

*Annual Water Conservation Summary  
Report for 2015*

Water System ID. # 94900P



**Introduction:**

This report consists of a progress summary of water conservation actions and measures taken by the City in 2015, and identifies those Water Conservation efforts planned in future years.

**Water Conservation Data Collection Elements:**

**Requirements**

<b>Type of Data</b>	<b>Units of Measure</b>	<b>Frequency of Collection</b>
Source of Supply Meter Readings	Gallons	Collect: Read daily but reported only monthly and annual totals
Peak Day/Peak Month	Gallons from the Supply Sources	Collect: Each year's peak day and peak month totals
City of Richland Intertie - Amount Imported	Gallons	Collect: Monthly totals
<u>Service Meter Readings</u>		
Single-Family	Total Gallons Used by this Customer Class	Collect: Monthly totals
Multi-Family	Total Gallons Used by this Customer Class	Collect Monthly totals
Commercial/Industrial	Total Gallons Used by this Customer Class	Collect: Monthly totals
Government/Municipal	Total Gallons Used by this Customer Class	Collect: Monthly totals
Parks	Total Gallons Used by this Customer Class	Collect: Monthly totals
Storm Drainage Facilities	Total Gallons Used by this Customer Class	Collect: Monthly totals
Fire Hydrants	Total Gallons Used by this Customer Class	Collect: Annual totals
Unmetered water - Accounted for Water	Gallons	Collect: Annual totals
Total Accounted for Water	Gallons	Collect: Annual totals
Unaccounted for Water	Gallons	Collect: Annual totals
Population Served	Estimate the number of customers & connections served in the residential classes and the number of connections served in the commercial, government, and industrial classes.	Collect: Annual totals
Economic Data	Existing Water Rates for each class.	Existing water rates
Conservation Data	Report the type of measure, the level of implementation of duration of the measure and the date at which they were begun.	Collect: Once per year

## 2012 - 2015 Water Conservation Data Collection Elements

Type of Data	2012		2013		2014		2015	
<b>Source of Supply Meter Readings in MG</b>								
Total Water System Pumpage - Wells 1,2,7,9,&10	741.669		693.267		613.890		628.349	
City of Richland Intertie - Amount Imported	<u>122.675</u>		<u>163.141</u>		<u>380.788</u>		<u>404.459</u>	
<b>TOTAL WATER PRODUCTION</b>	<b>864.344</b>		<b>856.408</b>		<b>994.678</b>		<b>1032.808</b>	
<b>Peak Day/Peak Month in MG</b>								
	July 31, 2012	August	August 12, 2013	July	July 28, 2014	July	July 10, 2015	July
Wells 1,2,7,9&10 Plus Intertie	5.529	137.51	5.095	132.865	6.023	163.591	6.509	177.114
Total Water System Pumpage								
<b><u>Service Meter Readings in MG</u></b>								
<b>Single-Family</b>	605.54		653.96		710.14		747.74	
<b>Multi-Family</b>	69.90		86.84		92.98		93.63	
<b>Commercial/Industrial</b>	54.08		43.85		62.76		86.52	
<b>Municipal/Government</b>	1.27		1.61		3.11		3.05	
<b>Parks</b>	4.17		4.72		10.17		14.26	
<b>Storm Drainage Facilities</b>	1.18		0.89		6.97		2.61	
<b>Fire Hydrant Meters</b>	9.54		4.35		6.66		15.19	
<b>Total Consumption</b>	745.68		796.22		892.79		963	
<b><u>Unmetered Water Reports in MG</u></b>								
Accounted for water	24.66		3.00		4.83		4.26	
<b>Total Accounted for Water in MG -</b>								
(Service meter Readings + Annual Unmetered Water Report)	770.34		799.22		897.62		967.26	
<b>Unaccounted for Water</b> (See Calculations*)	94.00	10.9%	57.19	6.7%	97.06	9.8%	65.55	6.3%
<b>Estimated Population Served</b>								
West Richland Population Only*	12,570		13,080		13,620		13,960	
Single Family Residential Connections	3917		4148		4258		4389	
Multi-Family Residential Connections	103		93		93		95	
Commercial/Industrial Connections	123		130		131		145	
Municipal/Government Connections	13		14		14		13	
Parks	15		16		16		21	
Storm Drainage Facilities	5		6		8		6	
Total Active Water System Connections	4,176		4407		4520		4669	
<b>Economic Data</b>	Listed in Following Narrative							
<b>Conservation Data</b>	Listed in Following Narrative							

### **Calculations:**

- (1) Source of Supply Meter Readings  
Production in Million Gallons (MG) per day
- (2) Unaccounted for Water  
Unaccounted for water (MG) = Total Production (MG) – Total Accounted for Water (MG)  
  
$$\% \text{ Water Loss} = \text{Unaccounted for Water (MG)} / \text{Total Production in MG} \times 100\%$$
- (3) Service Meter Readings
  - a) Total consumption is the total of all metered water usage within the City of West Richland utility service area.
  - b) All metered accounts are read on a monthly basis.
  - c) Customer classification used for this report section includes, Single and Multi-Family, Commercial/Industrial, and Government/Municipal. The Non-Revenue classification reflects the total metered water usage by Government/Municipal non-revenue accounts. The Un-metered Water–Accounted for Water includes estimated un-metered water use by City crews, and used by County Fire Departments for maintenance and other purposes. It is Accounted for Water.
- (4) Estimated Population Served  
Population is determined by the Washington State Office of Financial Management (OFM)

Economic Data:  
(see table next page)

**Table 1  
Summary of Water Rates 2015**

<b>Customer Class</b>	<b>Inside City</b>	<b>Outside City</b>
<b>Residential</b>		
Base fee		
Includes 3/4" meter	\$34.00/monthly	\$51.00/monthly
Includes 1" meter	\$34.00/monthly	\$51.00/monthly
Consumption per 100 Gal.	\$0.155/100GAL	\$0.155/100GAL
<b>Multi-Family/Commercial/Industrial</b>		
Base Fee		
3/4" meter	\$34.00/monthly	
1"	\$34.00/monthly	
1 1/2"	\$68.00/monthly	To
2"	\$108.80/monthly	Be
3"	\$217.60/monthly	Determined
4"	\$340.00/monthly	
6"	\$680.00/monthly	
Consumption per 100 Gal.	\$0.155/100Gal	

Conservation Data:

The following water conservation actions or program measures were taken during 2015.

✓ Leak Detection

In 2015 the City conducted leak detection in the Paradise Estates, Mountain View Estates, Bird Hill, and Desert Glades Sub-divisions. No major leaks were detected. There was one small leak found on the customers side of the meter and another very small leak was found on a service line which was repaired by the City Water crew. The majority of the waterlines in the City are new due to the amount of new development that has occurred in the past 15 years. Old steel and AC lines having the potential of leakage are being systematically replaced. In 2015 the City replaced old waterlines on S. 38<sup>th</sup> Avenue and Butte Court.

✓ Reservoir Leak Testing Program

The City schedules bi-annual reservoir cleaning and inspection. The inspection cleaning is on even years and was last completed in May 2014. Below are the inspection summaries from 2014 which were conducted by H2O Solutions, LLC.

Flat Top Reservoir 1 had no major repairs. There were a few minor external hairline cracks with efflorescence. The exterior hatch has minor surface corrosion around the knife edge as well as the lid with less than 5% corrosion overall. The interior ladder had minor surface corrosion on the stand offs, heaving staining and oil residual throughout with an overall corrosion of 20%. The interior flow had some minor hairline cracks and minor staining. The interior walls and column had minor hairline cracks and minor to moderate staining. The interior inlet/outlet had

moderate uniform surface corrosion as well as areas of moderate concentration cell corrosion with an overall corrosion of 50%. The interior drain had minor surface corrosion on the grate and the pipes had minor to moderate surface corrosion with an overall corrosion of 20%. The interior overflow had moderate and heavy uniform surface corrosion throughout the pipe with an overall corrosion of 75%. The interior ceiling had areas of minor hairline cracks. There was approximately ¼” of sediment evenly throughout the reservoir bottom. Recommended cleaning and inspection every 3-5 years

Flat Top Reservoir 2 had no major repairs. There were a few minor external hairline cracks with efflorescence. The exterior overflow pipe has a few isolated spots of minor surface corrosion with less than 5% overall corrosion present. Exterior hatch has minor surface corrosion around the knife edge as well as the lid and less than 5% corrosion present. The exterior surface of the roof has minor hairline cracks. The interior ladder is structurally sound with minor surface corrosion on the stand offs. There is heavy staining and pump oil residue throughout and an overall corrosion of 20%. The interior floor, walls and columns have minor hairline cracks and minor staining. The interior inlet/outlet has moderate uniform surface corrosion as well as areas of moderate concentration cell corrosion with an overall corrosion of 50%. The interior drain has minor surface corrosion on the grate and the pipes have minor to moderate surface corrosion throughout with an overall corrosion of 20%. The interior overflow has moderate and heavy uniform surface corrosion throughout the pipe and overall corrosion of 75%. There was approximately ¼” of sediment evenly throughout the reservoir bottom. Recommended cleaning and inspection every 3-5 years.

Brotherhood Reservoir exterior walls had areas of minor hairline cracks with efflorescence and the exterior roof had areas of minor hairline cracks. The exterior hatch had moderate surface corrosion around the knife edge as well as the lid with an overall corrosion of 10%. The exterior vent had moderate uniform surface corrosion as well as minor delamination in the coating with an overall corrosion of 10%. The interior ladder was found to not be structurally sound with heavy uniform surface corrosion throughout and the bottom run is missing with an overall corrosion of 100%. It was recommended to replace with stainless steel ladder. The City will be constructing a new reservoir to replace the Brotherhood Reservoir within the next 2-3 years so no repairs to the existing ladder will be performed. The interior drain/inlet/outlet showed signs of heavy surface corrosion on the grate with the pipes showing moderate surface corrosion with an overall corrosion of 30%. The interior floor had areas of minor hairline cracks and minor staining and interior walls had areas of minor cracking and minor to moderate staining. The interior overflow had heavy surface corrosion below the waterline with an overall corrosion of 100%. The interior overflow had moderate to heavy uniform surface corrosion throughout the pipe with an overall corrosion of 75%. Only 5% of the pipe coating remains. The interior floor has areas of minor hairline cracks and minor staining. Ceiling had areas of minor hairline cracking. There was approximately 1/16” of sediment evenly throughout the reservoir bottom. Recommended cleaning and inspection every 3-5 years.

Candy Mountain Reservoir had no major repairs. There were a few minor exterior hairline cracks with efflorescence on the sidewalls and areas of minor hairline

cracks on the exterior roof. Inside walls had signs of hairline cracks and minor staining. Interior drain had a few isolated spots of surface corrosion along the outside edge with an overall of 10% corrosion present. Interior overflow had minor surface corrosion on some of the weld seams with less than 5% corrosion present overall. The interior inlet/outlet pipe had minor to moderate surface corrosion along the pipe itself as well as the flanges and 15% overall corrosion present. There was approximately ¼” of sediment evenly throughout the reservoir bottom. Recommended cleaning and inspection every 3-5 years.

The City has continued to notice some water draining from the under drain system of the Candy Mountain 2 MG Reservoir but leak quantities are within Department of Health limits for allowable leakage for concrete reservoirs.

The Brotherhood Reservoir began leaking November 2015 from a seal at the bottom of the reservoir. H2O Solutions was hired to repair the seal between the reservoir floor and wall inside the reservoir. This reservoir is scheduled and funded for replacement in 2017.

The next reservoir inspection is scheduled for 2016.

- ✓ City Large Meters (Larger than 2 inch)  
The City has three (3) - 3 inch meters, four (4) - 4 inch meter and one (1) - 6-inch meter.
- ✓ Residential Meter Repair / Replacement Program  
The City began a meter replacement program in 2005 to replace residential water meters that had outlived their useful life. The meters are replaced and equipped with radio transmitters. In 2007 the City began testing old meters for flow accuracy. Flow was tested under low, mid, and high flow conditions. Low flow is tested at a rate of ¾ gallons per minute (gpm) for the total of 10 gallons. The medium flow test is run at 4 gpm for the total of 10 gallons. The high flow test is run at 30 gpm for the total of 100 gallons. Approximately 68% of the old meters tested in 2015 were outside manufacturer flow tolerances.  
  
In 2015, 18 - ¾ inch and 73 - 1 inch meters were replaced at a cost of \$25,000. To date the City has replaced 971 - ¾ inch and 1 inch water meters at a cost of \$275,000. In 2016, \$25,000 is budgeted to continue the meter replacement program.
- ✓ Source Metering Replacement and Improvement  
All City wells are metered and recorded. Meters at Wells 1, 2, 7, and 9 were calibrated in 2015.
- ✓ Water Audit Program for Large Water Users  
The City currently does not have any large water users. In the future, the City will establish a Water Audit Program. Currently a program is in draft form covering all entities in the Quad City Water Right.

✓ **Unmetered Water Reporting**

In 2004, the City of West Richland began an Unmetered Water Program to identify and track unaccounted for water. Such uses include maintenance and operation activities such as street sweeping, flushing of water mains, dust control, vactor truck, fire response, etc. by the City, County, and private parties. The Unmetered Water Report for 2015 shows 4.26 MG can be accounted for by routine City maintenance and other activities. It is accurately measured or estimated and is added as part of our total consumption. Through new software and changes in the billing and tracking of the City water, consistency in reporting values are expected to increase.

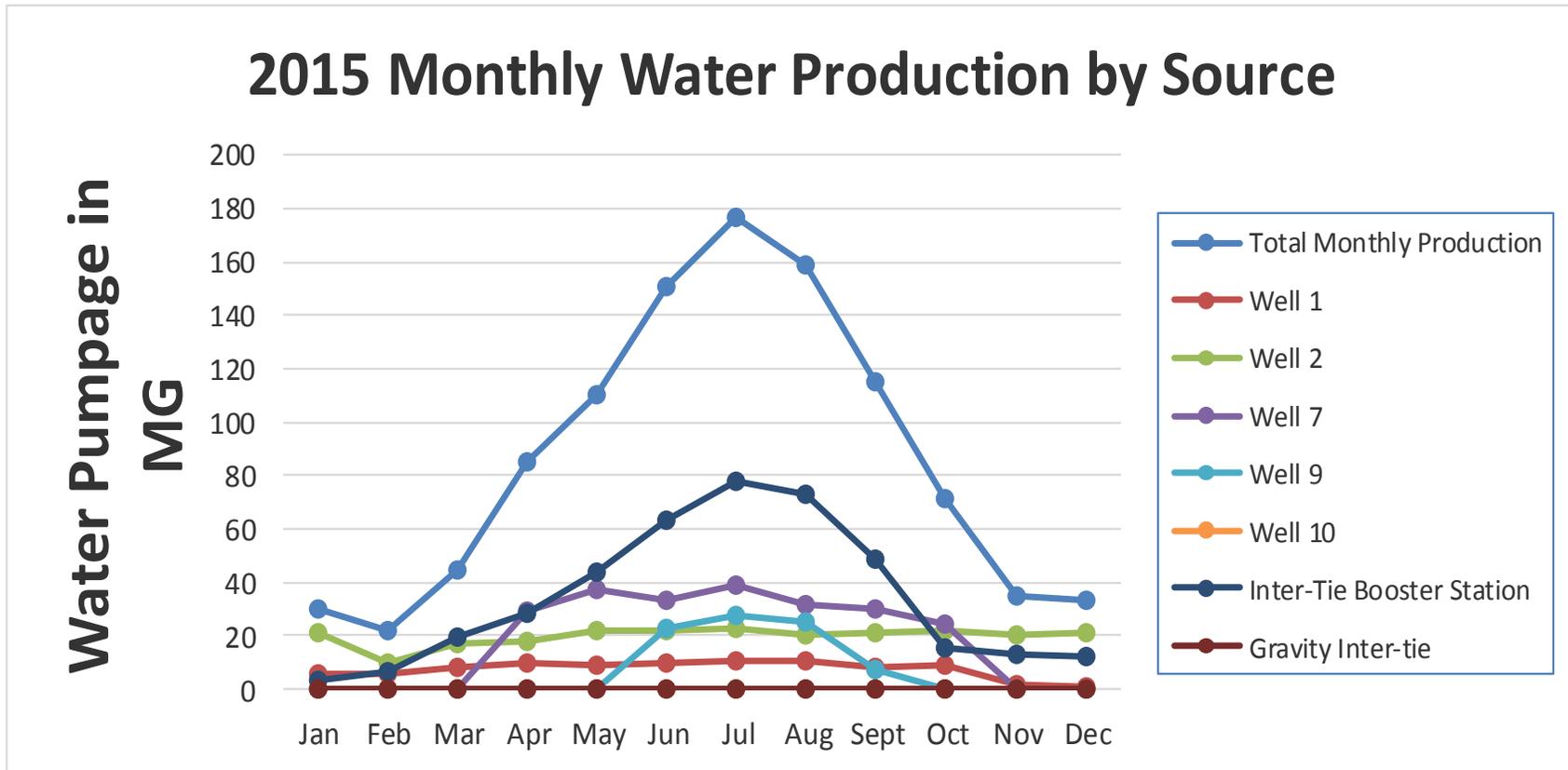
*Data Interpretation and Conclusions:*

The data collection elements from 2015 show the following:

- ✓ Unaccounted for water in West Richland met the City's goal of 10% (based on a rolling three year average). The City has spent many hours training personal and other agencies to aid us in this process. The estimated unaccounted for water in 2015 was 6.3%. We believe the low percentage is due to replacement of old meters, installation of meters at all City parks, and accurate documentation collected by the maintenance department and local Fire District as well as increased accuracy in metering and account management. We have yet to see a drastic effect from leak detection due to most of the waterlines in our system have been installed in the last 15 years.

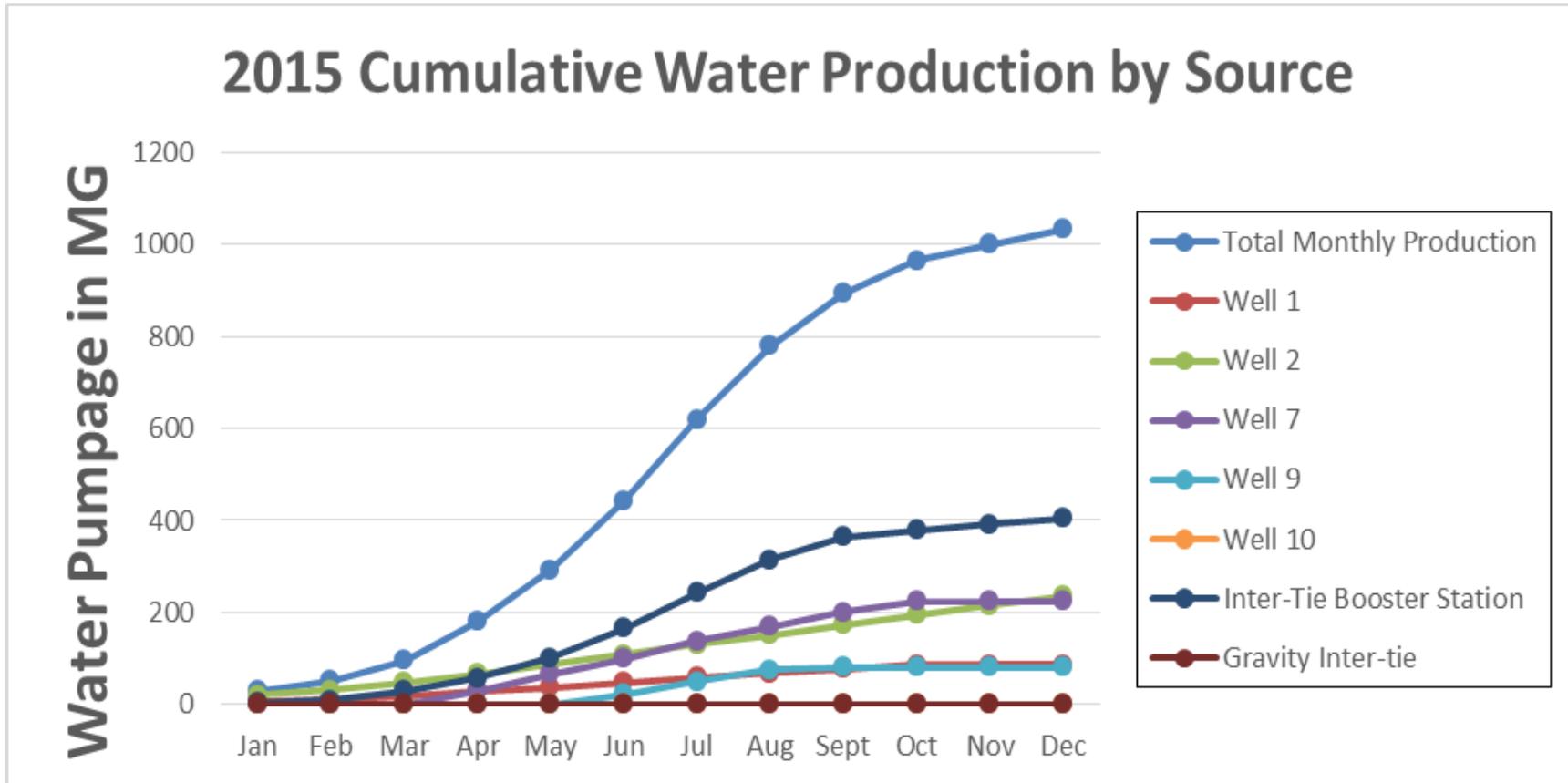
In year 2000, the unaccounted for water was at 43% and has been reduced to 6.3% in 2015. The 3 year average from 2013-2015 is 7.6%.

**City of West Richland**  
Water Conservation Summary Report 2015



Water Source	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Total Monthly Production	30.026	21.437	44.434	85.061	110.658	150.998	177.114	159.327	114.784	71.121	34.524	33.324
Well 1	5.552	5.756	7.655	9.828	8.711	9.976	10.818	10.116	8.049	9.059	1.158	0.425
Well 2	21.097	9.589	17.059	17.823	21.443	21.838	22.445	20.337	21.337	22.173	20.157	20.573
Well 7	0	0	0	28.789	36.843	33.526	39.166	31.369	29.912	24.212	0	0
Well 9	0	0	0	0	0	22.47	27.275	24.754	7.058	0	0	0
Well 10	0	0	0	0	0	0	0	0	0	0	0	0
Inter-Tie Booster Station	3.377	6.092	19.72	28.621	43.661	63.188	77.41	72.751	48.428	15.677	13.209	12.326
Gravity Inter-tie	0	0	0	0	0	0	0	0	0	0	0	0

**City of West Richland**



Water Source	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Total Monthly Production	30.026	51.463	95.897	180.958	291.616	442.614	619.728	779.055	893.839	964.960	999.484	1032.808
Well 1	5.552	11.308	18.963	28.791	37.502	47.478	58.296	68.412	76.461	85.52	86.678	87.103
Well 2	21.097	30.686	47.745	65.568	87.011	108.849	131.294	151.631	172.968	195.141	215.298	235.871
Well 7	0	0	0	28.789	65.632	99.158	138.324	169.693	199.605	223.817	223.817	223.817
Well 9	0	0	0	0	0	22.47	49.745	74.499	81.557	81.557	81.557	81.557
Well 10	0	0	0	0	0	0	0	0	0	0	0	0
Inter-Tie Booster Station	3.377	9.469	29.189	57.81	101.471	164.659	242.069	314.82	363.248	378.925	392.134	404.46
Gravity Inter-tie	0	0	0	0	0	0	0	0	0	0	0	0