:00:00 AM **Time Collected:** 10:15 AM
Comment:

Test	Lab	Method	Due Date	Priority
ALKALINITY	M	SM2320B	2/11/2015	***Normal (~10 Days)***
ALUMINUM ICP	M	EPA 200.7	2/11/2015	***Normal (~10 Days)***
ANTIMONY	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***

Customer Name: GROUNDWATER SOLUTIONS, INC - PORTLAND
55 SW YAMHILL ST STE. 400
PORTLAND OR 97204

Order ID: 150130004
Order Date: 1/30/2015

Contact Name: TABLE ROCK ANALYTICAL LAB

Project Name: 150129D

Comment:

ARSENIC	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
BARIUM	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
BERYLLIUM	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
BICARBONATE	M	SM2320B	3/6/2015	***Normal (~10 Days)***
CADMIUM	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
CARBONATE	M	SM2320B	3/6/2015	***Normal (~10 Days)***
CHLORIDE	M	EPA 300.0	2/11/2015	***Normal (~10 Days)***
CHROMIUM	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
COLOR	M	SM 2120B	2/11/2015	***Normal (~10 Days)***
COPPER	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
Corrosivity	M	Calculation	2/11/2015	***Normal (~10 Days)***
FLUORIDE	M	EPA 300.0	2/11/2015	***Normal (~10 Days)***
HARDNESS by EPA 200.7	M	EPA 200.7	2/11/2015	***Normal (~10 Days)***
IRON ICP	M	EPA 200.7	2/11/2015	***Normal (~10 Days)***
LEAD	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
MANGANESE ICP	M	EPA 200.7	2/11/2015	***Normal (~10 Days)***
MOLYBDENUM	M	EPA 200.8	3/6/2015	***Normal (~10 Days)***
NICKEL	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
NITRATE/N	M	EPA 300.0	2/11/2015	***Normal (~10 Days)***
NITRATE+ NITRITE AS N	M	EPA 300.0	2/11/2015	***Normal (~10 Days)***
NITRITE/N	M	EPA 300.0	2/11/2015	***Normal (~10 Days)***
ODOR	M	SM2150B	2/11/2015	***Normal (~10 Days)***
pH	M	SM 4500pH-B	2/11/2015	***Normal (~10 Days)***
SELENIUM	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
SILVER	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
SODIUM ICP	M	EPA 200.7	3/6/2015	***Normal (~10 Days)***
SOLIDS - TDS	M	SM 2540C	2/11/2015	***Normal (~10 Days)***
SULFATE	M	EPA 300.0	2/11/2015	***Normal (~10 Days)***
SURFACTANTS	M	SM5540C	2/11/2015	***Normal (~10 Days)***
THALLIUM	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
URANIUM	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***
ZINC	M	EPA 200.8	2/11/2015	***Normal (~10 Days)***

Customer Name: GROUNDWATER SOLUTIONS, INC - PORTLAND
55 SW YAMHILL ST STE. 400
PORTLAND OR 97204

Order ID: 150130004
Order Date: 1/30/2015

Contact Name: TABLE ROCK ANALYTICAL LAB
Project Name: 150129D
Comment:

Sample #: 150130004-008 **Customer Sample #:** 150129D8 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 3 **Date Received:** 1/30/2015 11:00:00 AM **Time Collected:** 10:15 AM
Comment:

Test	Lab	Method	Due Date	Priority
DIOXIN		EPA 1613B	2/11/2015	***Normal (~10 Days)***

Sample #: 150130004-009 **Customer Sample #:** 150129D9 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 2 **Date Received:** 1/30/2015 11:00:00 AM **Time Collected:** 10:50 AM
Comment:

Test	Lab	Method	Due Date	Priority
IRON BACTERIA	S	SM9240A	2/11/2015	***Normal (~10 Days)***

Sample #: 150130004-010 **Customer Sample #:** Trip Blank

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 1 **Date Received:** 1/30/2015 11:00:00 AM **Time Collected:**
Comment:

Test	Lab	Method	Due Date	Priority
VOLATILES 524.3 OR	M	EPA 524.3	2/11/2015	***Normal (~10 Days)***

SAMPLE CONDITION RECORD

Samples received in a cooler?	Yes
Samples received intact?	Yes
What is the temperature of the sample(s)? (°C)	2.4
Samples received with a COC?	Yes
Samples received within holding time?	Yes
Are all sample bottles properly preserved?	Yes
Are VOC samples free of headspace?	Yes
Is there a trip blank to accompany VOC samples?	Yes
Labels and chain agree?	Yes

150130 004 GDWP Last Due 3/6/2015
1st SAMP 1/29/2015 1st RCVD 1/30/2015
150129D

Anatek Labs, Inc
1282 Alturas Drive, Moscow ID 83843
T: (208) 883-2839 F: (208) 882-9246
www.anateklabs.com

State of Oregon
Drinking Water
Chain of Custody Record
(fill in shaded areas below)

Anatek Log In #

Water System: GSI Water Solutions
System ID#: —
Address:
City: State: Zip:
Phone:
Fax:

Send Bill or Receipt To:
☐ Same as Water System Info
Name: Table Rock Analytical Laboratory, LLC
Address: PO Box 746
City: Pendleton State: OR Zip: 97801
Purchase Order #:
Email: trocklab@gmail.com

Return Results By:
☐ Phone ☐ Mail
☐ Fax ☑ Email

Rush Samples - Results Needed By
Date:
Time:

Sample Identification

Sampled At: Adrian #6
Sampled By: Joseph
Date Collected: 1/29/15
Time Collected: 1015 - 1050
Entry Point or Source ID:
Source Name(s):

Sample Composition

Location: ☐ Source ☐ Distribution
Type: ☐ Raw ☐ Treated
Note: Composited samples will not be accepted for analyses.

Check Desired Analyses

☑ Phase II SOC (all 5 listed below)
- ☐ Semivolatiles (525.2)
- ☐ Herbicides (515.3)
- ☐ Carbamates (531.1)
- ☐ Pesticides (505)
- ☐ EDB (504.1)

☑ Phase V SOC (all 3 listed below)
- ☐ Diquat (549.2)
- ☐ Endothall (548.1)
- ☐ Glyphosate (547)

☐ Disinfection Biproducts (2 below)
- ☐ TTHM (524.2)
- ☐ HAA5 (SM6251B)

☑ VOC (524.2)

IOC's
- ☐ Nitrate
- ☐ Pb/Cu
- ☐ Full IOC
- ☐ TOC
- ~~☐ Asbestos~~
- ☑ Gross Alpha
- ☑ Gross Beta
- ☑ Radium 226
- ☑ Radium 228

☑ DIOXIN

5 analyts added on 3/4/15 see attached - TL 3/4/15

MWBS
Rads → Pace
Dioxin → Pace-PN
Iron Bact → TSPA

Inspection Checklist (Anatek Use Only)

Preservative:				Sample Condition:	
Semivolatiles (525.2)	NaSulfite	● Yes	○ No	Received Intact?	(Yes) No
Herbicides (515.3)	NaThiosulfate	● Yes	○ No	Labels & Chains Agree?	(Yes) No
Carbamates (531.1)	MCAA Buffer	● Yes	○ No	Containers Sealed?	(Yes) No
Pesticides (505)	NaThiosulfate	● Yes	○ No	VOC Headspace?	Yes (No)
EDB (504.1)	NaThiosulfate	● Yes	○ No	Temperature (°C)	2.4°C IR-1
Diquat (549.2)	NaThiosulfate	● Yes	○ No		
Endothall (548.1)	NaThiosulfate	● Yes	○ No		
Glyphosate (547)	NaThiosulfate	● Yes	○ No	Date & Time	1/30/15 1100 via UPS
THM's (524.2)	NaThiosulfate	○ Yes	○ No		
HAA5 (SM6251B)	NH_4Cl	○ Yes	○ No	Inspected By:	JL

OTHER: Please see attached list.
Hg vials marked TOC

Comments: 150129D1 = SOC
150129D2 = VOC, 150129D3 = Mercury
150129D4 = PCBs, 150129D5 = Rads
150129D6 = Cyanide, 150129D7 = ICK
150129D8 - Dioxine, 150129D9 = Iron Bacteria

Customer	Date/Time	Received By	Date/Time	Shipped By	Date/Time	Received By
BURead	Usual				1/30/15 1100	JL

Table Rock Analytical Laboratory

GENERAL
CHAIN OF CUSTODY RECORD

Table Rock Analytical Laboratory
419 SW 5th Street, Pendleton, Oregon 97801
541 276 0385 Fax 541 276 2041

Preliminary Results

Call _____ phone
Fax _____ phone
Email jabbott@gsiws.com email
Text _____ phone

Turnaround Time

Standard

Rush (pricing and turnaround must be described)

Page 1 of 1

Reporting Address

Company: GSI
Contact: Joseph Abbott
Address:
City: Kennewick State: WA Zip:
Phone: 239 206 0814 Fax:
Email: jabbott@gsiws.com

Analysis Requested

Sample ID	Collection Date	Time	By	Ashest D5 150129E	TOC D7	Rads D5	Cyanide D6	Dioxine D8	525 SOC	Diquat SOC	515/548 SOC	EDB SOC			Lab Bottle Suffix ID	Comments	Matrix
Adrian #6	1/29	1015	JA	2				1				1				SOC D1	9.3
					2					01						VOC D2	10.8
						4										Mercury D3	10.6
							1									PCBs D4	6.1
								2								Rads D5	4.9
		1050							2							Cyanide D6	5.1
										1						IOC D7	3.9
											1					Asbestos E	5.2
												2				Dioxine D8	7.1

4.9

Laboratory Use Only
Job Number: 150129D
Temperature 150129E

Billing Address

Company GSI Water Solutions, Inc
Contact Joseph Abbott
Address
City State: Zip:
Phone: Fax:

Relinquished By	Date	Time	Received By
[signature]	01/29	1230	Bulkead 1615
			Iron Bacteria D9

Table Rock Analytical Laboratory

GENERAL CHAIN OF CUSTODY RECORD

Table Rock Analytical Laboratory
419 SW 5th Street, Pendleton, Oregon 97801
541 276 0385 Fax 541 276 2041

Preliminary Results

Call 239 206 0814 (phone)
Fax (phone)
Email jabbott@gslws.com (email)
Text (phone)

Turnaround Time
Standard
Rush (pricing and turnaround must be described)

Reporting Address

Company: GSI
Contact: Joseph Abbott
Address: 8019 W. Quinault Ave Suite 201
City: Kennewick State: WA Zip: 99336
Phone: 239-206-0814 Fax:
Email:

Analysis Requested

Sample ID	Collection Date	Time	By	Pesticides 8081	Carbamate 8021	Glyphosate 8321	5243	TOC - mercury	Triplblank	Dioxine D8	PCBs D4	Iron Bacteria			Lab Bottle Suffix ID	Comments	Matrix
Adrian #6	1/29	1050	JA	2													
	↓	↓	↓		1	D1		D3									
				D1	D1	1											
							3		1								
				1		1		2									
					D1												
										1							
											1						
												4					

Laboratory Use Only
Job Number:
Temperature

Billing Address

Company
Contact
Address
City State: Zip:
Phone: Fax:

Relinquished By	Date	Time	Received By
[signature]	01/29	1230	Bread 1/29/15 1615

Customer Name: GROUNDWATER SOLUTIONS, INC - PORTLAND
55 SW YAMHILL ST STE. 400
PORTLAND OR 97204

Order ID: 150130004
Order Date: 1/30/2015

Contact Name: TABLE ROCK ANALYTICAL LAB
Project Name: 150129D

Comment:

ARSENIC	M	EPA 200.8	2/11/2015	Normal (~10 Days)
BARIUM	M	EPA 200.8	2/11/2015	Normal (~10 Days)
BERYLLIUM	M	EPA 200.8	2/11/2015	Normal (~10 Days)
CADMIUM	M	EPA 200.8	2/11/2015	Normal (~10 Days)
CHLORIDE	M	EPA 300.0	2/11/2015	Normal (~10 Days)
CHROMIUM	M	EPA 200.8	2/11/2015	Normal (~10 Days)
COLOR	M	SM 2120B	2/11/2015	Normal (~10 Days)
COPPER	M	EPA 200.8	2/11/2015	Normal (~10 Days)
Corrosivity	M	Calculation	2/11/2015	Normal (~10 Days)
FLUORIDE	M	EPA 300.0	2/11/2015	Normal (~10 Days)
HARDNESS by EPA 200.7	M	EPA 200.7	2/11/2015	Normal (~10 Days)
IRON ICP	M	EPA 200.7	2/11/2015	Normal (~10 Days)
LEAD	M	EPA 200.8	2/11/2015	Normal (~10 Days)
MANGANESE ICP	M	EPA 200.7	2/11/2015	Normal (~10 Days)
NICKEL	M	EPA 200.8	2/11/2015	Normal (~10 Days)
NITRATE/N	M	EPA 300.0	2/11/2015	Normal (~10 Days)
NITRATE+ NITRITE AS N	M	EPA 300.0	2/11/2015	Normal (~10 Days)
NITRITE/N	M	EPA 300.0	2/11/2015	Normal (~10 Days)
ODOR	M	SM2150B	2/11/2015	Normal (~10 Days)
pH	M	SM 4500pH-B	2/11/2015	Normal (~10 Days)
SELENIUM	M	EPA 200.8	2/11/2015	Normal (~10 Days)
SILVER	M	EPA 200.8	2/11/2015	Normal (~10 Days)
SOLIDS - TDS	M	SM 2540C	2/11/2015	Normal (~10 Days)
SULFATE	M	EPA 300.0	2/11/2015	Normal (~10 Days)
SURFACTANTS	M	SM5540C	2/11/2015	Normal (~10 Days)
THALLIUM	M	EPA 200.8	2/11/2015	Normal (~10 Days)
URANIUM	M	EPA 200.8	2/11/2015	Normal (~10 Days)
ZINC	M	EPA 200.8	2/11/2015	Normal (~10 Days)

Sample #: 150130004-008 **Customer Sample #:** 150129D8 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 3 **Date Received:** 10/30/2015 11:00:00 AM **Time Collected:** 10:15 AM
Comment:

Test	Lab	Method	Due Date	Priority
DIOXIN		EPA 1613B	2/11/2015	Normal (~10 Days)

Customer Name: GROUNDWATER SOLUTIONS, INC - PORTLAND
55 SW YAMHILL ST STE. 400
PORTLAND OR 97204

Order ID: 150130004
Order Date: 1/30/2015

Contact Name: TABLE ROCK ANALYTICAL LAB
Project Name: 150129D

Comment:

Sample #: 150130004-009 **Customer Sample #:** 150129D9 / ADRIAN #6

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 2 **Date Received:** 10/30/2015 11:00:00 AM **Time Collected:** 10:50 AM
Comment:

Test	Lab	Method	Due Date	Priority
IRON BACTERIA	S	SM9240A	2/11/2015	***Normal (~10 Days)***

Sample #: 150130004-010 **Customer Sample #:** Trip Blank

Recv'd: ☑ **Matrix:** Drinking Water **Collector:** JOSEPH **Date Collected:** 1/29/2015
Quantity: 1 **Date Received:** 10/30/2015 11:00:00 AM **Time Collected:**
Comment:

Test	Lab	Method	Due Date	Priority
VOLATILES 524.3 OR	M	EPA 524.3	2/11/2015	***Normal (~10 Days)***

SAMPLE CONDITION RECORD

Samples received in a cooler?	Yes
Samples received intact?	Yes
What is the temperature of the sample(s)? (°C)	2.4
Samples received with a COC?	Yes
Samples received within holding time?	Yes
Are all sample bottles properly preserved?	Yes
Are VOC samples free of headspace?	Yes
Is there a trip blank to accompany VOC samples?	Yes
Labels and chain agree?	Yes

150130 004 GDWP Last Due 2/11/2015
1st SAMP 1/29/2015 1st RCVD 1/30/2015
150129D

Anatek Labs, Inc
1282 Alturas Drive, Moscow ID 83843
T: (208) 883-2839 F: (208) 882-9246
www.anateklabs.com

State of Oregon Drinking Water Chain of Custody Record

(fill in shaded areas below)

Anatek Log In #

Water System: GSI Water Solutions
System ID#: —
Address:
City: State: Zip:
Phone:
Fax:

Send Bill or Receipt To:
☐ Same as Water System Info
Name: Table Rock Analytical Laboratory, LLC
Address: PO Box 746
City: Pendleton State: OR Zip: 97801
Purchase Order #:
Email: trocklab@gmail.com

Return Results By:
☐ Phone ☐ Mail
☐ Fax ☑ Email

Rush Samples - Results Needed By:
Date:
Time:

Sample Identification

Sampled At: Adrian #6
Sampled By: Joseph
Date Collected: 1/29/15
Time Collected: 1015 - 1050
Entry Point or Source ID:
Source Name(s):

Sample Composition

Location: ☐ Source ☐ Distribution
Type: ☐ Raw ☐ Treated

Note: Composited samples will not be accepted for analyses.

Check Desired Analyses

- ☑ Phase II SOC (all 5 listed below)
  - ☐ Semivolatiles (525.2)
  - ☐ Herbicides (515.3)
  - ☐ Carbamates (531.1)
  - ☐ Pesticides (505)
  - ☐ EDB (504.1)
- ☑ Phase V SOC (all 3 listed below)
  - ☐ Diquat (549.2)
  - ☐ Endothall (548.1)
  - ☐ Glyphosate (547)
- ☐ Disinfection Biproducts (2 below)
  - ☐ TTHM (524.2)
  - ☐ HAA5 (SM6251B)
- ☑ VOC (524.2)
- IOC's
  - ☐ Nitrate
  - ☐ Pb/Cu
  - ☐ Full IOC
  - ☐ TOC
  - ~~☐ Asbestos~~
  - ☑ Gross Alpha
  - ☑ Gross Beta
  - ☑ Radium 226
  - ☑ Radium 228
- ☑ DIOXIN

MWBS
Rads → Pace
Dioxin → Pace-MN
Iron Bact → TSPA

Inspection Checklist (Anatek Use Only)

Preservative:			
Semivolatiles (525.2)	NaSulfite	● Yes	○ No
Herbicides (515.3)	NaThiosulfate	● Yes	○ No
Carbamates (531.1)	MCAA Buffer	● Yes	○ No
Pesticides (505)	NaThiosulfate	● Yes	○ No
EDB (504.1)	NaThiosulfate	● Yes	○ No
Diquat (549.2)	NaThiosulfate	● Yes	○ No
Endothall (548.1)	NaThiosulfate	● Yes	○ No
Glyphosate (547)	NaThiosulfate	● Yes	○ No
THM's (524.2)	NaThiosulfate	○ Yes	○ No
HAA5 (SM6251B)	NH_4Cl	○ Yes	○ No

Sample Condition:		
Received Intact?	(Yes)	No
Labels & Chains Agree?	(Yes)	No
Containers Sealed?	(Yes)	No
VOC Headspace?	Yes	(No)

Temperature (°C): 2.4°C IR-1
Date & Time: 1/30/15 1100 via UPS
Inspected By: JK

OTHER: Please see attached list. Hg vials marked TOC

Comments:
01 150129D1 = SOC
02 150129D2 = VOC
03 150129D3 = Mercury
04 150129D4 = PCBs
05 150129D5 = Rads
06 150129D6 = Cyanide
07 150129D7 = IOC
08 150129D8 = Dioxine
09 150129D9 = Iron Bacteria

Customer	Date/Time	Received By	Date/Time	Shipped By	Date/Time	Received By
R. Rand	[illegible]				[illegible]	

Attachment F

Interval Test Laboratory Report

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Attn: WALT BURT
GSI
55 SW YAMHILL STE #300
PORTLAND, OR 97204

Collected By: M HINGST
Submitted By: M HINGST

Source of Sample:
ADRIAN TEST WELL

Time of Collection: 14:05
Date of Collection: 6/4/2014
Date Received: 6/4/2014
Report Date: 6/24/2014

Field Temp:
PWS:

Temp Rcvd in Lab: 7.0 °C
PWS Name

Laboratory Analysis Report

Sample Number: 1420344

NO FIELD TEMP RCVD; Methane, Ethane, and Ethene testing were performed by Accutest Mountain States (AMS). EPA Methods 504.1, 505, 515.3, 525.2, 531.2, 547, and 549.2 were performed by Anatek Labs (ATL).

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Calcium Hardness	UR	189	mg/L	1.25	EPA 200.7	6/10/2014	KC
Silica	UR	66.1	mg/L	0.25	EPA 200.7	6/10/2014	KC
Aluminum, Al	UR	0.46	mg/L	0.10	EPA 200.7	6/9/2014	KC
Antimony Low	0.006	< 0.005	mg/L	0.005	EPA 200.8	6/10/2014	JH
Arsenic Low	0.01	0.092	mg/L	0.003	EPA 200.8	6/6/2014	JH
Value Exceeds the MCL of 0.010 mg/L							
Barium, Ba	2	< 0.05	mg/L	0.05	EPA 200.7	6/9/2014	KC
Beryllium Low	0.004	< 0.0005	mg/L	0.0005	EPA 200.8	6/10/2014	JH
Cadmium Low	0.005	< 0.0005	mg/L	0.0005	EPA 200.8	6/10/2014	JH
Calcium, Ca	UR	75.6	mg/L	0.50	EPA 200.7	6/10/2014	KC
Chromium Low	0.1	< 0.002	mg/L	0.002	EPA 200.8	6/10/2014	JH
Copper, Cu	1.30	< 0.01	mg/L	0.01	EPA 200.7	6/9/2014	KC
Iron, Fe	UR	0.29	mg/L	0.05	EPA 200.7	6/6/2014	KC
Lead Low	0.015	< 0.005	mg/L	0.005	EPA 200.8	6/10/2014	JH
Magnesium, Mg	UR	21.3	mg/L	0.50	EPA 200.7	6/10/2014	KC
Manganese, Mn	UR	< 0.05	mg/L	0.05	EPA 200.7	6/6/2014	KC
Mercury, Hg	0.002	< 0.0002	mg/L	0.0002	EPA 245.1	6/6/2014	JMS

MCL = Maximum Contamination Level
MDL = Method Minimum Detection Limit
UR = Unregulated

Date Report Printed: 6/24/2014 8:23:01 A

Laboratory Analysis Report

Sample Number: 1420344

NO FIELD TEMP RCVD; Methane, Ethane, and Ethene testing were performed by Accutest Mountain States (AMS). EPA Methods 504.1, 505, 515.3, 525.2, 531.2, 547, and 549.2 were performed by Anatek Labs (ATL).

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Nickel, Ni	UR	< 0.02	mg/L	0.02	EPA 200.7	6/9/2014	KC
Potassium, K	UR	17.3	mg/L	0.5	EPA 200.7	6/10/2014	KC
Selenium Low	0.05	0.011	mg/L	0.005	EPA 200.8	6/10/2014	JH
Silver, Ag	UR	< 0.010	mg/L	0.010	SM 3111 B	6/17/2014	JH
Sodium, Na	UR	72.7	mg/L	0.50	EPA 200.7	6/10/2014	KC
Thallium Low	0.002	< 0.001	mg/L	0.001	EPA 200.8	6/10/2014	JH
Uranium, U	30	30	ug/L	1	EPA 200.8	6/10/2014	JH
Zinc, Zn	UR	0.02	mg/L	0.01	EPA 200.7	6/9/2014	KC
Ammonia Direct (as N)	UR	< 0.2	mg/L	0.2	EPA 350.1	6/5/2014	CJS
Nitrate + Nitrite (as N)	10	7.96	mg/L	0.02	EPA 353.2	6/10/2014	CJS
Nitrate (as N)	10	8.1	mg/L	0.2	EPA 300.0	6/5/2014	NC
The nitrate concentration is approaching maximum concentration of 10.0 mg/L. Monitoring is recommended.							
Nitrite (as N)	1.00	< 0.01	mg/L	0.01	EPA 353.2	6/6/2014	CJS
Ortho Phosphate (as P)		0.11	mg/L	0.05	EPA 365.1	6/5/2014	CJS
Ethylene Dibromide	0.05	<0.02	ug/L	0.02	EPA 504.1	6/14/2014	ATL
1,2-Dibromo-3-chloropropane	0.20	<0.02	ug/L	0.02	EPA 504.1	6/14/2014	ATL
Endrin	2	<0.02	ug/L	0.02	EPA 505	6/11/2014	ATL
gamma-BHC (Lindane)	0.2	<0.02	ug/L	0.02	EPA 505	6/11/2014	ATL
Methoxychlor	40	<0.1	ug/L	0.1	EPA 505	6/11/2014	ATL
Toxaphene	3	<1	ug/L	1	EPA 505	6/11/2014	ATL
Heptachlor	0.4	<0.04	ug/L	0.04	EPA 505	6/11/2014	ATL
Heptachlor epoxide	0.2	<0.02	ug/L	0.02	EPA 505	6/11/2014	ATL
Total PCB	0.5	<0.10	ug/L	0.1	EPA 505	6/11/2014	ATL
Chlordane(Total)	2	<0.1	ug/L	0.1	EPA 505	6/11/2014	ATL
Aldrin	UR	<0.2	ug/L	0.2	EPA 505	6/11/2014	ATL
Dieldrin	UR	<0.2	ug/L	0.2	EPA 505	6/11/2014	ATL
Dalapon	200	<1	ug/L	1	EPA 515.3	6/13/2014	ATL
Dicamba	UR	<0.2	ug/L	0.2	EPA 515.3	6/13/2014	ATL
2,4-Dichlorophenoxyacetic acid (2,4-D)	70.0	<0.1	ug/L	0.1	EPA 515.3	6/13/2014	ATL
Dinoseb	7.00	<0.2	ug/L	0.2	EPA 515.3	6/13/2014	ATL
Pentachlorophenol	1.00	<0.04	ug/L	0.04	EPA 515.3	6/13/2014	ATL

MCL = Maximum Contamination Level
MDL = Method Minimum Detection Limit
UR = Unregulated

Date Report Printed: 6/24/2014 8:23:01 A

Laboratory Analysis Report

Sample Number: 1420344

NO FIELD TEMP RCVD; Methane, Ethane, and Ethene testing were performed by Accutest Mountain States (AMS). EPA Methods 504.1, 505, 515.3, 525.2, 531.2, 547, and 549.2 were performed by Anatek Labs (ATL).

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Picloram	500	<0.1	ug/L	0.1	EPA 515.3	6/13/2014	ATL
Silvex	50.0	<0.2	ug/L	0.2	EPA 515.3	6/13/2014	ATL
Bis(2-ethylhexyl)adipate	400	<0.2	ug-L	0.2	EPA 525.2	6/15/2014	ATL
Bis(2-ethylhexyl)phthalate	6	<0.6	ug-L	0.6	EPA 525.2	6/15/2014	ATL
Simazine	4	<0.15	ug/L	0.15	EPA 525.2	6/15/2014	ATL
Hexachlorocyclopentadiene	50	<0.2	ug/L	0.2	EPA 525.2	6/15/2014	ATL
Atrazine	3	<0.2	ug/L	0.2	EPA 525.2	6/15/2014	ATL
Alachlor (Lasso)	2	<0.4	ug/L	0.4	EPA 525.2	6/15/2014	ATL
Hexachlorobenzene	1	<0.2	ug/L	0.2	EPA 525.2	6/15/2014	ATL
Benzo(a)pyrene	0.2	<0.02	ug/L	0.02	EPA 525.2	6/15/2014	ATL
Butachlor	UR	<0.4	ug/L	0.4	EPA 525.2	6/15/2014	ATL
Metolachlor	UR	<1	ug/L	1	EPA 525.2	6/15/2014	ATL
Metribuzin	UR	<0.2	ug/L	0.2	EPA 525.2	6/15/2014	ATL
Propachlor	UR	<0.2	ug/L	0.2	EPA 525.2	6/15/2014	ATL
Aldicarb	3.0	<2.0	ug/L	2	EPA 531.2	6/18/2014	ATL
Aldicarb sulfone	2.0	<2.0	ug/L	2	EPA 531.2	6/18/2014	ATL
Aldicarb sulfoxide	4.0	<2.0	ug/L	2	EPA 531.2	6/18/2014	ATL
Carbaryl	UR	<2.0	ug/L	2	EPA 531.2	6/18/2014	ATL
Carbofuran	40	<2.0	ug/L	2	EPA 531.2	6/18/2014	ATL
3-Hydroxycarbofuran	UR	<2.0	ug/L	2	EPA 531.2	6/18/2014	ATL
Methomyl	UR	<2.0	ug/L	2	EPA 531.2	6/18/2014	ATL
Oxamyl	200	<4.0	ug/L	4	EPA 531.2	6/18/2014	ATL
Glyphosate	700	<10.0	ug/L	10	EPA 547	6/12/2014	ATL
Endothall	100	<25	ug/L	10	EPA 548.1	6/10/2014	KB
Diquat	20.0	<0.8	ug/L	0.8	EPA 549.2	6/16/2014	ATL
Benzene	5	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Carbon tetrachloride	5	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Chlorobenzene	100	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
1,2-Dichlorobenzene	600	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
1,4-Dichlorobenzene	75	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
1,2-Dichloroethane	5	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY

MCL = Maximum Contamination Level
MDL = Method Minimum Detection Limit
UR = Unregulated

Date Report Printed: 6/24/2014 8:23:01 A

Laboratory Analysis Report

Sample Number: 1420344

NO FIELD TEMP RCVD; Methane, Ethane, and Ethene testing were performed by Accutest Mountain States (AMS). EPA Methods 504.1, 505, 515.3, 525.2, 531.2, 547, and 549.2 were performed by Anatek Labs (ATL).

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
1,1-Dichloroethene	7	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
cis-1,2-Dichloroethene	70	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
trans-1,2-Dichloroethene	100	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
1,2-Dichloropropane	5	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Ethylbenzene	700	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Styrene	100	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Tetrachloroethene	5	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Toluene	1000	0.8	ug/L	0.5	EPA 524.2	6/6/2014	CY
1,2,4-Trichlorobenzene	70	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
1,1,1-Trichloroethane	200	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
1,1,2-Trichloroethane	200	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Trichloroethene	5	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Vinyl chloride	2	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Total THM's	80	<2.0	ug/L	2	EPA 524.2	6/6/2014	CY
Bromodichloromethane	----	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Bromoform	----	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Chloroform	----	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Dibromochloromethane	----	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Xylene, Total	10000	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Dichloromethane	5	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Methyl-tert-butylether	UR	<0.5	ug/L	0.5	EPA 524.2	6/6/2014	CY
Dibromofluoromethane (Surr)		98.4	% 80-120		EPA 524.2	6/6/2014	CY
Toluene-d5 Surrogate		96.6	% 80-120		EPA 524.2	6/6/2014	CY
Bromofluorobenzene Surrogate		91.0	% 80-120		EPA 524.2	6/6/2014	CY
Dissolved Organic Carbon		0.80	mg/L	0.1	EPA 415.1	6/12/2014	MDM
Methane		<0.00040	mg/L	0.0004	RSKSOP 175	6/10/2014	AMS
Ethane		<0.00080	mg/L	0.0008	RSKSOP 175	6/10/2014	AMS
Ethene		<0.0012	mg/L	0.0012	RSKSOP 175	6/10/2014	AMS
Carbon, Total Organic, TOC		11.4	mg/L	0.1	EPA 415.1	6/9/2014	MDM
Radon-222			pCi/L	18	SM7500RN B		
Temperature			C		Thermometer		

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Date Report Printed: 6/24/2014 8:23:01 A

Laboratory Analysis Report

Sample Number: 1420344

NO FIELD TEMP RCVD; Methane, Ethane, and Ethene testing were performed by Accutest Mountain States (AMS). EPA Methods 504.1, 505, 515.3, 525.2, 531.2, 547, and 549.2 were performed by Anatek Labs (ATL).

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Alkalinity		314	mg/L		EPA 310.1	6/6/2014	CJS
pH		7.1	S.U.		SM 4500-H B	6/4/2014	CJS
Corrosivity	UR				Langelier		
Bicarbonate		314	mg/L		SM 2320	6/6/2014	CJS
Carbonate		0.0	mg/L		SM 2320	6/6/2014	CJS
Chloride, Cl	UR	30	mg/L	1	EPA 300.0	6/5/2014	NC
Cyanide, Total	0.20	< 0.005	mg/L	0.005	EPA 335.4	6/6/2014	DS
Fluoride, F	4.0	0.66	mg/L	0.10	EPA 300.0	6/10/2014	EB
Hardness	UR	296	mg/L	5.0	SM 2340	6/6/2014	CJS
Sulfate, SO4	UR	85	mg/L	1	EPA 300.0	6/5/2014	NC
Bromate, BrO3		< 5	ug/L	5	EPA 300.1	6/11/2014	KC
Chlorite, ClO2		< 10	ug/L	10	EPA 300.1	6/11/2014	KC
Chlorine Residual, Total		< 0.10	mg/L	0.10	SM 4500 Cl G	6/4/2014	CJS
Chemical Oxygen Demand		33.8	mg/L	20.0	EPA 410.4	6/6/2014	CJS
Conductivity	UR	861	umhos	2	SM 2510B	6/4/2014	CJS
Turbidity		1.0	NTU	0.5	EPA 180.1	6/4/2014	CJS
Total Dissolved Solids		580	mg/L	25	160.1	6/11/2014	GM
Hydrogen Sulfide	UR	<0.05	mg/L	0.05	SM 4500-S2 D	6/5/2014	GM
Color	UR	<5	C.U.	5	SM 2120	6/6/2014	MDM
Surfactants	UR	<0.01	mg/L	.01	SM 5540	6/13/2014	MDM
Threshold Odor	UR	N.O.O.	T.O.N.		EPA 140.1	6/6/2014	MDM
Total Suspended Solids		4	mg/L	3	SM 2540 D	6/6/2014	GM

MCL = Maximum Contamination Level
MDL = Method Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.
If you have any questions concerning this report,
please contact your client manager: **James Hibbs**

Date Report Printed: 6/24/2014 8:23:01 A

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 6/11/2014 10:57:10 AM
http://www.analyticallaboratories.com
These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1420345

Attn: WALT BURT
GSI
55 SW YAMHILL STE #300
PORTLAND, OR 97204

Collected By: M HINGST
Submitted By: M HINGST

Source of Sample:
ADRIAN TEST WELL (AS DISSOLVED)

Time of Collection: 14:05
Date of Collection: 6/4/2014
Date Received: 6/4/2014
Report Date: 6/6/2014

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab: 7.0 °C

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Arsenic Low	0.01	0.090	mg/L	0.003	EPA 200.8	6/6/2014	JH
Value Exceeds the MCL of 0.010 mg/L							
Iron, Fe	UR	<0.05	mg/L	0.05	EPA 200.7	6/6/2014	KC
Manganese, Mn	UR	<0.05	mg/L	0.05	EPA 200.7	6/6/2014	KC
Metals Filtering		*				6/5/2014	JMS

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.

If you have any questions about this report, or any future analytical needs, please contact your client manager:

James Hibbs

CLIENT CODE= GSI

CHAIN OF CUSTODY RECORD

CLIENT INFORMATION:

Project Manager: Walt Burt
Company: GSI Water Solutions
Address: 55 SW Yamhill St.
Portland, OR 9720
Phone: (971) 200-8508 Fax:
Sampled by: (Please print) Mary Hingst
Transported by: (Please print) Mary Hingst

PROJECT INFORMATION:

Project Name: City of Adrian
PWS Number:
Purchase Order Number:
Required Due Date:
E-mail Address: wburt@gsiws.com

ANALYTICAL LABS, INC.
1804 N. 33rd Street • Boise, ID 83703
(208) 342-5515 • Fax: (208) 342-5591 • 1-800-574-5773
Website: www.analyticallaboratories.com
E-mail: ali@analyticallaboratories.com

TESTS REQUESTED

Lab ID	Date Sampled	Time Sampled	Sample Description (Source)	Sample Matrix	See list	Remarks:
20344	6/4/14	14:05	~~Test well for municipal use~~ Adrian Test Well	H_2O	X	*Did not sample for: Bacteria, THM, HAA, *Rush Fe, As, Mn
20345			Adrian Test Well			
20345						

Invoice to: (If different than above address)

Special Instructions:

ALLOCATIONS OF RISK: Analytical Laboratories, Inc. will perform preparation and testing services, obtain findings and prepare reports in accordance with Good Laboratory Practices (GLP). If, for any reason, Analytical Laboratories, Inc. errors in the conduct of a test or procedure, their liability shall be limited to the cost of the test or procedure completed in error. Under no circumstances will Analytical Laboratories, Inc. be liable for any other cost associated with obtaining a sample or use of data.

Note: Samples are discarded 21 days after results are reported. Hazardous samples will be returned to client or disposed of at client expense.

Relinquished By: (Signature)	Print Name: Mary Hingst	Company: GSI Water Solutions	Date: 6/4/14	Time: 5:00PM
Received By: (Signature)	Print Name:	Company:	Date:	Time:
Relinquished By: (Signature)	Print Name:	Company:	Date:	Time:
Received By: (Signature) Brenda Wright	Print Name: Brenda Wright	Company: ALI	Date: 6-4-14	Time: 1709
SAMPLE RECEIPT Total # of Containers:	Chains of Custody Seals Y / N / NA	Intact: Y / N / NA Temperature Received: 7.0 °C	Condition: good	

REV. 2/19/12 WHITE: STAYS WITH SAMPLE (S) YELLOW: LAB PINK: SAMPLER

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 7/7/2014 10:39:35 AM
http://www.analyticallaboratories.com
These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1420346

Attn: WALT BURT
GSI
55 SW YAMHILL STE #300
PORTLAND, OR 97204

Collected By: M HINGST
Submitted By: M HINGST

Source of Sample:
ADRIAN TEST WELL

Time of Collection: 14:05
Date of Collection: 6/4/2014
Date Received: 6/4/2014
Report Date: 7/7/2014

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab: 7.0 °C

Radiological testing was performed by Summit Environmental (SUM).

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Gross Alpha	15 pCi	33+/-7.1	pCi/L	3	EPA 900.0	6/18/2014	SUM
Gross Beta		7.5+/-4.3	pCi/L	4	EPA 900.0	6/18/2014	SUM
Radium 226	----	<1	pCi/L	1	EPA 903.0	6/16/2014	SUM
Radium 228	----	<1	pCi/L	1	EPA 904.0	6/13/2014	SUM

RECEIVED
JUL 11 2014
By

Thank you for choosing Analytical Laboratories for your testing needs.

If you have any questions about this report, or any future analytical needs, please contact your client manager:

James Hibbs

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Attachment G

Field Water Quality Log

YSI-Pro Plus Multi-Parameter Water Quality Log
Measurements recorded during the last 1.5 hours of the constant-rate test.
City of Arian Well 6

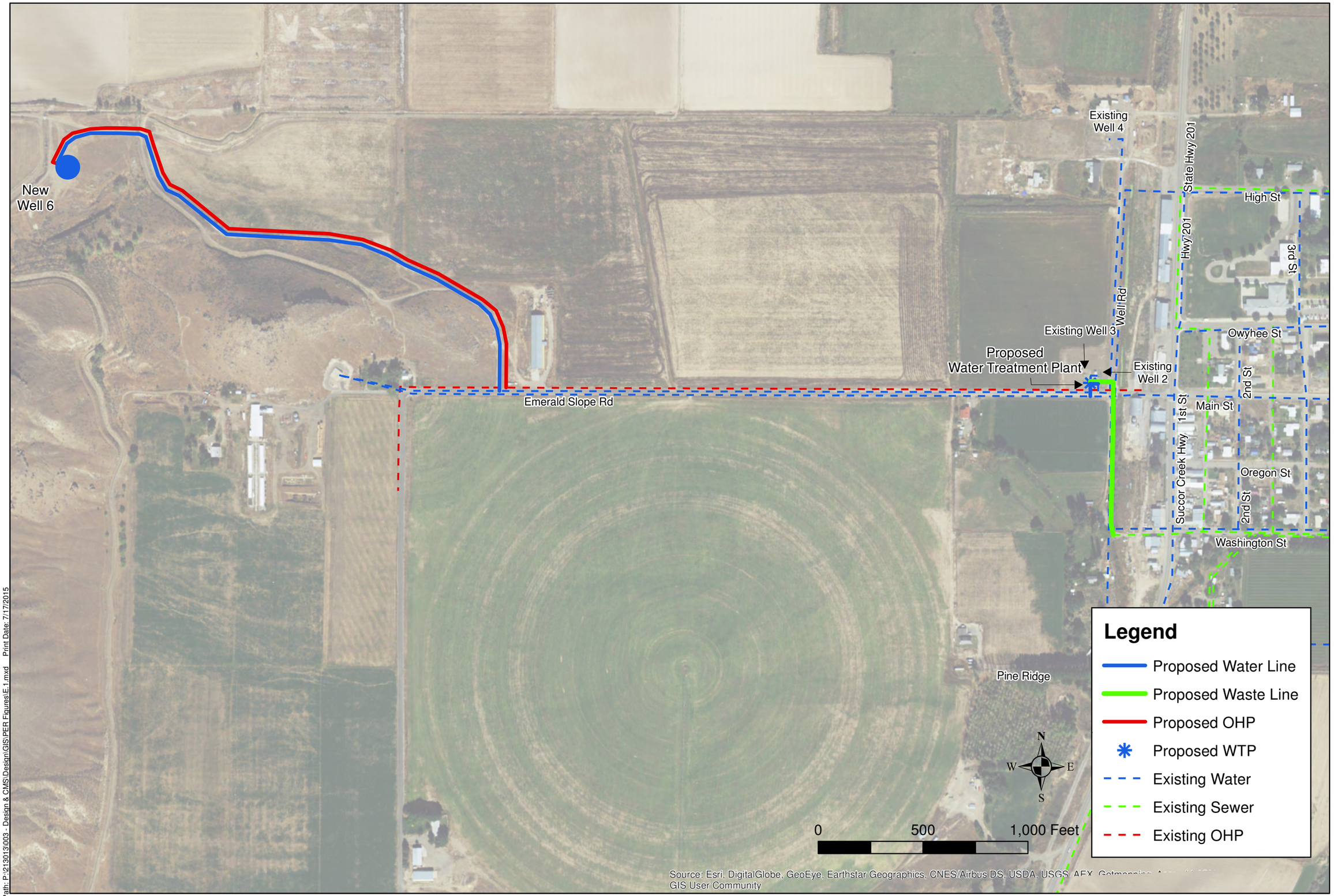
Timestamp	Barometer (PSI)	Specific Conductance (uS/cm)	Dissolved Oxygen (mg/L)	ORP_1 (mV)	pH_1 (Units)	Temperature (C)
1/29/2015 15:40	13.634	808	5.89	242.7	7.48	14.9
1/29/2015 15:45	13.634	788	6.06	145.2	7.48	14.8
1/29/2015 15:50	13.632	788	6.13	180.2	7.48	14.8
1/29/2015 15:55	13.632	786	6.05	172.7	7.48	14.9
1/29/2015 16:00	13.632	783	6.12	151.7	7.48	14.8
1/29/2015 16:05	13.631	773	6.01	142.6	7.48	14.9
1/29/2015 16:10	13.632	784	6.22	143.4	7.48	14.9
1/29/2015 16:15	13.632	783	6.27	154.3	7.48	14.8
1/29/2015 16:20	13.632	784	6.16	151.4	7.47	14.9
1/29/2015 16:25	13.632	781	6.24	159	7.47	14.8
1/29/2015 16:30	13.632	785	6.21	155.8	7.47	14.8
1/29/2015 16:35	13.634	787	6.1	158	7.47	14.8
1/29/2015 16:40	13.631	780	6.05	166.6	7.47	14.8
1/29/2015 16:45	13.631	788	6.26	164.2	7.47	14.8
1/29/2015 16:50	13.631	792	6.14	155.6	7.47	14.9
1/29/2015 16:55	13.631	785	6.01	138	7.47	14.9
1/29/2015 17:00	13.629	780	6.24	171.8	7.47	14.8
1/29/2015 17:05	13.629	781	6.07	170	7.47	14.8
1/29/2015 17:10	13.626	781	6.15	169.7	7.47	14.8

APPENDIX E

PROPOSED ALTERNATIVE

KELLER associates

213013-003/PER/15-373



Path: P:\213013\003 - Design & CMS\Design\GIS\PER Figures\E.1.mxd Print Date: 7/17/2015

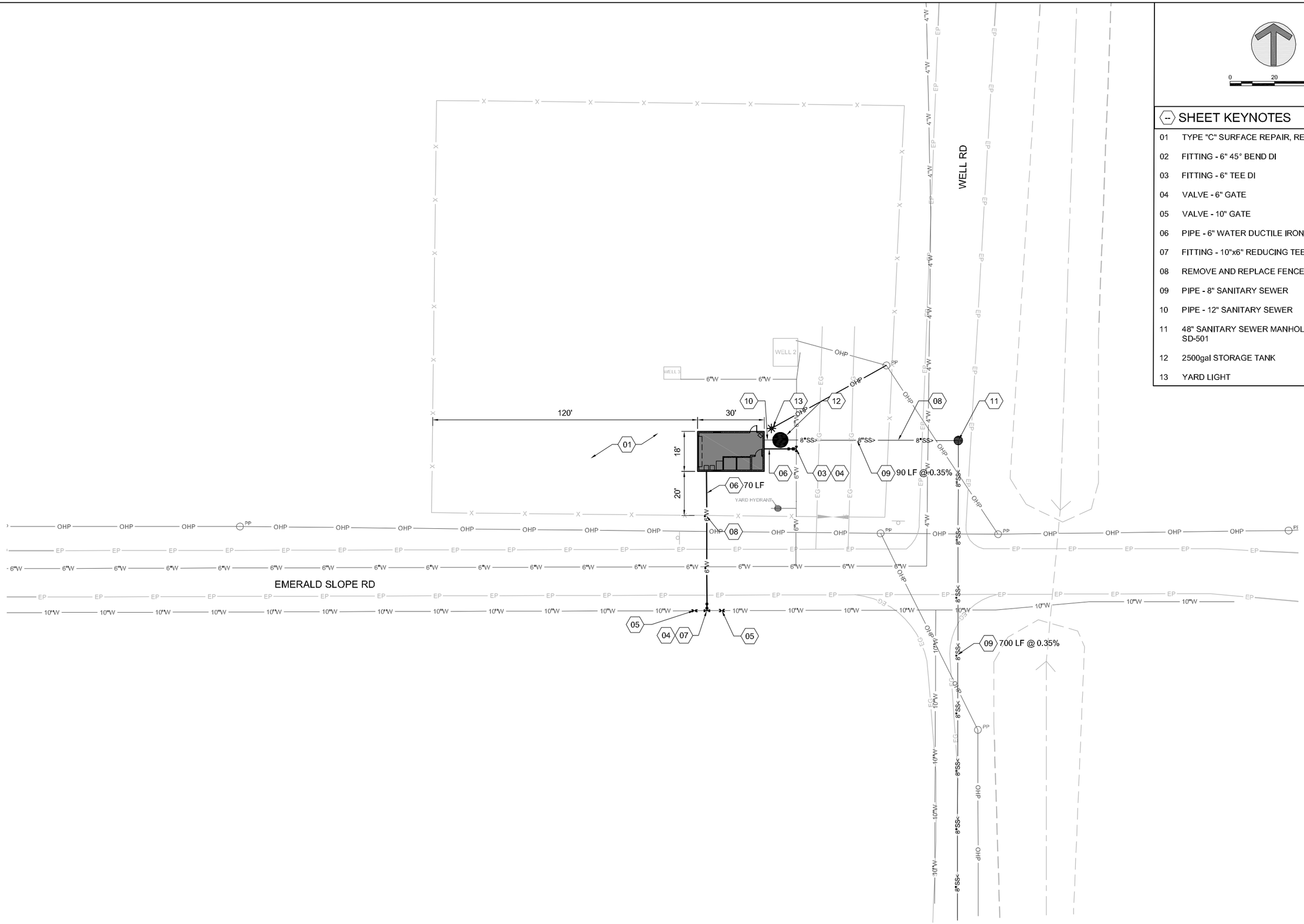
KELLER associates

Prepared for:
CITY of ADRIAN, OREGON

Project :
ADRIAN WATER SYSTEM IMPROVEMENTS

Title:
OVERALL PROJECT PLAN

Figure:
E.1



SHEET KEYNOTES

01	TYPE "C" SURFACE REPAIR, RE: ISPWC SD-303
02	FITTING - 6" 45° BEND DI
03	FITTING - 6" TEE DI
04	VALVE - 6" GATE
05	VALVE - 10" GATE
06	PIPE - 6" WATER DUCTILE IRON
07	FITTING - 10"x6" REDUCING TEE
08	REMOVE AND REPLACE FENCE AS NECESSARY
09	PIPE - 8" SANITARY SEWER
10	PIPE - 12" SANITARY SEWER
11	48" SANITARY SEWER MANHOLE, RE: ISPWC SD-501
12	2500gal STORAGE TANK
13	YARD LIGHT

KELLER associates

CITY OF ADRIAN

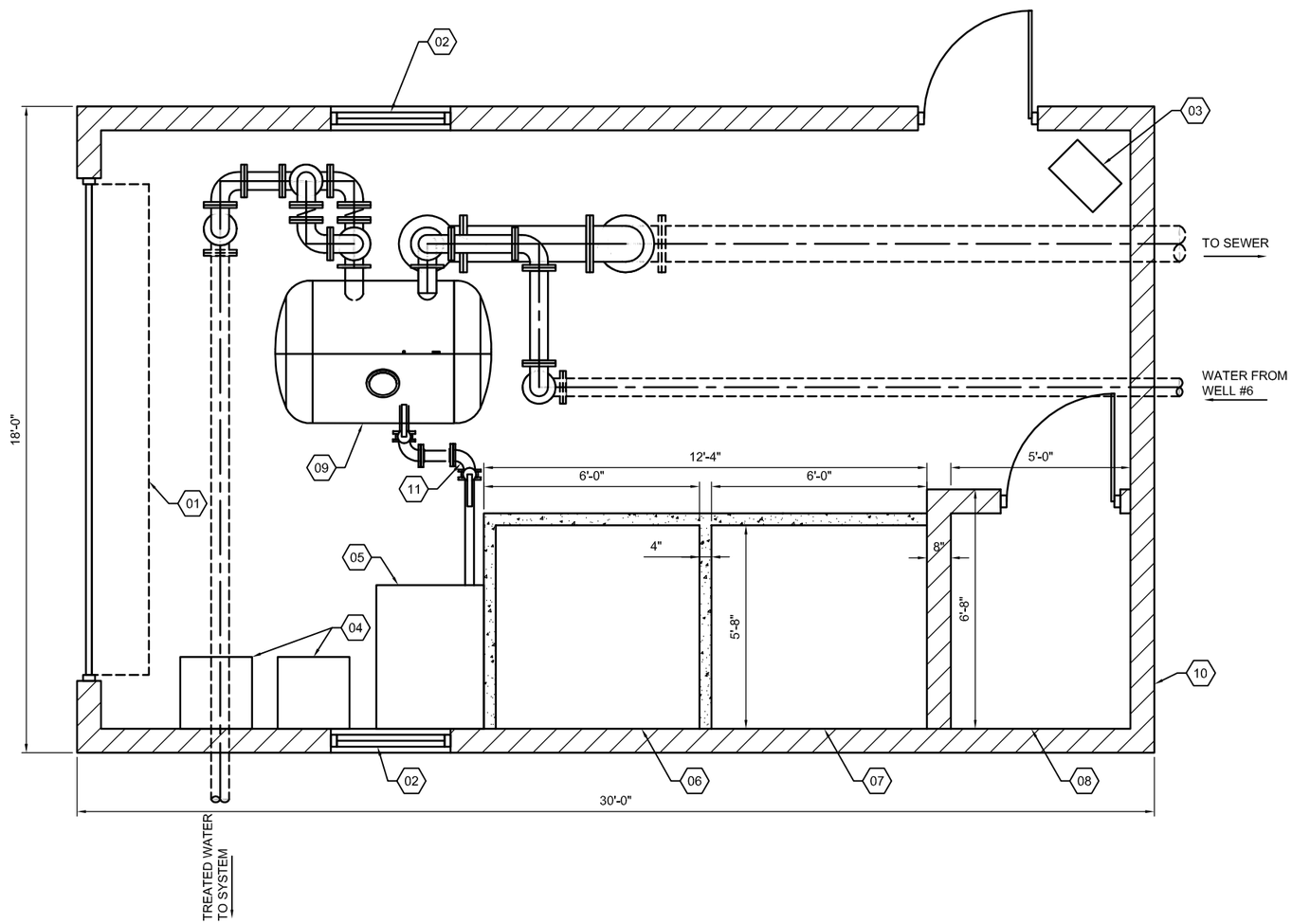
ADRIAN WTP

SITE PLAN

PROJECT NO.

FIGURE NO.
E.2

P:\213013\003 - Design & CMS\Design\CAD\01 PREDESIGN\00 FIGURES\FIGURE 1.dwg DATE: 10/13/2015 TIME: 01:04:42 PM



A1 PRELIMINARY WATER TREATMENT BUILDING LAYOUT

1/2" = 1'-0"

0 1' 2' 4'

GENERAL SHEET NOTES

1. ---
2. ---
3. ---

SHEET KEYNOTES

01	ROLL-UP DOOR
02	LOUVER
03	HEATER
04	CHEMICAL METERING PUMP
05	BLOWER
06	SODIUM HYPOCHLORITE STORAGE
07	FERRIC CHLORIDE STORAGE
08	ELECTRICAL & CONTROL ROOM
09	PRESSURIZED TREATMENT TANK
10	8" CMU WALL
11	AIRWASH INFLUENT

EQUIPMENT KEYNOTES

1001 ---

1002 ---

1003 ---

KELLER associates

CITY OF ADRIAN

ADRIAN WTP

PRELIMINARY WATER TREATMENT BUILDING LAYOUT

PROJECT NO.

FIGURE NO.

E.3

P:\213013\003 - Design & CMS\Design\CAD\01 PREDES\00 FIGURES\FIGURE 2.dwg DATE: 07/17/2015 TIME: 12:38:20 PM

Adrian Sanitary Sewer Capacities

LINE #	IN STREET	FROM STREET	TO STREET	GROUND ELEV AT UP INV	UP INV	DOWN INV	LENGTH (FT)	DIAMETER (FT)	ROUGHNESS	SLOPE (ft/ft)	VELOCITY (FPS)	CAPACITY (CFS)	CAPACITY (GPM)
100	*WTP site*	*WTP discharge*	*Future MH 1 in Well Road*	*2225*	*2222.21*	*2221.89*	*90*	*0.667*	*0.013*	*0.0035*	*2.05*	*0.717*	*322*
101	*Well Road*	*FMH1*	*Future MH 2 in Well Road*	*2224*	*2221.79*	*2220.50*	*370*	*0.667*	*0.013*	*0.0035*	*2.05*	*0.717*	*322*
102	*Well Road*	*FMH2*	*Existing MH A1-1 in Well Road*	*2226*	*2220.40*	*2219.10*	*370*	*0.667*	*0.013*	*0.0035*	*2.05*	*0.717*	*322*
6	Washington	Easement	Between 1st & 2nd	2223	2219.00	2216.08	455.00	0.667	0.013	0.0064	2.78	0.971	436
5	Washington	Between 1st & 2nd	2nd	2220	2214.36	2202.46	175.00	0.667	0.013	0.0680	9.05	3.160	1418
4	Washington	2nd - west side	2nd - east side	2206	2194.70	2194.46	50.00	0.667	0.013	0.0048	2.40	0.839	377
3	Washington	2nd	Between 2nd & 3rd	2204	2194.30	2193.78	120.00	0.667	0.013	0.0043	2.29	0.798	358
2	Washington	Between 2nd & 3rd	Between 3rd & 4th	2200	2193.68	2192.40	320.00	0.667	0.013	0.0040	2.20	0.766	344
1	Washington	Between 3rd & 4th	Pump Station	2200	2192.3	2191.02	320.00	0.667	0.013	0.0040	2.20	0.766	344

Scenario: Peak Day Existing
Current Time Step: 0.000Hr
FlexTable: Junction Table

ID	Label	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
31	J-3	2,207.94	Main Zone	<Collection: 0 items>	(N/A)	(N/A)	(N/A)
50	J-9	2,245.09	Transmission Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
52	J-10	2,290.00	Transmission Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
54	J-11	2,350.00	Transmission Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
56	J-12	2,390.00	Transmission Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
139	J-50	2,206.41	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
148	J-54	2,230.62	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
150	J-55	2,230.89	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
152	J-56	2,228.34	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
154	J-57	2,230.38	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
162	J-61	2,270.16	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
164	J-62	2,272.83	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
166	J-63	2,269.55	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
168	J-64	2,228.61	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
237	Well 2	2,229.80	<None>	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
243	Well 3	2,230.52	<None>	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
245	J-92	2,229.86	<None>	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
252	Well 5	0.00	<None>	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
254	J-94	0.00	<None>	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
315	J-97	2,231.24	Transmission Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
337	J-99	2,227.92	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
339	J-100	2,233.39	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
341	J-101	2,245.69	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
343	J-102	2,254.98	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
345	J-103	2,257.93	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
348	J-104	2,232.53	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
350	J-105	2,243.36	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
354	J-106	2,229.83	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
357	J-107	2,229.65	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
359	J-108	2,233.35	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
361	J-109	2,236.39	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
363	J-110	2,242.22	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
366	J-111	2,237.37	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
368	J-112	2,241.61	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
370	J-113	2,242.39	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
372	J-114	2,257.65	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
374	J-115	2,270.25	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
377	J-116	2,235.59	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
379	J-117	2,224.96	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
381	J-118	2,231.70	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
383	J-119	2,232.42	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
386	J-120	2,230.94	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
388	J-121	2,227.20	Main Zone	<Collection: 1 item>	(N/A)	(N/A)	(N/A)
428	J-123	0.00	Main Zone	<Collection: 2 items>	(N/A)	(N/A)	(N/A)
441	J-125	2,265.90	Main Zone	<Collection: 0 items>	(N/A)	(N/A)	(N/A)
465	J-126	0.00	<None>	<Collection: 0 items>	(N/A)	(N/A)	(N/A)
467	J-127	0.00	<None>	<Collection: 0 items>	(N/A)	(N/A)	(N/A)
474	J-128	2,456.00	<None>	<Collection: 0 items>	0.00	2,454.95	-0.5
60	J-13	2,378.00	Transmission Zone	<Collection: 1 item>	82.29	2,403.86	11.2
62	J-14	2,352.00	Transmission Zone	<Collection: 1 item>	0.00	2,403.88	22.4
64	J-15	2,288.00	Transmission Zone	<Collection: 1 item>	0.00	2,403.95	50.2
439	J-124	2,268.02	Main Zone	<Collection: 0 items>	0.00	2,404.03	58.8
201	J-79	2,267.82	Main Zone	<Collection: 1 item>	1.09	2,404.03	58.9
160	J-60	2,265.61	Main Zone	<Collection: 1 item>	1.09	2,404.03	59.9
196	J-77	2,258.55	Main Zone	<Collection: 1 item>	1.09	2,404.03	62.9

194	J-76	2,254.30	Main Zone	<Collection: 1 item>	1.09	2,404.03	64.8
198	J-78	2,254.15	Main Zone	<Collection: 1 item>	1.09	2,404.03	64.8
178	J-69	2,251.04	Main Zone	<Collection: 1 item>	1.09	2,404.03	66.2
158	J-59	2,250.85	Main Zone	<Collection: 1 item>	1.09	2,404.03	66.3
180	J-70	2,247.70	Main Zone	<Collection: 1 item>	1.09	2,404.03	67.6
66	J-16	2,245.95	Main Zone	<Collection: 1 item>	0.00	2,404.02	68.4
231	J-89	2,245.35	Main Zone	<Collection: 1 item>	1.09	2,404.03	68.7
176	J-68	2,244.83	Main Zone	<Collection: 1 item>	1.09	2,404.03	68.9
191	J-75	2,238.31	Main Zone	<Collection: 1 item>	1.09	2,404.04	71.7
156	J-58	2,236.86	Main Zone	<Collection: 1 item>	1.09	2,404.04	72.3
258	J-95	2,236.29	Main Zone	<Collection: 2 items>	1.09	2,404.03	72.6
392	J-122	2,236.14	Main Zone	<Collection: 0 items>	0.00	2,404.03	72.6
189	J-74	2,235.48	Main Zone	<Collection: 1 item>	1.09	2,404.04	72.9
102	J-34	2,235.32	Main Zone	<Collection: 1 item>	1.09	2,404.03	73.0
116	J-40	2,235.28	Main Zone	<Collection: 1 item>	1.09	2,404.03	73.0
118	J-41	2,234.94	Main Zone	<Collection: 1 item>	1.09	2,404.03	73.2
184	J-72	2,234.89	Main Zone	<Collection: 1 item>	1.09	2,404.04	73.2
186	J-73	2,234.18	Main Zone	<Collection: 1 item>	1.09	2,404.04	73.5
174	J-67	2,233.87	Main Zone	<Collection: 1 item>	1.09	2,404.03	73.6
172	J-66	2,233.61	Main Zone	<Collection: 1 item>	1.09	2,404.03	73.7
228	J-88	2,232.36	Main Zone	<Collection: 1 item>	1.09	2,404.04	74.3
104	J-35	2,232.21	Main Zone	<Collection: 1 item>	1.09	2,404.04	74.3
106	J-36	2,231.76	Main Zone	<Collection: 1 item>	1.09	2,404.04	74.5
318	J-98	2,231.53	Main Zone	<Collection: 1 item>	0.00	2,404.05	74.6
108	J-37	2,231.50	Main Zone	<Collection: 1 item>	1.09	2,404.04	74.7
484	J-132	2,231.23	Main Zone	<Collection: 1 item>	0.00	2,404.05	74.8
70	J-18	2,231.01	Main Zone	<Collection: 1 item>	1.09	2,404.05	74.9
488	J-133	2,231.00	<None>	<Collection: 1 item>	0.00	2,404.33	75.0
170	J-65	2,230.55	Main Zone	<Collection: 1 item>	1.09	2,404.03	75.1
110	J-38	2,230.56	Main Zone	<Collection: 1 item>	1.09	2,404.05	75.1
68	J-17	2,230.48	Main Zone	<Collection: 1 item>	1.09	2,404.05	75.1
80	J-23	2,230.00	Main Zone	<Collection: 1 item>	1.09	2,404.03	75.3
204	J-80	2,229.70	Main Zone	<Collection: 1 item>	1.09	2,404.03	75.4
113	J-39	2,229.62	Main Zone	<Collection: 1 item>	1.09	2,404.03	75.5
225	J-87	2,227.78	Main Zone	<Collection: 1 item>	1.09	2,404.03	76.3
129	J-45	2,227.26	Main Zone	<Collection: 1 item>	1.09	2,404.03	76.5
76	J-21	2,227.27	Main Zone	<Collection: 1 item>	1.09	2,404.05	76.5
100	J-33	2,227.03	Main Zone	<Collection: 1 item>	1.09	2,404.03	76.6
120	J-42	2,225.87	Main Zone	<Collection: 1 item>	1.09	2,404.03	77.1
74	J-20	2,224.89	Main Zone	<Collection: 1 item>	1.09	2,404.05	77.5
131	J-46	2,223.86	Main Zone	<Collection: 1 item>	1.09	2,404.03	78.0
72	J-19	2,223.16	Main Zone	<Collection: 1 item>	1.09	2,404.05	78.3
133	J-47	2,219.97	Main Zone	<Collection: 1 item>	1.09	2,404.03	79.6
98	J-32	2,216.85	Main Zone	<Collection: 1 item>	1.09	2,404.03	81.0
207	J-81	2,215.17	Main Zone	<Collection: 1 item>	1.09	2,404.03	81.7
135	J-48	2,214.98	Main Zone	<Collection: 1 item>	1.09	2,404.03	81.8
82	J-24	2,211.93	Main Zone	<Collection: 1 item>	1.09	2,404.03	83.1
137	J-49	2,211.02	Main Zone	<Collection: 1 item>	1.09	2,404.03	83.5
123	J-43	2,210.10	Main Zone	<Collection: 1 item>	1.09	2,404.03	83.9
219	J-85	2,208.26	Main Zone	<Collection: 1 item>	1.09	2,404.03	84.7
86	J-26	2,207.92	Main Zone	<Collection: 1 item>	1.09	2,404.03	84.8
96	J-31	2,207.80	Main Zone	<Collection: 1 item>	1.09	2,404.03	84.9
84	J-25	2,207.74	Main Zone	<Collection: 1 item>	1.09	2,404.03	84.9
88	J-27	2,206.99	Main Zone	<Collection: 1 item>	1.09	2,404.03	85.2
90	J-28	2,206.11	Main Zone	<Collection: 1 item>	1.09	2,404.03	85.6
216	J-84	2,206.00	Main Zone	<Collection: 1 item>	1.09	2,404.03	85.7
213	J-83	2,206.00	Main Zone	<Collection: 1 item>	1.09	2,404.03	85.7
126	J-44	2,206.00	Main Zone	<Collection: 1 item>	1.09	2,404.03	85.7
210	J-82	2,206.00	Main Zone	<Collection: 1 item>	1.09	2,404.03	85.7
92	J-29	2,205.64	Main Zone	<Collection: 1 item>	1.09	2,404.03	85.8
143	J-52	2,205.25	Main Zone	<Collection: 1 item>	1.09	2,404.03	86.0
94	J-30	2,205.24	Main Zone	<Collection: 1 item>	1.09	2,404.03	86.0
145	J-53	2,205.00	Main Zone	<Collection: 1 item>	1.09	2,404.03	86.1
141	J-51	2,204.33	Main Zone	<Collection: 1 item>	1.09	2,404.03	86.4
481	J-131	2,233.95	<None>	<Collection: 0 items>	0.00	2,450.64	93.8

44	J-6	2,231.00	<None>	<Collection: 1 item>	0.00	2,450.95	95.2
42	Well 4	2,230.58	<None>	<Collection: 1 item>	0.00	2,450.96	95.3
46	J-7	2,230.11	Transmission Zone	<Collection: 1 item>	0.00	2,450.61	95.4

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Scenario: Peak Day Existing
Current Time Step: 0.000Hr
FlexTable: Pipe Table

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)
41	P-6	27	R-4	PMP-4	10	Ductile Iron	130.0	False	0.000	59.85	0.24	0.000	True	10
43	P-7	43	PMP-4	Well 4	10	Ductile Iron	130.0	False	0.000	59.85	0.24	0.000	True	340
45	P-8	21	Well 4	J-6	6	PVC	150.0	False	0.000	59.85	0.68	0.000	False	0
47	P-9	1,118	J-6	J-7	6	PVC	150.0	False	0.000	59.85	0.68	0.000	False	0
49	P-10	71	J-7	PRV-2	6	PVC	150.0	False	0.000	59.85	0.68	0.000	False	0
53	P-12	1,343	J-9	J-10	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
55	P-13	1,285	J-10	J-11	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
57	P-14	278	J-11	J-12	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
59	P-15	76	J-12	T-1	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
61	P-16	92	T-1	J-13	10	Asbestos Cement	140.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
63	P-17	321	J-13	J-14	10	Asbestos Cement	140.0	False	0.000	-82.29	0.34	0.000	False	0
65	P-18	1,274	J-14	J-15	10	Asbestos Cement	140.0	False	0.000	-82.29	0.34	0.000	False	0
67	P-19	1,335	J-15	J-16	10	Asbestos Cement	140.0	False	0.000	-82.29	0.34	0.000	False	0
71	P-21	23	J-17	J-18	6	PVC	150.0	False	0.000	4.37	0.05	0.000	False	0
73	P-22	610	J-18	J-19	6	PVC	150.0	False	0.000	3.28	0.04	0.000	False	0
75	P-23	131	J-19	J-20	6	PVC	150.0	False	0.000	2.18	0.02	0.000	False	0
77	P-24	52	J-20	J-21	6	PVC	150.0	False	0.000	1.09	0.01	0.000	False	0
81	P-26	308	J-19	J-23	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
83	P-27	324	J-23	J-24	6	PVC	150.0	False	0.000	3.32	0.04	0.000	False	0
85	P-28	312	J-24	J-25	6	PVC	150.0	False	0.000	6.08	0.07	0.000	False	0
87	P-29	323	J-25	J-26	6	PVC	150.0	False	0.000	7.33	0.08	0.000	False	0
89	P-30	141	J-26	J-27	6	PVC	150.0	False	0.000	6.38	0.07	0.000	False	0
91	P-31	106	J-27	J-28	6	PVC	150.0	False	0.000	2.01	0.02	0.000	False	0
93	P-32	72	J-28	J-29	6	PVC	150.0	False	0.000	0.92	0.01	0.000	False	0
97	P-34	321	J-30	J-31	6	PVC	150.0	False	0.000	-2.36	0.03	0.000	False	0
101	P-36	317	J-32	J-33	6	PVC	150.0	False	0.000	-9.06	0.10	0.000	False	0
107	P-39	43	J-35	J-36	10	Asbestos Cement	140.0	False	0.000	-58.97	0.24	0.000	False	0
109	P-40	24	J-36	J-37	10	Asbestos Cement	140.0	False	0.000	-60.07	0.25	0.000	False	0
111	P-41	219	J-37	J-38	10	Asbestos Cement	140.0	False	0.000	-61.16	0.25	0.000	False	0
112	P-42	32	J-38	J-17	10	Asbestos Cement	140.0	False	0.000	-62.25	0.25	0.000	False	0
114	P-43	320	J-35	J-39	6	PVC	150.0	False	0.000	12.05	0.14	0.000	False	0
117	P-45	138	J-34	J-40	6	PVC	150.0	False	0.000	8.23	0.09	0.000	False	0
119	P-46	22	J-40	J-41	6	PVC	150.0	False	0.000	7.13	0.08	0.000	False	0
121	P-47	185	J-41	J-42	6	PVC	150.0	False	0.000	6.04	0.07	0.000	False	0
124	P-49	330	J-33	J-43	6	PVC	150.0	False	0.000	4.52	0.05	0.000	False	0
127	P-51	328	J-32	J-44	6	PVC	150.0	False	0.000	2.33	0.03	0.000	False	0
130	P-53	214	J-23	J-45	6	PVC	150.0	False	0.000	5.46	0.06	0.000	False	0
132	P-54	270	J-45	J-46	6	PVC	150.0	False	0.000	4.37	0.05	0.000	False	0
134	P-55	57	J-46	J-47	6	PVC	150.0	False	0.000	3.28	0.04	0.000	False	0
136	P-56	164	J-47	J-48	6	PVC	150.0	False	0.000	2.18	0.02	0.000	False	0
138	P-57	234	J-48	J-49	6	PVC	150.0	False	0.000	1.09	0.01	0.000	False	0
140	P-58	273	J-49	J-50	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
142	P-59	450	J-50	J-51	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
144	P-60	54	J-51	J-52	6	PVC	150.0	False	0.000	-1.09	0.01	0.000	False	0
146	P-61	195	J-52	J-53	6	PVC	150.0	False	0.000	-2.18	0.02	0.000	False	0
147	P-62	246	J-53	J-27	6	PVC	150.0	False	0.000	-3.28	0.04	0.000	False	0
149	P-63	283	J-47	J-54	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
151	P-64	273	J-54	J-55	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
153	P-65	439	J-38	J-56	8	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
157	P-67	265	J-57	J-58	8	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
159	P-68	574	J-58	J-59	6	PVC	150.0	False	0.000	8.64	0.10	0.000	False	0
161	P-69	307	J-59	J-60	6	PVC	150.0	False	0.000	2.19	0.02	0.000	False	0
163	P-70	356	J-60	J-61	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
165	P-71	382	J-61	J-62	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0

167	P-72	102	J-62	J-63	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
169	P-73	410	J-63	J-64	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
171	P-74	356	J-64	J-65	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
173	P-75	103	J-65	J-66	6	PVC	150.0	False	0.000	-1.09	0.01	0.000	False	0
175	P-76	33	J-66	J-67	6	PVC	150.0	False	0.000	-2.18	0.02	0.000	False	0
177	P-77	288	J-67	J-68	6	PVC	150.0	False	0.000	-3.28	0.04	0.000	False	0
179	P-78	326	J-68	J-69	6	PVC	150.0	False	0.000	-4.37	0.05	0.000	False	0
183	P-80	287	J-70	J-72	10	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
185	P-81	18	H-14	J-72	8	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
187	P-82	25	J-72	J-73	8	PVC	150.0	False	0.000	-13.01	0.08	0.000	False	0
188	P-83	321	J-73	J-35	8	PVC	150.0	False	0.000	-14.10	0.09	0.000	False	0
190	P-84	20	J-72	J-74	8	PVC	150.0	False	0.000	11.91	0.08	0.000	False	0
192	P-85	353	J-74	J-75	8	PVC	150.0	False	0.000	10.82	0.07	0.000	False	0
193	P-86	275	J-75	J-58	8	PVC	150.0	False	0.000	9.73	0.06	0.000	False	0
195	P-87	202	J-59	J-76	6	PVC	150.0	False	0.000	5.36	0.06	0.000	False	0
197	P-88	300	J-76	J-77	6	PVC	150.0	False	0.000	4.27	0.05	0.000	False	0
199	P-89	116	J-77	J-78	6	PVC	150.0	False	0.000	3.18	0.04	0.000	False	0
200	P-90	49	J-78	J-69	6	PVC	150.0	False	0.000	2.08	0.02	0.000	False	0
202	P-91	104	J-60	J-79	6	PVC	150.0	False	0.000	1.09	0.01	0.000	False	0
203	P-92	305	J-66	J-3	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
205	P-93	225	J-39	J-80	6	PVC	150.0	False	0.000	10.96	0.12	0.000	False	0
206	P-94	92	J-80	J-23	6	PVC	150.0	False	0.000	9.87	0.11	0.000	False	0
208	P-95	195	J-42	J-81	6	PVC	150.0	False	0.000	4.95	0.06	0.000	False	0
209	P-96	133	J-81	J-24	6	PVC	150.0	False	0.000	3.86	0.04	0.000	False	0
211	P-97	145	J-43	J-82	6	PVC	150.0	False	0.000	3.43	0.04	0.000	False	0
212	P-98	182	J-82	J-25	6	PVC	150.0	False	0.000	2.34	0.03	0.000	False	0
214	P-99	162	J-44	J-83	6	PVC	150.0	False	0.000	1.24	0.01	0.000	False	0
215	P-100	169	J-83	J-26	6	PVC	150.0	False	0.000	0.15	0.00	0.000	False	0
217	P-101	142	J-29	J-84	6	PVC	150.0	False	0.000	-0.17	0.00	0.000	False	0
218	P-102	153	J-84	J-30	6	PVC	150.0	False	0.000	-1.26	0.01	0.000	False	0
220	P-103	31	J-31	J-85	6	PVC	150.0	False	0.000	-3.45	0.04	0.000	False	0
221	P-104	275	J-85	J-32	6	PVC	150.0	False	0.000	-4.54	0.05	0.000	False	0
222	P-105	318	J-69	J-33	6	PVC	150.0	False	0.000	-3.38	0.04	0.000	False	0
224	P-106	297	J-89	J-34	6	PVC	150.0	False	0.000	-2.18	0.02	0.000	False	0
226	P-107	41	J-33	J-87	8	PVC	150.0	False	0.000	-18.05	0.12	0.000	False	0
227	P-108	295	J-87	J-34	8	PVC	150.0	False	0.000	-19.14	0.12	0.000	False	0
229	P-109	279	J-34	J-88	8	PVC	150.0	False	0.000	-30.64	0.20	0.000	False	0
230	P-110	24	J-88	J-35	8	PVC	150.0	False	0.000	-31.73	0.20	0.000	False	0
232	P-111	332	J-69	J-70	10	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
233	P-112	25	J-89	J-70	6	PVC	150.0	False	0.000	1.09	0.01	0.000	False	0
236	P-113	22	R-2	PMP-2	8	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	True	10
238	P-114	39	PMP-2	Well 2	8	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	True	388
242	P-116	22	R-3	PMP-3	8	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	True	10
244	P-117	39	PMP-3	Well 3	8	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	True	362
246	P-118	12	Well 2	J-92	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
248	P-120	52	Well 3	J-92	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	True	0
251	P-121	41	R-5	PMP-5	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
253	P-122	93	PMP-5	Well 5	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
255	P-123	2,338	Well 5	J-94	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
256	P-124	1,227	J-94	T-1	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
259	P-125	208	J-95	J-32	6	PVC	150.0	False	0.000	-1.09	0.01	0.000	False	0
281	P-127	49	H-2	J-58	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
287	P-129	43	H-5	J-76	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
289	P-130	35	H-6	J-33	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
291	P-131	37	H-7	J-30	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
293	P-132	30	H-8	J-31	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
295	P-133	31	H-9	J-42	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
297	P-134	30	H-10	J-88	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
305	P-135	30	H-11	J-23	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
307	P-136	49	H-12	J-78	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
309	P-137	23	H-13	J-124	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
314	P-138	23	J-31	J-3	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
317	P-140	626	J-97	J-9	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
321	P-143	21	J-97	J-98	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
335	P-144	105	J-68	J-95	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
336	P-145	57	J-21	J-55	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0

338	P-146	160	J-54	J-99	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
340	P-147	119	J-99	J-100	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
342	P-148	369	J-100	J-101	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
344	P-149	144	J-101	J-102	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
346	P-150	628	J-102	J-103	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
347	P-151	651	J-103	J-16	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
349	P-152	223	J-19	J-104	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
351	P-153	222	J-104	J-105	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
352	P-154	296	J-105	J-103	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
353	P-155	618	J-104	J-100	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
355	P-156	432	J-56	J-106	8	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
356	P-157	111	J-106	J-57	8	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
358	P-158	505	J-106	J-107	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
360	P-159	273	J-107	J-108	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
362	P-160	403	J-108	J-109	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
364	P-161	421	J-109	J-110	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
365	P-162	58	J-110	J-16	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
367	P-163	347	J-58	J-111	10	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
369	P-164	273	J-111	J-112	10	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
371	P-165	48	J-112	J-113	10	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
373	P-166	553	J-113	J-114	10	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
375	P-167	740	J-114	J-115	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
376	P-168	398	J-115	J-62	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
378	P-169	279	J-111	J-116	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
380	P-170	494	J-116	J-117	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
382	P-171	301	J-117	J-118	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
384	P-172	184	J-118	J-119	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
385	P-173	254	J-119	J-108	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
387	P-174	145	J-57	J-120	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
389	P-175	515	J-120	J-121	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
390	P-176	279	J-121	J-119	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
391	P-177	340	J-114	J-60	10	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
393	P-178	303	J-16	J-122	10	Asbestos Cement	140.0	False	0.000	-82.29	0.34	0.000	False	0
394	P-179	322	J-122	J-98	10	Asbestos Cement	140.0	False	0.000	-82.29	0.34	0.000	False	0
395	P-180	873	J-107	J-122	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
396	P-181	650	J-122	J-105	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
429	P-182	25	J-123	J-98	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
440	P-183	88	J-79	J-124	6	PVC	150.0	False	0.000	0.00	0.00	0.000	False	0
442	P-184	115	J-124	J-125	10	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
443	P-185	369	J-125	J-68	10	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
446	P-186	197	J-120	J-116	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
447	P-187	513	J-49	J-24	6	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
466	P-188	83	J-51	J-126	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
468	P-189	314	J-126	J-127	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
469	P-190	157	J-127	J-28	6	Ductile Iron	110.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
480	P-193	62	R-6	J-128	6	Ductile Iron	130.0	False	0.000	90.16	1.02	0.001	False	0
482	P-194	5,738	J-128	J-131	6	Ductile Iron	140.0	False	0.000	90.16	1.02	0.001	False	0
483	P-195	76	J-131	PRV-2	6	Ductile Iron	140.0	False	0.000	90.16	1.02	0.001	False	0
485	P-196	63	J-98	J-132	10	Asbestos Cement	140.0	False	0.000	-82.29	0.34	0.000	False	0
486	P-197	51	J-132	J-17	10	Asbestos Cement	140.0	False	0.000	67.71	0.28	0.000	False	0
489	P-199	28	PRV-2	J-133	6	Ductile Iron	110.0	False	0.000	150.00	1.70	0.003	False	0
490	P-200	92	J-133	J-132	6	Ductile Iron	110.0	False	0.000	150.00	1.70	0.003	False	0

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Scenario: Peak Day Existing
Current Time Step: 0.000Hr
FlexTable: Reservoir Table

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
39	R-4	2,229.07	<None>	59.85	2,229.07
234	R-2	2,229.92	<None>	(N/A)	(N/A)
240	R-3	2,230.97	<None>	(N/A)	(N/A)
249	R-5	0.00	<None>	(N/A)	(N/A)
479	R-6	2,455.00	<None>	90.16	2,455.00

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Scenario: Peak Day Existing
Current Time Step: 0.000Hr
FlexTable: Tank Table

ID	Label	Zone	Elevation (Base) (ft)	Elevation (Minimum) (ft)	Elevation (Initial) (ft)	Elevation (Maximum) (ft)	Volume (Inactive) (MG)	Diameter (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
257	T-1	<None>	2,374.00	-	-	-	0.00	50.46	(N/A)	(N/A)

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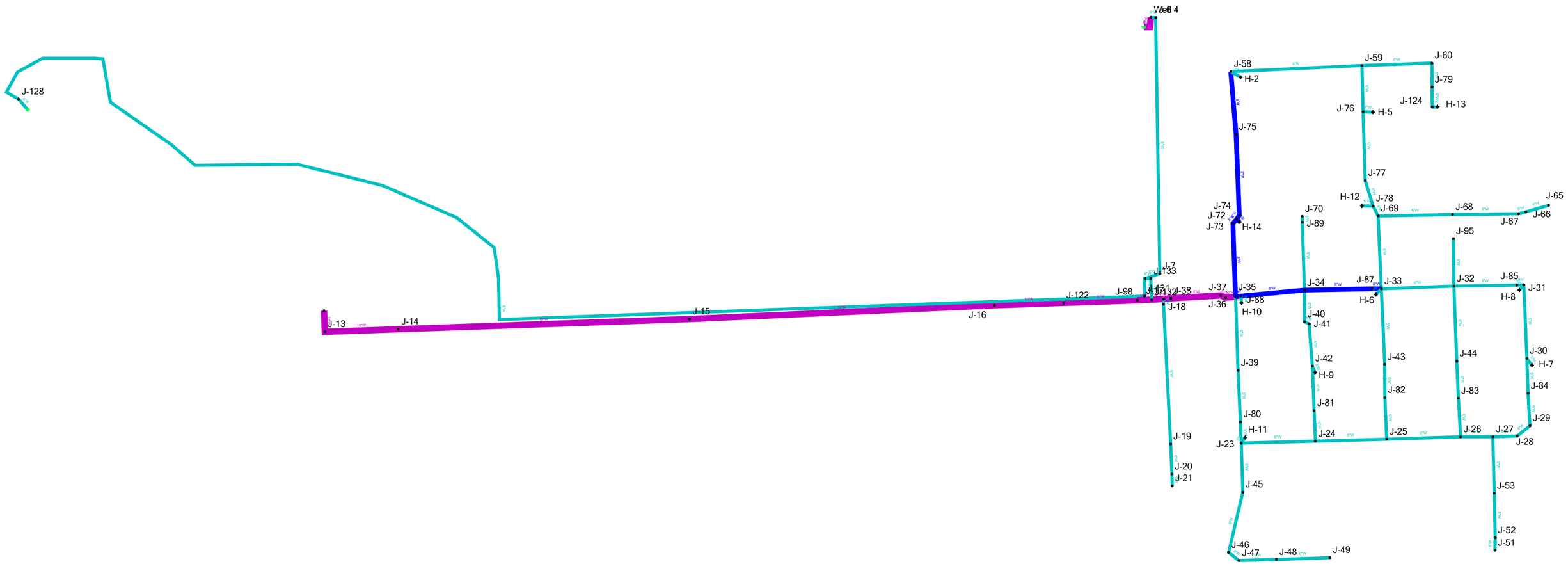
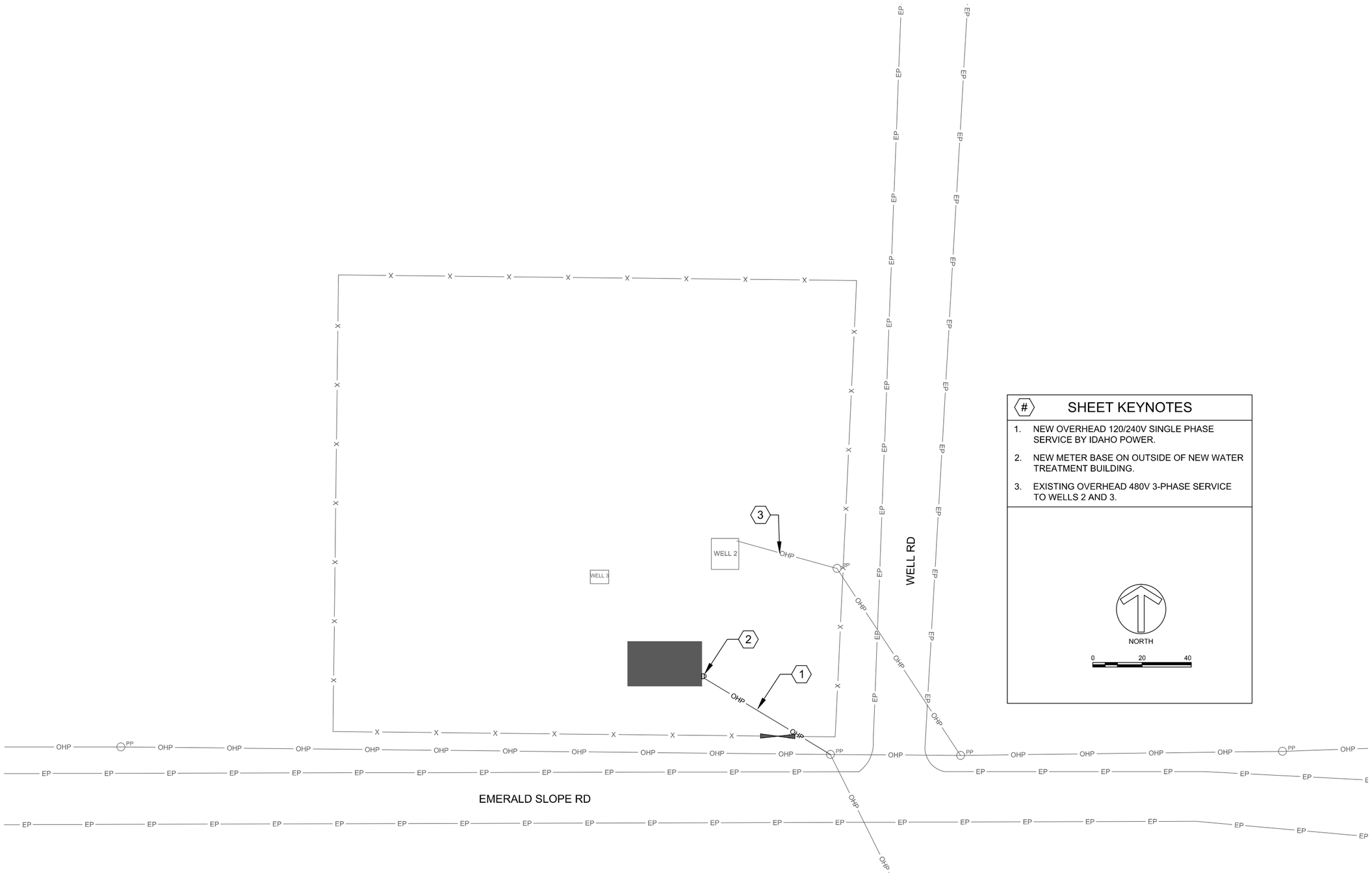
Scenario: Peak Day Existing



Adrian_WaterModel-2015_eval.wtg
7/22/2015

Bentley Systems, Inc. Haestad Methods Solution Center
27 Siemon Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666



#	SHEET KEYNOTES
1.	NEW OVERHEAD 120/240V SINGLE PHASE SERVICE BY IDAHO POWER.
2.	NEW METER BASE ON OUTSIDE OF NEW WATER TREATMENT BUILDING.
3.	EXISTING OVERHEAD 480V 3-PHASE SERVICE TO WELLS 2 AND 3.

KELLER associates

CTA

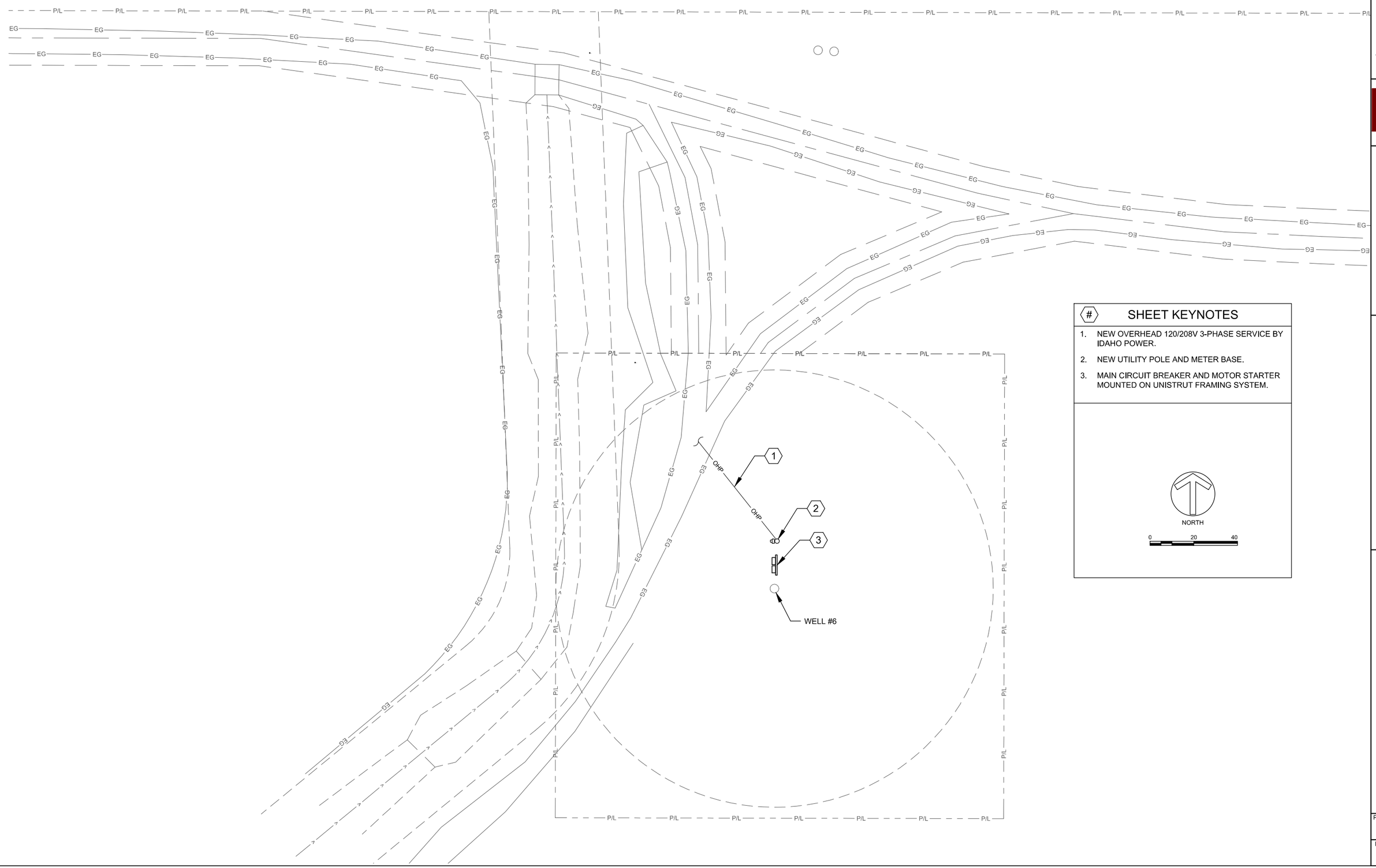
CITY OF ADRIAN

ADRIAN WATER SYSTEM IMPROVEMENTS

WATER TREATMENT FACILITIES BUILDING ELECTRICAL SITE PLAN

PROJECT NO.

FIGURE NO.
E-02



#	SHEET KEYNOTES
1.	NEW OVERHEAD 120/208V 3-PHASE SERVICE BY IDAHO POWER.
2.	NEW UTILITY POLE AND METER BASE.
3.	MAIN CIRCUIT BREAKER AND MOTOR STARTER MOUNTED ON UNISTRUT FRAMING SYSTEM.

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CTA

CITY OF ADRIAN

ADRIAN WATER SYSTEM IMPROVEMENTS

WELL #6 ELECTRICAL SITE PLAN

PROJECT NO.

FIGURE NO.
E-01

APPENDIX F

PILOT STUDY REPORT

KELLER associates

213013-003/PER/15-373

FINAL

ARSENIC REMOVAL
PILOT STUDY REPORT

KELLER ASSOCIATES
131 SW 5TH AVENUE, SUITE A
MERIDIAN, IDAHO 83642

LOPREST JOB NO. 33156

FOR
ADRIAN, CITY OF
PILOT STUDY
SEPTEMBER 21, 2015

Prepared by:

Loprest Water Treatment Company
2825 Franklin Canyon Road
Rodeo, CA 94572

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APPENDIX

A. PILOT TEST DATA LOG

B. PILOT RUN SCHEDULE

LIST OF ACRONYMS AND ABBREVIATIONS

APHA Platinum – Cobalt Standard Method	APHA
Arsenic	As
Chlorine	Cl
Differential Pressure	DP
Gallons per minute	gpm
Iron	Fe
Manganese	Mn
Manganese Dioxide	Mang-Ox
Maximum Contaminant Level	MCL
Milligrams per liter	mg/L
Parts per billion	ppb (= µg/L)
United States Environmental Protection Agency	USEPA

ARSENIC REMOVAL PILOT STUDY REPORT
LOPREST JOB NO. 33156
FOR
ADRIAN PILOT STUDY
SEPTEMBER 21, 2015

0.0 EXECUTIVE SUMMARY

Loprest Water Treatment Company (Loprest) is under contract with Keller Associates to complete a pilot study for treatment of Well 6 in the City of Adrian, Oregon.

The objective of the pilot study was to demonstrate "proof of concept" if coagulation followed by filtration was a viable technology to remove arsenic in water from Well No. 6 when raw water arsenic levels are so high, >70 ppb. Preparations were made to reduce the pH of the raw water if it was required. Also, two unique arsenic adsorptive medias were evaluated as a final polishing step to the effluent of the coagulation/filtration process.

The well also has borderline high uranium and nitrate levels. Although ion exchange is the best available technology, there are published papers [1] that indicate uranium can be removed from drinking water by chemical clarification using ferric chloride as a coagulant. Ferric chloride addition is required for arsenic removal by coagulation/filtration so tests were done to determine if and what levels of uranium could be removed.

The levels of nitrate were also tested to determine if any reduction could be achieved. Because the nitrate ion is stable and highly soluble it is not amenable to removal by coagulation and precipitation or adsorption and filtration. Normally, ion exchange or a chemical reductive treatment is required for nitrate removal.

The first filter run of the study indicated that coagulation with high levels of ferric chloride and then filtration by a manganese dioxide media could produce effluent water below the MCL of arsenic for drinking water from the high levels found in the source water. Further, it showed that with adsorptive media polishing, effluent level could be consistently produced with < 2 ppb of arsenic. With this success it was deemed that acid injection to reduce the pH would not be necessary.

A second filter run was conducted to determine repeatability after a filter backwash had occurred. This second run also produced effluent at less than the MCL from filtration alone, although at higher levels than run one. The initial lower effluent values of run 1 were due to the adsorptive capacity of the filter media. This is used up on the first run and the second run is more typical of the expected results.

Given funding and time constraints, no additional runs were made. However, "proof of concept" that arsenic removal to and below the MCL was demonstrated. Due to the high and variable levels found in the source water from prior testing, polishing of at least 50% of the filter effluent by adsorptive media is recommended. The blended product would give the owner security that effluent levels would remain below the MCL without the need for continual monitoring of filter effluent. Of the two adsorptive medias' evaluated, the NXT-2 product had superior performance. It should be noted that effluent levels of arsenic were below the MCL prior to polishing by absorptive media.

The testing also indicated reduction of uranium with this treatment process, at least initially. If raw water uranium levels do increase to above the 30 ppb MCL then some reduction of uranium may be possible, particularly of ferric chloride dosage levels are increased. There was an initial drop in nitrate levels after treatment by the adsorptive medias. These adsorptive medias can get as anion exchange resins initially but would have very low capacities for nitrate and other anion removal. The level of nitrate reduction decreased over the course of the run.

1.0 BACKGROUND

This report summarizes the results and conclusions of a groundwater treatment pilot test program. This pilot test program was undertaken by Loprest for Keller Associates and the City of Adrian to determine the removal performance for arsenic and/or iron leakage. Chemical treatment processes and estimated dosages required were also studied.

1.1 INTRODUCTION

Iron, manganese, arsenic and hydrogen sulfide are indigenous to numerous groundwater aquifers. With the exception of arsenic, these constituents are more prevalent in deeper aquifers that are devoid of dissolved oxygen.

This pilot test program was conducted between August 10, 2015 and August 14, 2015 at the Adrian jobsite in Adrian, OR. Untreated water for the test was pumped by a temporary well pump from well 6 with a small side-stream feeding the pilot trailer.

f1.2 OVERVIEW OF IRON AND ARSENIC TREATMENT PROCESSES

A brief discussion of iron and arsenic treatment processes follows. A discussion of iron removal is included since arsenic treatment often requires the addition of an iron salt to the water.

1.2.1 Iron Removal

The most common method of removing iron from water involves the oxidation of soluble iron (Fe^{+2}, or ferrous ion) to its insoluble form (Fe^{+3}, ferric ion), and subsequent removal of the precipitates formed by filtration.

Manganese-Oxide (MnO4) media is an 75% pure manganese dioxide ore, mined and screened for potable water use. In waters with a positive oxidation/reduction potential (ORP), it can work without the use of an oxidant. Other manganese dioxide ore materials mixed with a variety of sand materials are available under various trade names.

Mang-Ox (one of the many trade names for manganese-oxide media) enhances the oxidation and removal of iron by adsorbing Fe^{+2} on the surface of the media, and by promoting the exchange of electrons to oxidize soluble Fe^{+2} to insoluble Fe^{+3}. The kinetics of Fe^{+2} uptake and oxidation on MnO_x coated media is a function of the specific concentration of adsorption sites on the media, the oxidation potential and the pH of the water.

The performance of the Mang-Ox was evaluated.

1.2.2 Arsenic Removal

A maximum contaminant level for arsenic of 0.01 mg/L (10 micrograms per liter, or parts per billion) has been established by the USEPA.

Studies and experience at operating plants have shown that significant concentrations of soluble arsenic can be removed by coagulation with naturally occurring iron, or with naturally occurring iron in combination with metal salts such as alum or ferric chloride. Ferric chloride has been demonstrated to be the more effective of these two coagulants. Reduction of pH is often required to increase the efficiency of the coagulation process.

Arsenic is soluble in natural waters in both the As^{+3} and As^{+5} oxidation states. Arsenic in the As^{+5} oxidation state is more easily removed than in the $As+^{3}$ oxidation state. $As+^{3}$ is readily oxidized to As^{+5} in the presence of free chlorine (or other oxidants).

One atom of arsenic reacts with two atoms of chlorine, therefore the stoichiometric amount of chlorine required to oxidize 1 mg/1 of arsenic is equal to twice the atomic weight of chlorine divided by the atomic weight of arsenic, or [2(35.453)/74.922] = 0.95 mg/1 of chlorine.

Metal coagulants such as ferric chloride form insoluble gelatinous floc when added to water. This floc enmeshes the soluble arsenic species. Arsenic is removed by co-precipitation, which is defined as an incorporation of soluble arsenic species into a growing hydroxide phase via inclusion, occlusion, and adsorption.

2.0 DESCRIPTION OF PILOT TEST PROTOCOL

A description of the pilot test protocol follows, including a list of participants, a description of the test site, characteristics of the feed water, raw water analytical data, and a description of the treated water handling facilities used during the pilot study.

2.1 PILOT TEST PARTICIPANTS AND RESPONSIBILITIES

The names, contact information, title and responsibilities of each pilot test participant are provided in Table 1.

TABLE 1
PILOT TEST PARTICIPANTS AND RESPONSIBILITIES

Name and Contact Information	Title and Responsibilities
Thompson Nguyen	Service Engineer, Loprest Water Treatment Company Pilot operation 510-799-3101 Thompson@Loprest.com
Randy L. Richey	President, Loprest Water Treatment Company Pilot supervision 510-799-3101 Randy@Loprest.com

Run 1 was started in the morning of August 10, 2015. The study was completed on August 14, 2015.

2.2 DESCRIPTION OF TEST SITE

The well site was in the City of Adrian located in Malheur County, Oregon. Untreated water was on site, and the pilot equipment was brought to Adrian for testing

2.3 RAW WATER ANALYTICAL DATA

Raw water constituent levels are presented below. Laboratory reports indicate the well contains arsenic levels over 50 ppb. The raw water exceeds the MCL for arsenic

TABLE 2
RAW FEED WATER CHARACTERISTICS

Constituent	Average Values Owner's Lab
Arsenic, mg/L	0.07
Uranium, ug/L	26
Nitrate, mg/L	9.5

2.4 PILOT TEST OBJECTIVE

The purpose of the pilot study was to evaluate coagulation/filtration as a treatment option for the production of drinking quality water from the City of Adrian's source well no. 6. This study was done at the "proof of concept" level. If successful, optimization of chemical feed rates, service run times, plant operation would be done at the full scale level. The ability to remove the contaminants of concern, arsenic and uranium, were reviewed and final effluent samples were tested by a certified lab.

2.5 MEDIA EVAULUATION

Manganese Dioxide can be used to remove arsenic after conversion to its oxidized state and coagulation with iron oxide. It has the highest oxidation potential and capacity for dissolved contaminants when compared to conventional medias such as manganese greensand, filter sand, anthracite and combinations of these medias. So manganese dioxide was selected as the best choice in a one time proof of concept study.

3.0 DESCRIPTION OF PILOT SYSTEM

Loprest pilot filter column utilized mang-ox media with a 36" bed depth. Oxidation was with diluted sodium hypochlorite injected prior to the filter column. Coagulation was with diluted ferric chloride solution also injected prior to filtration.

3.1 PILOT TEST EQUIPMENT DESCRIPTION

Loprest's pilot test equipment is installed in a 5' x 12' trailer, which was parked at the jobsite. The pilot test components were constructed and installed in the trailer by Loprest. The following equipment is installed in the trailer and was utilized during the pilot test:

- Two each Wal-Chem EZ-B10 chlorine metering pumps, maximum flow rate of 0.6 GPH, each with dedicated solution tank and 350 ml calibration chamber. One pump will be used to inject sodium hypochlorite and one pump can be used to inject ferric chloride.
- One vertical pressure filter constructed of clear acrylic pipe, 12 inch outside diameter (11.25" inside diameter) by 65 ½" side shell height, cross sectional area =0.69 square feet, with internals, valves, controls and media as follows:
    - Slotted strainer underdrain laterals
    - Surface wash header
    - 36 inches of mang-ox, 125 pounds per cubic foot
    - Automatically or manually operated valves to control filtration, rinse to waste, surface wash, and backwash
    - Pressure gauges on inlet and outlet
    - Differential pressure gauge connected to inlet and outlet
    - Air release valve
    - Inlet and outlet sample ports
    - Rate of flow indicators for filtration, backwash, and surface wash

- A 10.4 gallon capacity contact chamber for chemical mixing and detention time installed in the trailer but is not typically used.
- A surface wash system with a pump and flowmeter is installed.
- Test equipment recommended but not included is as follows:
    - DR 900 Portable Colorimeter and associated reagent for iron
    - Quick test II for low level arsenic

A 200 gallon polyethylene storage tank and a backwash pump are provided for installation outside of the trailer. The storage tank will store filtered water to be used as backwash supply.

A photo of the interior of the pilot trailer is provided in Figure 1.

PILOT TEST TRAILER
FIGURE 1

The pilot system is equipped with a PLC based control panel, which automatically controls the filter control valves and backwash pump during backwashing. Backwashing can be initiated manually or by differential pressure. Manual initiation is anticipated for this pilot study since the differential pressure is not expected to increase significantly during the planned length of the filter runs.

3.2 DESCRIPTION OF PROPOSED PILOT OPERATION

A source of raw water will be connected to the pilot trailer inlet fitting. If necessary, a pressure reducing valve to limit the pressure delivered to the trailer to 50 psi will be installed on the inlet.

Raw water will pass through the pilot trailer and the filtered water will be directed to two polishing adsorptive media columns (parallel flow) and then to a storage tank. A flow meter and automated flow control valve will be used to maintain constant flow despite pressure drop increases while operating unattended.

When backwashing the filter is required, the filter water hose will be disconnected from the storage tank bottom fitting, and the backwash pump suction hose will be connected to the same tank fitting. Backwash water will be discharged into a temporary tank. After backwash is completed, the filtered water outlet hose will be reconnected to the tank bottom fitting.

4.0 PROPOSED PILOT TEST PROTOCOL

See Appendix B. Adrian pilot run schedule, dated July 30, 2015

4.1 OPERATING PROCEDURES

Prior to the first run, the pilot filter will be backwashed. The source of water for the backwash should be potable water. After the first backwash, the filtered water from the pilot filter will be used for backwashing.

Additional runs (approx. 6 hrs. each) will be done to adjust to the raw water quality and to optimize chemical addition/treatment rate as time allows.

Prior to startup and at the end of each run, the filter will be backwashed. The backwash cycle will be completed in three steps: 1) backwash at a flow of 14 gpm (20 gpm/sf) and surface wash for 4 minutes at a flow rate of 1.4 gpm (2 gpm/sf), 2) backwash only for 4 minutes at a flow rate of 14 gpm and 3) filter to waste for 4 minutes at a flow rate of 4.0 gpm. Effluent water will be accumulated for use as backwash supply water.

During each filter run, the following parameters will be measured and recorded on a Pilot Data Log at one hour intervals for 6 hours each day. Raw water will not be tested on site as Arsenic levels are too high to measure.

1. Chlorine, arsenic, and iron levels in the effluent
2. Differential pressure across the filter media
3. pH
4. Chemical feed pump's injection rate

4.2 SAMPLING PROTOCOL

Effluent water iron, arsenic, and pH will be tested onsite using the instruments and procedures described in the following section. Each filter influent and effluent sample will be taking in sufficient volume to provide the required sample volume for each parameter to be tested. Sample volumes will be sufficient to provide a sample for onsite testing, and for sending to an independent laboratory per owner's sampling plan (attachment B). A chain of custody form provided by others will be completed for each bottle provided to laboratory.

The onsite test equipment, procedures, and methods are described in the following section.

4.3 ONSITE TEST EQUIPMENT, PROCEDURES, AND METHODS

Field testing for iron and manganese will be performed with a DR 900. With this instrument, packets of reagents specific for each constituent are added to a pair of sample cylinders, which are then inserted into the test instrument in two steps. One sample is called the blank, which is inserted into the DR 900 first, and the instrument is zeroed. The DR 900 measures the amount of light passing through the blank sample, and stores the result. Next, the second prepared sample is inserted and the value is read by the DR 900. The instrument compares the stored value for the blank to the value for the prepared sample and displays the results for the constituent being tested. Arsenic field testing will be with a Quick Test II unit.

Pressure drop reading will be recorded manually reading filter media column DP. A sample test log can be provided.

5.0 TREATMENT PERFORMANCE EVALUATION

This section provides a summary of the performance of the equipment during the pilot test. Refer to Section 3.0 and 4.0 for a complete description and specification of the pilot test equipment and field analysis test equipment.

5.1 FILTER HEADLOSS

The pressure differential across the filter during the various runs never increased significantly. Effluent leakage of arsenic rose during the testing, therefore, effluent arsenic quality is indicative of filter performance and run time.

5.2 ARSENIC TREATMENT

A summary of the influent and filtered water values for iron and arsenic is presented in Tables 3 through 5. The test results noted “field” are test results from the DR 900, those noted Lab were provided from Keller Associates. The raw data log is shown in Appendix A.

TABLE 3
IRON, CHLORINE AND ARSENIC TEST RESULTS
RUN #1 Part 1 of 2
August 11, 2015

ANALYTE	Hours of Service					
	1	2	3	4	5	6
Fe into column, mg/L, field	1.36	1.31	1.21	1.39	1.20	1.21
Fe out, mg/L, field	0.01	0.02	0.02	0.02	0.01	0.01
Fe, Lab, mg/L, Lab	<0.05					<0.05
Cl out, mg/L, field	1.11	0.95	0.91	0.98	0.81	0.86
As out, ppb, field	1-2	1-2	1-2	1-2	4-5	4-5
As out, ppb, lab	<3					6
As out NXT, ppb, field	0-1		0-1		0-1	
As out NXT, ppb, lab	<3					<3
Uranium out, NXT, ug/L, lab	<1					<1
Nitrate out, NXT, mg/L, lab	8.3					9.4
As out FO36, ppb, field		1-2		1-2		3-4
As out FO36, ppb, lab	<3					6
Uranium out, FO36, ug/L, lab	<1					16
Nitrate out, FO36, mg/L, lab	7.1					8.9
DP, psi	1.25	0.75	0.5	1.0		1.0
Silica, mg/L, Lab	62.1					66.6
Uranium, ug/L, Lab	<1					16
Vanadium, mg/L, Lab	<0.05					<0.05
Nitrate, mg/L, Lab	9.4					9.5
Phosphate, mg/L, Lab	0.07					<0.05

NOTES: Media = Manganese Dioxide Flow = 4.0 GPM
Chem Feed Rates = Chlorine @ 3.58 ppm, Ferric Chloride @ 5.85 ppm

TABLE 4
IRON, CHLORINE AND ARSENIC TEST RESULTS
RUN #1 Part 2 of 2
August 12, 2015

ANALYTE	Hours of Service					
	7	8	9	10	11	12
Fe into column, mg/L, field	1.4	1.31	1.31	1.36	1.34	1.31
Fe out, mg/L, field	0.02	0.01	0.01	0.00	0.01	0.01
Fe out, mg/L, lab						<0.05
Cl out, mg/L, field	1.1	1.29	1.17	1.18	1.15	1.12
As out, filter column, ppb, field	1-2	3-4	3-4	5-6	5-6	7-8
As out, filter column, ppb, lab						10
As out NXT, ppb, field	0-1		0-1		0-1	
As out FO36, ppb, field		2-3		5-6		6-7
DP, psi	1.0	2.0		2.25	2.5	3.0
Silica, mg/L, lab						66.0
Uranium, ug/L, lab						18
Vanadium, mg/L, lab						<0.05
Nitrate, mg/L, lab						9.5
Phosphate, mg/L, lab						-

NOTES: Media = Manganese Dioxide Flow = 4.0 GPM
Chem Feed Rates = Chlorine @ 3.35 ppm, Ferric Chloride @ 5.85 ppm

TABLE 5
IRON, CHLORINE AND ARSENIC TEST RESULTS
RUN #2
August 13, 2015

ANALYTE	Hours of Service					
	1	2	3	4	5	6
Fe into column, mg/L, field	1.34	1.34	1.39	1.39	1.37	1.4
Fe out, mg/L, field	0.02	0.02	0.01	0.01	0.01	0.01
Fe out, mg/L, lab	<0.05					<0.05
Cl out, mg/L, field	1.29	1.19	1.18	1.19	1.14	1.09
As out, filter column, ppb, field	1-2	2-3	2-3	4-5	5-6	5-6
As out, filter column, ppb, lab	<3					8
As out NXT, ppb, field	0-1		0-1		0-1	
As out FO36, ppb, field		2-3		4-5		4-5
DP, psi	0.75	0.5		0.5	0.25	0.5
Metal Digestion	*					*
Silica, mg/L, lab	62.5					64.2
Uranium, ug/L, lab	6					20
Vanadium, mg/L, lab	<0.05					<0.05
Nitrate, mg/L, lab	9.4					9.3
Phosphate, mg/L, lab	-					-

NOTES: Media = Manganese Dioxide Flow = 4.0 GPM
Chem Feed Rates = Chlorine @ 3.04 ppm, Ferric Chloride @ 5.07 ppm

6.0 PERFORMANCE EVALUATION

Run 1 was conducted at 6 gpm/SF with a ferric chloride dosage of 5-6 ppm to give a filter inlet iron concentration of > 1.2 ppm. Sodium hypochlorite was fed at a rate of 3.35 ppm (calculated) to maintain a chlorine residual of greater than 0.9 ppm as free chlorine. Effluent water quality was measured with field instruments. The differential pressure showed no appreciable rise over the test period.

Run 2 was conducted under the same conditions as run 1 to confirm repeatability of results.

Acid Feed was not used as acceptable results were obtained without it

6.1 BACKWASH WATER QUALITY

Backwash water from the pilot filter was collected after Run 1. Five gallons of backwash water was collected. The collection was taken to provide a sample that is representative of the backwash water anticipated for the full scale plant. The sample collection procedure included five steps in approximately equal volumes (approx. 1 gallon each) every 1.5 minutes of the backwash to waste step.

The water was allowed to settle for 8 hours. After the settling period, samples were taken from the supernatant and analyzed to determine the levels of iron and arsenic. These values are anticipated in the backwash recycle water. The values are presented in Table 6 below.

TABLE 6
SETTLED BACKWASH WATER CHARACTERISTICS
LAB RESULTS

DATE SAMPLED		
	As, µg/l	Fe, mg/l
08/12/15	10-12	0.07

The above values are consistent with backwash recycle water constituent levels of iron, manganese, and arsenic at operating treatment plants. At these other locations, the recycled water rate of flow represents approximately 10% of the raw water rate of flow. At these other operating plants, recycling the settled backwash water caused no increase in the constituent levels in the filtered water outlet.

6.2 BACKWASH VOLUME AND RATIO

Good design practice requires that the ratio of filtered water volume to backwash water volume shall not exceed 5.0%. The ratio achieved in the pilot test was 4.6% based on a 12 hour run calculated as follows:

Waste volume generated based on Mang-Ox:

Backwash – 20 gpm/SF x 0.69 SF for 4 minutes = 14 gpm x 4 = 56 gallons
Surface Wash – 2 gpm/SF x 0.69 SF for 4 minutes = 1.4 gpm x 4 = 5.6 gallons
Backwash Only – 20 gpm/SF x 0.69 SF for 4 minutes = 14 gpm x 4 = 56 gallons
Rinse – 4.0 gpm x 4 minutes = 16.0 gallons
Total waste volume = 133.6 gallons

Backwash ratio based on 12 hour filter run:

Filtered water volume produced in 12 hours = 4.0 gpm x 12 x 60 minutes/hr = 2,880 gallons
Backwash waste to filtered water = 133.6 ÷ 2,880 = 0.046 = 4.6%

6.3 CONCLUSION

Arsenic removal can be achieved using the coagulation filtration process. The effluent level of arsenic will depend on the amount of ferric chloride dosing and the filter run time. Consistent arsenic levels below 8 ppb will likely require high ferric chloride dosages and lead to short filter run times.

Polishing the filter effluent by passing it through a column of NXT-2 adsorptive media consistently produced an effluent arsenic level below field and lab detection limits. The alternate column of FO-36 did not perform as well. The performance of the filter media was better on its initial run when compared to the second run. This was expected as manganese dioxide has some adsorptive characteristics. However, these sites are quickly used up (initial run only) and provided the filter media is getting cleaned by backwashing (evidenced by low initial differential pressure) then subsequent filter runs are expected to perform as in run No 2.

Uranium was initially removed by the coagulation filtration process but reached its MCL limit sooner than arsenic. Published reports [(1)] suggest better removal of uranium at ferric chloride dosage over 15 ppm. However, this level of ferric dosage would be detrimental to filter performance. Some removal of nitrates was observed, at least initially.

For full scale design criteria see accompanying 100 gpm treatment proposal.

References:

[1] “Removal of Uranium from Drinking Water by Ion Exchange and Chemical Clarification”; Steven W. Hanson, Donald B. Wilson, Naren N. Gunaji; Water Engineering Research Laboratory Office of Research and Development; 1986

APPENDIX A

LOPREST WATER TREATMENT COMPANY

Job Name: Adrian — Coag Filter

Job Number: 33156 — ABST CYL.

Pilot Test/ Rinse To Quality Log

RUN NO 1

Date	Time	pH In	pH col out	Fe in mg/l	Cl Free Out mg/l	Fe Out mg/l	As Out ppb	NXT Out ppb	FO36 out ppb	Cl Pump ml/min	Fe Pump ml/min	Acid Pump strokes	Raw Water gpm	Press in psi	Press out psi	DP psi	Notes
8/11/15	10:30	7.3	7.3	1.36	1.11	0.01	1--2	0--1	---	32	30	n/a	3.8--4	17.25	18.5	1.25	$FeCl_2$: 100ml to 5 Gal H_2O Cl_2: 500 ml to 5 Gal H_2O
	11:30	7.4	7.3	1.31	0.95	0.02	1--2	---	1--2	32	30	n/a	3.8--4	17.25	18	0.75	Raw As: >100 ppb
	12:30	7.3	7.2	1.21	0.91	0.02	1--2	0--1	----	32	30	n/a	3.8--4	17.25	17.75	0.5	Well Head Pressure: 41 psi
	13:30	7.3	7.3	1.39	0.98	0.02	1--2	---	1--2	32	30	n/a	3.8--4	17	18	1	
	14:30	7.2	7.2	1.2	0.81	0.01	4--5	0--1	---	32	30	n/a	---	---	---	---	Raw As: 80-100 ppb
	15:30	7.3	7.3	1.21	0.86	0.01	4--5	---	3--4	32	30	n/a	---	17.5	18.5	1	Well Head Pressure: 44 psi
8/12/15	8:30	7.3	7.4	1.4	1.1	0.02	1--2	0--1	---	32	30	n/a	---	21	20	1	$FeCl_2$: 100ml to 5 Gal H_2O Cl_2: 500 ml to 5 Gal H_2O
	9:30	7.4	7.5	1.31	1.29	0.01	3--4	---	2--3	31	30	n/a	---	22	20	2	Flow NXT-2 ~ 2.5 gpm FO-36 ~ 1.4 gpm
	10:30	7.3	7.4	1.31	1.17	0.01	3--4	0--1	---	30	30	n/a	---	----	---	---	Well Head Pressure: 44 psi
	11:30	7.3	7.3	1.36	1.18	0	5--6	---	5--6	29	30	n/a	---	22.25	20	2.25	
	12:30	7.3	7.4	1.34	1.15	0.01	5--6	0--1	---	29	30	n/a	---	23	20.5	2.5	
	13:30	7.4	7.5	1.31	1.12	0.01	7--8	---	6--7	29	30	n/a	---	22.5	19.5	3	Flow NXT-2 ~ 2.5 gpm FO-36 ~ 1.4 gpm
																	BW @ 14 gpm S.W. @ 1.4 gpm

Note: All samples taken from effluent except as noted by "in".

LOPREST WATER TREATMENT COMPANY

Job Name:

Job Number:

Pilot Test/ Rinse To Quality Log

RUN NO 1

Date	Time	pH In	pH col out	Fe in mg/l	Cl Free Out mg/l	Fe Out mg/l	As Out ppb	NXT Out ppb	FO36 out ppb	Cl Pump ml/min	Fe Pump ml/min	Acid Pump strokes	Raw Water gpm	Press in psi	Press out psi	DP psi	Notes
8/13/15	8:30	7.4	7.4	1.34	1.29	0.02	1--2	0--1	---	28	26	n/a	3.8--4	24	24.75	0.75	$FeCl_2$: 100ml to 5 Gal H_2O Cl_2: 500 ml to 5 Gal H_2O
	9:30	7.4	7.3	1.34	1.19	0.02	2--3	---	2--3	28	26	n/a	3.8--4	24.25	24.75	0.5	
	10:30	7.3	7.3	1.39	1.18	0.01	2--3	0--1	----	27	26	n/a	3.8--4	---	---	---	
	11:30	7.3	7.3	1.39	1.19	0.01	4--5	---	4--5	28	26	n/a	3.8--4	26	26.5	0.5	Raw As: > 100 ppb
	12:30	7.3	7.3	1.37	1.14	0.01	5--6	0--1	---	26	26	n/a	---	25.5	25.75	0.25	
	13:30	7.3	7.3	1.4	1.09	0.01	5--6	---	4--5	26	26	n/a	---	26	26.5	0.5	

Note: All samples taken from effluent except as noted by "in".

APPENDIX B

July 30, 2015

Job Note - Job 33156
Adrian Pilot Run Schedule
Media 1 - Mang-Ox

Cl_2: 500 mls of bleach concentrate into 5 gals of water start at 24 mls/min pump rate for 4.0 gals/min raw water flow rate and adjust to get 0.5-1.0 ppm free Cl in effluent

Fe_3Cl_2: 100 mls of Fe_3Cl_2 (neat) into 5 gals of water start at 20 mls/min pump rate for 4.0 gals/min raw water flow rate and adjust to get1.3 ppm Fe at column inlet (3.8 ppm FeCl dosage)

Run 1:

1) Raw water flow 4.0 gals/min (5.8 gpm/SF)

2) Add Cl_2 to get residual desired (media may have some additional chlorine demand)

3) Add FeCl to get iron into column per target above

4) Measure effluent quality

5) Call with results

6) Stop after 6 hours, backwash column per 4.1

Run 2:

1) Reduce the raw water pH feeding the column to approximately 6.5 by injection of diluted sulfuric acid. Without alkalinity data the acid stock solution cannot be calculated. Use trial and error.

2) Repeat run 1 test conditions.

3) Call with results

4) Continue run for 6 hours.

APPENDIX G

COST ESTIMATES

KELLER associates

213013-003/PER/15-373

	PROJECT SUMMARY	**ESTIMATE CLASS:**	PRE-DESIGN
PROJECT :	Adrian Water System Improvements	**DATE :**	7/17/2015
JOB # :	213013-003	**COMPLETED BY:**	CML
LOCATION :	**Adrian, OR**	**REVIEWED BY:**	
ELEMENT :	**PROJECT SUMMARY**		

NO.	DESCRIPTION	ESTIMATED COST	
0	GENERAL CONDITIONS (MOB/DEMOB, BONDS/INSURANCE)	$ 39,250.00	
1	SITEWORK	$ 40,400.00	
2	SITE PIPING	$ 48,600.00	
3	TRANSMISSION PIPING TO WELL	$ 252,800.00	
4	TREATMENT BUILDING	$ 65,000.00	
5	MECHANICAL PIPING	$ 34,100.00	
6	FILTRATION SYSTEM with POLISHING STEP	$ 259,100.00	
7	HVAC	$ 12,000.00	
8	ELECTRICAL & POWER	$ 47,000.00	
9	INSTRUMENTATION & CONTROLS	$ 26,000.00	
10	WELL PUMP, DROP PIPE, AND VFD	$46,200	
	TOTAL DIRECT COST	**$880,000**	
	15% GENERAL CONTRACTOR MARKUP	$130,000	
	TOTAL ESTIMATED CONSTRUCTION COST	**$1,010,000**	
	PERMITTING, LEGAL	$5,000	
	ENGINEERING	$202,000	
	SUBTOTAL	**$1,217,000**	
	20% CONTINGENCY & ALLOWANCES	$243,400	
	TOTAL ESTIMATED PROJECT COST	**$1,460,400**	

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time, and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

UNIT PRICES

ESTIMATE CLASS: PRE-DESIGN

PROJECT : Adrian Water System Improvements

DATE : 7/6/2015

JOB # : 213013-003

COMPLETED BY: CML

LOCATION : Adrian, OR

REVIEWED BY:

ELEMENT : Unit Prices

NO.	DESCRIPTION	UNIT	UNIT PRICE
1	**SITEWORK**		
1.1	GRAVEL SURFACE RESTORATION	LF	$10
1.2	ASPHALT SURFACE RESTORATION	LF	$35
1.3	MISCELLANEOUS SURFACE RESTORATION	LF	$5
1.4			
1.5			
2	**SITE PIPING**		
2.1	8" C900 Waterline - includes fittings, excavation, bedding, and backfill	LF	$60
2.2	8" Sch 35 PVC Waste line - includes fittings, excavation, bedding, and backfill	LF	$60
2.3			
2.4			
2.5			
3	**TRANSMISSION PIPING TO WELL**		
3.1	6" C900 Waterline - includes fittings, excavation, bedding, and backfill	LF	$55
3.2	Canal Crossing	EA	$15,000
3.3	Rock excavation	LF	$36
3.4			
3.5			
4	**TREATMENT BUILDING**		
4.1	Treatment Building	EA	$62,000
4.2	Containment Walls	LS	$3,000
4.3			
4.4			
4.5			
5	**MECHANICAL PIPING**		
5.1	12" Sch 35 PVC Waste line - includes fittings, excavation, bedding, and backfill	LF	$90
5.2	Backwash Storage Tank (2,500 gallons) with concrete pad and fittings	EA	$20,000
5.3	6" DI Waterline - includes fittings, excavation, bedding, and backfill	LF	$70
5.4	3" Airwash line - includes fittings	LF	$130
5.5	Chemical addition line - includes fittings, excavation, bedding, and backfill	LF	$70
5.6	Fittings	EA	$350
5.7	Valves	EA	$950
5.8			
5.9			
6	**FILTRATION SYSTEM**		
6.1	Pressure Filtration Vessels (two 50gpm units)	EA	$199,800
6.2	Chemical Metering Pump	EA	$1,752
6.3	2-3 HP blower 18-22 scfm Pos Disp Blower - extra price only	EA	$10,000
6.4	100 gallon crosslinked poly Sodium Hypochlorite Storage	EA	$400
6.5	50 gallon cross poly Ferric Chloride Storage	EA	$300
6.6	Polishing Step: Adsorptive Media LaOH3 (NXT-2) 3' diameter vessel	EA	$45,000
6.7			
6.8			
6.9			
7	**HVAC**		
7.1	Louver	EA	$2,500
7.2	Heater	EA	$3,500
7.3	Exhaust Fan	EA	$3,500
7.4			
7.5			
8	**ELECTRICAL & POWER**		
8.1	GENERATOR and fuel tank	LS	$31,700
8.2	Well 6 3 phase electrical service extension	LS	$13,550
8.3	WTP 3 phase electrical service	LS	$1,750
8.4			
8.5			
9	**INSTRUMENTATION & CONTROLS**		
9.1	Radio Telmetry	LS	$6,000
9.2	Controls	LS	$20,000
9.3			
9.4			
9.5			

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	1-SITEWORK	**ESTIMATE CLASS:**	PRE-DESIGN
PROJECT :	Adrian Water System Improvements	**DATE :**	7/6/2015
JOB # :	213013-003	**COMPLETED BY:**	CML
LOCATION :	**Adrian, OR**	**REVIEWED BY:**	
ELEMENT :	**Sitework**		

NO.	DESCRIPTION	QUANTITY	ESTIMATED COST	
1.1	GRAVEL SURFACE RESTORATION	650	$6,500.00	
1.2	ASPHALT SURFACE RESTORATION	125	$4,375.00	
1.3	MISCELLANEOUS SURFACE RESTORATION	5900	$29,500.00	
	TOTAL COST - Sitework		**$40,400**	

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2-SITE PIPING

ESTIMATE CLASS: PRE-DESIGN

PROJECT : Adrian Water System Improvements

DATE : 7/6/2015

JOB # : 213013-003

COMPLETED BY: CML

LOCATION : Adrian, OR

REVIEWED BY:

ELEMENT : Site Piping

NO.	DESCRIPTION	QUANTITY	ESTIMATED COST	
2.1	8" C900 Waterline - includes fittings, excavation, bedding, and backfill	60	$3,600.00	
2.2	8" Sch 35 PVC Waste line - includes fittings, excavation, bedding, and backfill	750	$45,000.00	
	TOTAL COST - Site Piping		**$48,600**	

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2-SITE PIPING

ESTIMATE CLASS: PRE-DESIGN

PROJECT : Adrian Water System Improvements

DATE : 7/6/2015

JOB # : 213013-003

COMPLETED BY: CML

LOCATION : Adrian, OR

REVIEWED BY:

ELEMENT : Site Piping

NO.	DESCRIPTION	QUANTITY	ESTIMATED COST	
3.1	6" C900 Waterline - includes fittings, excavation, bedding, and backfill	2900	$159,500.00	
3.2	Canal Crossing	1	$15,000.00	
3.3	Rock excavation	2175	$78,300.00	
	TOTAL COST - Site Piping		**$252,800**	

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	3-TREATMENT BUILDING	**ESTIMATE CLASS:**	PRE-DESIGN
PROJECT :	Adrian Water System Improvements	**DATE :**	7/6/2015
JOB # :	213013-003	**COMPLETED BY:**	CML
LOCATION :	**Adrian, OR**	**REVIEWED BY:**	
ELEMENT :	**Treatment Building**		

NO.	DESCRIPTION	QUANTITY	ESTIMATED COST	
4.1	Treatment Building	1	$62,000.00	
4.2	Containment Walls	1	$3,000.00	
	TOTAL COST - Treatment Building		**$65,000**	

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4-MECHANICAL PIPING

ESTIMATE CLASS: PRE-DESIGN

PROJECT : Adrian Water System Improvements

DATE : 7/6/2015

JOB # : 213013-003

COMPLETED BY: CML

LOCATION : Adrian, OR

REVIEWED BY:

ELEMENT : Mechanical Piping

NO.	DESCRIPTION	QUANTITY	ESTIMATED COST	
5.1	12" Sch 35 PVC Waste line - includes fittings, excavation, bedding, and backfill	20	$1,800.00	
5.2	Backwash Storage Tank (2,500 gallons) with concrete pad and fittings	1	$20,000.00	
5.3	6" DI Waterline - includes fittings, excavation, bedding, and backfill	25	$1,750.00	
5.4	3" Airwash line - includes fittings	10	$1,300.00	
5.5	Chemical addition line - includes fittings, excavation, bedding, and backfill	30	$2,100.00	
5.6	Fittings	15	$5,250.00	
5.7	Valves	2	$1,900.00	
	TOTAL COST - Mechanical Piping		**$34,100**	

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	5-FILTRATION SYSTEM	**ESTIMATE CLASS:**	PRE-DESIGN
PROJECT :	Adrian Water System Improvements	**DATE :**	7/6/2015
JOB # :	213013-003	**COMPLETED BY:**	CML
LOCATION :	**Adrian, OR**	**REVIEWED BY:**	RR
ELEMENT :	**Filtration System**		

NO.	DESCRIPTION	QUANTITY	ESTIMATED COST	
6.1	Pressure Filtration Vessels (two 50gpm units)	1	$199,800.00	
6.2	Chemical Metering Pump	2	$3,504.00	
6.3	2-3 HP blower 18-22 scfm Pos Disp Blower - extra price only	1	$10,000.00	
6.4	100 gallon crosslinked poly Sodium Hypochlorite Storage	1	$400.00	
6.5	50 gallon cross poly Ferric Chloride Storage	1	$300.00	
6.6	Polishing Step: Adsorptive Media LaOH3 (NXT-2) 3' diameter vessel	1	$45,000.00	
	TOTAL COST - Filtration System		**$259,100**	

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	6-HVAC	**ESTIMATE CLASS:**	PRE-DESIGN
PROJECT :	Adrian Water System Improvements	**DATE :**	7/6/2015
JOB # :	213013-003	**COMPLETED BY:**	CML
LOCATION :	**Adrian, OR**	**REVIEWED BY:**	
ELEMENT :	**HVAC**		

NO.	DESCRIPTION	QUANTITY	ESTIMATED COST	
7.1	Louver	2	$5,000.00	
7.2	Heater	1	$3,500.00	
7.3	Exhaust Fan	1	$3,500.00	
	TOTAL COST - HVAC		**$12,000**	

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7-ELECTRICAL & POWER

ESTIMATE CLASS: PRE-DESIGN

PROJECT : Adrian Water System Improvements

DATE : 7/6/2015

JOB # : 213013-003

COMPLETED BY: CML

LOCATION : Adrian, OR

REVIEWED BY:

ELEMENT : Electrical & Power

NO.	DESCRIPTION	QUANTITY	ESTIMATED COST	
8.1	GENERATOR and fuel tank	1	$31,700.00	
8.2	Well 6 3 phase electrical service extension	1	$13,550.00	
8.3	WTP 3 phase electrical service	1	$1,750.00	
	TOTAL COST - Electrical & Power		**$47,000**	

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8-INSTRUMENTATION & CONTROLS

ESTIMATE CLASS: PRE-DESIGN

PROJECT : Adrian Water System Improvements

DATE : 7/6/2015

JOB # : 213013-003

COMPLETED BY: CML

LOCATION : Adrian, OR

REVIEWED BY:

ELEMENT : Instrumentation & Controls

NO.	DESCRIPTION	QUANTITY	ESTIMATED COST	
9.1	Radio Telmetry	1	$6,000.00	
9.2	Controls	1	$20,000.00	
9.3	0		$0.00	
	TOTAL COST - Instrumentation & Controls		**$26,000**	

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