CAUTION

When installing the shaft and bearings into the bearing bore, push against the outer race. **Never** hit the balls or ball cage.

Press the outboard oil seal (18) into the bearing cap (12) with the lip positioned as shown in Figure 2. Replace the bearing cap gasket (11), and secure the bearing cap with the hardware (13 and 14). **Be careful** not to damage the oil seal lip on the shaft keyway.

Install the bearing housing O-ring (30).

Lubricate the bearing housing as indicated in **LUBRICATION.**

Seal Installation

(Figures 2, 5, 6 and 7)

WARNING!

Most cleaning solvents are toxic and flammable. Use them only in a well ventilated area free from excessive heat, sparks, and flame. Read and follow all precautions printed on solvent containers.

Clean the seal cavity and shaft with a cloth soaked in fresh cleaning solvent. Inspect the stationary seat bore in the seal plate for dirt, nicks and burrs, and remove any that exist. The stationary seat bore **must** be completely clean before installing the seal.

CAUTION

A new seal assembly should be installed **any time** the old seal is removed from the pump. Wear patterns on the finished faces cannot be realigned during reassembly. Reusing an old seal could result in premature failure.

To ease installation of the seal, lubricate the shaft sleeve O-ring and the external stationary seat O-ring with a very **small** amount of light lubricating oil. See Figure 5 for seal part identification.

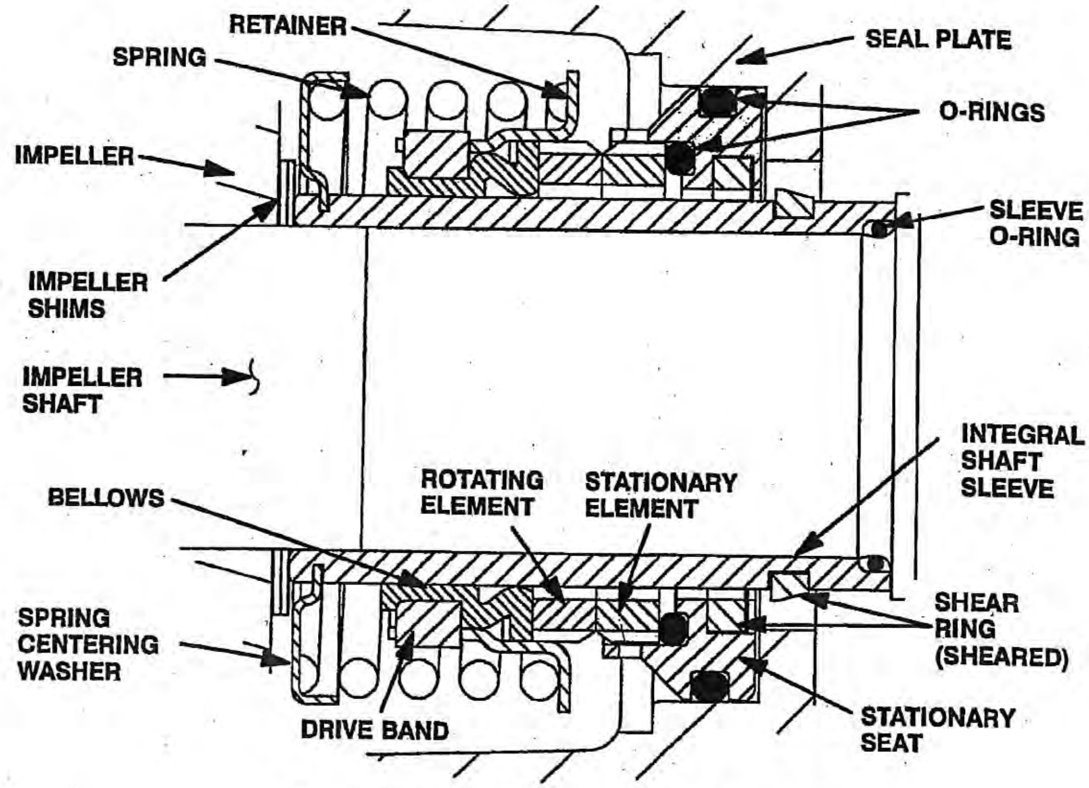


Figure 5. 46513–151 Cartridge Seal Assembly

CAUTION

This seal is not designed for operation at temperatures above 160°F (71°C). Do not use at higher operating temperatures.

If the seal plate was removed, install the seal plate gasket (4). Position the seal plate over the shaft and secure it to the intermediate with the hardware (20 and 21).

To prevent damaging the shaft sleeve O-ring (28) on the shaft threads, stretch the O-ring over a piece of tubing 1-1/4 I.D. x 1-1/2 O.D. x 2-inches long (32 mm x 38 mm x 51 mm). Slide the tube over the shaft threads, then slide the O-ring off the tube and onto the shaft. Remove the tube, and continue to slide the O-ring down the shaft until it seats against the shaft shoulder.

When installing a new cartridge seal assembly, remove the seal from the container, and remove the mylar storage tabs, if so equipped, from between the seal faces.

CAUTION

New cartridge seal assemblies may be equipped with mylar storage tabs between the seal faces. If so equipped, these storage tabs **must** be removed before installing the seal.

Lubricate the external stationary seat O-ring with light oil. Slide the seal assembly onto the shaft until the external stationary seat O-ring engages the bore in the seal plate.

Clean and inspect the impeller as described in **Impeller Installation and Adjustment.** Install the full set of impeller shims (29) provided with the seal, and screw the impeller onto the shaft until it is seated against the seal (see Figure 6).

Continue to screw the impeller onto the shaft. This will press the stationary seat into the seal plate bore.

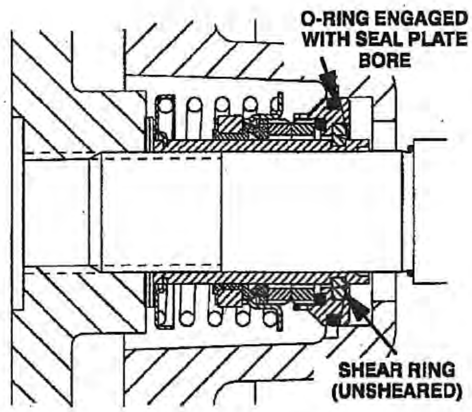


Figure 6. Seal Partially Installed

NOTE

A firm resistance will be felt as the impeller presses the stationary seat into the seal plate bore.

As the stationary seat becomes fully seated, the seal spring compresses, and the shaft sleeve will break the nylon shear ring. This allows the sleeve to slide down the shaft until seated against the shaft shoulder. Continue to screw the impeller onto the shaft until the impeller, shims, and sleeve are fully seated against the shaft shoulder (see Figure 7).

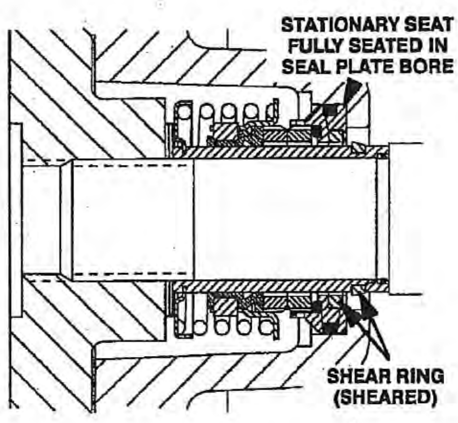


Figure 7. Seal Fully Installed

Measure the impeller-to-seal plate clearance, and remove impeller adjusting shims to obtain the proper clearance as described in **Impeller Installation and Adjustment.**

If necessary to reuse an old seal in an emergency, carefully separate the rotating and stationary seal faces from the bellows retainer and stationary seat.

CAUTION

A new seal assembly should be installed **any time** the old seal is removed from the pump. Wear patterns on the finished faces cannot be realigned during reassembly. Reusing an old seal could result in premature failure.

Handle the seal parts with extreme care to prevent damage. Be careful not to contaminate precision finished faces; even fingerprints on the faces can shorten seal life. If necessary, clean the faces with a non-oil based solvent and a clean, lint-free tissue. Wipe **lightly** in a concentric pattern to avoid scratching the faces.

Carefully wash all metallic parts in fresh cleaning solvent and allow to dry thoroughly.

CAUTION

Do not attempt to separate the rotating portion of the seal from the shaft sleeve when reusing an old seal. The rubber bellows will adhere to the sleeve during use, and attempting to separate them could damage the bellows.

Inspect the seal components for wear, scoring, grooves, and other damage that might cause leakage. Inspect the integral shaft sleeve for nicks or cuts on either end. If any components are worn, or the sleeve is damaged, replace the complete seal; **never mix old and new seal parts.**

Install the stationary seal element in the stationary seat. Press this stationary subassembly into the seal plate bore until it seats squarely against the bore shoulder. A push tube made from a piece of plastic pipe would aid this installation. The I.D. of

the pipe should be slightly larger than the O.D. of the shaft sleeve.

Slide the rotating portion of the seal (consisting of the integral shaft sleeve, spring centering washer, spring, bellows and retainer, and rotating element) onto the shaft until the seal faces contact.

Proceed with **Impeller Installation and Adjustment.**

Impeller Installation

(Figure 2)

Inspect the impeller, and replace it if cracked or badly worn. Inspect the impeller and shaft threads for dirt or damage, and clean or dress the threads as required.

CAUTION

The shaft and impeller threads **must** be completely clean before reinstalling the impeller. Even the slightest amount of dirt on the threads can cause the impeller to seize to the shaft, making future removal difficult or impossible without damage to the impeller or shaft.

Install the same thickness of impeller adjusting shims (29) as previously removed. Apply 'Never-Seez' or equivalent to the shaft threads and screw the impeller onto the shaft until tight.

NOTE

At the slightest sign of binding, immediately back the impeller off, and check the threads for dirt. ***Do not*** *try to force the impeller onto the shaft.*

A clearance of .025 to .040 inch (0,64 to 1,02 mm) between the impeller and the seal plate is recommended for maximum pump efficiency. Measure this clearance, and add or remove impeller adjusting shims as required.

NOTE

If the rotating assembly has been installed in the pump casing, this clearance may be measured by reaching through the priming port with a feeler gauge.

NOTE

Proceed with ***Rotating Assembly Installation*** *before installing the impeller capscrew and washer (22 and 23). The rotating assembly must be installed in the pump casing in order to torque the impeller capscrew.*

After the rotating assembly is installed in the pump casing, coat the threads of the impeller capscrew (23) with 'Never-Seez' or equivalent compound, and install the impeller washer (22) and capscrew; torque the capscrew to 90 ft. lbs. (1080 in. lbs. or 12,4 m. kg.).

Rotating Assembly Installation

(Figure 1)

NOTE

If the pump has been completely disassembled, it is recommended that the suction check valve and back cover assembly be reinstalled at this point. The back cover assembly must be in place to adjust the impeller face clearance.

Install the bearing housing and lubricate it with light grease. Ease the rotating assembly into the pump casing using the installation tool. **Be careful** not to damage the O-ring.

Install the four sets of rotating assembly adjusting shims (11) using the same thickness as previously removed. Secure the rotating assembly to the pump casing with the hardware (9 and 10). **Do not** fully tighten the capscrews until the back cover has been reinstalled and the impeller face clearance has been set.

A clearance of .010 to .020 inch (0,25 to 0,51 mm) between the impeller and the wear plate is also recommended for maximum pump efficiency. This clearance can be obtained by removing an equal amount of shims from each rotating assembly shim set until the impeller scrapes against the wear plate when the shaft is turned. After the impeller scrapes, add approximately .015 inch (0,4 mm) of shims to each shim set.

NOTE

An alternate method of adjusting this clearance is to

reach through the suction port with a feeler gauge and measure the gap. Add or subtract rotating assembly shims accordingly.

Suction Check Valve Installation

(Figure 1)

Inspect the check valve assembly (29), and replace it if badly worn.

NOTE

The check valve assembly must be replaced as a complete unit. Individual parts are not sold separately.

Reach through the back cover opening with the check valve (29), and position the check valve adaptor in the mounting slot in the suction flange (30). Align the adaptor with the flange hole, and secure the assembly with the check valve pin (31).

NOTE

If the suction or discharge flanges were removed, replace the respective gaskets, apply 'Permatex Aviation No. 3 Form-A-Gasket' or equivalent compound to the mating surfaces, and secure them to the pump casing with the attaching hardware.

Back Cover Installation

(Figure 1)

If the wear plate (12) was removed for replacement, carefully center it on the back cover and secure it with the hardware (13 and 14). The wear plate **must** be concentric to prevent binding when the back cover is installed.

Replace the back cover O-ring (15), and lubricate it with a generous amount of No. 2 grease. Clean any scale or debris from the contacting surfaces in the pump casing that might interfere or prevent a good seal with the back cover. Slide the back cover assembly into the pump casing. Be sure the wear plate does not bind against the impeller.

NOTE

To ease future disassembly, apply a film of grease or 'Never-Seez' on the back cover shoulder, or any surface which contacts the pump casing. This action will reduce rust and scale build-up.

Secure the back cover assembly by tightening the back cover nuts (24) evenly. **Do not** over-tighten the hand nuts; they should be just tight enough to ensure a good seal at the back cover shoulder. Be sure the wear plate does not bind against the casing.

PRESSURE RELIEF VALVE MAINTENANCE

(Figure 1)

The back cover is equipped with a pressure relief valve (20) to provide additional safety for the pump and operator (refer to **Liquid Temperature And Overheating** in **OPERATION**).

It is recommended that the pressure relief valve assembly be replaced at each overhaul, or any time the pump overheats and activates the valve. **Never** replace this valve with a substitute which has not been specified or provided by the Gorman-Rupp Company.

Periodically, the valve should be removed for inspection and cleaning. When reinstalling the relief valve, apply 'Loctite Pipe Sealant With Teflon No. 592', or equivalent compound, on the relief valve threads. Position the valve as shown in Figure 1 with the discharge port pointing down.

Final Pump Assembly

(Figure 1)

Install the shaft key (16, Figure 2) and reconnect the power source. Be sure to install any guards used over the rotating members.

WARNING!

Do not operate the pump without the guards in place over the rotating parts. Exposed rotating parts can catch clothing, fingers, or tools, causing severe injury to personnel.

Install the suction and discharge lines and open all valves. Make certain that all piping connections are tight, properly supported and secure.

Be sure the pump and power source have been properly lubricated, see **LUBRICATION**.

Remove the fill cover assembly (36) and fill the pump casing with clean liquid. Reinstall the fill cover and tighten it. Refer to **OPERATION,** Section C, before putting the pump back into service.

LUBRICATION

Seal Assembly

(Figure 2)

Before starting the pump, remove the vented plug (8) and fill the seal cavity with approximately 40 ounces (1,4 liters) of SAE No. 30 non-detergent oil, or to a level just below the tapped vented plug hole. Clean and reinstall the vented plug. Maintain the oil at this level.

Bearings

(Figure 2)

The bearing housing was fully lubricated when shipped from the factory. Check the oil level regularly through the sight gauge (24) and maintain it at the middle of the gauge. When lubrication is required, add SAE No. 30 non-detergent oil through the hole for the air vent (9). **Do not** over-lubricate. Over-lubrication can cause the bearings to overheat, resulting in premature bearing failure.

NOTE

The white reflector in the sight gauge must be positioned horizontally to provide proper drainage.

Under normal conditions, drain the bearing housing once each year and refill with approximately 32 ounces (1 liter) clean oil. Change the oil more frequently if the pump is operated continuously or installed in an environment with rapid temperature change.

CAUTION

Monitor the condition of the bearing lubricant regularly for evidence of rust or moisture condensation. This is especially important in areas where variable hot and cold temperatures are common.

For cold weather operation, consult the factory or a lubricant supplier for the recommended grade of oil.

Power Source

Consult the literature supplied with the power source, or contact your local power source representative.

THE GORMAN-RUPP COMPANY AND GORMAN-RUPP OF CANADA LIMITED 12 MONTH LIMITED WARRANTY

EXTENT AND DURATION OF WARRANTY

Coverage: The Gorman-Rupp Company or Gorman-Rupp of Canada Limited (herein individually referred to as "GR") each individually warrant that its products and parts shall be free from defects in material and workmanship for twelve (12) months from the date of purchase by the original end user.

Exceptions: This Limited Warranty shall not apply to the following products and parts: engines, motors, trade accessories and other products, components or materials not manufactured by GR. With respect to submersible pumps, the pump and motor are an integral unit and are therefore warranted as a unit. However, with respect to the electrical components in submersible pumps, this warranty is valid **only** when electrical controls for the pump have been specified and/or provided by GR. Wear and tear on any product resulting from normal use is not covered by this Limited Warranty.

LIMITATIONS

GR'S SOLE AND EXCLUSIVE WARRANTY WITH RESPECT TO ITS PRODUCTS AND PARTS IS THIS LIMITED WARRANTY. THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER EXPRESS AND/OR IMPLIED WARRANTIES, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE.

EXCLUSIVE REMEDY AND DAMAGES

The sole and exclusive remedy for breach of this Limited Warranty by GR, and the entire extent of its liability for such breach or for damages arising and/or resulting from the use of the products and parts covered by this Limited Warranty shall be as follows:

1. **Repair or replacement:** If inspection shows that any GR product or part covered under this LimitedWarranty is defective in materials or workmanship, GR shall repair or replace the defective product or part at its option, without charge. You must have properly installed, maintained and used the product or part claimed to be defective in accordance with the maintenance schedule and/or manual which comes with the product. *No allowance will be made for labor, transportation or other charges incurred by you in connection with such repair or replacement.*

2. **To obtain the above remedy:**

   a) Immediately notify GR at the address below of the claimed defect in materials or workmanship and provide the serial number or date code of the product and/or part and provide a copy of the invoice or bill of sale referencing the product and/or part by no later than the expiration date of the Limited Warranty period.

   b) GR will advise whether inspection of the product and/or part will be necessary and whether and how repair or replacement will be effected. If inspection by GR is necessary, the product or part must be sent freight prepaid to GR at the address stated below. Return shipment of the repaired product or part will be F.O.B. the address stated below.

3. **Damages:** GR's liability for damages for breach of this Limited Warranty shall not exceed the amount of the purchase price of the product or part in respect to which damages are claimed. **IN NO EVENT SHALL GR BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES FOR BREACH OF THIS LIMITED WARRANTY OTHER THAN AS STATED HEREIN.**

   Some states do not allow the exclusion or limitation of incidental or consequential damages. Accordingly, the above may not apply to you. This Limited Warranty gives you specific legal rights, and you may also have other rights which vary from state to state and province to province.

THE GORMAN-RUPP COMPANY
P.O. BOX 1217
MANSFIELD, OH 44901–1217
Phone: (419) 755–1011

GORMAN-RUPP OF CANADA LIMITED
70 Burwell Road
St. Thomas, Ontario N5P 3R7
Phone: (519) 631–2870

Appendix D

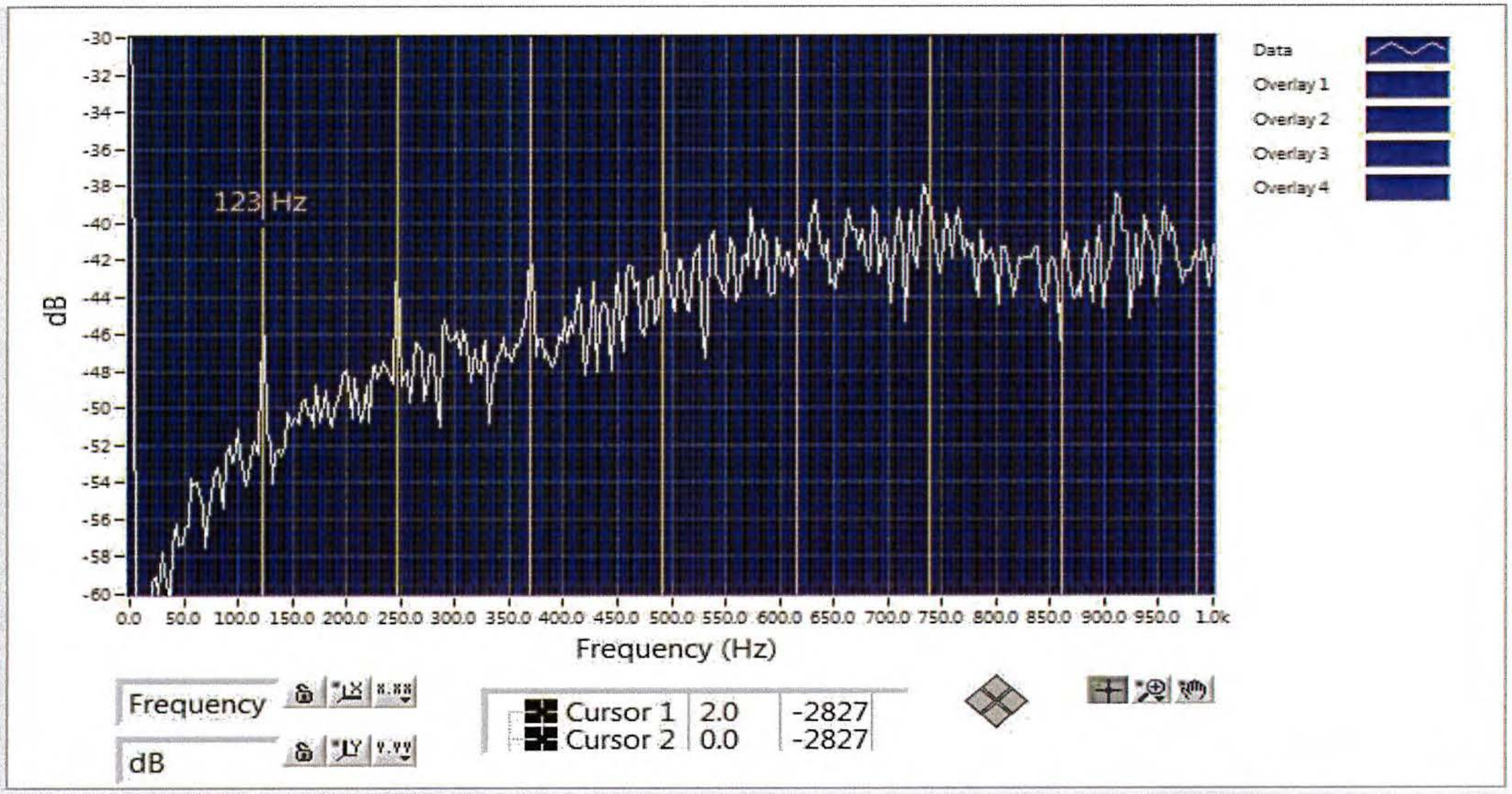
Testing Results

Exhibit 1

Ultrasonic Data ~ Woodland Manor Pump Station

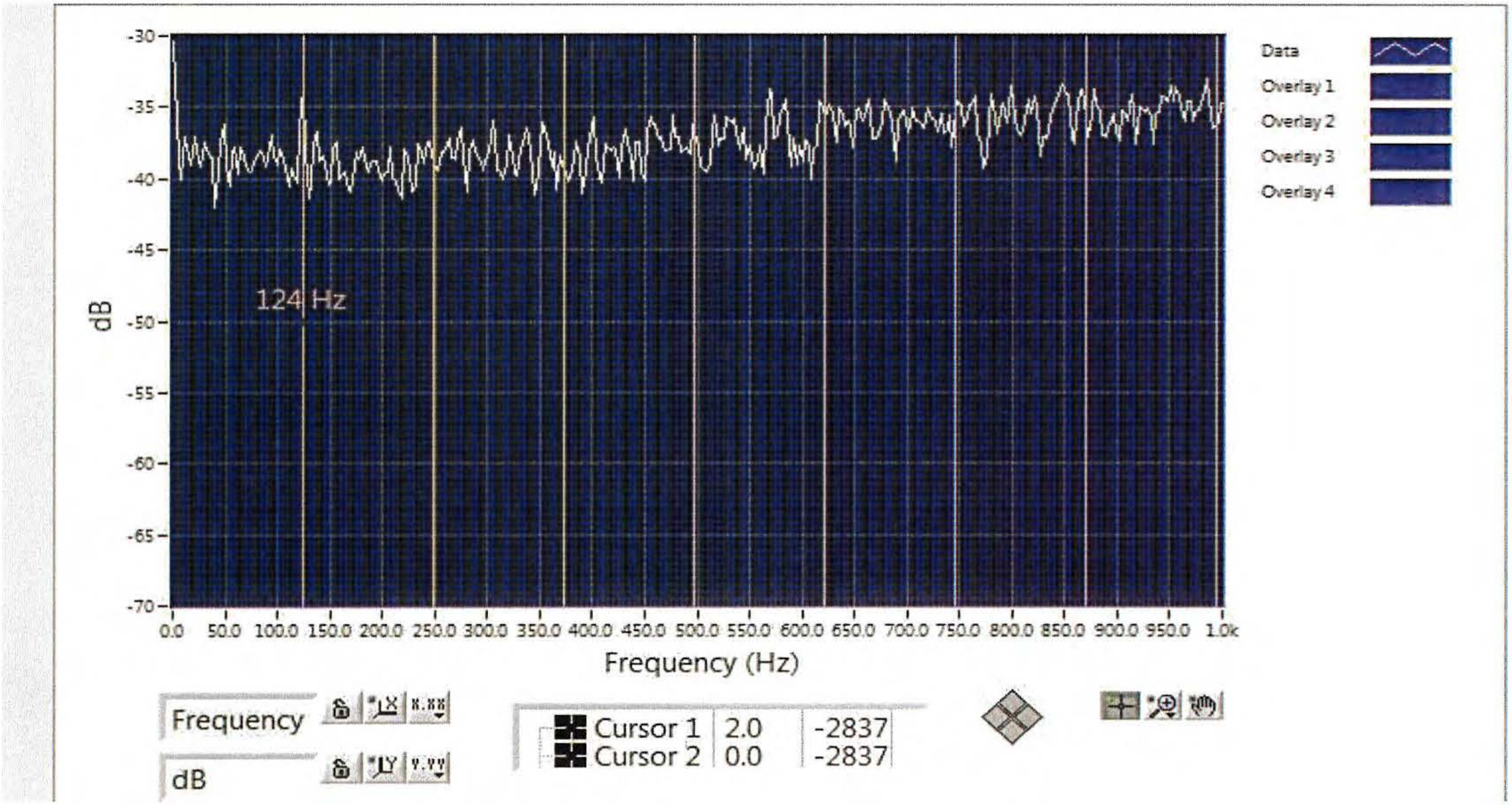
Date	Location Name	Point Name	Point Number	dB	Frequency	Sensitivity	Comments
10/16/2013 10:50	PUMP 1A	MTR-OB	1	41	30	45	Noise time domain 50 percent scale - Indicative of need for Relubrication
10/16/2013 10:50	PUMP 1A	MTR-IB	2	33	30	53	Noise time domain - less saturated than all other motor bearings - Relube ASAP
10/16/2013 10:52	PUMP 1A	PU-BOTH	3	43	30	43	FFT Clean
10/16/2013 11:14	PUMP 1B	MTR-OB	4	46	30	39	Time domain noisy peaking 100 percent full scale - indicative of a very dry bearing - Relube ASAP
10/16/2013 11:15	PUMP 1B	MTR-IB	5	48	30	37	Time domain noisy - 124 hertz spike starting in FFT - Bearing sounds dry - Relube ASAP
10/16/2013 11:16	PUMP 1B	PU-BOTH	6	46	30	39	Time Domain Very Noisy -
10/16/2013 11:35	PUMP 2A	MTR-OB\	7	49	30	37	FFT clean - Time domain very noisy - Bearing sounds dry - Relube ASAP
10/16/2013 11:36	PUMP 2A	MTR-IB	8	49	30	37	FFT Clean - Time Domain is very noisy - Relube ASAP
10/16/2013 11:37	PUMP 2A	PU-BOTH	9	42	30	44	FFT clean waveform
10/16/2013 11:58	PUMP 2B	MTR-OB\	10	49	30	38	Time Domain is noisy - Relube ASAP
10/16/2013 11:59	PUMP 2B	MTR-IB	11	47	30	39	123 Hz harmonic present - Noisy time domain - Relube as soon as possible
10/16/2013 12:00	PUMP 2B	PU-BOTH	12	41	30	45	FFT Clean Waveform

Exhibit 2



Pump 2B motor inboard bearing 123 Hertz Harmonic

Exhibit 3



Pump 1B motor inboard bearing Small 124 Hertz Spike

Exhibit 4

Motor Insulation Resistance Testing ~ Woodlands Manor Pump Station

Date	Location Name	Point Name	Resistance test	
10/16/2013	PUMP 1A	Motor	1.46	Gig Ohms
10/16/2013	PUMP 1B	Motor	1.55	Gig Ohms
10/16/2013	PUMP 2A	Motor	1.77	Gig Ohms
10/16/2013	PUMP 2B	Motor	1.58	Gig Ohms

Exhibit 5

Thermal imaging ~ Woodland Manor pump station

Date	Location Name	Point Name	Thermal Imaging (infrared)
10/16/2013	PUMP 1A	Motor	No abnormal heating patterns observed
10/16/2013	PUMP 1A	Pump	No abnormal heating patterns observed
10/16/2013	PUMP 1B	Motor	No abnormal heating patterns observed
10/16/2013	PUMP 1B	Pump	No abnormal heating patterns observed
10/16/2013	PUMP 2A	Motor	No abnormal heating patterns observed
10/16/2013	PUMP 2A	Pump	No abnormal heating patterns observed
10/16/2013	PUMP 2B	Motor	No abnormal heating patterns observed
10/16/2013	PUMP 2B	Pump	No abnormal heating patterns observed

DiPrete Engineering

Woodland Manor Sewer Pump Station & Tiogue Avenue Sewer Force Main, Coventry Rhode Island

Woodland Manor Sewer Pump Station

Located in Coventry, Rhode Island

Prepared For: HallKeen Real Estate Management and Investment

7-14-09

Revised 11-17-09

Two Stafford Court Cranston, RI 02920 Tel: (401) 943-1000 Fax: (401) 464-6006 www.DiPrete-Eng.com

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Table of Contents

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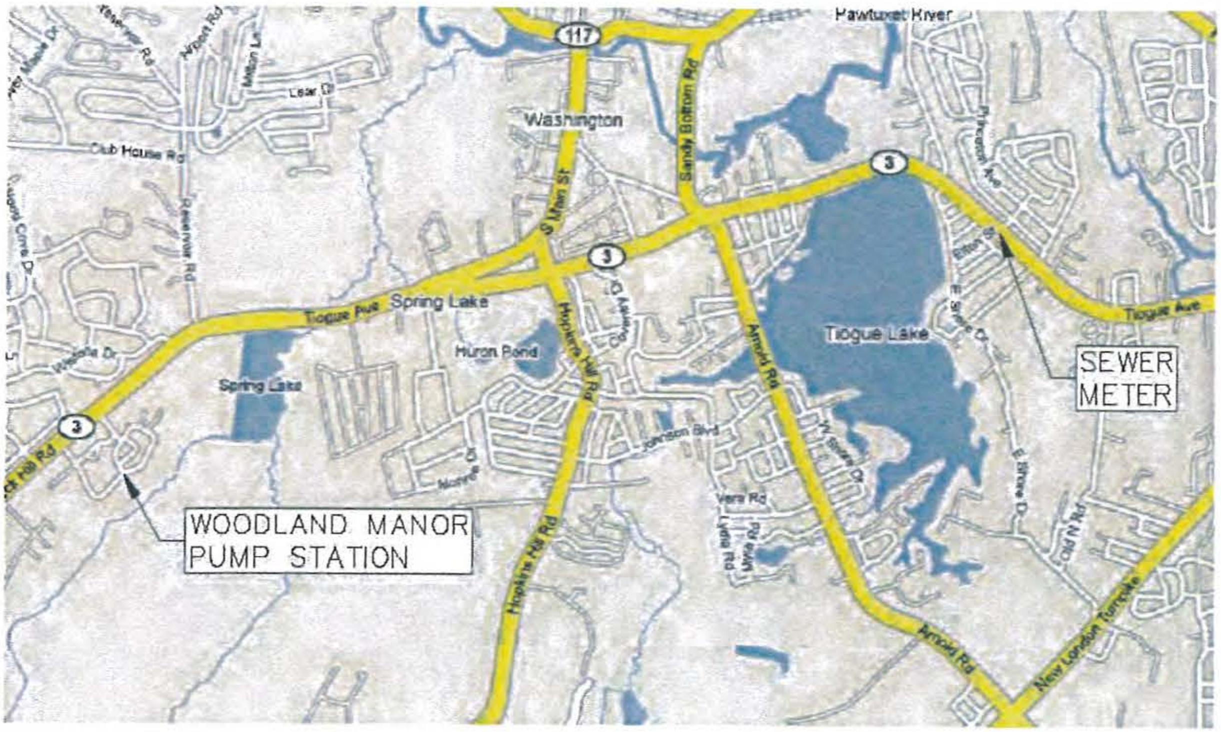
Executive Summary

The project is an evaluation of the existing private sewer pump station located at the Woodland Manor apartment complex in Coventry, Rhode Island. The pump station was built approximately 30 years ago and is connected to a sewer force main that runs east up to Tiogue Avenue (RI Rt. 3) for roughly three miles where it discharges into the City of West Warwick's gravity sewer system located at the town line. Along the private line there are several private businesses connected into the line.



This report details the inspection and evaluation of the existing sewer pump station. It also documents all known connections to the system and results of the sewer flow study that was conducted on the system. It then provides recommendations for future operation and maintenance of the pump station and sewer force main.

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1.0 Pump Station Evaluation and Inspection

1.1 SEWER PUMP STATION INSPECTION

On September 19, 2008, representatives from DiPrete Engineering and Boydco Inc. of East Providence, RI conducted an inspection of the existing sewer pump station which services Woodland Manor. The Boydco engineers have extensive experience designing, installing and maintaining sewer pump stations. Below is a summary of Boydco's observations.

Pumps

- The pump station is 30 years old with four self priming Gorman-Rupp (G-R) sewage pumps that are arranged in two sets of series pumps that may operate in parallel but are designed to handle the load with a single pair. The serial and model numbers of the pumps are as follows:

Pump	Serial Number	Model Number
1A*	1073103	T6A3-B
1B	1192685	T6A3-B
2A	1141725	T6A60-B
2B	725344	T6A3-B

*Pump 1A is believed to be original while the remaining three have been replaced.

- When we arrived on 9/19/08, one pair of pumps (pumps 1A and 1B) was in the process of being rebuilt and therefore unavailable for testing.
- Pump discharges are tied into a common 8" diameter discharge which has a flow meter in the common discharge line.
- The remaining set of pumps has been arranged to run on a temporary basis by a pair of float switches which run across the ground under the station's door and into the motor control center through the partially closed door on the Motor Control Cabinet (MCC). Floats are required due to the removal of the unoperational automatic level control system. The MCC is showing signs of age and corrosion along with extensive rusting on the lower portions of the steel cabinet.
- The G-R sewage pumps are running very smoothly but are not pumping at the desired rate most likely due to accumulated wear within pump volutes and possible fouling within the piping and valves. Pump 1A has a different casing than the other pumps. A test gauge was installed but was unable to obtain an accurate reading due to an accumulation of debris. The air release valve attached to the pumps was not operational and was combined with the air release valve from the other series of pumps.
- It is true the rotating elements have been replaced but it seems to have been unsuccessful in restoring capacity of the pumps.

Flow Meter

- The flow meter indicates flow when pumps are running. Flow registers between 4.0-4.5 as the pump runs and flow in force main becomes stable. If the force main is 10" in diameter it would require a flow of 600 GPM to achieve self cleaning velocity of 2.5 FPS. This indicates that the remaining pair of pumps is pumping at a lower than designed volume and or that the flowmeter has lost calibration over its installed service life. There are several other issues with the installation of the meter including insufficient lay length without interruption or velocity change.
- If the meter is to be used for revenue or billing it must be repaired or replaced to have some assurance of accuracy.

Other Issues

- The Motor Control Center is of questionable reliability and it would require rebuilding or replacement if it is to be counted on to provide satisfactory service.
- The air release valve line running out of the pump station is currently split and attached to both series of pumps.
- The water supply to the building is located at the bottom of the stairs roughly six inches off the ground.
- Other problems within the station include lack of any system to lift or hoist pumps into place, failing lights, leaking chemical piping, and other housekeeping issues.
- A source of backup power was not observed and it is not clear how the station would remain functional during a power loss.

On December 22, 2008 representatives from DiPrete Engineering, Hayes Pump Inc. and Boydco conducted a follow-up inspection of the sewer pump station. Hayes Pump Inc. was present to record serial numbers from the pumps and from any other applicable components.

Upon entering the station it was clear that the two pumps that were offline at the time of the September inspection had been repaired and were now operational. The automatic level control system has been replaced and the float switches located at the outside holding tank have been removed. Therefore there is no longer a power cord running across the floor and out the door.

Please refer to the Summary of Findings and Recommendation (Section 3.0) for Boydco's recommendations for repairs and future maintenance.

1.2 SEWER PUMP STATION INSPECTION PHOTOS

Figure 1: One of the G-RT6A3-B pumps

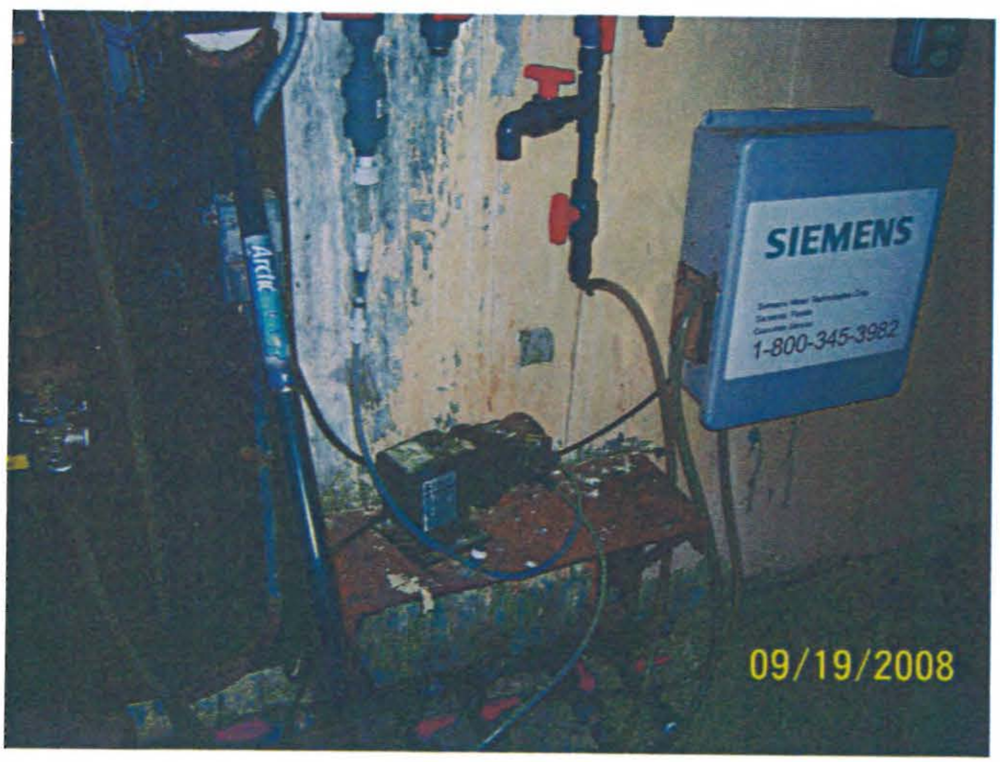

Figure 2: Example of water damage inside the station

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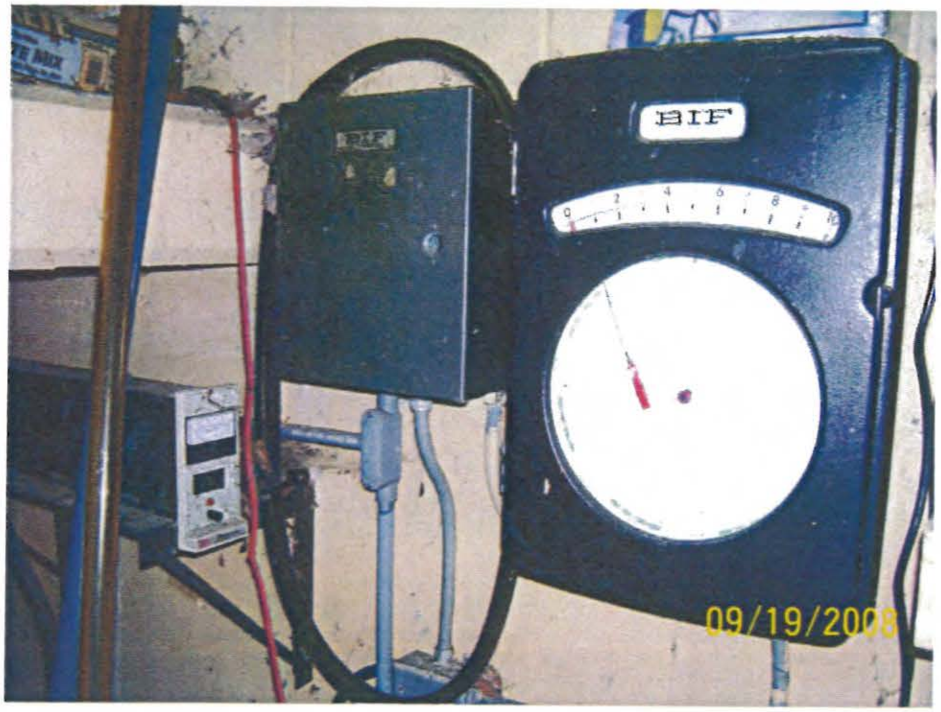

Figure 3: Existing sewer flow meter

Figure 4: Missing float control panel (since repaired)

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Figure 5: Combined air release

Figure 6: Pump in process of being repaired (since completed)

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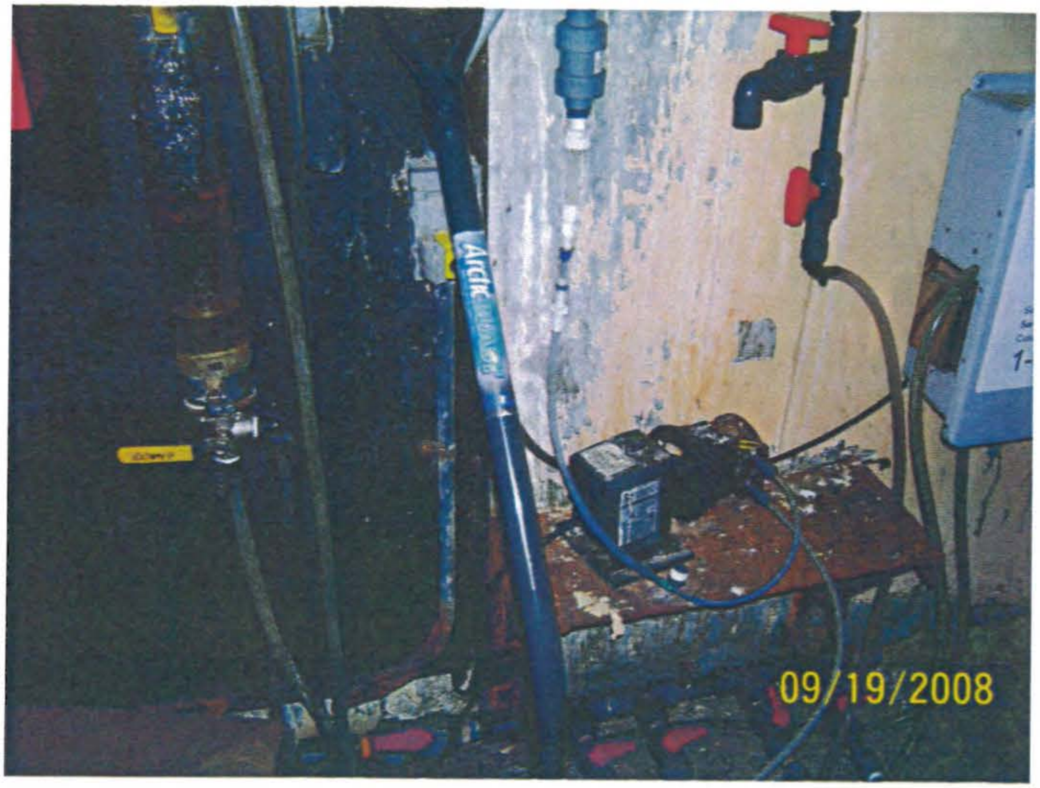

Figure 7: Various water damage and housekeeping issues

Figure 8: Rust at bottom of control panel cabinet

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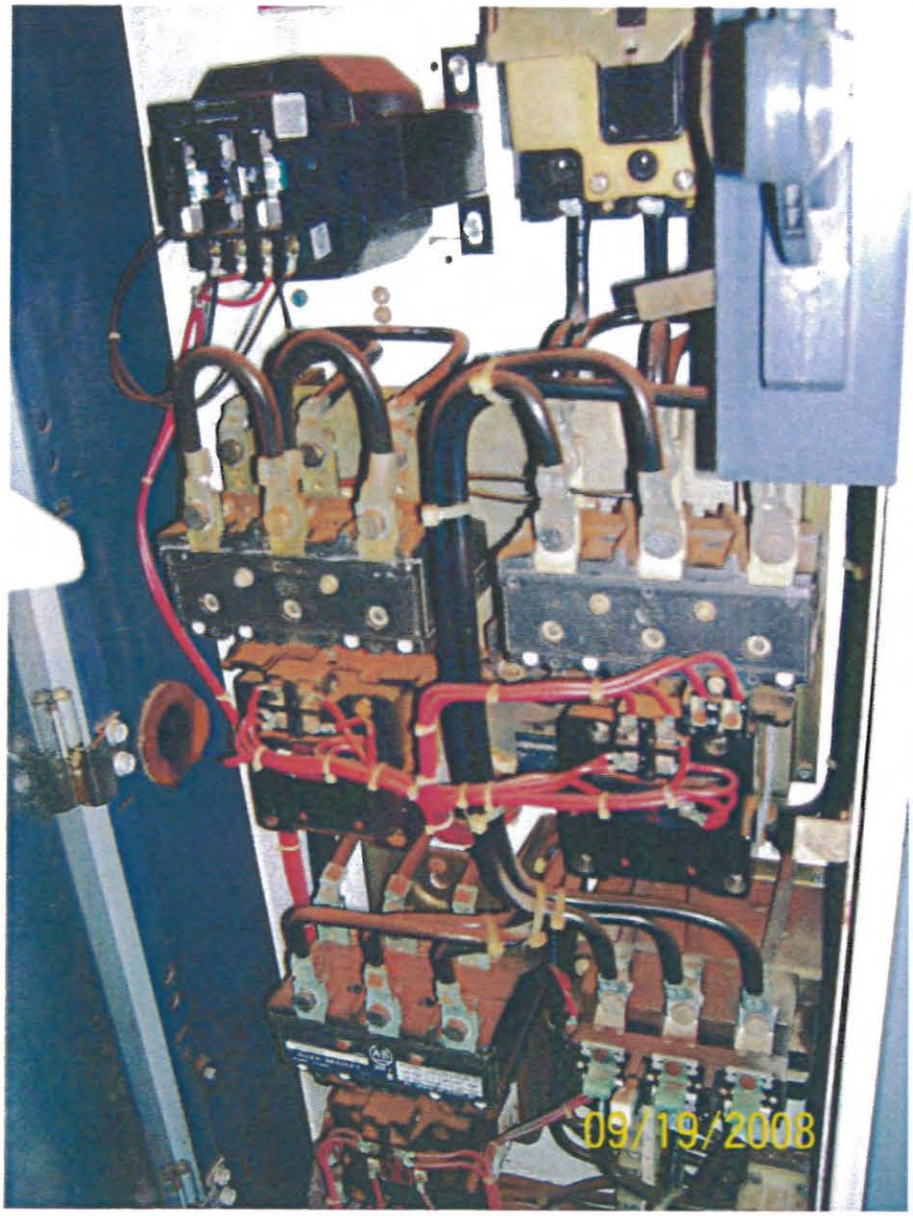

Figure 9: Inside of the motor control center

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Figure 10: Inside of motor control center

Figure 11: Inside of motor control center showing evidence of water pooling

2.0 Pump Station Flow Study

2.1 SEWER FORCE MAIN METER INSPECTION

On November 25, 2008 representatives from DiPrete Engineering and Boydco conducted an inspection of the existing sewer meter located along the sewer force main at the intersection of Tiogue Avenue and Darton Street in Coventry, Rhode Island. The sewer force main then runs in a gravity state for approximately 1000' until it ties into the City of West Warwick's gravity sewer system at the Coventry-West Warwick line.

The sewer meter was found to be in good condition and was running as designed. Sewer flow readings through the meter were taken for nine weeks starting on September 29 and continuing until November 25, 2008. The results were as follows:

Start	Duration (mins)	Total Flow (gal)	Average Flow (gpm)	Average Flow (gpd)
9/29/2008 19:30	9000	506,546.2	56.28	81,047.39
10/6/2008 1:30	9000	483,492.8	53.72	77,358.85
10/12/2008 7:30	9000	468,027.8	52.00	74,884.45
10/18/2008 13:30	9000	467,313.3	51.92	74,770.13
10/24/2008 19:30	9000	452,630.8	50.29	72,420.93
10/31/2008 1:30	9000	424,204.2	47.13	67,872.67
11/6/2008 7:30	9000	428,686	47.63	68,589.76
11/12/2008 13:30	9000	452,374.7	50.26	72,379.95
11/18/2008 19:30	9000	215,366.9	23.93	34,458.70*
11/25/2008 1:30	2138	107,412.3	50.24	72,345.05
		Overall Average Flow	**48.34**	**73,518.80**

*This period was during the week of Thanksgiving, and since some businesses discharging into the sewer force main were closed, the values from this week were not used in the analysis for the Overall Average Flow.

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2.1 SEWER FORCE MAIN METER INSPECTION PHOTOS

Figure 12: Sewer force main meter enclosure located on Tiogue Avenue

Figure 13: Inside of meter cabinet

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Figure 14: Sewer force main meter

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2.3 SEWER FORCE CONNECTION LIST AND CALCULATIONS

DiPrete Engineering worked with the West Warwick Sewer Authority, James Geremia and Associates (the Sewer Authority consultants), the Kent County Water Authority (KCWA), and other sources to review the current connections and usage of the system. The usage information was obtained from the most recent KCWA water billings unless otherwise noted.

The connections and flow information and can be found on the following page:

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Connection	Connection Address	Usage (cu. ft.)	Usage (gal)	Billing Period	Duration (days)	Water Usage (gpd)
Woodland Manor Apartments	20 Woodland Drive, Coventry RI	112,805.00	843,781.40	6/30/08-9/30/08	92	9,171.54
Borelli's Pastry Shop	765 Tiogue Avenue, Coventry RI	5,700.00	42,636.00	3/27/08-7/06/08	103	413.94
Boston Neck Realty	1650 Nooseneck Hill Road, Coventry RI	23,000.00	172,040.00	3/27/08-7/15-08	110	1,564.00
Coventry Credit Union	1076 Main Street, Coventry RI	3,300.00	24,684.00	4/22/08-7/29/08	98	251.88
CVS (Site #00621-01)	743 Tiogue Avenue, Coventry RI	3,000.00	22,440.00	3/27/08-7/08/0/	103	217.86
Vacant Unit			-			-
Haven Health Center	10 Woodland Drive, Coventry RI	257,500.00	1,926,100.00	6/30/08-9/30/08	92	20,935.87
Leisure Village	1620 Nooseneck Hill Road, Coventry RI	36,000.00	269,280.00	6/30/08-9/30/09	92	2,926.96
Soco Inc./ Leisure Condos	1700 Nooseneck Hill Road, Coventry RI	7,000.00	52,360.00	7/15/08-10/31/08	108	484.81
Star Brite Car Wash	1620 Nooseneck Hill Road, Coventry RI	16,000.00	119,680.00	7/16/08-10/31/08	107	1,118.50
Star Brite Laundromat	1602 Nooseneck Hill Road, Coventry RI	39,000.00	291,720.00	8/31/08-9/31/08	30	9,724.00
Father Paul R. Grenon (SS. John and Paul) Church	341 South Main Street, Coventry RI	16,991.00	127,092.68	4/09/08-7/14/08	96	1,323.88
Father John V Doyle School	343 South Main Street, Coventry RI	4,000.00	29,920.00	4/11/08-7/14/08	94	318.30
Stop & Shop Supermarket Co.	900 Tiogue Avenue, Coventry RI	37,600.00	281,248.00	3/27/08-7/31/08	126	2,232.13
Taco Bell Corp (Store #5261)	784 Tiogue Avenue, Coventry RI	16,000.00	119,680.00	7/08/08-10/23/08	107	1,118.50
Tiogue Avenue Association	1036 Tiogue Avenue, Coventry RI		-			730.30 *
Tiogue Veterinary Clinic	916 Tiogue Avenue, Coventry RI	4,000.00	29,920.00	3/27/08-7/06/08	103	290.49
Tom's Fruit and Deli	821 Tiogue Avenue, Coventry RI	11,800.00	88,264.00	3/27/08-7/06/08	103	856.93
U.S. Postal Office	1550 Nooseneck Hill Road, Coventry RI	4,000.00	29,920.00	3/27/08-7/15/08	110	272.00
Wal-Mart Stores, Inc. (Store #228)	650 Centre of New England Blvd	68,501.00	512,387.48	12/27/07-3/24/08	88	5,822.59
Westwood Estates	14 Liena Rose Way, Coventry RI	526,000.00	3,934,480.00	7/10/08-10/1/08	94	6,455.00 **
VSH Realty (Cumberland Farms)	1600 Nooseneck Hill Road, Coventry RI	2,100.00	15,708.00	7/15/08-10/31/08	108	145.44
Vacant Unit			-			-
Glenwood Park	978 Tiogue Avenue, Coventry RI	83,000.00	620,840.00	7-08/08-10/23/08	107	5,802.24
Kent County Hospital/Coventry Care	1620 Nooseneck Hill Road, Coventry RI	1,000.00	7,480.00	3/27/08-7/16/08	111	67.39
Kenyon Oil Company, Inc.	851 Tiogue Avenue, Coventry RI	5,900.00	44,132.00	7/08/08-10/23/08	107	412.45
					Total =	**72,657.00**

* KCWA usage information could not be obtained for this connection. In its place, water billing information obtained from Peter Castriotta was used in the calculations.

** Westwood Estates is a large development which contains both individual septic disposal systems and a gravity sewer system which is pumped into the sewer force main. Since all units do not discharge into sewer force main, the average daily flow reading from the sewer pump located at Westwood Estates was used in the calculations.

The usage values for the most recent flow periods were compared to historical data for the largest users and can be considered consistent with the historical data.

2.4 FLOW STUDY CONCLUSION

The difference between the measured flow through the sewer force before it connects to the City of West Warwick Sewer System (73,518 gpd) and the calculated flow entering the system (72,657 gpd) is 861 gpd. This represents a 1.17% difference and can be considered insignificant. It is the conclusion of this study that there are no major leaks or infiltration in the sewer force main.

The sewer force main itself was not inspected in this study. The small difference between the metered flow and calculated flow (1.17%) does not indicate that the line needs to be inspected at this time.

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3.0 Summary of Findings and Recommendations

3.1 MAINTENANCE RECOMMENDATIONS

There are several repair and maintenance issues that need to be addressed. These issues are:

1. The two pumps that are not operating should be brought back online immediately. It is important to keep all four pumps online because if only one series of pumps is online the pump station would become non-operational if the remaining pumps failed.

   Update: As observed on the December 22, 2008 site inspection, all four pumps are now operational. This is no longer and issue.
2. The pumps should be cleaned to remove accumulated debris to allow for pressure testing of the pumps.
3. The wet well should be cleaned to remove all accumulated solids and debris.
4. The automatic level control system has been removed and the pumps are setup to be activated by a float system in the holding tank. The float system is powered by an extension cord run from the floor of the pump station, up the stairs, out the door, across the ground to a manhole in the holding tank. The manhole cover is propped up with a stick and a shelf is laid across it to prevent anyone from disturbing it. This is not only an unreliable system but is a safety concern as the holding tank is open at all times. The automatic control system should be replaced and the float system removed.

   Update: As observed on the December 22, 2008 site inspection, the automatic level control system has been repaired. This is no longer an issue.
5. The meter does not seem to be reliable and is outdated. Boydco suggests installing a polysonic meter. These meters are more accurate and more cost-effective.
6. The casing on Pump 1A should be replaced to match the other three pumps. This would increase the efficiency of the pump station and the life of the pump.
7. The air release valve line running out of the pump station is currently split and attached to both series of pumps. An independent air release line should be installed for each series of pumps.
8. The motor control center (MCC) needs maintenance. For the most part the electrical components of the system are in good shape and with a minimal amount of repair should be restored optimal functionality. The steel cabinet the MCC is located in is heavily corroded and should be replaced and placed on a raised cement slab to prevent corrosion.
9. A system should be installed to lift or hoist the pumps into place for maintenance and for future replacement.
10. There are several water leaks inside the pump station. This has resulted in corrosion of most of the metal casings for the various control and electrical panels. The water appears to be running over several electrical components. The water could easily short out electrical components and pose an electrocution risk to anyone working inside the pump station.
11. The chemical pipes have several leaks and treatment chemicals have been spilt throughout the pump station. These spills should be cleaned up and the pipes replaced.
12. The lighting in the pump station should be increased.
13. The pump station's heater and ventilator should be replaced.

14. The pump station's sump pumps should be replaced.
15. The water service to the building is located at floor level. In the future this should be raised above the level of the door in order to prevent it from being inaccessible if the station were to flood. When it is moved a backflow preventer should be installed.
16. If in the future the valves on the pumps discharge pipes are replaced, they should be replaced with plug valves and not the butterfly valves which are in place now.
17. No source of backup power was observed, and this should be addressed in the future operation of the pump station.
18. In the future, the sewer force main meter located on Tiogue Avenue should be read monthly to monitor any changes in flows.

While this station is now handling the sewage flow, the station is of questionable reliability and may be subject to failure if the above repairs and upgrades are not completed.

Boydco has prepared quotes for the two essential repairs to the station. These repairs should be performed as soon as possible:

1. Replace and repair the pump station' lights, sump pumps, ventilator, and heater. Clean all the debris out of pump station and store all equipment inside that will be reused in an orderly manner. Replace existing G-R control unit with new that will give an indication of wet well level with back up float switches to insure redundant control should primary level control fail.

   Cost for this service including labor and materials not including RI Sales tax is **$13,660.00**

2. Clean the sewage wet well of accumulated solids and debris to include non hazardous regulated solids like fats, oil, & grease, along with grit and heavy materials in wet well bottom.

   This quote covers up to removing and disposing of in an approved facility up to 9 tons of material. If the wet well has not been maintained any better than the station it is good practice to remove this material prior to it's damaging the recently installed pumps.

   Cost for this service not including RI sales tax is **$8,000.00**

In addition, it is DiPrete Engineering's recommendation that the operators of the Woodland Manor Pump Station contract Boydco for monthly inspections and maintenance of the pump station at the following budget:

Annual budgeted amount for monthly inspections and labor = **$4,704.00**
Annual budgeted amount for routine part replacements = **$1,000.00**
Total Annual Inspection Budget = **$5,704.00**

DiPrete Engineering also anticipates significant repair and replacement obligations along the lines of the currently required repairs will be required every 5 to 10 years. We suggest utilizing the current Boydco repair and replacement quote of $21,660.00 as a guide for these costs. Therefore, this results in an annual budget for repair and replacement of **$4,332.00** in addition to the annual inspection budget.

3.2 GENERAL RECOMMENDATIONS

While consulting with James Geremia and Associates it was brought to our attention that future sewer regulations will require that all private sewer line owners provide the sewer authority with an operation and maintenance plan and GIS mapping of all sewer line connections and components. This would involve additional services and could be completed by DiPrete Engineering in the future.

The cost to compile the plan and GIS data of the sewer force main system would range from **$5000-$8000** depending on the level of effort required to locate the existing connections. We recommend using the operation and maintenance plan included in this report.

3.3 OPERATION AND MAINTENANCE PLAN

Boydco has prepared a proposal for a preventative maintenance plan for the sewer pump station. This can be found on the following pages.

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BOYDCO
Sewage Pumping Station
Water Booster Systems
101 Commercial Way
East Providence, RI 02914
(401) 438-6900 Fax: (401) 438-6008

DATE: February 6, 2009

TO: Woodland Manor

Coventry, RI

RE: Preventative Maintenance Proposal
Sewage Pump Station

This letter will serve as a quotation to you on a preventative maintenance contract for the above referenced project.

The maintenance performed at this station is on a monthly basis. The work performed at each visit would include:

1. In compliance with OSHA'S 29 CFG part 1910 enacted 4/15/93 which dictates the entrance procedures into a confined space area, a pre-entry report and checklist will be performed. Maintain "Safe" job site for non-permit operation and entry.
2. Operate, inspect, and verify all electrical control circuits for proper operation.
3. Record pump amperage and voltage on all phases of the system, compare with specification, and report variances.
4. Check, inspect, and operate all mechanical equipment including manual operation of floats to check for proper alternation.
5. Test operation of check valves.
6. Check for proper operation of alarm equipment, if applicable.
7. Replace burned out light bulbs in control panel.
8. Replace corrosion inhibitors in control panel annually.
9. Inspect system for loose bolts and correct as required, (where accessible).
10. Check all joints and connections for leaks or cracks, (where accessible).
11. Treat wetwell with potassium permanganate to reduce accumulation of grease solids which inhibit pump performance.
12. Inspect pumps for fractures, corrosion, leaks, etc. where accessible and visually observe for proper operation.
13. Perform a draw-down test on both pumps to check pump performance.
14. A copy of maintenance report sent to you after each visit.

BOYDCO

Sewage Pumping Station
Water Booster Systems

101 Commercial Way
East Providence, RI 02914
(401) 438-6900 Fax: (401) 438-6008

By having a preventative maintenance contract in effect, your repairs are automatically given a higher priority than if you were strictly on a 'call' basis. Maintenance contracts help to ensure that the expensive mechanical equipment you have in place is inspected, operated, and maintained so there will be a minimum of down-time or unscheduled repairs. These are always inconvenient and quite often more costly than if the problem had been attended to earlier.

BOYDCO recommends that this station be serviced on a monthly basis to ensure that it is maintained in proper operating efficiency. The cost for this service would be $392.00 per visit.

This preventative maintenance contract does not include any parts or labor not specifically mentioned above. Any other parts could be furnished to you at a discounted price. Any labor not covered in the contract would be billed at a rate of $90.00 per hour during normal working hours of 7:30 AM through 4:00 PM Monday through Friday. Any labor beyond these hours would be billed 1 1/2 times the normal rate. Any additional trips to your site would also be subject to a charge of $1.25 per mile.

If you wish to accept this proposal, please sign and return a copy indicating acceptance. Please also provide the names and phone numbers of three (3) contact people on your staff so that if there is an emergency, problem, or a decision has to be made while servicing is going on, there would be a contact person available.

If I can provide any further help or clarify any of the matters outlined above, please do not hesitate to contact me.

Very truly yours,
BOYDCO, INC.

Jeffrey A. Fox
Controller

Accepted by: ______________________

For: ______________________

Date: ______________________

Contacts and phone numbers

Name: ________________ Number: ______________
Name: ________________ Number: ______________
Name: ________________ Number: ______________

Operation and maintenance plans for both models of pumps can be found on the following pages.

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INSTALLATION, OPERATION, AND MAINTENANCE MANUAL

WITH PARTS LIST

GORMAN-RUPP PUMPS

T SERIES PUMPS

MODELS
T6A3-B
INCLUDING: /F

THE GORMAN-RUPP COMPANY • MANSFIELD, OHIO
www.grpumps.com
GORMAN-RUPP OF CANADA LIMITED • ST. THOMAS, ONTARIO, CANADA Printed in U.S.A.

Register your new
Gorman-Rupp pump online at
www.grpumps.com
Valid serial number and e-mail address required.

RECORD YOUR PUMP MODEL AND SERIAL NUMBER

Please record your pump model and serial number in the spaces provided below. Your Gorman-Rupp distributor needs this information when you require parts or service.

Pump Model: ______________________________

Serial Number: ______________________________

TABLE OF CONTENTS

TABLE OF CONTENTS
(continued)

INTRODUCTION

Thank You for purchasing a Gorman-Rupp pump. **Read this manual** carefully to learn how to safely install and operate your pump. Failure to do so could result in personal injury or damage to the pump. This Installation, Operation, and Maintenance manual is designed to help you achieve the best performance and longest life from your Gorman-Rupp pump.

This pump is a T Series, semi-open impeller, self-priming centrifugal model with a suction check valve. The pump is designed for handling liquids containing large entrained solids and slurries. The basic material of construction is gray iron, with ductile iron impeller and steel wearing parts.

Because pump installations are seldom identical, this manual cannot possibly provide detailed instructions and precautions for every aspect of each specific application. Therefore, it is the responsibility of the owner/installer of the pump to ensure that applications not addressed in this manual are performed **only** after establishing that neither operator safety nor pump integrity are compromised by the installation. Pumps and related equipment **must** be installed and operated according to all national, local and industry standards.

If there are any questions regarding the pump or its application which are not covered in this manual or in other literature accompanying this unit, please contact your Gorman-Rupp distributor, or:

The Gorman-Rupp Company
P.O. Box 1217
Mansfield, Ohio 44901–1217
Phone: (419) 755–1011
or:
Gorman-Rupp of Canada Limited
70 Burwell Road
St. Thomas, Ontario N5P 3R7
Phone: (519) 631–2870

For information or technical assistance on the power source, contact the power source manufacturer's local dealer or representative.

The following are used to alert maintenance personnel to procedures which require special attention, to those which could damage equipment, and to those which could be dangerous to personnel:

DANGER!

Immediate hazards which WILL result in severe personal injury or death. These instructions describe the procedure required and the injury which will result from failure to follow the procedure.

WARNING!

Hazards or unsafe practices which COULD result in severe personal injury or death. These instructions describe the procedure required and the injury which could result from failure to follow the procedure.

CAUTION

Hazards or unsafe practices which COULD result in minor personal injury or product or property damage. These instructions describe the requirements and the possible damage which could result from failure to follow the procedure.

NOTE

Instructions to aid in installation, operation, and maintenance or which clarify a procedure.

SAFETY – SECTION A

This information applies to T Series basic pumps. Gorman-Rupp has no control over or particular knowledge of the power source which will be used. Refer to the manual accompanying the power source before attempting to begin operation.

Because pump installations are seldom identical, this manual cannot possibly provide detailed instructions and precautions for each specific application. Therefore, it is the owner/installer's responsibility to ensure that applications not addressed in this manual are performed only after establishing that neither operator safety nor pump integrity are compromised by the installation.

WARNING!

Before attempting to open or service the pump:

1. Familiarize yourself with this manual.
2. Disconnect or lock out the power source to ensure that the pump will remain inoperative.
3. Allow the pump to completely cool if overheated.
4. Check the temperature before opening any covers, plates, or plugs.
5. Close the suction and discharge valves.
6. Vent the pump slowly and cautiously.
7. Drain the pump.

WARNING!

This pump is designed to handle liquids containing large entrained solids or slurries. Do not attempt to pump volatile, corrosive, or flammable materials which may damage the pump or endanger personnel as a result of pump failure.

WARNING!

After the pump has been positioned, make certain that the pump and all piping connections are tight, properly supported and secure before operation.

DANGER!

Do not operate the pump without the guards in place over the rotating parts. Exposed rotating parts can catch clothing, fingers, or tools, causing severe injury to personnel.

WARNING!

Do not remove plates, covers, gauges, pipe plugs, or fittings from an overheated pump. Vapor pressure within the pump can cause parts being disengaged to be ejected with great force. Allow the pump to completely completely cool before servicing.

WARNING!

Do not operate the pump against a closed discharge valve for long periods of time. If operated against a closed discharge valve, pump components will deteriorate, and the liquid could come to a boil, build pressure, and cause the pump casing to rupture or explode.

WARNING!

Use lifting and moving equipment in good repair and with adequate capacity to prevent injuries to personnel or damage to equipment. Suction and discharge hoses and piping must be removed from the pump before lifting.

WARNING!

Do not attempt to disengage any part of an overheated pump unit. Vapor pressure within the pump casing can eject these parts with great force when they are disengaged. Allow the pump to completely cool before servicing it.

CAUTION

Pumps and related equipment must be installed and operated according to all national, local and industry standards.

WARNING!

Overheated pumps can cause severe burns and injury. If overheating of the pump occurs:

1. **Stop the pump immediately.**
2. **Allow the pump to completely cool.**
3. **Refer to instructions in this manual before restarting the pump.**

INSTALLATION – SECTION B

Review all SAFETY information in Section A.

Since pump installations are seldom identical, this section offers only general recommendations and practices required to inspect, position, and arrange the pump and piping.

Most of the information pertains to a standard **static lift application** where the pump is positioned above the free level of liquid to be pumped.

If installed in a **flooded suction application** where the liquid is supplied to the pump under pressure, some of the information such as mounting, line configuration, and priming must be tailored to the specific application. Since the pressure supplied to the pump is critical to performance and safety, **be sure** to limit the incoming pressure to **50%** of the maximum permissible operating pressure as shown on the pump performance curve.

For further assistance, contact your Gorman-Rupp distributor or the Gorman-Rupp Company.

Pump Dimensions

See Figure 1 for the approximate physical dimensions of this pump.

OUTLINE DRAWING

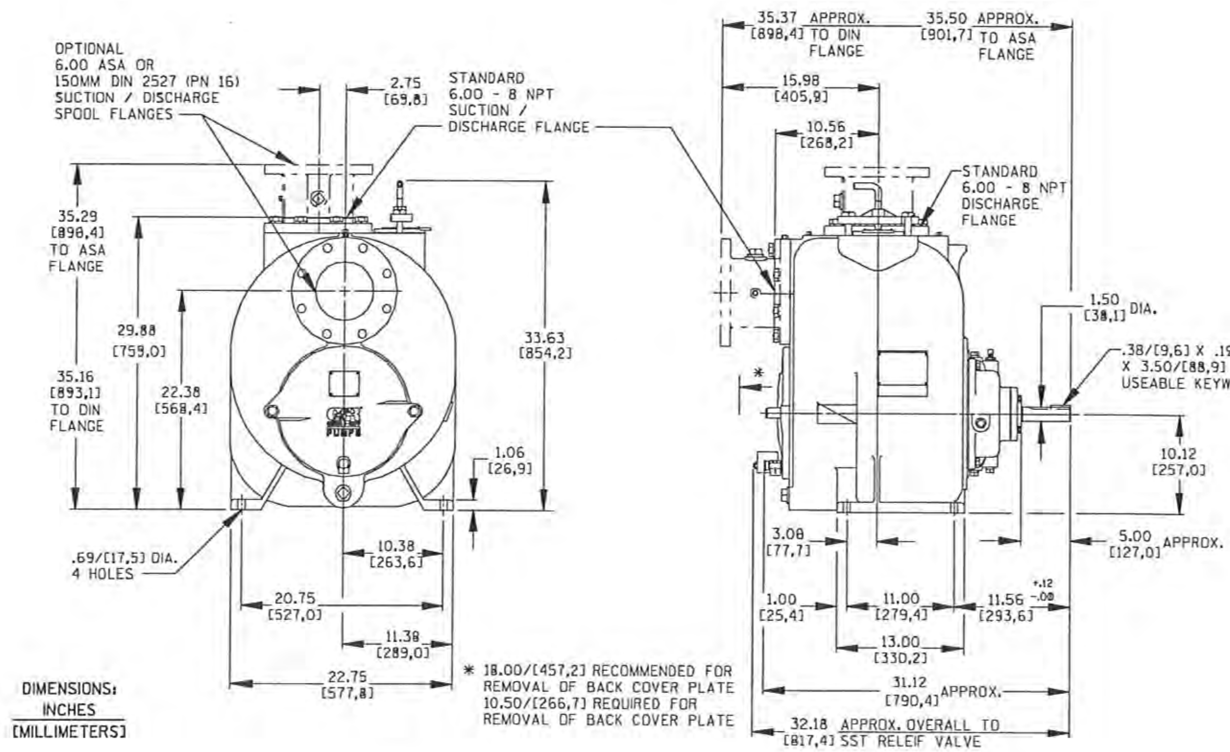


Figure 1. Pump Model T6A3-B, Including /F

PREINSTALLATION INSPECTION

The pump assembly was inspected and tested before shipment from the factory. Before installation, inspect the pump for damage which may have occurred during shipment. Check as follows:

a. Inspect the pump for cracks, dents, damaged threads, and other obvious damage.

b. Check for and tighten loose attaching hardware. Since gaskets tend to shrink after drying, check for loose hardware at mating surfaces.

c. Carefully read all warnings and cautions contained in this manual or affixed to the pump, and perform all duties indicated. Note the direction of rotation indicated on the pump. Check that the pump shaft rotates counterclockwise when facing the impeller.

CAUTION

Only operate this pump in the direction indicated by the arrow on the pump body and on the accompanying decal. Refer to **ROTATION** in **OPERATION**, Section C.

d. Check levels and lubricate as necessary. Refer to **LUBRICATION** in the **MAINTENANCE AND REPAIR** section of this manual and perform duties as instructed.

e. If the pump and power source have been stored for more than 12 months, some of the components or lubricants may have exceeded their maximum shelf life. These **must be inspected or replaced** to ensure maximum pump service.

If the maximum shelf life has been exceeded, or if anything appears to be abnormal, contact your Gorman-Rupp distributor or the factory to determine the repair or updating policy. **Do not** put the pump into service until appropriate action has been taken.

POSITIONING PUMP

Lifting

Pump unit weights will vary depending on the mounting and drive provided. Check the shipping tag on the unit packaging for the actual weight, and use lifting equipment with appropriate capacity. Drain the pump and remove all customer-installed equipment such as suction and discharge hoses or piping before attempting to lift existing, installed units.

CAUTION

The pump assembly can be seriously damaged if the cables or chains used to lift and move the unit are improperly wrapped around the pump.

Mounting

Locate the pump in an accessible place as close as practical to the liquid being pumped. Level mounting is essential for proper operation.

The pump may have to be supported or shimmed to provide for level operation or to eliminate vibration.

Clearance

When positioning the pump, allow a minimum clearance of **18 inches (457 mm)** in front of the back cover to permit removal of the cover and easy access to the pump interior.

SUCTION AND DISCHARGE PIPING

Pump performance is adversely effected by increased suction lift, discharge elevation, and friction losses. See the performance curve and operating range shown on Page E-1 to be sure your overall application allows pump to operate within the safe operation range.

Materials

Either pipe or hose maybe used for suction and discharge lines; however, the materials must be compatible with the liquid being pumped. If hose is used in suction lines, it must be the rigid-wall, reinforced type to prevent collapse under suction. Using piping couplings in suction lines is not recommended.

Line Configuration

Keep suction and discharge lines as straight as possible to minimize friction losses. Make minimum use of elbows and fittings, which substantially increase friction loss. If elbows are necessary, use the long-radius type to minimize friction loss.

Connections to Pump

Before tightening a connecting flange, align it exactly with the pump port. Never pull a pipe line into place by tightening the flange bolts and/or couplings.

Lines near the pump must be independently supported to avoid strain on the pump which could cause excessive vibration, decreased bearing life, and increased shaft and seal wear. If hose-type lines are used, they should have adequate support to secure them when filled with liquid and under pressure.

Gauges

Most pumps are drilled and tapped for installing discharge pressure and vacuum suction gauges. If these gauges are desired for pumps that are not tapped, drill and tap the suction and discharge lines not less than 18 inches (457,2 mm) from the suction and discharge ports and install the lines. Installation closer to the pump may result in erratic readings.

SUCTION LINES

To avoid air pockets which could affect pump priming, the suction line must be as short and direct as possible. When operation involves a suction lift, the line must always slope upward to the pump from the source of the liquid being pumped; if the line slopes down to the pump at any point along the suction run, air pockets will be created.

Fittings

Suction lines should be the same size as the pump inlet. If reducers are used in suction lines, they should be the eccentric type, and should be installed with the flat part of the reducers uppermost to avoid creating air pockets. Valves are not normally used in suction lines, but if a valve is used, install it with the stem horizontal to avoid air pockets.

Strainers

If a strainer is furnished with the pump, be certain to use it; any spherical solids which pass through a strainer furnished with the pump will also pass through the pump itself.

If a strainer is not furnished with the pump, but is installed by the pump user, make certain that the total area of the openings in the strainer is at least three or four times the cross section of the suction line, and that the openings will not permit passage of solids larger than the solids handling capability of the pump.

This pump is designed to handle up to 3-inch (76,2 mm) diameter spherical solids.

Sealing

Since even a slight leak will affect priming, head, and capacity, especially when operating with a high suction lift, all connections in the suction line should be sealed with pipe dope to ensure an airtight seal. Follow the sealant manufacturer's recommendations when selecting and applying the pipe dope. The pipe dope should be compatible with the liquid being pumped.

Suction Lines In Sumps

If a single suction line is installed in a sump, it should be positioned away from the wall of the sump at a distance equal to 1 1/2 times the diameter of the suction line.

If there is a liquid flow from an open pipe into the sump, the flow should be kept away from the suction inlet because the inflow will carry air down into the sump, and air entering the suction line will reduce pump efficiency.

If it is necessary to position inflow close to the suction inlet, install a baffle between the inflow and the suction inlet at a distance 1 1/2 times the diameter of the suction pipe. The baffle will allow entrained air to escape from the liquid before it is drawn into the suction inlet.

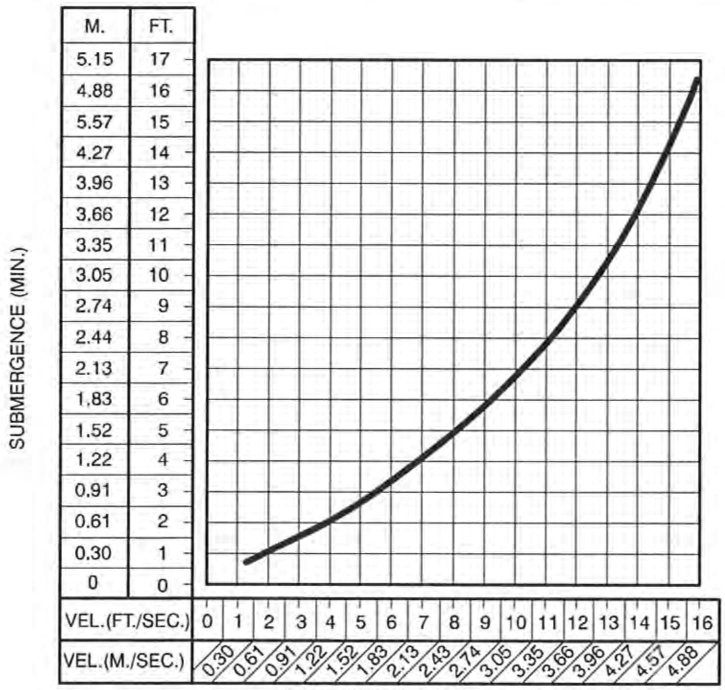
If two suction lines are installed in a single sump, the flow paths may interact, reducing the efficiency of one or both pumps. To avoid this, position the suction inlets so that they are separated by a distance equal to at least 3 times the diameter of the suction pipe.

Suction Line Positioning

The depth of submergence of the suction line is critical to efficient pump operation. Figure 2 shows recommended minimum submergence vs. velocity.

NOTE

The pipe submergence required may be reduced by installing a standard pipe increaser fitting at the end of the suction line. The larger opening size will reduce the inlet velocity. Calculate the required submergence using the following formula based on the increased opening size (area or diameter).



$$\text{VELOCITY (FT./SEC.)} = \frac{\text{FLOW (G.P.M.)} \times .321}{\text{AREA IN IN.}^2} \quad \text{OR} \quad \frac{\text{FLOW (G.P.M.)} \times .4085}{(\text{DIAMETER IN IN.})^2}$$

$$\text{VELOCITY (M./SEC.)} = \frac{\text{FLOW (L/SEC)} \times .001}{\text{AREA IN M}^2} \quad \text{OR} \quad \frac{\text{FLOW (M}^3\text{/HR} \times 353.7}{(\text{DIAMETER IN MM})^2}$$

Figure 2. Recommended Minimum Suction Line Submergence vs. Velocity

DISCHARGE LINES

Siphoning

Do not terminate the discharge line at a level lower than that of the liquid being pumped unless a siphon breaker is used in the line. Otherwise, a siphoning action causing damage to the pump could result.

Valves

If a throttling valve is desired in the discharge line, use a valve as large as the largest pipe to minimize friction losses. Never install a throttling valve in a suction line.

With high discharge heads, it is recommended that a throttling valve and a system check valve be installed in the discharge line to protect the pump from excessive shock pressure and reverse rotation when it is stopped.

CAUTION

If the application involves a high discharge head, gradually close the discharge throttling valve before stopping the pump.

Bypass Lines

Self-priming pumps are not air compressors. During the priming cycle, air from the suction line must be vented to atmosphere on the discharge side. If the discharge line is open, this air will be vented through the discharge. However, if a check valve has been installed in the discharge line, the discharge side of the pump must be opened to atmospheric pressure through a bypass line installed between the pump discharge and the check valve. A self-priming centrifugal pump **will not prime** if there is sufficient static liquid head to hold the discharge check valve closed.

NOTE

The bypass line should be sized so that it does not affect pump discharge capacity; however, the bypass line should be at least 1 inch in diameter to minimize the chance of plugging.

In **low discharge head applications** (less than 30 feet or 9 meters), it is recommended that the bypass line be run back to the wet well, and located 6 inches below the water level or cut-off point of the low level pump. In some installations, this bypass line may be terminated with a six-to-eight foot length of 1 1/4 inch I.D. **smooth-bore** hose; air and liquid vented during the priming process will then agitate the hose and break up any solids, grease, or other substances likely to cause clogging.

CAUTION

A bypass line that is returned to a wet well must be secured against being drawn into the pump suction inlet.

It is also recommended that pipe unions be installed at each 90° elbow in a bypass line to ease disassembly and maintenance.

In **high discharge head applications** (more than 30 feet), an excessive amount of liquid may be bypassed and forced back to the wet well under the full working pressure of the pump; this will reduce overall pumping efficiency. **Therefore, it is recommended that a Gorman-Rupp Automatic Air Release Valve be installed in the bypass line.**

Gorman-Rupp Automatic Air Release Valves are reliable, and require minimum maintenance. See **AUTOMATIC AIR RELEASE VALVE** in this section for installation and theory of operation of the Automatic Air Release Valve. Consult your Gorman-Rupp distributor, or contact the Gorman-Rupp Company for selection of an Automatic Air Release Valve to fit your application.

If the installation involves a flooded suction such as a below-ground lift station. A pipe union and manual shut-off valve may be installed in the bleed line to allow service of the valve without shutting down the station, and to eliminate the possibility of flooding. If a manual shut-off valve is installed **anywhere** in the air release piping, it **must** be a full-opening **ball type** valve to prevent plugging by solids.

DANGER!

If a manual shut-off valve is installed in a bypass line, it must not be left closed during operation. A closed manual shut-off valve may cause a pump which has lost prime to continue to operate without reaching prime, causing dangerous overheating and possible explosive rupture of the pump casing. Personnel could be severely injured.

Allow an over-heated pump to cool before servicing. Do not remove plates, covers, gauges, or fittings from an over-heated pump. Liquid within the pump can reach boiling temperatures, and vapor pressure within the pump can cause parts being disengaged to be ejected with great force. After the pump cools, drain the liquid from the pump by removing the casing drain plug. Use cau-

tion when removing the plug to prevent injury to personnel from hot liquid.

AUTOMATIC AIR RELEASE VALVE

When properly installed, a Gorman-Rupp Automatic Air Release Valve will permit air to escape through the bypass line and then close automatically when the pump is fully primed and pumping at full capacity.

WARNING!

Some leakage (1 to 5 gallons [3.8 to 19 liters] per minute) will occur when the valve is fully closed. Be sure the bypass line is directed back to the wet well or tank to prevent hazardous spills.

Consult the manual accompanying the Air Release Valve for additional information on valve installation and performance.

Air Release Valve Installation

The Automatic Air Release Valve must be independently mounted in a horizontal position between the pump discharge port and the inlet side of the discharge check valve (see Figure 3). The inlet opening in the Air Release Valve is equipped with standard 1-inch NPT pipe threads.

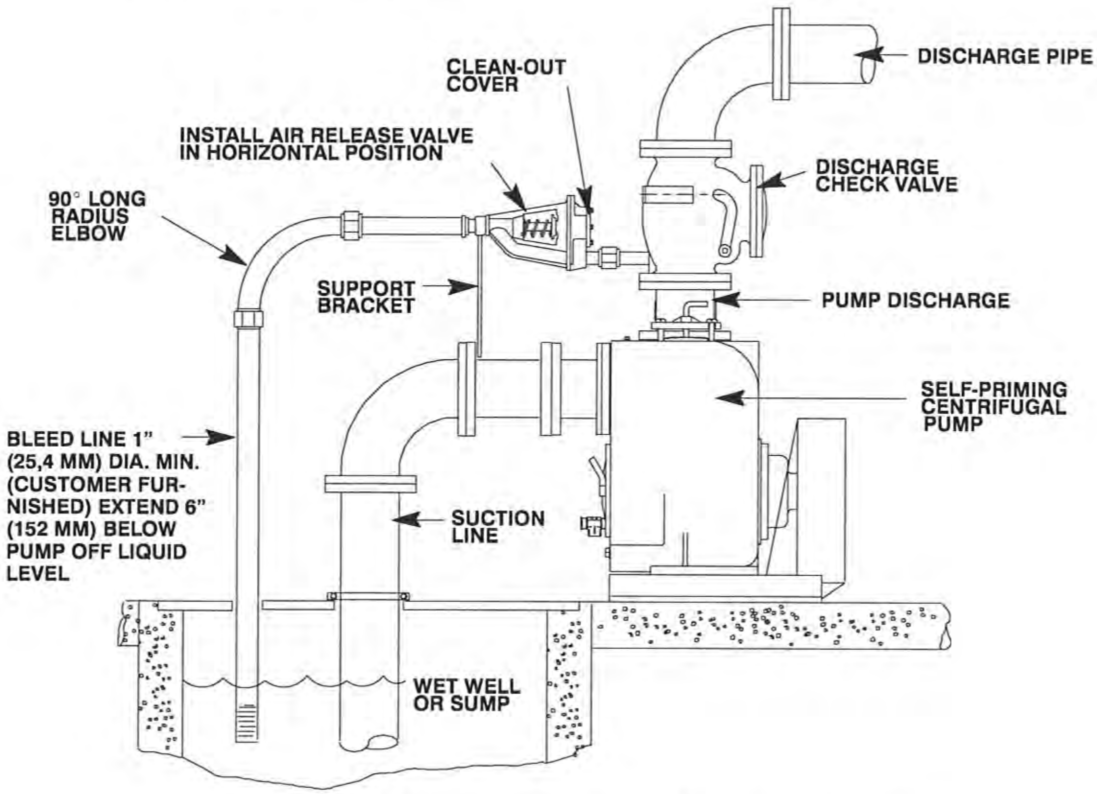


Figure 3. Typical Automatic Air Release Valve Installation

Connect the valve outlet to a bleed line which slopes back to the wet well or sump. The bleed line must be the same size as the outlet opening or larger, depending on which Air Release Valve is being used. If **piping** is used for the bleed line, avoid the use of elbows whenever possible.

NOTE

For multiple pump installations, it is recommended that each Air Release Valve be fitted with an independent bleeder line directed back to the wet well. If multiple Air Release Valves are installed in a system, ***do not*** *direct bleeder lines to a common manifold pipe. Contact your Gorman-Rupp distributor or the Gorman-Rupp Company for information about installation of an Automatic Air Release Valve for your specific application.*

ALIGNMENT

The alignment of the pump and its power source is critical for trouble-free mechanical operation. In either a flexible coupling or V-belt driven system, the driver and pump must be mounted so that their shafts are aligned with and parallel to each other. It is imperative that alignment be checked after the pump and piping are installed, and before operation.

NOTE

Check **Rotation,** *Section C, before final alignment of the pump.*

When mounted at the Gorman-Rupp factory, driver and pump are aligned before shipment. Misalignment will occur in transit and handling. Pumps **must** be checked and realigned before operation. Before checking alignment, tighten the foundation bolts. The pump casing feet and/or pedestal feet, and the driver mounting bolts should also be tightly secured.

WARNING!

When checking alignment, disconnect the power source to ensure that the pump will remain inoperative.

CAUTION

Adjusting the alignment in one direction may alter the alignment in another direction. check each procedure after altering alignment.

Coupled Drives

When using couplings, the axis of the power source must be aligned to the axis of the pump shaft in both the horizontal and vertical planes. Most couplings require a specific gap or clearance between the driving and the driven shafts. Refer to the coupling manufacturer's service literature.

Align spider insert type couplings by using calipers to measure the dimensions on the circumference of the outer ends of the coupling hub every 90°. The coupling is in alignment when the hub ends are the same distance apart at all points (see Figure 4A).

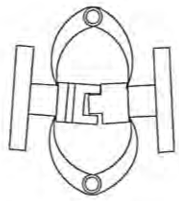


Figure 4A. Aligning Spider-Type Couplings

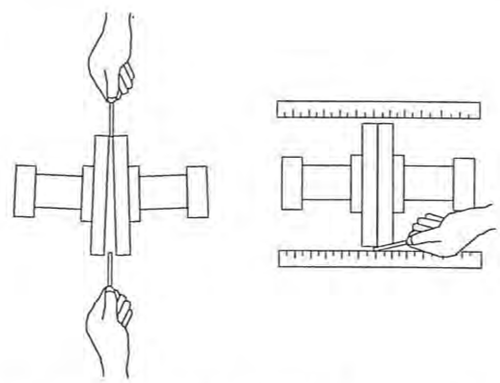


Figure 4B. Aligning Non-Spider Type Couplings

Align non-spider type couplings by using a feeler gauge or taper gauge between the coupling halves every 90°. The coupling is in alignment when the hubs are the same distance apart at all points (see Figure 4B).

Check parallel adjustment by laying a straightedge across both coupling rims at the top, bottom, and side. When the straightedge rests evenly on both halves of the coupling, the coupling is in horizontal parallel alignment. If the coupling is misaligned, use a feeler gauge between the coupling and the straightedge to measure the amount of misalignment.

V-Belt Drives

When using V-belt drives, the power source and the pump must be parallel. Use a straightedge along the sides of the pulleys to ensure that the pulleys are properly aligned (see Figure 4C). In drive systems using two or more belts, make certain that the belts are a matched set; unmatched sets will cause accelerated belt wear.

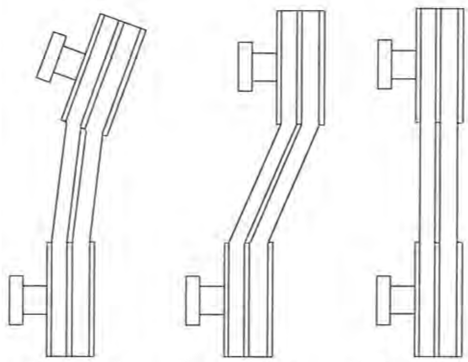


Figure 4C. Alignment of V-Belt Driven Pumps

Tighten the belts in accordance with the belt manufacturer's instructions. If the belts are too loose, they will slip; if the belts are too tight, there will be excessive power loss and possible bearing failure. Select pulleys that will match the proper speed ratio; overspeeding the pump may damage both pump and power source.

DANGER!

Do not operate the pump without the guard in place over the rotating parts. exposed rotating parts can catch clothing, fingers, or tools, causing severe injury to personnel.

DRIVE BELT TENSIONING

General Rules of Tensioning

For new drive belts, check the tension after 5, 20 and 50 hours of operation and re-tension as required (see the following procedure for measuring belt tension). Thereafter, check and re-tension if required monthly or at 500 hour intervals, whichever comes first.

Ideal drive belt tension is the **lowest** tension at which the belt will not slip under peak load conditions. Do not over-tension drive belts. Over-tensioning will shorten both drive belt and bearing life. Under-tensioning will cause belt slippage. Always keep belts free from dirt, grease, oil and other foreign material which may cause slippage.

OPERATION – SECTION C

Review all SAFETY information in Section A.

Follow the instructions on all tags, labels and decals attached to the pump.

WARNING!

This pump is designed to handle liquids containing large entrained solids and slurries. Do not attempt to pump volatile, corrosive, or flammable liquids which may damage the pump or endanger personnel as a result of pump failure.

CAUTION

Pump speed and operating conditions must be within the performance range shown on page E-1.

PRIMING

Install the pump and piping as described in **INSTALLATION**. Make sure that the piping connections are tight, and that the pump is securely mounted. Check that the pump is properly lubricated (see **LUBRICATION** in **MAINTENANCE AND REPAIR**).

This pump is self-priming, but the pump should never be operated unless there is liquid in the pump casing.

CAUTION

Never operate this pump unless there is liquid in the pump casing. The pump will not prime when dry. extended operation of a dry pump will destroy the seal assembly.

Add liquid to the pump casing when:

1. The pump is being put into service for the first time.
2. The pump has not been used for a considerable length of time.
3. The liquid in the pump casing has evaporated.

Once the pump casing has been filled, the pump will prime and reprime as necessary.

WARNING!

After filling the pump casing, reinstall and tighten the fill plug. Do not attempt to operate the pump unless all connecting piping is securely installed. Otherwise, liquid in the pump forced out under pressure could cause injury to personnel.

To fill the pump, remove the pump casing fill cover or fill plug in the top of the casing, and add clean liquid until the casing is filled. Replace the fill cover or fill plug before operating the pump.

STARTING

Consult the operations manual furnished with the power source.

Rotation

The correct direction of pump rotation is counterclockwise when facing the impeller. The pump could be damaged and performance adversely affected by incorrect rotation. If pump performance is not within the specified limits (see the curve on page E-1), check the direction of power source rotation before further troubleshooting.

If an electric motor is used to drive the pump, remove V-belts, couplings, or otherwise disconnect the pump from the motor before checking motor rotation. Operate the motor independently while observing the direction of the motor shaft, or cooling fan.

If rotation is incorrect on a three-phase motor, have a qualified electrician interchange any two of the three phase wires to change direction. If rotation is incorrect on a single-phase motor, consult the literature supplied with the motor for specific instructions.

OPERATION

Lines With a Bypass

If a Gorman-Rupp Automatic Air Release Valve has been installed, the valve will automatically open to allow the pump to prime, and automatically close after priming is complete (see **INSTALLATION** for Air Release Valve operation).

If the bypass line is open, air from the suction line will be discharged through the bypass line back to the wet well during the priming cycle. Liquid will then continue to circulate through the bypass line while the pump is in operation.

Lines Without a Bypass

Open all valves in the discharge line and start the power source. Priming is indicated by a positive reading on the discharge pressure gauge or by a quieter operation. The pump may not prime immediately because the suction line must first fill with liquid. If the pump fails to prime within five minutes, stop it and check the suction line for leaks.

After the pump has been primed, partially close the discharge line throttling valve in order to fill the line slowly and guard against excessive shock pressure which could damage pipe ends, gaskets, sprinkler heads, and any other fixtures connected to the line. When the discharge line is completely filled, adjust the throttling valve to the required flow rate.

WARNING!

Do not operate the pump against a closed discharge throttling valve for long periods of time. If operated against a closed discharge throttling valve, pump components will deteriorate, and the liquid could come to a boil, build pressure, and cause the pump casing to rupture or explode.

Leakage

No leakage should be visible at pump mating surfaces, or at pump connections or fittings. Keep all line connections and fittings tight to maintain maximum pump efficiency.

Liquid Temperature And Overheating

The **maximum** liquid temperature for this pump is 160° F (71° C). Do not apply it at a higher operating temperature.

Overheating can occur if operated with the valves in the suction or discharge lines closed. Operating against closed valves could bring the liquid to a boil, build pressure, and cause the pump to rupture or explode. If overheating occurs, stop the pump and allow it to cool before servicing it. Refill the pump casing with cool liquid.

DANGER!

Allow an over-heated pump to cool before servicing. Do not remove plates, covers, gauges, or fittings from an overheated pump. Liquid within the pump can reach boiling temperatures, and vapor pressure within the pump can cause parts being disengaged to be ejected with great force. After the pump cools, drain the liquid from the pump by removing the casing drain plug. Use caution when removing the plug to prevent injury to personnel from hot liquid.

As a safeguard against rupture or explosion due to heat, this pump is equipped with a pressure relief valve which will open if vapor pressure within the pump casing reaches a critical point. If overheating does occur, stop the pump immediately and allow it to cool before servicing it. **Approach any overheated pump cautiously**. It is recommended that the pressure relief valve assembly be replaced at each overhaul, or any time the pump casing overheats and activates the valve. **Never** replace this valve with a substitute which has not been specified or provided by the Gorman-Rupp Company.

Strainer Check

If a suction strainer has been shipped with the pump or installed by the user, check the strainer regularly, and clean it as necessary. The strainer should also be checked if pump flow rate begins to drop. If a vacuum suction gauge has been installed, monitor and record the readings regularly to detect strainer blockage.

Never introduce air or steam pressure into the pump casing or piping to remove a blockage. This could result in personal injury or damage to the equipment. If backflushing is absolutely necessary, liquid pressure **must** be limited to 50% of the maximum permissible operating pressure shown on the pump performance curve.

Pump Vacuum Check

With the pump inoperative, install a vacuum gauge in the system, using pipe dope on the threads. Block the suction line and start the pump. At operating speed the pump should pull a vacuum of 20 inches (508,0 mm) or more of mercury. If it does not, check for air leaks in the seal, gasket, or discharge valve.

Open the suction line, and read the vacuum gauge with the pump primed and at operation speed. Shut off the pump. The vacuum gauge reading will immediately drop proportionate to static suction lift, and should then stabilize. If the vacuum reading falls off rapidly after stabilization, an air leak exists. Before checking for the source of the leak, check the point of installation of the vacuum gauge.

STOPPING

Never halt the flow of liquid suddenly. If the liquid being pumped is stopped abruptly, damaging shock waves can be transmitted to the pump and piping system. Close all connecting valves slowly.

On engine driven pumps, reduce the throttle speed slowly and allow the engine to idle briefly before stopping.

CAUTION

If the application involves a high discharge head, gradually close the discharge throttling valve before stopping the pump.

After stopping the pump, lock out or disconnect the power source to ensure that the pump will remain inoperative.

WARNING!

Do not operate the pump against a closed discharge throttling valve for long periods of time. If operated against a closed discharge throttling valve, pump components will deteriorate, and the liquid could come to a boil, build pressure, and cause the pump casing to rupture or explode.

Cold Weather Preservation

In below freezing conditions, drain the pump to prevent damage from freezing. Also, clean out any solids by flushing with a hose. Operate the pump for approximately one minute; this will remove any remaining liquid that could freeze the pump rotating parts. If the pump will be idle for more than a few hours, or if it has been pumping liquids containing a large amount of solids, drain the pump, and flush it thoroughly with clean water. To prevent large solids from clogging the drain port and preventing the pump from completely draining, insert a rod or stiff wire in the drain port, and agitate the liquid during the draining process. Clean out any remaining solids by flushing with a hose.

BEARING TEMPERATURE CHECK

Bearings normally run at higher than ambient temperatures because of heat generated by friction.

Temperatures up to 160°F (71° C) are considered normal for bearings, and they can operate safely to at least 180°F (82° C).

Checking bearing temperatures by hand is inaccurate. Bearing temperatures can be measured accurately by placing a contact-type thermometer against the housing. Record this temperature for future reference.

A sudden increase in bearing temperature is a warning that the bearings are at the point of failing to operate properly. Make certain that the bearing lubricant is of the proper viscosity and at the correct level (see **LUBRICATION** in **MAINTENANCE AND REPAIR**). Bearing overheating can also be caused by shaft misalignment and/or excessive vibration.

When pumps are first started, the bearings may seem to run at temperatures above normal. Continued operation should bring the temperatures down to normal levels.

TROUBLESHOOTING – SECTION D

Review all SAFETY information in Section A.

WARNING!

Before attempting to open or service the pump:

1. **Familiarize yourself with this manual.**
2. **Lock out or disconnect the power source to ensure that the pump will remain inoperative.**
3. **Allow the pump to completely cool if overheated.**
4. **Check the temperature before opening any covers, plates, or plugs.**
5. **Close the suction and discharge valves.**
6. **Vent the pump slowly and cautiously.**
7. **Drain the pump.**

TROUBLE	POSSIBLE CAUSE	PROBABLE REMEDY
PUMP FAILS TO PRIME	Not enough liquid in casing.	Add liquid to casing. See **PRIMING**.
	Suction check valve contaminated or damaged.	Clean or replace check valve.
	Air leak in suction line.	Correct leak.
	Lining of suction hose collapsed.	Replace suction hose.
	Leaking or worn seal or pump gasket.	Check pump vacuum. Replace leaking or worn seal or gasket.
	Suction lift or discharge head too high.	Check piping installation and install bypass line if needed. See **INSTALLATION**.
	Strainer clogged.	Check strainer and clean if necessary.
PUMP STOPS OR FAILS TO DELIVER RATED FLOW OR PRESSURE	Air leak in suction line.	Correct leak.
	Lining of suction hose collapsed.	Replace suction hose.
	Leaking or worn seal or pump gasket.	Check pump vacuum. Replace leaking or worn seal or gasket.

TROUBLE	POSSIBLE CAUSE	PROBABLE REMEDY
PUMP STOPS OR FAILS TO DELIVER RATED FLOW OR PRESSURE	Strainer clogged.	Check strainer and clean if necessary.
	Suction intake not submerged at proper level or sump too small.	Check installation and correct submergence as needed.
	Impeller or other wearing parts worn or damaged.	Replace worn or damaged parts. Check that impeller is properly centered and rotates freely.
	Impeller clogged.	Free impeller of debris.
	Pump speed too slow.	Check driver output; check belts or couplings for slippage.
	Discharge head too high.	Install bypass line.
	Suction lift too high.	Measure lift w/vacuum gauge. Reduce lift and/or friction losses in suction line.
PUMP REQUIRES TOO MUCH POWER	Pump speed too high.	Check driver output; check that sheaves or couplings are correctly sized.
	Discharge head too low.	Adjust discharge valve.
	Liquid solution too thick.	Dilute if possible.
	Bearing(s) frozen.	Disassemble pump and check bearing(s).
PUMP CLOGS FREQUENTLY	Liquid solution too thick.	Dilute if possible.
	Discharge flow too slow.	Open discharge valve fully to increase flow rate, and run power source at maximum governed speed.
	Suction check valve or foot valve clogged or binding.	Clean valve.
EXCESSIVE NOISE	Cavitation in pump.	Reduce suction lift and/or friction losses in suction line. Record vacuum and pressure gauge readings and consult local representative or factory.
	Pumping entrained air.	Locate and eliminate source of air bubble.
	Pump or drive not securely mounted.	Secure mounting hardware.
	Impeller clogged or damaged.	Clean out debris; replace damaged parts.

TROUBLE	POSSIBLE CAUSE	PROBABLE REMEDY
BEARINGS RUN TOO HOT	Bearing temperature is high, but within limits.	Check bearing temperature regularly to monitor any increase.
	Low or incorrect lubricant.	Check for proper type and level of lubricant.
	Suction and discharge lines not properly supported.	Check piping installation for proper support.
	Drive misaligned.	Align drive properly.

PREVENTIVE MAINTENANCE

Since pump applications are seldom identical, and pump wear is directly affected by such things as the abrasive qualities, pressure and temperature of the liquid being pumped, this section is intended only to provide general recommendations and practices for preventive maintenance. Regardless of the application however, following a routine preventive maintenance schedule will help assure trouble-free performance and long life from your Gorman-Rupp pump. For specific questions concerning your application, contact your Gorman-Rupp distributor or the Gorman-Rupp Company.

Record keeping is an essential component of a good preventive maintenance program. Changes in suction and discharge gauge readings (if so equipped) between regularly scheduled inspections can indicate problems that can be corrected before system damage or catastrophic failure occurs. The appearance of wearing parts should also be documented at each inspection for comparison as well. Also, if records indicate that a certain part (such as the seal) fails at approximately the same duty cycle, the part can be checked and replaced before failure occurs, reducing unscheduled down time.

For new applications, a first inspection of wearing parts at 250 hours will give insight into the wear rate for your particular application. Subsequent inspections should be performed at the intervals shown on the chart below. Critical applications should be inspected more frequently.

Preventive Maintenance Schedule

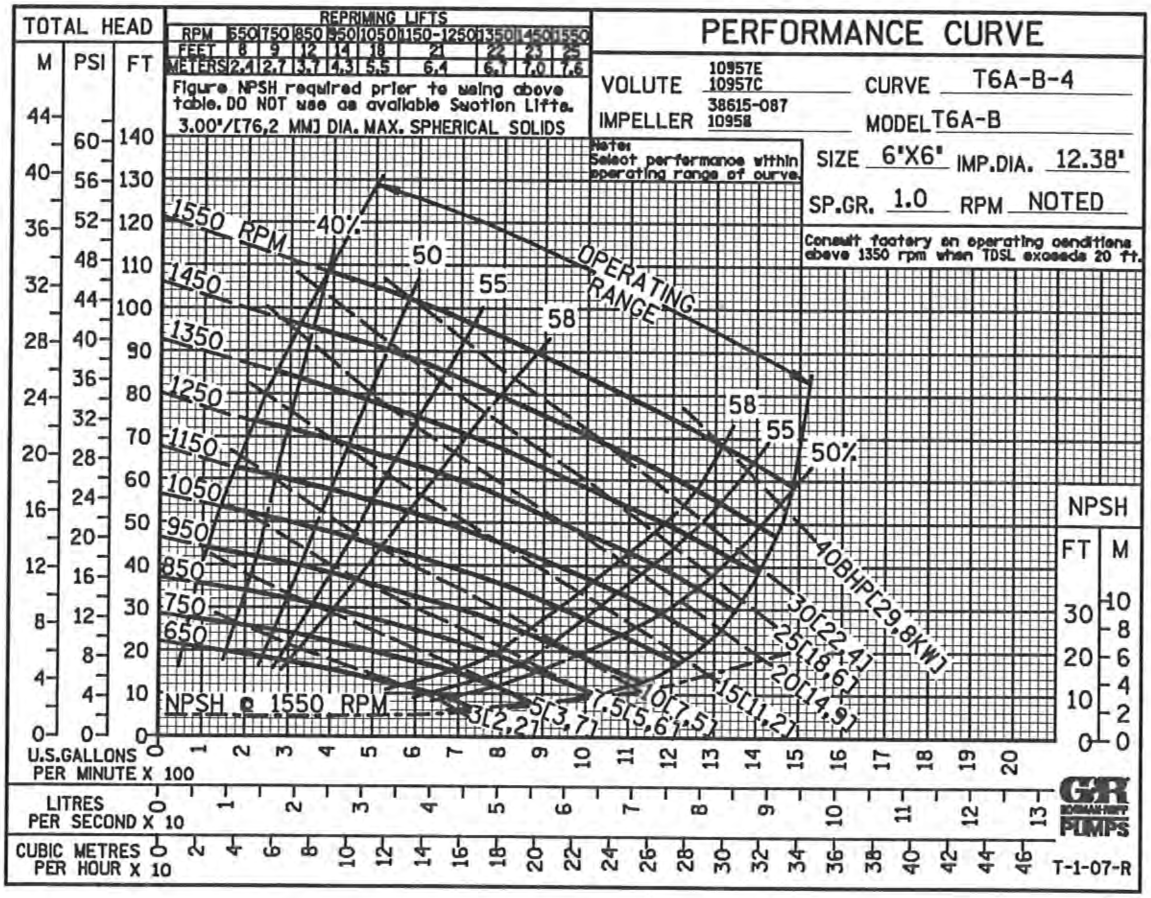
Item	Service Interval*				
	Daily	Weekly	Monthly	Semi-Annually	Annually
General Condition (Temperature, Unusual Noises or Vibrations, Cracks, Leaks, Loose Hardware, Etc.)	I				
Pump Performance (Gauges, Speed, Flow)	I				
Bearing Lubrication		I			R
Seal Lubrication (And Packing Adjustment, If So Equipped)		I			R
V-Belts (If So Equipped)			I		
Air Release Valve Plunger Rod (If So Equipped)			I	C	
Front Impeller Clearance (Wear Plate)				I	
Rear Impeller Clearance (Seal Plate)				I	
Check Valve					I
Pressure Relief Valve (If So Equipped)					C
Pump and Driver Alignment					I
Shaft Deflection					I
Bearings					I
Bearing Housing					I
Piping					I
Driver Lubrication – See Mfgr's Literature					

Legend:
I = Inspect, Clean, Adjust, Repair or Replace as Necessary
C = Clean
R = Replace

* Service interval based on an intermittent duty cycle equal to approximately 4000 hours annually. Adjust schedule as required for lower or higher duty cycles or extreme operating conditions.

PUMP MAINTENANCE AND REPAIR – SECTION E

MAINTENANCE AND REPAIR OF THE WEARING PARTS OF THE PUMP WILL MAINTAIN PEAK OPERATING PERFORMANCE.



✳ **STANDARD PERFORMANCE FOR PUMP MODEL T6A3-B, Including /F**

✳Based on 70° F (21° C) clear water at sea level with minimum suction lift. Since pump installations are seldom identical, your performance may be difference due to such factors as viscosity, specific gravity, elevation, temperature, and impeller trim.

If your pump serial number is followed by an "N", your pump is **NOT** a standard production model.

Contact the Gorman-Rupp Company to verify performance or part numbers.

CAUTION

Pump speed and operating condition points must be within the continuous performance range shown on the curve.

SECTION DRAWING

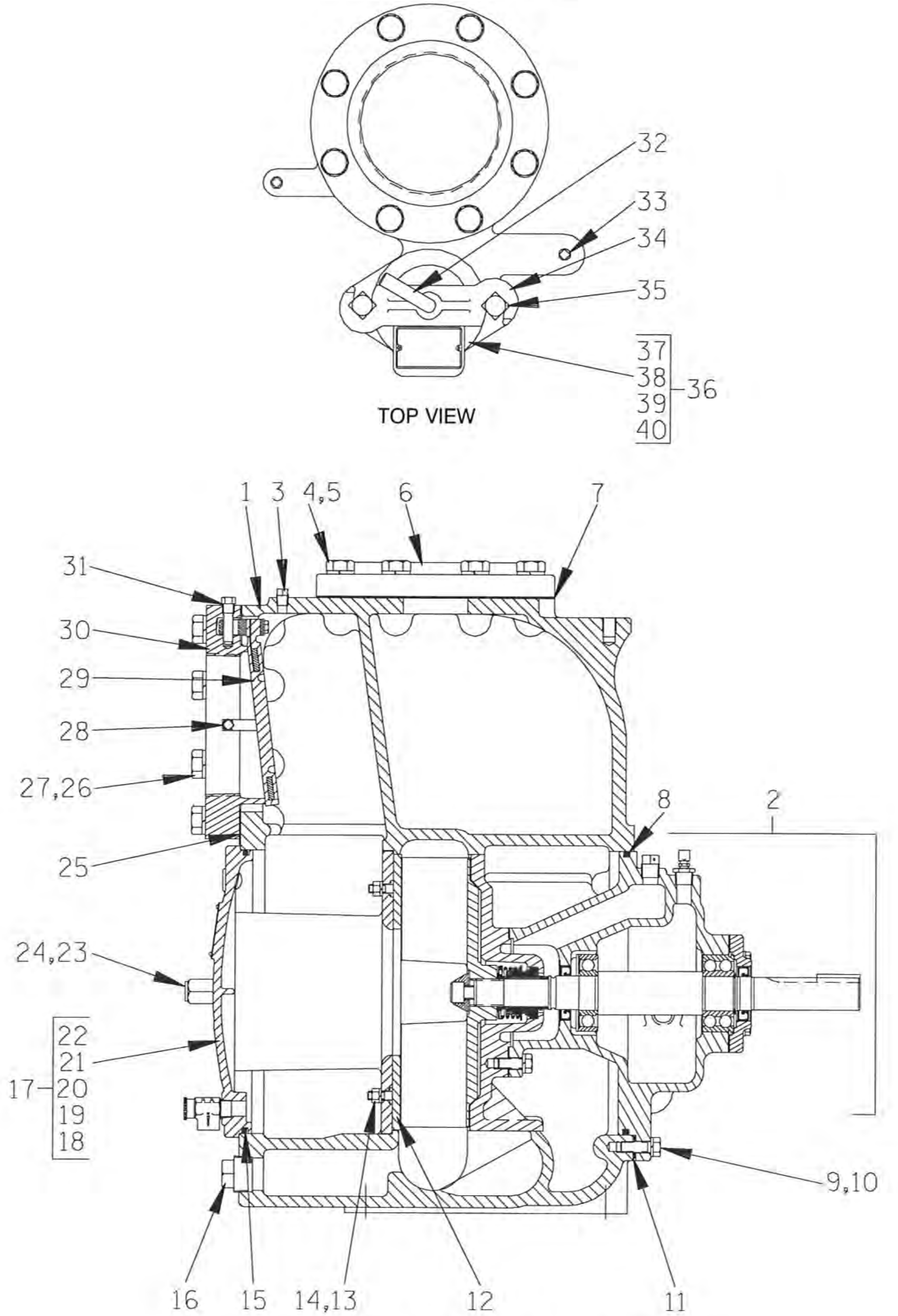


Figure 1. Pump Model T6A3−B, Including /F

PARTS LIST
Pump Model T6A3−B, Including /F
(From S/N 740693 Up)

If your pump serial number is followed by an "N", your pump is **NOT** a standard production model. Contact the Gorman-Rupp Company to verify part numbers.

ITEM NO.	PART NAME	PART NUMBER	MAT'L CODE	QTY
1	PUMP CASING	10957C	10010	1
2 *	REPAIR ROTATING ASSY	10956F	---	1
*	REPAIR ROTATING ASSY (WW MODEL ONLY)	44163−243	---	1
*	REPAIR ROTATING ASSY (WWS MODEL ONLY)	44163−202	---	1
3	PIPE PLUG	P04	15079	1
4	HEX HD CAPSCREW	B1208	15991	8
5	LOCKWASHER	J12	15991	8
6	DISCHARGE FLANGE	1758	10010	1
7 *	DISCH FLANGE GSKT	25113−036	---	1
8 *	ROTATING ASSY O-RING	S1676	---	1
9	HEX HD CAPSCREW	B0806	15991	4
10	LOCKWASHER	J08	15991	4
11 *	ROT ASSY SHIM SET	13131	17040	4
12 *	WEAR PLATE ASSY	46451−723	24150	1
13	LOCKWASHER	J06	15991	4
14	HEX NUT	D06	15991	4
15 *	BACK COVER O-RING	S1676	---	1
16	CASING DRAIN PLUG	P20	10009	1
17	BACK CVR PLATE ASSY	42111−905	---	1
18	−DRIVE SCREW	BM#04−03	17000	4
19	−WARNING PLATE	2613EV	13990	1
20	−PRESS RELIEF VALVE	26662−005	---	1
21	−BACK COVER PLATE	NOT AVAILABLE		1
22	−WARNING DECAL	38816−302	---	1
23	STUD	C1211	15991	2
24	BACK COVER NUT	31871−073	15000	2
25 *	GASKET	11402G	19370	1
26	HEX HD CAPSCREW	B1211	15991	8
27	LOCKWASHER	J12	15991	8
28	PIPE PLUG	P04	15079	1
29 *	SUCT CHK VALVE ASSY	46411−064	---	1
30	SUCTION FLANGE	11402	10010	1
31	CHECK VALVE PIN	11645	17010	1
32	CLAMP BAR SCREW	31912−009	15000	1
33	PIPE PLUG	P04	15079	1
34	CLAMP BAR	38111−004	11010	1
35	MACHINE BOLT	A1014	15991	2
36	FILL COVER ASSY	42111−344	---	1
37	−DRIVE SCREW	BM#04−03	17000	2
38	−FILL COVER PLATE	NOT AVAILABLE		1
39	−WARNING PLATE	38816−097	13990	1
40 *	−GASKET	50G	19210	1
NOT SHOWN:				
	NAME PLATE	38818−040	13990	1
	DRIVE SCREW	BM#04−03	17000	4
	LUBE DECAL	11421	---	1
	SUCTION STICKER	6588AG	---	1
	DISCHARGE STICKER	6588BJ	---	1
	PRIMING STICKER	6588AH	---	1
	WARNING DECAL	2613FE	---	1
	ROTATON DECAL	2613M	---	1
OPTIONAL:				
	DISASSEMBLY TOOL	48711−020	---	1
	/F FLANGE KIT	48213−041	---	1
	−SUCTION	11402A	10010	1
	−DISCHARGE	11402B	10010	1
	/FM METRIC FLANGE KIT	48213−078	---	1
	−SUCTION	38642−502	10000	1
	−DISCHARGE	38642−503	10000	1
	WEAR PLATES:			
	−SPA ALLOY	46451−729	24160	1
	−TUNGSTEN CARBIDE	46451−726	2415D	1
	−STAINLESS STEEL	46451−723	1718H	1
	CASING HEATERS:			
	−120V	47811−004	---	1
	−240V	47811−005	---	1
	CHECK VALVE ASSYS:			
	−NEO SOLID TYPE	46411−019	---	1
✓	−VITON SOLID	46411−078	---	1
✓	−VITON BLOW−OUT	46411−088	---	1
	PRESS RELIEF VALVES:			
	−SEWAGE TYPE	46431−628	---	1
	−STAINLESS STEEL	46431−629	---	1
	HI TEMP SHUT−DOWN KITS:			
	−145°F	48313−186	---	1
	−130°F	48313−256	---	1
	−120°F	48313−257	---	1
	HI TEMP SHUT−DOWN THERMOSTAT KIT 145°F	48313−172	---	1
	AIR RELEASE VALVES:			
	−10# COMP SPRING	GRP33−07A	---	1
	−25# COMP SPRING	GRP33−07	---	1
	−80# COMP SPRING	GRP33−07B	---	1
	A/R VALVE MTG KIT	46331−515	---	1
	ROTATING ASSY AND BACK COVER O-RING			
✓	−VITON	25154−454	---	1

* INDICATES PARTS RECOMMENDED FOR STOCK
✓ KALREZ® AND VITON™ ARE PRODUCTS OF THE DUPONT CORP
★ AFLAS® IS A PRODUCT OF THE 3M CORP

SECTION DRAWING

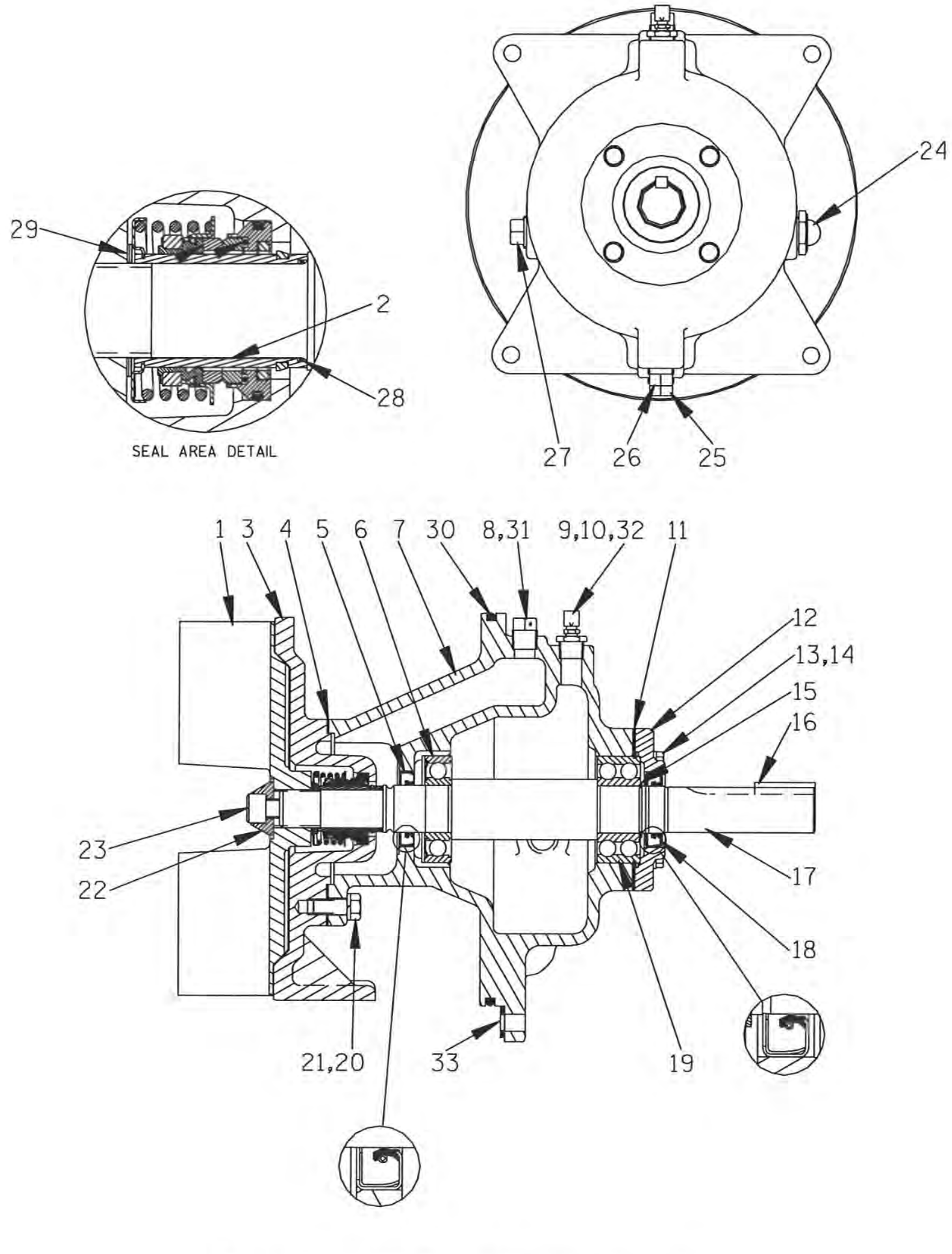


Figure 2. 10956F Repair Rotating Assembly

PARTS LIST
10956F Repair Rotating Assembly

ITEM NO.	PART NAME	PART NUMBER	MAT'L CODE	QTY
1 *	IMPELLER	10958	11010	1
2 *	SEAL ASSEMBLY	46513–150	– – –	1
3	SEAL PLATE	11837E	10010	1
4 *	SEAL PLATE GASKET	10959G	20000	1
5 *	BEARING CAP OIL SEAL	S1352	– – –	1
6 *	INBOARD BALL BEARING	23276–009	– – –	1
7	BEARING HOUSING	10959B	10010	1
8	VENTED PLUG	4823A	15079	1
9	AIR VENT	S1530	– – –	1
10	RED PIPE BUSHING	AP0802	15079	1
11 **	BEARING CAP GASKET	38683–248	18000	1
12	BEARING CAP	38322–215	10010	1
13	HEX HD CAPSCREW	B0605	15991	4
14	LOCKWASHER	J06	15991	4
15	BRG RETAINING RING	S244	– – –	1
16 *	SHAFT KEY	N0612	15990	1
17 *	IMPELLER SHAFT	10529	16040	1
18 *	INBOARD OIL SEAL	S1352	– – –	1
19 *	OUTBRD BALL BEARING	S1040	– – –	1
20	HEX HD CAPSCREW	B0805 1/2	15991	4
21	LOCKWASHER	J08	15991	4
22	IMPELLER WASHER	10278	15030	1
23	SOCKET HD CAPSCREW	DM1004S	15991	1
24	SIGHT GAUGE	S1471	– – –	1
25	SEAL CAV DRAIN PLUG	P08	15079	1
26	BRG HSG DRAIN PLUG	P08	15079	1
27	PIPE PLUG	P12	15079	1
28 *	O-RING	25154–022	– – –	REF
29 *	IMPELLER ADJ SHIM SET	37J	17090	REF
30 *	ROTATING ASSY O-RING	S1676	– – –	1
31	SHIPPING PLUG	11495B	15079	1
32	SHIPPING PLUG	11495B	15079	1
33 *	ROT ASSY ADJ SHIM SET	13131	17040	4
NOT SHOWN:				
	ROTATION DECAL	2613M	– – –	1

ITEM NO.	PART NAME	PART NUMBER	MAT'L CODE	QTY
	INSTRUCTION TAG	6588U	– – –	1
OPTIONAL:				
	IMP CLEAN-OUT KIT	48783–003	– – –	1
	STAINLESS STEEL PARTS:			
	IMP SHAFT LESS SLEEVE	10529B	1706H	1
	SPACER WASHER (FOR SST SHAFT)	38329–040	17130	1
	SEAL ASSY	112364D	– – –	1
	IMPELLERS:			
	–ADI	10958	1102H	1
	–TUNG CARB COATED	10958A	11000	1
	SEAL PLATES:			
	–(TUNG CARB COATED)	11837F	10010	1
	–ADI	11837E	1102H	1
	SEAL ASSEMBLIES			
†	–STD MECHANICAL	12364A	– – –	1
†	–PERMALON COATED	46512–150	– – –	1
	METAL BELLOWS MECH SEAL ASSY			
	SEAL PLATE	38272–242	10010	1
	SEAL SLEEVE ASTL	11876B	16000	1
	SPACER WASHER	38329–040	17130	1
✓	–(VITON OR EQUAL)	46512–147	– – –	1
✓	–(KALREZ)	46512–142	– – –	1
†	MECHANICAL SEAL SHAFT SLEEVE	11876A	16000	1
† ★	AFLAS SEAL (W/SST SLEEVE OR SOLID SST SHAFT)	46512–194	– – –	1
	ROTATING ASSEMBLY AND BACK COVER O-RINGS:			
✓	–VITON	25154–454	– – –	1

* INDICATES PARTS RECOMMENDED FOR STOCK

** FOR PUMPS WITH SERIAL NUMBERS **BELOW** 864836, ORDER 10530G/18000 BEARING CAP GASKET. IF **BOTH** BEARING CAP AND GASKET MUST BE REPLACED, ORDER PARTS LISTED ABOVE.

† OPTIONAL MECHANICAL SEAL(S) **MUST** BE USED WITH MECHANICAL SEAL SHAFT SLEEVE OR SOLID SST SHAFT.

✓ KALREZ® AND VITON™ ARE PRODUCTS OF THE DUPONT CORP.

★ AFLAS® IS A PRODUCT OF THE 3M CORP.

PUMP AND SEAL DISASSEMBLY AND REASSEMBLY

Review all SAFETY information in Section A.

Follow the instructions on all tags, label and decals attached to the pump.

This pump requires little service due to its rugged, minimum-maintenance design. However, if it becomes necessary to inspect or replace the wearing parts, follow these instructions which are keyed to the sectional views (see Figures 1 and 2) and the accompanying parts lists.

As described on the following pages, this manual will alert personnel to known procedures which require special attention, to those which could damage equipment, and to those which could be dangerous to personnel. However, this manual cannot possibly anticipate and provide detailed precautions for every situation that might occur during maintenance of the unit. Therefore, it is the responsibility of the owner/maintenance personnel to ensure that **only** safe, established maintenance procedures are used, and that any procedures not addressed in this manual are performed **only** after establishing that neither personal safety nor pump integrity are compromised by such practices.

Many service functions may be performed by draining the pump and removing the back cover assembly. If major repair is required, the piping and/or power source must be disconnected. The following instructions assume complete disassembly is required.

Before attempting to service the pump, disconnect or lock out the power source and take precautions to ensure that it will remain inoperative. Close all valves in the suction and discharge lines.

For power source disassembly and repair, consult the literature supplied with the power source, or contact your local power source representative.

WARNING!

Before attempting to open or service the pump:

1. **Familiarize yourself with this manual.**
2. **Disconnect or lock out the power source to ensure that the pump will remain inoperative.**
3. **Allow the pump to completely cool if overheated.**
4. **Check the temperature before opening any covers, plates, or plugs.**
5. **Close the suction and discharge valves.**
6. **Vent the pump slowly and cautiously.**
7. **Drain the pump.**

WARNING!

Use lifting and moving equipment in good repair and with adequate capacity to prevent injuries to personnel or damage to equipment.

Back Cover And Wear Plate Removal

(Figure 1)

The wear plate (12) is easily accessible and may be serviced by removing the back cover assembly (17). Before attempting to service the pump, remove the pump casing drain plug (16) and drain the pump. Clean and reinstall the drain plug.

Remove the back cover nuts (24) and pull the back cover and assembled wear plate from the pump casing (1). Inspect the wear plate, and replace it if badly scored or worn. To remove the wear plate, disengage the hardware (13 and 14).

Inspect the back cover O-ring (15) and replace it if damaged or worn.

Suction Check Valve Removal

(Figure 1)

If the check valve assembly (29) is to be serviced, remove the check valve pin (31), reach through the back cover opening and pull the complete assembly from the suction flange (30).

NOTE

Further disassembly of the check valve is not required since it must be replaced as a complete unit.

Individual parts are not sold separately.

Rotating Assembly Removal

(Figure 2)

The rotating assembly may be serviced without disconnecting the suction or discharge piping; however, the power source must be removed to provide clearance.

The impeller (1) should be loosened while the rotating assembly is still secured to the pump casing. Before loosening the impeller, remove the seal cavity drain plug (25) and drain the seal lubricant. This will prevent the oil in the seal cavity from escaping when the impeller is loosened. Clean and reinstall the seal cavity drain plug.

Immobilize the impeller by wedging a block wood between the vanes and the pump casing, and remove the impeller capscrew and washer (22 and 23).

Install a lathe dog on the drive end of the shaft (17) with the "V" notch positioned over the shaft keyway.

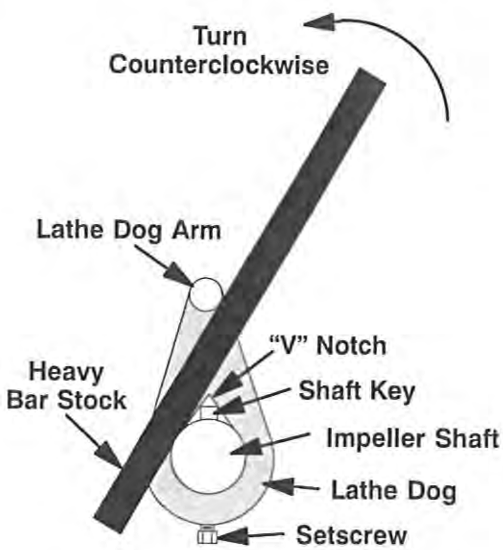


Figure 3. Loosening Impeller

With the impeller rotation still blocked, see Figure 3 and use a long piece of heavy bar stock to pry against the arm of the lathe dog in a counterclockwise direction (when facing the drive end of the shaft). **Use caution** not to damage the shaft or keyway. When the impeller breaks loose, remove the lathe dog and wood block.

NOTE

Do not remove the impeller until the rotating assembly has been removed from the pump casing.

(Figure 1)

Remove the hardware (9 and 10) securing the rotating assembly to the pump casing. Separate the rotating assembly by pulling straight away from the pump casing.

NOTE

An optional disassembly tool is available from the factory. If the tool is used, follow the instructions packed with it. A similar tool may be assembled using 1/2-inch pipe (schedule 80 steel or malleable iron) and a standard tee (see Figure 4). All threads are 1/2-inch NPT. ***Do not pre-assemble the tool.***

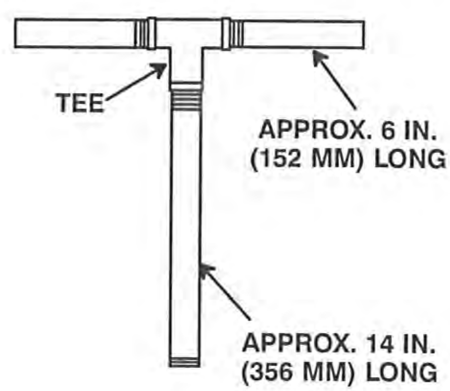


Figure 4. Rotating Assembly Tool

To install the tool, remove the air vent (9, Figure 2) from the bearing housing, and screw the longest length of pipe into the vent hole until fully engaged. Install the tee, and screw the handles into the tee. Use caution when lifting the rotating assembly to avoid injury to personnel or damage to the assembly.

Remove the bearing housing O-ring (8).

Impeller Removal

(Figure 2)

With the rotating assembly removed from the pump casing, unscrew the impeller from the shaft.

Use caution when unscrewing the impeller; tension on the shaft seal spring will be released as the impeller is removed. Inspect the impeller and replace if cracked or badly worn.

Remove the impeller adjusting shims (29); tie and tag the shims, or measure and record their thickness for ease of reassembly.

Seal Removal

(Figure 2)

Slide the integral shaft sleeve and rotating portion of the seal off the shaft as a unit.

Use a pair of stiff wires with hooked ends to remove the stationary element and seat.

An alternate method of removing the stationary seal components is to remove the hardware (20 and 21) and separate the seal plate (3) and gasket (4) from the bearing housing (7). Position the seal plate on a flat surface with the impeller side down. Use a wooden dowel or other suitable tool to press on the back side of the stationary seat until the seat, O-rings, and stationary element can be removed.

Remove the shaft sleeve O-ring (28).

If no further disassembly is required, refer to **Seal Installation**.

Shaft and Bearing Removal and Disassembly

(Figure 2)

When the pump is properly operated and maintained, the bearing housing should not require disassembly. Disassemble the shaft and bearings **only** when there is evidence of wear or damage.

CAUTION

Shaft and bearing disassembly in the field is not recommended. These operations should be performed only in a properly-equipped shop by qualified personnel.

Remove the bearing housing drain plug (26) and drain the lubricant. Clean and reinstall the drain plug.

Disengage the hardware (13 and14) and slide the bearing cap (12) and oil seal (18) off the shaft.Remove the bearing cap gasket (11), and press the oil seal from the bearing cap.

Place a block of wood against the impeller end of the shaft and tap the shaft and assembled bearings (6 and 19) from the bearing housing.

After removing the shaft and bearings, clean and inspect the bearings **in place** as follows.

CAUTION

To prevent damage during removal from the shaft, it is recommended that bearings be cleaned and inspected **in place**. It is **strongly** recommended that the bearings be replaced **any** time the shaft and bearings are removed.

Clean the bearing housing, shaft and all component parts (except the bearings) with a soft cloth soaked in cleaning solvent. Inspect the parts for wear or damage and replace as necessary.

WARNING!

Most cleaning solvents are toxic and flammable. Use them only in a well ventilated area free from excessive heat, sparks, and flame. Read and follow all precautions printed on solvent containers.

Clean the bearings thoroughly in **fresh** cleaning solvent. Dry the bearings with filtered compressed air and coat with light oil.

CAUTION

Bearings must be kept free of all dirt and foreign material. Failure to do so will greatly shorten bearing life. **DO NOT** spin dry bearings. This may scratch the balls or races and cause premature bearing failure.

Rotate the bearings by hand to check for roughness or binding and inspect the bearing balls. If rotation is rough or the bearing balls are discolored, replace the bearings.

The bearing tolerances provide a tight press fit onto the shaft and a snug slip fit into the bearing housing. Replace the bearings, shaft, or bearing housing if the proper bearing fit is not achieved.

If bearing replacement is required, remove the outboard bearing retaining ring (15), and use a bearing puller to remove the bearings from the shaft.

Press the inboard oil seal (5) from the bearing housing.

Shaft and Bearing Reassembly and Installation

(Figure 2)

Clean the bearing housing, shaft and all component parts (except the bearings) with a soft cloth soaked in cleaning solvent. Inspect the parts for wear or damage as necessary.

WARNING!

Most cleaning solvents are toxic and flammable. Use them only in a well ventilated area free from excessive heat, sparks, and flame. Read and follow all precautions printed on solvent containers.

Inspect the shaft for distortion, nicks or scratches, or for thread damage on the impeller end. Dress small nicks and burrs with a fine file or emery cloth. Replace the shaft if defective.

Position the inboard oil seal (5) in the bearing housing bore with the lip positioned as shown in Figure 2. Press the oil seal into the housing until the face is **just flush** with the machined surface on the housing.

CAUTION

To prevent damage during removal from the shaft, it is recommended that bearings be cleaned and inspected **in place**. It is **strongly** recommended that the bearings be replaced **any** time the shaft and bearings are removed.

NOTE

Position the inboard bearing (6) on the shaft with the shielded side toward the impeller end of the shaft. Position the outboard bearing (19) on the shaft with the integral retaining ring on the bearing O.D. toward the drive end of the shaft.

The bearings may be heated to ease installation. An induction heater, hot oil bath, electric oven, or hot plate may be used to heat the bearings. Bearings should **never** be heated with a direct flame or directly on a hot plate.

NOTE

*If a hot oil bath is used to heat the bearings, both the oil and the container must be **absolutely** clean. If the oil has been previously used, it must be **thoroughly** filtered.*

Heat the bearings to a uniform temperature **no higher than** 250°F (120°C), and slide the bearings onto the shaft, one at a time, until they are fully seated. This should be done quickly, in one continuous motion, to prevent the bearings from cooling and sticking on the shaft.

After the bearings have been installed and allowed to cool, check to ensure that they have not moved away from the shaft shoulders in shrinking. If movement has occurred, use a suitable sized sleeve and a press to reposition the bearings against the shaft shoulders.

If heating the bearings is not practical, use a suitable sized sleeve, and an arbor (or hydraulic) press to install the bearings on the shaft.

CAUTION

When installing the bearings onto the shaft, **never** press or hit against the outer race, balls, or ball cage. Press **only** on the inner race.

Secure the outboard bearing on the shaft with the bearing retaining ring (15).

Slide the shaft and assembled bearings into the bearing housing until the retaining ring on the outboard bearing seats against the bearing housing.

CAUTION

When installing the shaft and bearings into the bearing bore, push against the outer race. **Never** hit the balls or ball cage.

Press the outboard oil seal (18) into the bearing cap (12) with the lip positioned as shown in Figure 2. Replace the bearing cap gasket (11), and secure the bearing cap with the hardware (13 and 14). **Be careful** not to damage the oil seal lip on the shaft keyway.

Install the bearing housing O-ring (30).

Lubricate the bearing housing as indicated in **LUBRICATION**.

Seal Installation

(Figures 2, 5, 6 and 7)

WARNING!

Most cleaning solvents are toxic and flammable. Use them only in a well ventilated area free from excessive heat, sparks, and flame. Read and follow all precautions printed on solvent containers.

Clean the seal cavity and shaft with a cloth soaked in fresh cleaning solvent. Inspect the stationary seat bore in the seal plate for dirt, nicks and burrs, and remove any that exist. The stationary seat bore **must** be completely clean before installing the seal.

CAUTION

A new seal assembly should be installed **any time** the old seal is removed from the pump. Wear patterns on the finished faces cannot be realigned during reassembly. Reusing an old seal could result in premature failure.

To ease installation of the seal, lubricate the shaft sleeve O-ring and the external stationary seat O-ring with a very **small** amount of light lubricating oil. See Figure 5 for seal part identification.

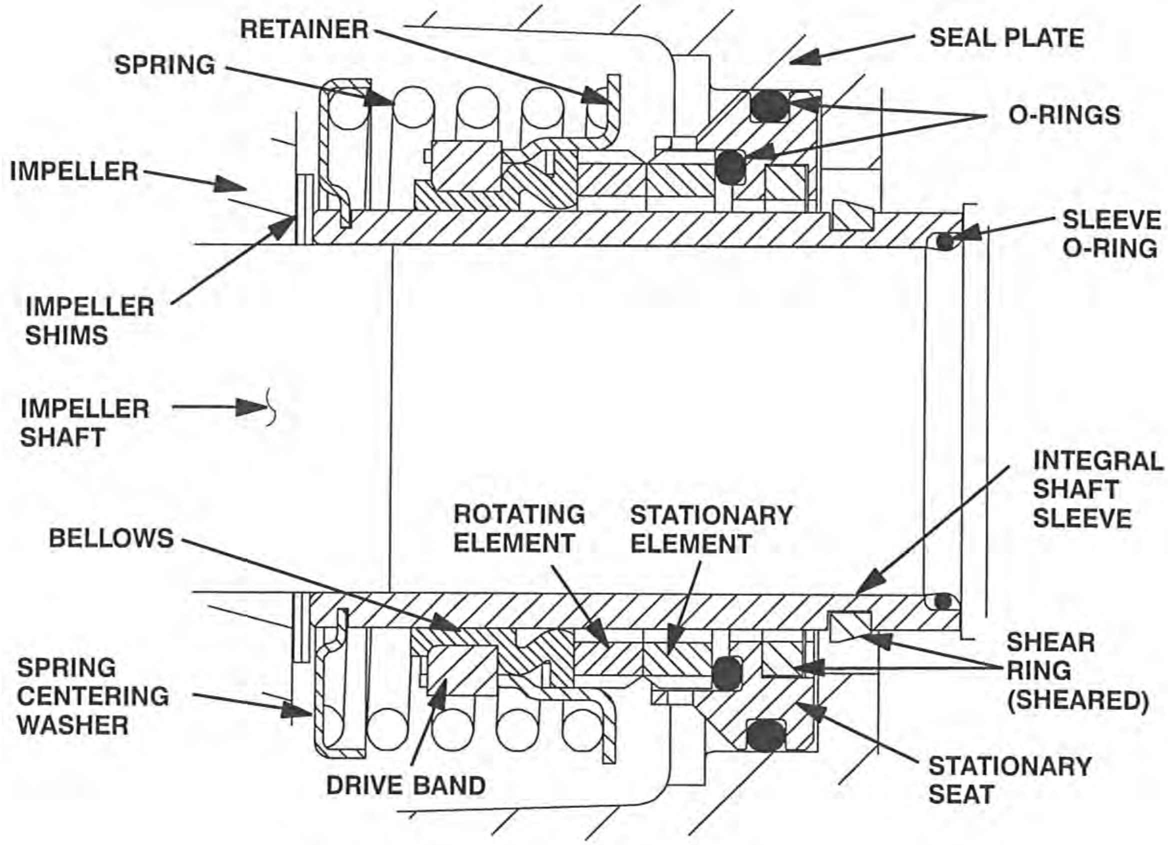


Figure 5. 46513−150 Cartridge Seal Assembly

CAUTION

This seal is not designed for operation at temperatures above 160°F (71°C). Do not use at higher operating temperatures.

If the seal plate was removed, install the seal plate gasket (4). Position the seal plate over the shaft and secure it to the intermediate with the hardware (20 and 21).

To prevent damaging the shaft sleeve O-ring (28) on the shaft threads, stretch the O-ring over a piece of tubing 1-1/4 I.D. x 1-1/2 O.D. x 2-inches long (32 mm x 38 mm x 51 mm). Slide the tube over the shaft threads, then slide the O-ring off the tube and onto the shaft. Remove the tube, and continue to slide the O-ring down the shaft until it seats against the shaft shoulder.

When installing a new cartridge seal assembly, remove the seal from the container, and remove the mylar storage tabs, if so equipped, from between the seal faces.

CAUTION

New cartridge seal assemblies may be equipped with mylar storage tabs between the seal faces. If so equipped, these storage tabs **must** be removed before installing the seal.

Lubricate the external stationary seat O-ring with light oil. Slide the seal assembly onto the shaft until the external stationary seat O-ring engages the bore in the seal plate.

Clean and inspect the impeller as described in **Impeller Installation and Adjustment**. Install the full set of impeller shims (29) provided with the seal, and screw the impeller onto the shaft until it is seated against the seal (see Figure 6).

Continue to screw the impeller onto the shaft. This will press the stationary seat into the seal plate bore.

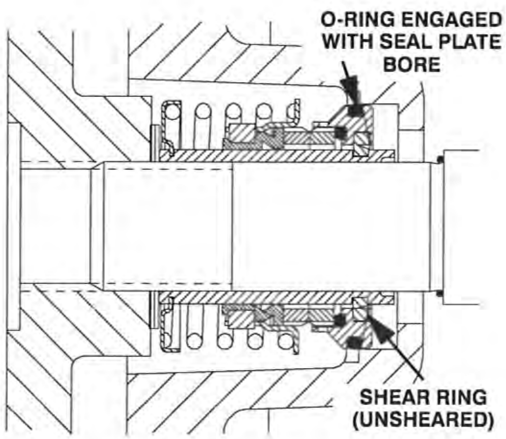


Figure 6. Seal Partially Installed

NOTE

A firm resistance will be felt as the impeller presses the stationary seat into the seal plate bore.

As the stationary seat becomes fully seated, the seal spring compresses, and the shaft sleeve will break the nylon shear ring. This allows the sleeve to slide down the shaft until seated against the shaft shoulder. Continue to screw the impeller onto the shaft until the impeller, shims, and sleeve are fully seated against the shaft shoulder (see Figure 7).

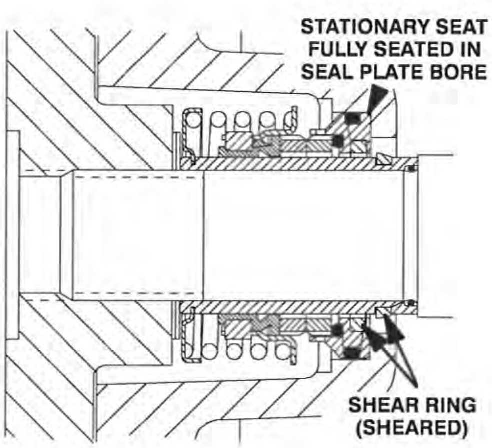


Figure 7. Seal Fully Installed

Measure the impeller-to-seal plate clearance, and remove impeller adjusting shims to obtain the proper clearance as described in **Impeller Installation and Adjustment**.

If necessary to reuse an old seal in an emergency, carefully separate the rotating and stationary seal faces from the bellows retainer and stationary seat.

CAUTION

A new seal assembly should be installed **any time** the old seal is removed from the pump. Wear patterns on the finished faces cannot be realigned during reassembly. Reusing an old seal could result in premature failure.

Handle the seal parts with extreme care to prevent damage. Be careful not to contaminate precision finished faces; even fingerprints on the faces can shorten seal life. If necessary, clean the faces with a non-oil based solvent and a clean, lint-free tissue. Wipe **lightly** in a concentric pattern to avoid scratching the faces.

Carefully wash all metallic parts in fresh cleaning solvent and allow to dry thoroughly.

CAUTION

Do not attempt to separate the rotating portion of the seal from the shaft sleeve when reusing an old seal. The rubber bellows will adhere to the sleeve during use, and attempting to separate them could damage the bellows.

Inspect the seal components for wear, scoring, grooves, and other damage that might cause leakage. Inspect the integral shaft sleeve for nicks or cuts on either end. If any components are worn, or the sleeve is damaged, replace the complete seal; **never mix old and new seal parts.**

Install the stationary seal element in the stationary seat. Press this stationary subassembly into the seal plate bore until it seats squarely against the bore shoulder. A push tube made from a piece of plastic pipe would aid this installation. The I.D. of

the pipe should be slightly larger than the O.D. of the shaft sleeve.

Slide the rotating portion of the seal (consisting of the integral shaft sleeve, spring centering washer, spring, bellows and retainer, and rotating element) onto the shaft until the seal faces contact.

Proceed with **Impeller Installation and Adjustment**.

Impeller Installation

(Figure 2)

Inspect the impeller, and replace it if cracked or badly worn. Inspect the impeller and shaft threads for dirt or damage, and clean or dress the threads as required.

CAUTION

The shaft and impeller threads **must** be completely clean before reinstalling the impeller. Even the slightest amount of dirt on the threads can cause the impeller to seize to the shaft, making future removal difficult or impossible without damage to the impeller or shaft.

Install the same thickness of impeller adjusting shims (29) as previously removed. Apply 'Never-Seez' or equivalent to the shaft threads and screw the impeller onto the shaft until tight.

NOTE

At the slightest sign of binding, immediately back the impeller off, and check the threads for dirt. ***Do not*** *try to force the impeller onto the shaft.*

A clearance of .025 to .040 inch (0,64 to 1,02 mm) between the impeller and the seal plate is recommended for maximum pump efficiency. Measure this clearance, and add or remove impeller adjusting shims as required.

NOTE

If the rotating assembly has been installed in the pump casing, this clearance may be measured by reaching through the priming port with a feeler gauge.

NOTE

Proceed with ***Rotating Assembly Installation*** *before installing the impeller capscrew and washer (22 and 23). The rotating assembly must be installed in the pump casing in order to torque the impeller capscrew.*

After the rotating assembly is installed in the pump casing, coat the threads of the impeller capscrew (23) with 'Never-Seez' or equivalent compound, and install the impeller washer (22) and capscrew; torque the capscrew to 90 ft. lbs. (1080 in. lbs. or 12,4 m. kg.).

Rotating Assembly Installation

(Figure 1)

NOTE

If the pump has been completely disassembled, it is recommended that the suction check valve and back cover assembly be reinstalled at this point. The back cover assembly must be in place to adjust the impeller face clearance.

Install the bearing housing and lubricate it with light grease. Ease the rotating assembly into the pump casing using the installation tool. **Be careful** not to damage the O-ring.

Install the four sets of rotating assembly adjusting shims (11) using the same thickness as previously removed. Secure the rotating assembly to the pump casing with the hardware (9 and 10). **Do not** fully tighten the capscrews until the back cover has been reinstalled and the impeller face clearance has been set.

A clearance of .010 to .020 inch (0,25 to 0,51 mm) between the impeller and the wear plate is also recommended for maximum pump efficiency. This clearance can be obtained by removing an equal amount of shims from each rotating assembly shim set until the impeller scrapes against the wear plate when the shaft is turned. After the impeller scrapes, add approximately .015 inch (0,4 mm) of shims to each shim set.

NOTE

An alternate method of adjusting this clearance is to

reach through the suction port with a feeler gauge and measure the gap. Add or subtract rotating assembly shims accordingly.

Suction Check Valve Installation

(Figure 1)

Inspect the check valve assembly (29), and replace it if badly worn.

NOTE

The check valve assembly must be replaced as a complete unit. Individual parts are not sold separately.

Reach through the back cover opening with the check valve (29), and position the check valve adaptor in the mounting slot in the suction flange (30). Align the adaptor with the flange hole, and secure the assembly with the check valve pin (31).

NOTE

If the suction or discharge flanges were removed, replace the respective gaskets, apply 'Permatex Aviation No. 3 Form-A-Gasket' or equivalent compound to the mating surfaces, and secure them to the pump casing with the attaching hardware.

Back Cover Installation

(Figure 1)

If the wear plate (12) was removed for replacement, carefully center it on the back cover and secure it with the hardware (13 and 14). The wear plate **must** be concentric to prevent binding when the back cover is installed.

Replace the back cover O-ring (15), and lubricate it with a generous amount of No. 2 grease. Clean any scale or debris from the contacting surfaces in the pump casing that might interfere or prevent a good seal with the back cover. Slide the back cover assembly into the pump casing. Be sure the wear plate does not bind against the impeller.

NOTE

To ease future disassembly, apply a film of grease or 'Never-Seez' on the back cover shoulder, or any surface which contacts the pump casing. This action will reduce rust and scale build-up.

Secure the back cover assembly by tightening the back cover nuts (24) evenly. **Do not** over-tighten the hand nuts; they should be just tight enough to ensure a good seal at the back cover shoulder. Be sure the wear plate does not bind against the casing.

PRESSURE RELIEF VALVE MAINTENANCE

(Figure 1)

The back cover is equipped with a pressure relief valve (20) to provide additional safety for the pump and operator (refer to **Liquid Temperature And Overheating** in **OPERATION**).

It is recommended that the pressure relief valve assembly be replaced at each overhaul, or any time the pump overheats and activates the valve. **Never** replace this valve with a substitute which has not been specified or provided by the Gorman-Rupp Company.

Periodically, the valve should be removed for inspection and cleaning. When reinstalling the relief valve, apply 'Loctite Pipe Sealant With Teflon No. 592', or equivalent compound, on the relief valve threads. Position the valve as shown in Figure 1 with the discharge port pointing down.

Final Pump Assembly

(Figure 1)

Install the shaft key (16, Figure 2) and reconnect the power source. Be sure to install any guards used over the rotating members.

WARNING!

Do not operate the pump without the guards in place over the rotating parts. Exposed rotating parts can catch clothing, fingers, or tools, causing severe injury to personnel.

Install the suction and discharge lines and open all valves. Make certain that all piping connections are tight, properly supported and secure.

Be sure the pump and power source have been properly lubricated, see **LUBRICATION**.

Remove the fill cover assembly (36) and fill the pump casing with clean liquid. Reinstall the fill cover and tighten it. Refer to **OPERATION**, Section C, before putting the pump back into service.

LUBRICATION

Seal Assembly

(Figure 2)

Before starting the pump, remove the vented plug (8) and fill the seal cavity with approximately 40 ounces (1,4 liters) of SAE No. 30 non-detergent oil, or to a level just below the tapped vented plug hole. Clean and reinstall the vented plug. Maintain the oil at this level.

Bearings

(Figure 2)

The bearing housing was fully lubricated when shipped from the factory. Check the oil level regularly through the sight gauge (24) and maintain it at the middle of the gauge. When lubrication is required, add SAE No. 30 non-detergent oil through the hole for the air vent (9). **Do not** over-lubricate. Over-lubrication can cause the bearings to overheat, resulting in premature bearing failure.

NOTE

The white reflector in the sight gauge must be positioned horizontally to provide proper drainage.

Under normal conditions, drain the bearing housing once each year and refill with approximately 32 ounces (1 liter) clean oil. Change the oil more frequently if the pump is operated continuously or installed in an environment with rapid temperature change.

CAUTION

Monitor the condition of the bearing lubricant regularly for evidence of rust or moisture condensation. This is especially important in areas where variable hot and cold temperatures are common.

For cold weather operation, consult the factory or a lubricant supplier for the recommended grade of oil.

Power Source

Consult the literature supplied with the power source, or contact your local power source representative.

THE GORMAN-RUPP COMPANY AND GORMAN-RUPP OF CANADA LIMITED 12 MONTH LIMITED WARRANTY

EXTENT AND DURATION OF WARRANTY

Coverage: The Gorman-Rupp Company or Gorman-Rupp of Canada Limited (herein individually referred to as "GR") each individually warrant that its products and parts shall be free from defects in material and workmanship for twelve (12) months from the date of purchase by the original end user.

Exceptions: This Limited Warranty shall not apply to the following products and parts: engines, motors, trade accessories and other products, components or materials not manufactured by GR. With respect to submersible pumps, the pump and motor are an integral unit and are therefore warranted as a unit. However, with respect to the electrical components in submersible pumps, this warranty is valid **only** when electrical controls for the pump have been specified and/or provided by GR. Wear and tear on any product resulting from normal use is not covered by this Limited Warranty.

LIMITATIONS

GR'S SOLE AND EXCLUSIVE WARRANTY WITH RESPECT TO ITS PRODUCTS AND PARTS IS THIS LIMITED WARRANTY. THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER EXPRESS AND/OR IMPLIED WARRANTIES, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE.

EXCLUSIVE REMEDY AND DAMAGES

The sole and exclusive remedy for breach of this Limited Warranty by GR, and the entire extent of its liability for such breach or for damages arising and/or resulting from the use of the products and parts covered by this Limited Warranty shall be as follows:

1. **Repair or replacement:** If inspection shows that any GR product or part covered under this LimitedWarranty is defective in materials or workmanship, GR shall repair or replace the defective product or part at its option, without charge. You must have properly installed, maintained and used the product or part claimed to be defective in accordance with the maintenance schedule and/or manual which comes with the product. *No allowance will be made for labor, transportation or other charges incurred by you in connection with such repair or replacement.*

2. **To obtain the above remedy:**

   a) Immediately notify GR at the address below of the claimed defect in materials or workmanship and provide the serial number or date code of the product and/or part and provide a copy of the invoice or bill of sale referencing the product and/or part by no later than the expiration date of the Limited Warranty period.

   b) GR will advise whether inspection of the product and/or part will be necessary and whether and how repair or replacement will be effected. If inspection by GR is necessary, the product or part must be sent freight prepaid to GR at the address stated below. Return shipment of the repaired product or part will be F.O.B. the address stated below.

3. **Damages:** GR's liability for damages for breach of this Limited Warranty shall not exceed the amount of the purchase price of the product or part in respect to which damages are claimed. **IN NO EVENT SHALL GR BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES FOR BREACH OF THIS LIMITED WARRANTY OTHER THAN AS STATED HEREIN.**

   Some states do not allow the exclusion or limitation of incidental or consequential damages. Accordingly, the above may not apply to you. This Limited Warranty gives you specific legal rights, and you may also have other rights which vary from state to state and province to province.

THE GORMAN-RUPP COMPANY
P.O. BOX 1217
MANSFIELD, OH 44901—1217
Phone: (419) 755—1011

GORMAN-RUPP OF CANADA LIMITED
70 Burwell Road
St. Thomas, Ontario N5P 3R7
Phone: (519) 631—2870

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OM-01929–OB02
October 20, 1983
Rev. K 06-19-08

INSTALLATION, OPERATION, AND MAINTENANCE MANUAL

WITH PARTS LIST

GORMAN-RUPP PUMPS

T SERIES PUMPS

MODELS
T6A60-B
INCLUDING: /F, /FM

THE GORMAN-RUPP COMPANY • MANSFIELD, OHIO
www.grpumps.com
GORMAN-RUPP OF CANADA LIMITED • ST. THOMAS, ONTARIO, CANADA Printed in U.S.A.

Register your new
Gorman-Rupp pump online at
www.grpumps.com
Valid serial number and e-mail address required.

RECORD YOUR PUMP MODEL AND SERIAL NUMBER

Please record your pump model and serial number in the spaces provided below. Your Gorman-Rupp distributor needs this information when you require parts or service.

Pump Model: ______________________________

Serial Number: ______________________________

TABLE OF CONTENTS

TABLE OF CONTENTS
(continued)

INTRODUCTION

Thank You for purchasing a Gorman-Rupp pump. **Read this manual** carefully to learn how to safely install and operate your pump. Failure to do so could result in personal injury or damage to the pump. This Installation, Operation, and Maintenance manual is designed to help you achieve the best performance and longest life from your Gorman-Rupp pump.

This pump is a T Series, semi-open impeller, self-priming centrifugal model with a suction check valve. The pump is designed for handling liquids containing large entrained solids and slurries. The basic material of construction is gray iron, with ductile iron impeller and steel wearing parts.

Because pump installations are seldom identical, this manual cannot possibly provide detailed instructions and precautions for every aspect of each specific application. Therefore, it is the responsibility of the owner/installer of the pump to ensure that applications not addressed in this manual are performed **only** after establishing that neither operator safety nor pump integrity are compromised by the installation. Pumps and related equipment **must** be installed and operated according to all national, local and industry standards.

If there are any questions regarding the pump or its application which are not covered in this manual or in other literature accompanying this unit, please contact your Gorman-Rupp distributor, or:

The Gorman-Rupp Company
P.O. Box 1217
Mansfield, Ohio 44901–1217
Phone: (419) 755–1011
or:
Gorman-Rupp of Canada Limited
70 Burwell Road
St. Thomas, Ontario N5P 3R7
Phone: (519) 631–2870

For information or technical assistance on the power source, contact the power source manufacturer's local dealer or representative.

The following are used to alert maintenance personnel to procedures which require special attention, to those which could damage equipment, and to those which could be dangerous to personnel:

DANGER!

Immediate hazards which WILL result in severe personal injury or death. These instructions describe the procedure required and the injury which will result from failure to follow the procedure.

WARNING!

Hazards or unsafe practices which COULD result in severe personal injury or death. These instructions describe the procedure required and the injury which could result from failure to follow the procedure.

CAUTION

Hazards or unsafe practices which COULD result in minor personal injury or product or property damage. These instructions describe the requirements and the possible damage which could result from failure to follow the procedure.

NOTE

Instructions to aid in installation, operation, and maintenance or which clarify a procedure.

SAFETY – SECTION A

This information applies to T Series basic pumps. Gorman-Rupp has no control over or particular knowledge of the power source which will be used. Refer to the manual accompanying the power source before attempting to begin operation.

Because pump installations are seldom identical, this manual cannot possibly provide detailed instructions and precautions for each specific application. Therefore, it is the owner/installer's responsibility to ensure that applications not addressed in this manual are performed only after establishing that neither operator safety nor pump integrity are compromised by the installation.

WARNING!

Before attempting to open or service the pump:

1. Familiarize yourself with this manual.
2. Disconnect or lock out the power source to ensure that the pump will remain inoperative.
3. Allow the pump to completely cool if overheated.
4. Check the temperature before opening any covers, plates, or plugs.
5. Close the suction and discharge valves.
6. Vent the pump slowly and cautiously.
7. Drain the pump.

WARNING!

This pump is designed to handle liquids containing large entrained solids or slurries. Do not attempt to pump volatile, corrosive, or flammable materials which may damage the pump or endanger personnel as a result of pump failure.

WARNING!

After the pump has been positioned, make certain that the pump and all piping connections are tight, properly supported and secure before operation.

DANGER!

Do not operate the pump without the guards in place over the rotating parts. Exposed rotating parts can catch clothing, fingers, or tools, causing severe injury to personnel.

WARNING!

Do not remove plates, covers, gauges, pipe plugs, or fittings from an overheated pump. Vapor pressure within the pump can cause parts being disengaged to be ejected with great force. Allow the pump to completely completely cool before servicing.

WARNING!

Do not operate the pump against a closed discharge valve for long periods of time. If operated against a closed discharge valve, pump components will deteriorate, and the liquid could come to a boil, build pressure, and cause the pump casing to rupture or explode.

WARNING!

Use lifting and moving equipment in good repair and with adequate capacity to prevent injuries to personnel or damage to equipment. Suction and discharge hoses and piping must be removed from the pump before lifting.

WARNING!

Do not attempt to disengage any part of an overheated pump unit. Vapor pressure within the pump casing can eject these parts with great force when they are disengaged. Allow the pump to completely cool before servicing it.

CAUTION

Pumps and related equipment must be installed and operated according to all national, local and industry standards.

WARNING!

Overheated pumps can cause severe burns and injury. If overheating of the pump occurs:

1. **Stop the pump immediately.**
2. **Allow the pump to completely cool.**
3. **Refer to instructions in this manual before restarting the pump.**

INSTALLATION – SECTION B

Review all SAFETY information in Section A.

Since pump installations are seldom identical, this section offers only general recommendations and practices required to inspect, position, and arrange the pump and piping.

Most of the information pertains to a standard **static lift application** where the pump is positioned above the free level of liquid to be pumped.

If installed in a **flooded suction application** where the liquid is supplied to the pump under pressure, some of the information such as mounting, line configuration, and priming must be tailored to the specific application. Since the pressure supplied to the pump is critical to performance and safety, **be sure** to limit the incoming pressure to **50%** of the maximum permissible operating pressure as shown on the pump performance curve.

For further assistance, contact your Gorman-Rupp distributor or the Gorman-Rupp Company.

Pump Dimensions

See Figure 1 for the approximate physical dimensions of this pump.

OUTLINE DRAWING

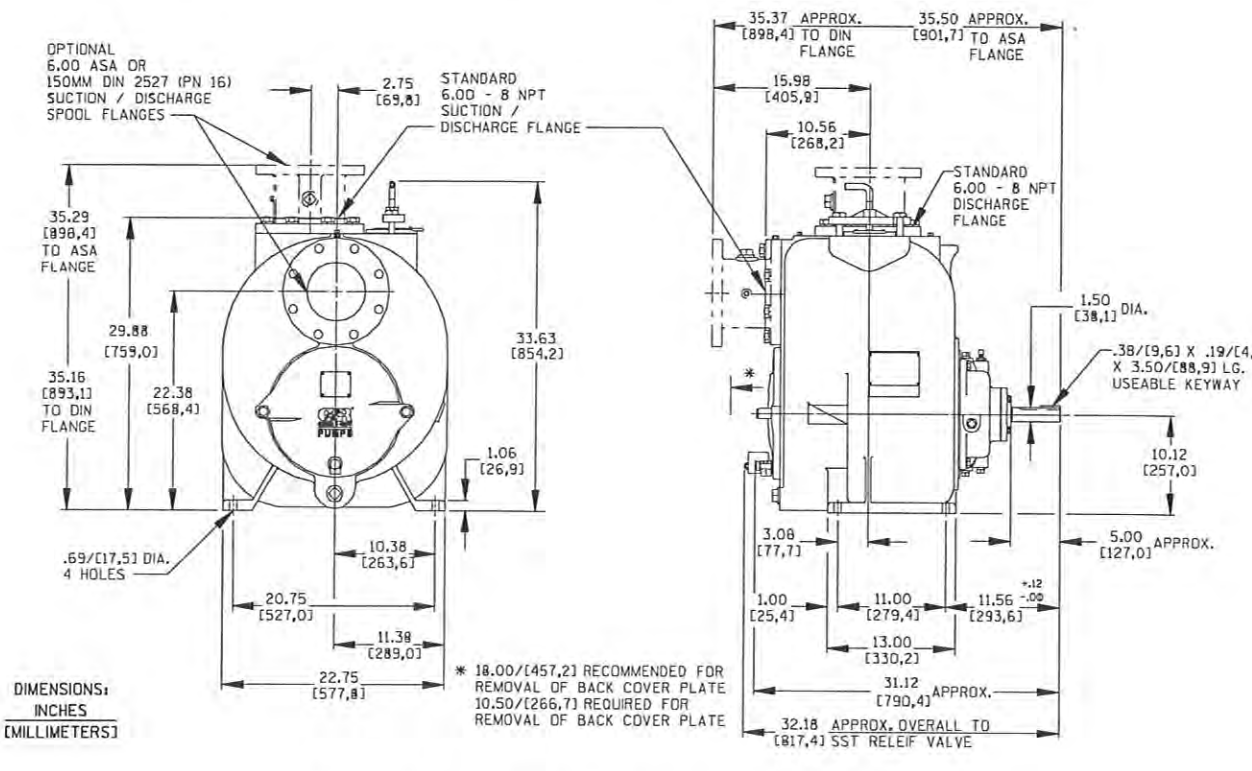


Figure 1. Pump Model T6A60-B, Including /F and /FM

PREINSTALLATION INSPECTION

The pump assembly was inspected and tested before shipment from the factory. Before installation, inspect the pump for damage which may have occurred during shipment. Check as follows:

a. Inspect the pump for cracks, dents, damaged threads, and other obvious damage.

b. Check for and tighten loose attaching hardware. Since gaskets tend to shrink after drying, check for loose hardware at mating surfaces.

c. Carefully read all warnings and cautions contained in this manual or affixed to the pump, and perform all duties indicated. Note the direction of rotation indicated on the pump. Check that the pump shaft rotates counterclockwise when facing the impeller.

CAUTION

Only operate this pump in the direction indicated by the arrow on the pump body and on the accompanying decal. Refer to **ROTATION** in **OPERATION**, Section C.

d. Check levels and lubricate as necessary. Refer to **LUBRICATION** in the **MAINTENANCE AND REPAIR** section of this manual and perform duties as instructed.

e. If the pump and power source have been stored for more than 12 months, some of the components or lubricants may have exceeded their maximum shelf life. These **must be inspected or replaced** to ensure maximum pump service.

If the maximum shelf life has been exceeded, or if anything appears to be abnormal, contact your Gorman-Rupp distributor or the factory to determine the repair or updating policy. **Do not** put the pump into service until appropriate action has been taken.

POSITIONING PUMP

Lifting

Pump unit weights will vary depending on the mounting and drive provided. Check the shipping tag on the unit packaging for the actual weight, and use lifting equipment with appropriate capacity. Drain the pump and remove all customer-installed equipment such as suction and discharge hoses or piping before attempting to lift existing, installed units.

CAUTION

The pump assembly can be seriously damaged if the cables or chains used to lift and move the unit are improperly wrapped around the pump.

Mounting

Locate the pump in an accessible place as close as practical to the liquid being pumped. Level mounting is essential for proper operation.

The pump may have to be supported or shimmed to provide for level operation or to eliminate vibration.

Clearance

When positioning the pump, allow a minimum clearance of **18 inches (457 mm)** in front of the back cover to permit removal of the cover and easy access to the pump interior.

SUCTION AND DISCHARGE PIPING

Pump performance is adversely effected by increased suction lift, discharge elevation, and friction losses. See the performance curve and operating range shown on Page E-1 to be sure your overall application allows pump to operate within the safe operation range.

Materials

Either pipe or hose maybe used for suction and discharge lines; however, the materials must be compatible with the liquid being pumped. If hose is used in suction lines, it must be the rigid-wall, reinforced type to prevent collapse under suction. Using piping couplings in suction lines is not recommended.

Line Configuration

Keep suction and discharge lines as straight as possible to minimize friction losses. Make minimum use of elbows and fittings, which substantially increase friction loss. If elbows are necessary, use the long-radius type to minimize friction loss.

Connections to Pump

Before tightening a connecting flange, align it exactly with the pump port. Never pull a pipe line into place by tightening the flange bolts and/or couplings.

Lines near the pump must be independently supported to avoid strain on the pump which could cause excessive vibration, decreased bearing life, and increased shaft and seal wear. If hose-type lines are used, they should have adequate support to secure them when filled with liquid and under pressure.

Gauges

Most pumps are drilled and tapped for installing discharge pressure and vacuum suction gauges. If these gauges are desired for pumps that are not tapped, drill and tap the suction and discharge lines not less than 18 inches (457,2 mm) from the suction and discharge ports and install the lines. Installation closer to the pump may result in erratic readings.

SUCTION LINES

To avoid air pockets which could affect pump priming, the suction line must be as short and direct as possible. When operation involves a suction lift, the line must always slope upward to the pump from the source of the liquid being pumped; if the line slopes down to the pump at any point along the suction run, air pockets will be created.

Fittings

Suction lines should be the same size as the pump inlet. If reducers are used in suction lines, they should be the eccentric type, and should be installed with the flat part of the reducers uppermost to avoid creating air pockets. Valves are not normally used in suction lines, but if a valve is used, install it with the stem horizontal to avoid air pockets.

Strainers

If a strainer is furnished with the pump, be certain to use it; any spherical solids which pass through a strainer furnished with the pump will also pass through the pump itself.

If a strainer is not furnished with the pump, but is installed by the pump user, make certain that the total area of the openings in the strainer is at least three or four times the cross section of the suction line, and that the openings will not permit passage of solids larger than the solids handling capability of the pump.

This pump is designed to handle up to 3-inch (76,2 mm) diameter spherical solids.

Sealing

Since even a slight leak will affect priming, head, and capacity, especially when operating with a high suction lift, all connections in the suction line should be sealed with pipe dope to ensure an airtight seal. Follow the sealant manufacturer's recommendations when selecting and applying the pipe dope. The pipe dope should be compatible with the liquid being pumped.

Suction Lines In Sumps

If a single suction line is installed in a sump, it should be positioned away from the wall of the sump at a distance equal to 1 1/2 times the diameter of the suction line.

If there is a liquid flow from an open pipe into the sump, the flow should be kept away from the suction inlet because the inflow will carry air down into the sump, and air entering the suction line will reduce pump efficiency.

If it is necessary to position inflow close to the suction inlet, install a baffle between the inflow and the suction inlet at a distance 1 1/2 times the diameter of the suction pipe. The baffle will allow entrained air to escape from the liquid before it is drawn into the suction inlet.

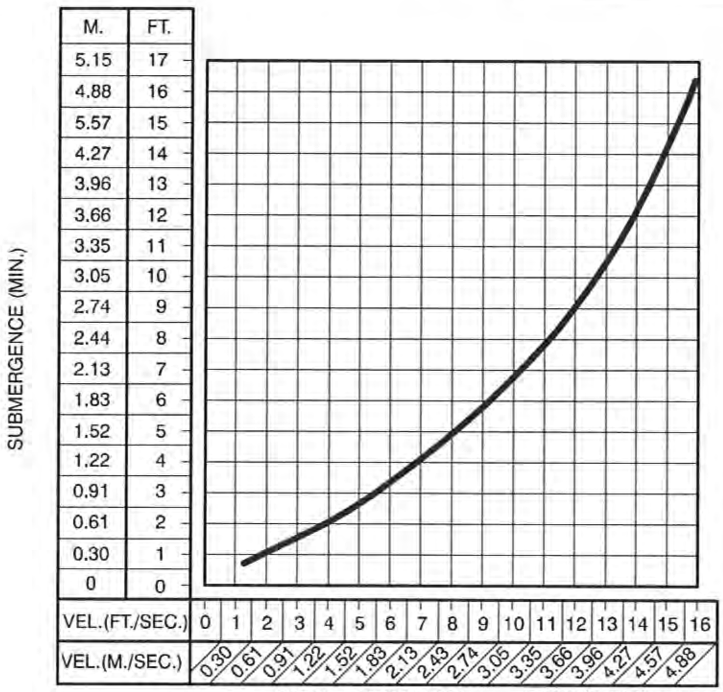
If two suction lines are installed in a single sump, the flow paths may interact, reducing the efficiency of one or both pumps. To avoid this, position the suction inlets so that they are separated by a distance equal to at least 3 times the diameter of the suction pipe.

Suction Line Positioning

The depth of submergence of the suction line is critical to efficient pump operation. Figure 2 shows recommended minimum submergence vs. velocity.

NOTE

The pipe submergence required may be reduced by installing a standard pipe increaser fitting at the end of the suction line. The larger opening size will reduce the inlet velocity. Calculate the required submergence using the following formula based on the increased opening size (area or diameter).



$$\text{VELOCITY (FT./SEC.)} = \frac{\text{FLOW (G.P.M.)} \times .321}{\text{AREA IN IN.}^2} \quad \text{OR} \quad \frac{\text{FLOW (G.P.M.)} \times .4085}{(\text{DIAMETER IN IN.})^2}$$

$$\text{VELOCITY (M./SEC.)} = \frac{\text{FLOW (L/SEC)} \times .001}{\text{AREA IN M}^2} \quad \text{OR} \quad \frac{\text{FLOW (M}^3\text{/HR} \times 353.7}{(\text{DIAMETER IN MM})^2}$$

Figure 2. Recommended Minimum Suction Line Submergence vs. Velocity

DISCHARGE LINES

Siphoning

Do not terminate the discharge line at a level lower than that of the liquid being pumped unless a siphon breaker is used in the line. Otherwise, a siphoning action causing damage to the pump could result.

Valves

If a throttling valve is desired in the discharge line, use a valve as large as the largest pipe to minimize friction losses. Never install a throttling valve in a suction line.

With high discharge heads, it is recommended that a throttling valve and a system check valve be installed in the discharge line to protect the pump from excessive shock pressure and reverse rotation when it is stopped.

CAUTION

If the application involves a high discharge head, gradually close the discharge throttling valve before stopping the pump.

Bypass Lines

Self-priming pumps are not air compressors. During the priming cycle, air from the suction line must be vented to atmosphere on the discharge side. If the discharge line is open, this air will be vented through the discharge. However, if a check valve has been installed in the discharge line, the discharge side of the pump must be opened to atmospheric pressure through a bypass line installed between the pump discharge and the check valve. A self-priming centrifugal pump **will not prime** if there is sufficient static liquid head to hold the discharge check valve closed.

NOTE

The bypass line should be sized so that it does not affect pump discharge capacity; however, the bypass line should be at least 1 inch in diameter to minimize the chance of plugging.

In **low discharge head applications** (less than 30 feet or 9 meters), it is recommended that the bypass line be run back to the wet well, and located 6 inches below the water level or cut-off point of the low level pump. In some installations, this bypass line may be terminated with a six-to-eight foot length of 1 1/4 inch I.D. **smooth-bore** hose; air and liquid vented during the priming process will then agitate the hose and break up any solids, grease, or other substances likely to cause clogging.

CAUTION

A bypass line that is returned to a wet well must be secured against being drawn into the pump suction inlet.

It is also recommended that pipe unions be installed at each 90° elbow in a bypass line to ease disassembly and maintenance.

In **high discharge head applications** (more than 30 feet), an excessive amount of liquid may be bypassed and forced back to the wet well under the full working pressure of the pump; this will reduce overall pumping efficiency. **Therefore, it is recommended that a Gorman-Rupp Automatic Air Release Valve be installed in the bypass line.**

Gorman-Rupp Automatic Air Release Valves are reliable, and require minimum maintenance. See **AUTOMATIC AIR RELEASE VALVE** in this section for installation and theory of operation of the Automatic Air Release Valve. Consult your Gorman-Rupp distributor, or contact the Gorman-Rupp Company for selection of an Automatic Air Release Valve to fit your application.

If the installation involves a flooded suction such as a below-ground lift station. A pipe union and manual shut-off valve may be installed in the bleed line to allow service of the valve without shutting down the station, and to eliminate the possibility of flooding. If a manual shut-off valve is installed **anywhere** in the air release piping, it **must** be a full-opening **ball type** valve to prevent plugging by solids.

DANGER!

If a manual shut-off valve is installed in a bypass line, it must not be left closed during operation. A closed manual shut-off valve may cause a pump which has lost prime to continue to operate without reaching prime, causing dangerous overheating and possible explosive rupture of the pump casing. Personnel could be severely injured.

Allow an over-heated pump to cool before servicing. Do not remove plates, covers, gauges, or fittings from an over-heated pump. Liquid within the pump can reach boiling temperatures, and vapor pressure within the pump can cause parts being disengaged to be ejected with great force. After the pump cools, drain the liquid from the pump by removing the casing drain plug. Use cau-

tion when removing the plug to prevent injury to personnel from hot liquid.

AUTOMATIC AIR RELEASE VALVE

When properly installed, a Gorman-Rupp Automatic Air Release Valve will permit air to escape through the bypass line and then close automatically when the pump is fully primed and pumping at full capacity.

WARNING!

Some leakage (1 to 5 gallons [3.8 to 19 liters] per minute) will occur when the valve is fully closed. __Be sure__ the bypass line is directed back to the wet well or tank to prevent hazardous spills.

Consult the manual accompanying the Air Release Valve for additional information on valve installation and performance.

Air Release Valve Installation

The Automatic Air Release Valve must be independently mounted in a horizontal position between the pump discharge port and the inlet side of the discharge check valve (see Figure 3). The inlet opening in the Air Release Valve is equipped with standard 1-inch NPT pipe threads.

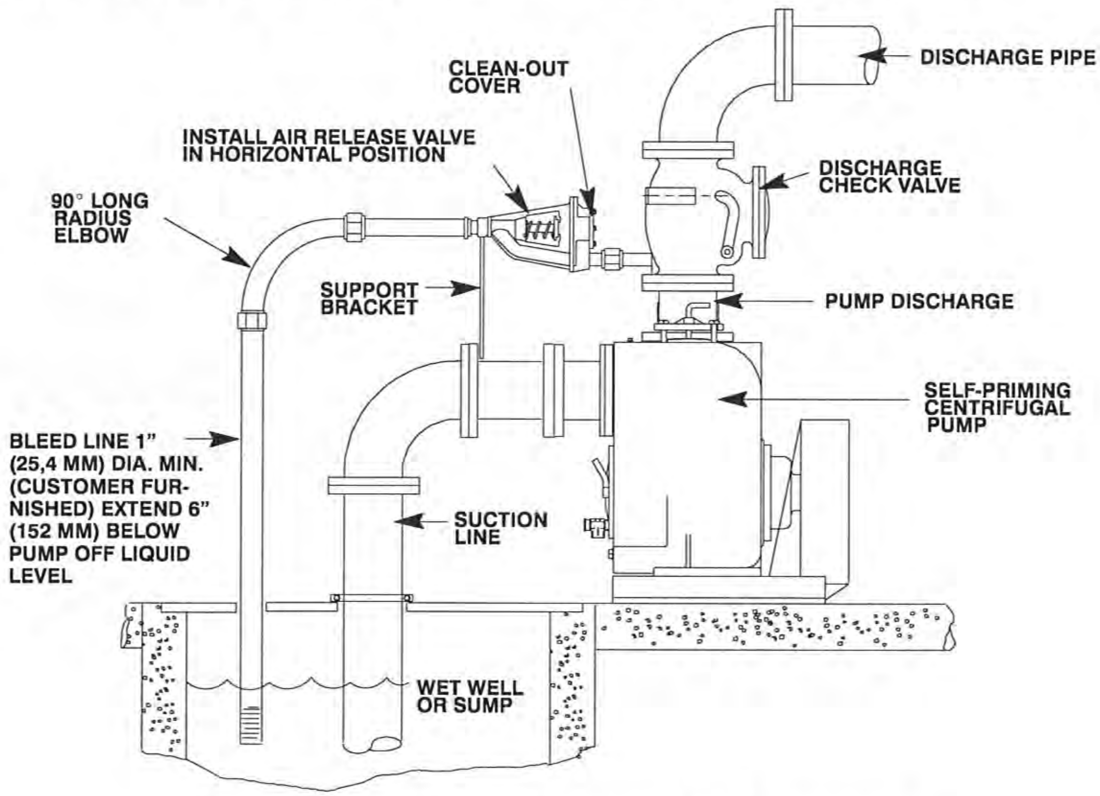


Figure 3. Typical Automatic Air Release Valve Installation

Connect the valve outlet to a bleed line which slopes back to the wet well or sump. The bleed line must be the same size as the outlet opening or larger, depending on which Air Release Valve is being used. If **piping** is used for the bleed line, avoid the use of elbows whenever possible.

NOTE

*For multiple pump installations, it is recommended that each Air Release Valve be fitted with an independent bleeder line directed back to the wet well. If multiple Air Release Valves are installed in a system, **do not** direct bleeder lines to a common manifold pipe. Contact your Gorman-Rupp distributor or the Gorman-Rupp Company for information about installation of an Automatic Air Release Valve for your specific application.*

ALIGNMENT

The alignment of the pump and its power source is critical for trouble-free mechanical operation. In either a flexible coupling or V-belt driven system, the driver and pump must be mounted so that their shafts are aligned with and parallel to each other. It is imperative that alignment be checked after the pump and piping are installed, and before operation.

NOTE

Check **Rotation,** *Section C, before final alignment of the pump.*

When mounted at the Gorman-Rupp factory, driver and pump are aligned before shipment. Misalignment will occur in transit and handling. Pumps **must** be checked and realigned before operation. Before checking alignment, tighten the foundation bolts. The pump casing feet and/or pedestal feet, and the driver mounting bolts should also be tightly secured.

WARNING!

When checking alignment, disconnect the power source to ensure that the pump will remain inoperative.

CAUTION

Adjusting the alignment in one direction may alter the alignment in another direction. check each procedure after altering alignment.

Coupled Drives

When using couplings, the axis of the power source must be aligned to the axis of the pump shaft in both the horizontal and vertical planes. Most couplings require a specific gap or clearance between the driving and the driven shafts. Refer to the coupling manufacturer's service literature.

Align spider insert type couplings by using calipers to measure the dimensions on the circumference of the outer ends of the coupling hub every 90°. The coupling is in alignment when the hub ends are the same distance apart at all points (see Figure 4A).

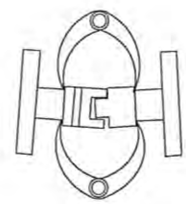


Figure 4A. Aligning Spider-Type Couplings

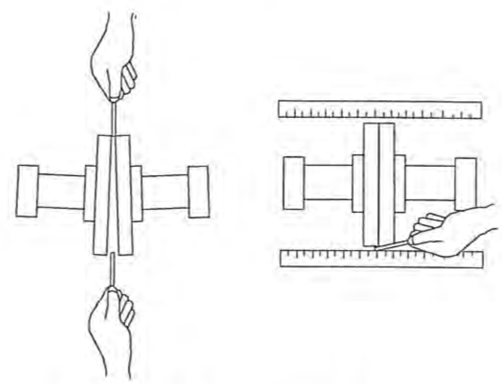


Figure 4B. Aligning Non-Spider Type Couplings

Align non-spider type couplings by using a feeler gauge or taper gauge between the coupling halves every 90°. The coupling is in alignment when the hubs are the same distance apart at all points (see Figure 4B).

Check parallel adjustment by laying a straightedge across both coupling rims at the top, bottom, and side. When the straightedge rests evenly on both halves of the coupling, the coupling is in horizontal parallel alignment. If the coupling is misaligned, use a feeler gauge between the coupling and the straightedge to measure the amount of misalignment.

V-Belt Drives

When using V-belt drives, the power source and the pump must be parallel. Use a straightedge along the sides of the pulleys to ensure that the pulleys are properly aligned (see Figure 4C). In drive systems using two or more belts, make certain that the belts are a matched set; unmatched sets will cause accelerated belt wear.

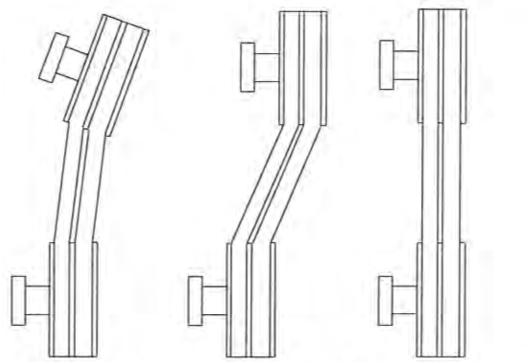


Figure 4C. Alignment of V-Belt Driven Pumps

Tighten the belts in accordance with the belt manufacturer's instructions. If the belts are too loose, they will slip; if the belts are too tight, there will be excessive power loss and possible bearing failure. Select pulleys that will match the proper speed ratio; overspeeding the pump may damage both pump and power source.

DANGER!

Do not operate the pump without the guard in place over the rotating parts. exposed rotating parts can catch clothing, fingers, or tools, causing severe injury to personnel.

DRIVE BELT TENSIONING

General Rules of Tensioning

For new drive belts, check the tension after 5, 20 and 50 hours of operation and re-tension as required (see the following procedure for measuring belt tension). Thereafter, check and re-tension if required monthly or at 500 hour intervals, whichever comes first.

Ideal drive belt tension is the **lowest** tension at which the belt will not slip under peak load conditions. Do not over-tension drive belts. Over-tensioning will shorten both drive belt and bearing life. Under-tensioning will cause belt slippage. Always keep belts free from dirt, grease, oil and other foreign material which may cause slippage.

OPERATION – SECTION C

Review all SAFETY information in Section A.

Follow the instructions on all tags, labels and decals attached to the pump.

WARNING!

This pump is designed to handle liquids containing large entrained solids and slurries. Do not attempt to pump volatile, corrosive, or flammable liquids which may damage the pump or endanger personnel as a result of pump failure.

CAUTION

Pump speed and operating conditions must be within the performance range shown on page E-1.

PRIMING

Install the pump and piping as described in **INSTALLATION.** Make sure that the piping connections are tight, and that the pump is securely mounted. Check that the pump is properly lubricated (see **LUBRICATION** in **MAINTENANCE AND REPAIR**).

This pump is self-priming, but the pump should never be operated unless there is liquid in the pump casing.

CAUTION

Never operate this pump unless there is liquid in the pump casing. The pump will not prime when dry. extended operation of a dry pump will destroy the seal assembly.

Add liquid to the pump casing when:

1. The pump is being put into service for the first time.
2. The pump has not been used for a considerable length of time.
3. The liquid in the pump casing has evaporated.

Once the pump casing has been filled, the pump will prime and reprime as necessary.

WARNING!

After filling the pump casing, reinstall and tighten the fill plug. Do not attempt to operate the pump unless all connecting piping is securely installed. Otherwise, liquid in the pump forced out under pressure could cause injury to personnel.

To fill the pump, remove the pump casing fill cover or fill plug in the top of the casing, and add clean liquid until the casing is filled. Replace the fill cover or fill plug before operating the pump.

STARTING

Consult the operations manual furnished with the power source.

Rotation

The correct direction of pump rotation is counterclockwise when facing the impeller. The pump could be damaged and performance adversely affected by incorrect rotation. If pump performance is not within the specified limits (see the curve on page E-1), check the direction of power source rotation before further troubleshooting.

If an electric motor is used to drive the pump, remove V-belts, couplings, or otherwise disconnect the pump from the motor before checking motor rotation. Operate the motor independently while observing the direction of the motor shaft, or cooling fan.

If rotation is incorrect on a three-phase motor, have a qualified electrician interchange any two of the three phase wires to change direction. If rotation is incorrect on a single-phase motor, consult the literature supplied with the motor for specific instructions.

OPERATION

Lines With a Bypass

If a Gorman-Rupp Automatic Air Release Valve has been installed, the valve will automatically open to allow the pump to prime, and automatically close after priming is complete (see **INSTALLATION** for Air Release Valve operation).

If the bypass line is open, air from the suction line will be discharged through the bypass line back to the wet well during the priming cycle. Liquid will then continue to circulate through the bypass line while the pump is in operation.

Lines Without a Bypass

Open all valves in the discharge line and start the power source. Priming is indicated by a positive reading on the discharge pressure gauge or by a quieter operation. The pump may not prime immediately because the suction line must first fill with liquid. If the pump fails to prime within five minutes, stop it and check the suction line for leaks.

After the pump has been primed, partially close the discharge line throttling valve in order to fill the line slowly and guard against excessive shock pressure which could damage pipe ends, gaskets, sprinkler heads, and any other fixtures connected to the line. When the discharge line is completely filled, adjust the throttling valve to the required flow rate.

WARNING!

Do not operate the pump against a closed discharge throttling valve for long periods of time. If operated against a closed discharge throttling valve, pump components will deteriorate, and the liquid could come to a boil, build pressure, and cause the pump casing to rupture or explode.

Leakage

No leakage should be visible at pump mating surfaces, or at pump connections or fittings. Keep all line connections and fittings tight to maintain maximum pump efficiency.

Liquid Temperature And Overheating

The **maximum** liquid temperature for this pump is 160° F (71° C). Do not apply it at a higher operating temperature.

Overheating can occur if operated with the valves in the suction or discharge lines closed. Operating against closed valves could bring the liquid to a boil, build pressure, and cause the pump to rupture or explode. If overheating occurs, stop the pump and allow it to cool before servicing it. Refill the pump casing with cool liquid.

DANGER!

Allow an over-heated pump to cool before servicing. Do not remove plates, covers, gauges, or fittings from an overheated pump. Liquid within the pump can reach boiling temperatures, and vapor pressure within the pump can cause parts being disengaged to be ejected with great force. After the pump cools, drain the liquid from the pump by removing the casing drain plug. Use caution when removing the plug to prevent injury to personnel from hot liquid.

As a safeguard against rupture or explosion due to heat, this pump is equipped with a pressure relief valve which will open if vapor pressure within the pump casing reaches a critical point. If overheating does occur, stop the pump immediately and allow it to cool before servicing it. **Approach any overheated pump cautiously**. It is recommended that the pressure relief valve assembly be replaced at each overhaul, or any time the pump casing overheats and activates the valve. **Never** replace this valve with a substitute which has not been specified or provided by the Gorman-Rupp Company.

Strainer Check

If a suction strainer has been shipped with the pump or installed by the user, check the strainer regularly, and clean it as necessary. The strainer should also be checked if pump flow rate begins to drop. If a vacuum suction gauge has been installed, monitor and record the readings regularly to detect strainer blockage.

Never introduce air or steam pressure into the pump casing or piping to remove a blockage. This could result in personal injury or damage to the equipment. If backflushing is absolutely necessary, liquid pressure **must** be limited to 50% of the maximum permissible operating pressure shown on the pump performance curve.

Pump Vacuum Check

With the pump inoperative, install a vacuum gauge in the system, using pipe dope on the threads. Block the suction line and start the pump. At operating speed the pump should pull a vacuum of 20 inches (508,0 mm) or more of mercury. If it does not, check for air leaks in the seal, gasket, or discharge valve.

Open the suction line, and read the vacuum gauge with the pump primed and at operation speed. Shut off the pump. The vacuum gauge reading will immediately drop proportionate to static suction lift, and should then stabilize. If the vacuum reading falls off rapidly after stabilization, an air leak exists. Before checking for the source of the leak, check the point of installation of the vacuum gauge.

STOPPING

Never halt the flow of liquid suddenly. If the liquid being pumped is stopped abruptly, damaging shock waves can be transmitted to the pump and piping system. Close all connecting valves slowly.

On engine driven pumps, reduce the throttle speed slowly and allow the engine to idle briefly before stopping.

CAUTION

If the application involves a high discharge head, gradually close the discharge throttling valve before stopping the pump.

After stopping the pump, lock out or disconnect the power source to ensure that the pump will remain inoperative.

WARNING!

Do not operate the pump against a closed discharge throttling valve for long periods of time. If operated against a closed discharge throttling valve, pump components will deteriorate, and the liquid could come to a boil, build pressure, and cause the pump casing to rupture or explode.

Cold Weather Preservation

In below freezing conditions, drain the pump to prevent damage from freezing. Also, clean out any solids by flushing with a hose. Operate the pump for approximately one minute; this will remove any remaining liquid that could freeze the pump rotating parts. If the pump will be idle for more than a few hours, or if it has been pumping liquids containing a large amount of solids, drain the pump, and flush it thoroughly with clean water. To prevent large solids from clogging the drain port and preventing the pump from completely draining, insert a rod or stiff wire in the drain port, and agitate the liquid during the draining process. Clean out any remaining solids by flushing with a hose.

BEARING TEMPERATURE CHECK

Bearings normally run at higher than ambient temperatures because of heat generated by friction.

Temperatures up to 160°F (71° C) are considered normal for bearings, and they can operate safely to at least 180°F (82° C).

Checking bearing temperatures by hand is inaccurate. Bearing temperatures can be measured accurately by placing a contact-type thermometer against the housing. Record this temperature for future reference.

A sudden increase in bearing temperature is a warning that the bearings are at the point of failing to operate properly. Make certain that the bearing lubricant is of the proper viscosity and at the correct level (see **LUBRICATION** in **MAINTENANCE AND REPAIR**). Bearing overheating can also be caused by shaft misalignment and/or excessive vibration.

When pumps are first started, the bearings may seem to run at temperatures above normal. Continued operation should bring the temperatures down to normal levels.

TROUBLESHOOTING – SECTION D

Review all SAFETY information in Section A.

WARNING!

Before attempting to open or service the pump:

1. **Familiarize yourself with this manual.**
2. **Lock out or disconnect the power source to ensure that the pump will remain inoperative.**
3. **Allow the pump to completely cool if overheated.**
4. **Check the temperature before opening any covers, plates, or plugs.**
5. **Close the suction and discharge valves.**
6. **Vent the pump slowly and cautiously.**
7. **Drain the pump.**

TROUBLE	POSSIBLE CAUSE	PROBABLE REMEDY
PUMP FAILS TO PRIME	Not enough liquid in casing.	Add liquid to casing. See **PRIMING**.
	Suction check valve contaminated or damaged.	Clean or replace check valve.
	Air leak in suction line.	Correct leak.
	Lining of suction hose collapsed.	Replace suction hose.
	Leaking or worn seal or pump gasket.	Check pump vacuum. Replace leaking or worn seal or gasket.
	Suction lift or discharge head too high.	Check piping installation and install bypass line if needed. See **INSTALLATION**.
	Strainer clogged.	Check strainer and clean if necessary.
PUMP STOPS OR FAILS TO DELIVER RATED FLOW OR PRESSURE	Air leak in suction line.	Correct leak.
	Lining of suction hose collapsed.	Replace suction hose.
	Leaking or worn seal or pump gasket.	Check pump vacuum. Replace leaking or worn seal or gasket.

TROUBLE	POSSIBLE CAUSE	PROBABLE REMEDY
PUMP STOPS OR FAILS TO DELIVER RATED FLOW OR PRESSURE	Strainer clogged.	Check strainer and clean if necessary.
	Suction intake not submerged at proper level or sump too small.	Check installation and correct submergence as needed.
	Impeller or other wearing parts worn or damaged.	Replace worn or damaged parts. Check that impeller is properly centered and rotates freely.
	Impeller clogged.	Free impeller of debris.
	Pump speed too slow.	Check driver output; check belts or couplings for slippage.
	Discharge head too high.	Install bypass line.
	Suction lift too high.	Measure lift w/vacuum gauge. Reduce lift and/or friction losses in suction line.
PUMP REQUIRES TOO MUCH POWER	Pump speed too high.	Check driver output; check that sheaves or couplings are correctly sized.
	Discharge head too low.	Adjust discharge valve.
	Liquid solution too thick.	Dilute if possible.
	Bearing(s) frozen.	Disassemble pump and check bearing(s).
PUMP CLOGS FREQUENTLY	Liquid solution too thick.	Dilute if possible.
	Discharge flow too slow.	Open discharge valve fully to increase flow rate, and run power source at maximum governed speed.
	Suction check valve or foot valve clogged or binding.	Clean valve.
EXCESSIVE NOISE	Cavitation in pump.	Reduce suction lift and/or friction losses in suction line. Record vacuum and pressure gauge readings and consult local representative or factory.
	Pumping entrained air.	Locate and eliminate source of air bubble.
	Pump or drive not securely mounted.	Secure mounting hardware.
	Impeller clogged or damaged.	Clean out debris; replace damaged parts.

TROUBLE	POSSIBLE CAUSE	PROBABLE REMEDY
BEARINGS RUN TOO HOT	Bearing temperature is high, but within limits.	Check bearing temperature regularly to monitor any increase.
	Low or incorrect lubricant.	Check for proper type and level of lubricant.
	Suction and discharge lines not properly supported.	Check piping installation for proper support.
	Drive misaligned.	Align drive properly.

PREVENTIVE MAINTENANCE

Since pump applications are seldom identical, and pump wear is directly affected by such things as the abrasive qualities, pressure and temperature of the liquid being pumped, this section is intended only to provide general recommendations and practices for preventive maintenance. Regardless of the application however, following a routine preventive maintenance schedule will help assure trouble-free performance and long life from your Gorman-Rupp pump. For specific questions concerning your application, contact your Gorman-Rupp distributor or the Gorman-Rupp Company.

Record keeping is an essential component of a good preventive maintenance program. Changes in suction and discharge gauge readings (if so equipped) between regularly scheduled inspections can indicate problems that can be corrected before system damage or catastrophic failure occurs. The appearance of wearing parts should also be documented at each inspection for comparison as well. Also, if records indicate that a certain part (such as the seal) fails at approximately the same duty cycle, the part can be checked and replaced before failure occurs, reducing unscheduled down time.

For new applications, a first inspection of wearing parts at 250 hours will give insight into the wear rate for your particular application. Subsequent inspections should be performed at the intervals shown on the chart below. Critical applications should be inspected more frequently.

Preventive Maintenance Schedule

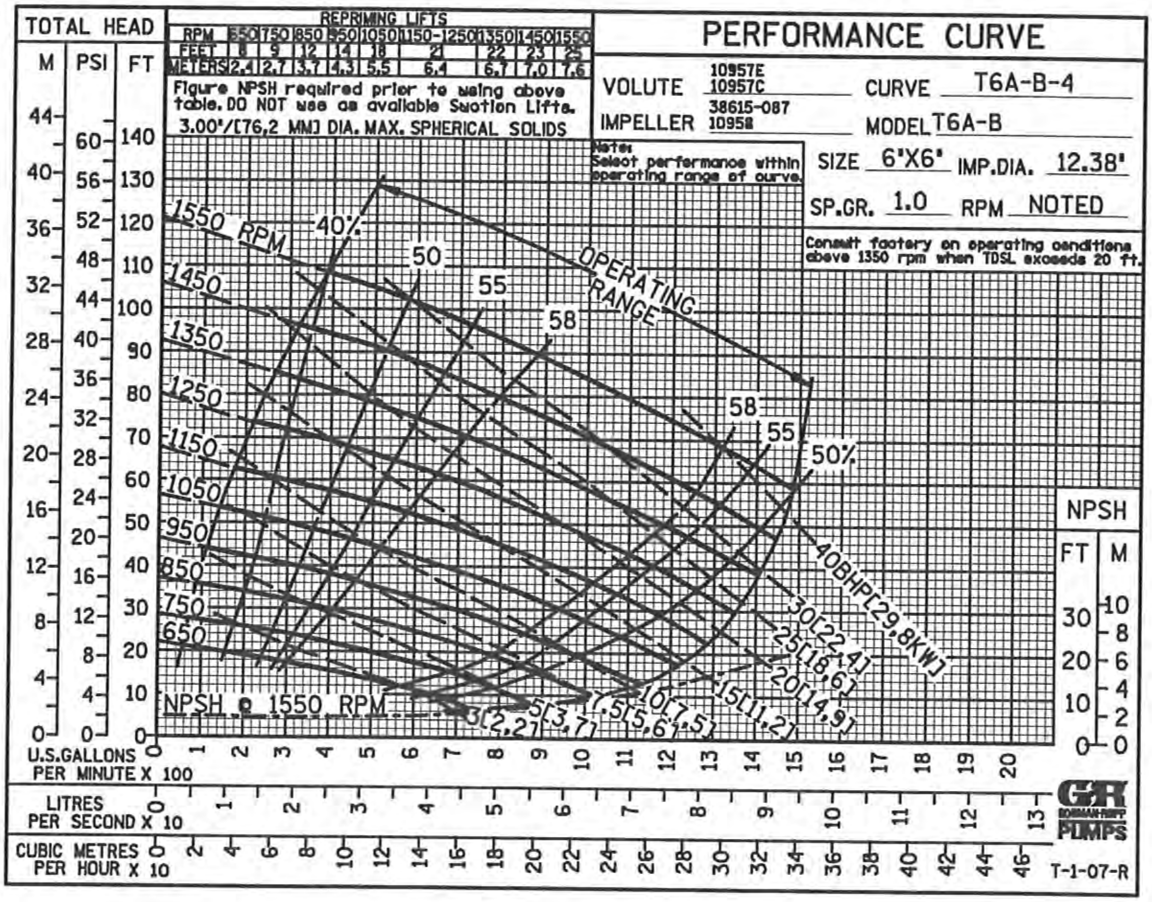
Item	Service Interval*				
	Daily	Weekly	Monthly	Semi-Annually	Annually
General Condition (Temperature, Unusual Noises or Vibrations, Cracks, Leaks, Loose Hardware, Etc.)	I				
Pump Performance (Gauges, Speed, Flow)	I				
Bearing Lubrication		I			R
Seal Lubrication (And Packing Adjustment, If So Equipped)		I			R
V-Belts (If So Equipped)			I		
Air Release Valve Plunger Rod (If So Equipped)			I	C	
Front Impeller Clearance (Wear Plate)				I	
Rear Impeller Clearance (Seal Plate)				I	
Check Valve					I
Pressure Relief Valve (If So Equipped)					C
Pump and Driver Alignment					I
Shaft Deflection					I
Bearings					I
Bearing Housing					I
Piping					I
Driver Lubrication – See Mfgr's Literature					

Legend:
I = Inspect, Clean, Adjust, Repair or Replace as Necessary
C = Clean
R = Replace

* Service interval based on an intermittent duty cycle equal to approximately 4000 hours annually. Adjust schedule as required for lower or higher duty cycles or extreme operating conditions.

PUMP MAINTENANCE AND REPAIR – SECTION E

MAINTENANCE AND REPAIR OF THE WEARING PARTS OF THE PUMP WILL MAINTAIN PEAK OPERATING PERFORMANCE.



∗ **STANDARD PERFORMANCE FOR PUMP MODEL T6A60-B, Including /F and /FM**

∗Based on 70° F (21° C) clear water at sea level with minimum suction lift. Since pump installations are seldom identical, your performance may be difference due to such factors as viscosity, specific gravity, elevation, temperature, and impeller trim.

If your pump serial number is followed by an "N", your pump is **NOT** a standard production model.

Contact the Gorman-Rupp Company to verify performance or part numbers.

CAUTION

Pump speed and operating condition points must be within the continuous performance range shown on the curve.

SECTION DRAWING

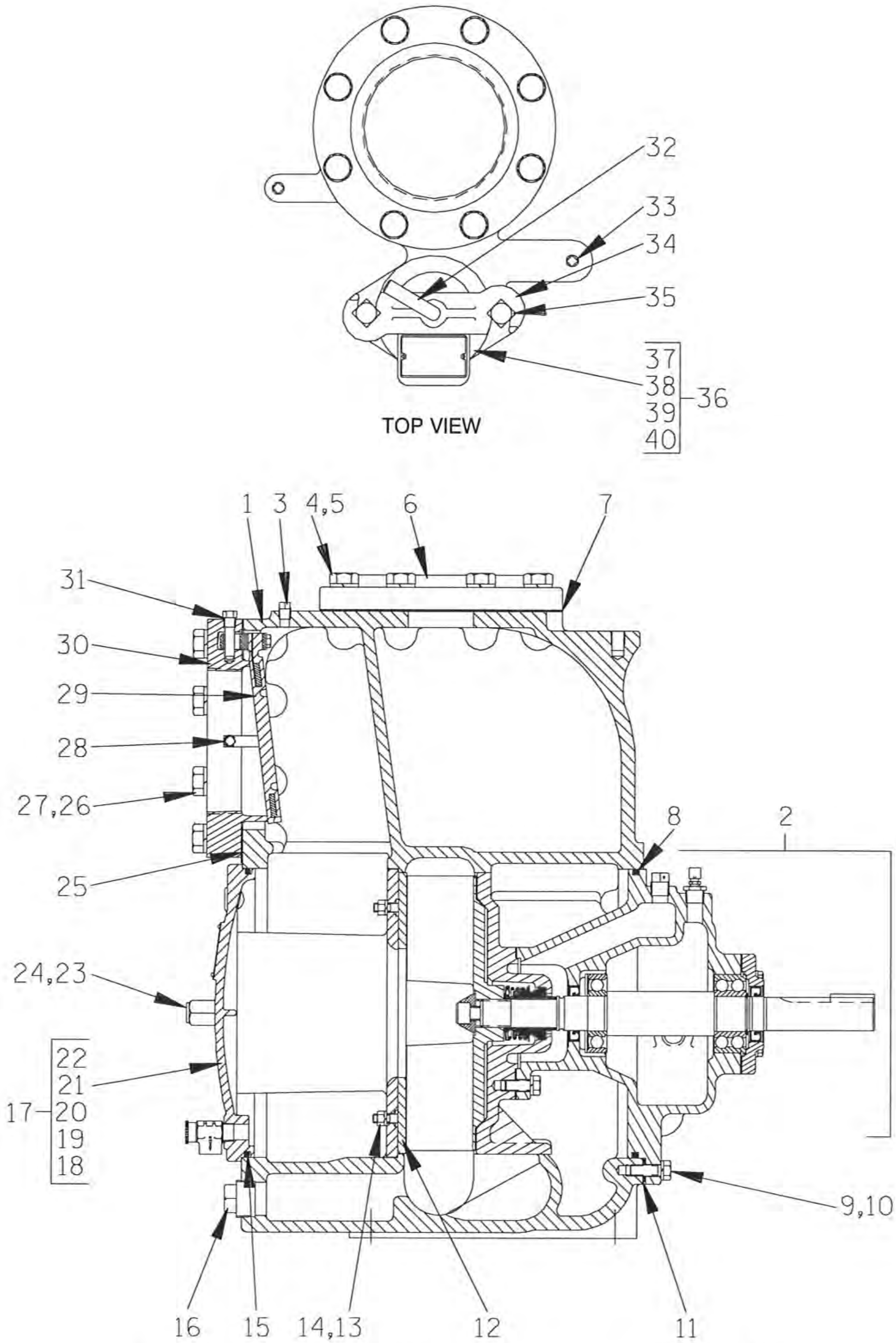


Figure 1. Pump Model T6A60–B, Including /F and /FM

PARTS LIST
Pump Model T6A60–B, Including /F and /FM
(From S/N 791258 Up)

If your pump serial number is followed by an "N", your pump is **NOT** a standard production model. Contact the Gorman-Rupp Company to verify part numbers.

ITEM NO.	PART NAME	PART NUMBER	MAT'L CODE	QTY
1	PUMP CASING	10957C	10010	1
2 *	REPAIR ROTATING ASSY	44163–050	–––	1
3	PIPE PLUG	P04	15079	1
4	HEX HD CAPSCREW	B1208	15991	8
5	LOCKWASHER	J12	15991	8
6	DISCHARGE FLANGE	1758	10010	1
7 *	DISCH FLANGE GSKT	1679G	19370	1
8 *	ROTATING ASSY O-RING	S1676	–––	1
9	HEX HD CAPSCREW	B0806	15991	4
10	LOCKWASHER	J08	15991	4
11 *	ROT ASSY SHIM SET	13131	17040	4
12 *	WEAR PLATE ASSY	46451–723	24150	1
13	LOCKWASHER	J06	15991	4
14	HEX NUT	D06	15991	4
15 *	BACK COVER O-RING	S1676	–––	1
16	CASING DRAIN PLUG	P20	10009	1
17	BACK CVR PLATE ASSY	42111–905	–––	1
18	–DRIVE SCREW	BM#04–03	17000	4
19	–WARNING PLATE	2613EV	13990	1
20	–PRESS RELIEF VALVE	26662–005	–––	1
21	–BACK COVER PLATE	NOT AVAILABLE		1
22	–WARNING DECAL	38816–302	–––	1
23	STUD	C1211	15991	2
24	BACK COVER NUT	31871–073	15000	2
25 *	SUCTION FLANGE GSKT	11402G	19370	1
26	HEX HD CAPSCREW	B1211	15991	8
27	LOCKWASHER	J12	15991	8
28	PIPE PLUG	P04	15079	1
29 *	SUCT CHK VALVE ASSY	46411–064	–––	1
30	SUCTION FLANGE	11402	10010	1
31	CHECK VALVE PIN	11645	17010	1
32	CLAMP BAR SCREW	31912–009	15000	1
33	PIPE PLUG	P04	15079	1
34	CLAMP BAR	38111–004	11010	1
35	MACHINE BOLT	A1014	15991	2
36	FILL COVER ASSY	42111–344	–––	1
37	–DRIVE SCREW	BM#04–03	17000	2
38	–FILL COVER PLATE	NOT AVAILABLE		1
39	–WARNING PLATE	38816–097	13990	1
40 *	–COVER GASKET	50G	19210	1
NOT SHOWN:				
	DRIVE SCREW	BM#04–03	17000	4
	LUBE DECAL	11421	–––	1
	ROTATION DECAL	2613M	–––	1

ITEM NO.	PART NAME	PART NUMBER	MAT'L CODE	QTY
	WARNING DECAL	2613FE	–––	1
	NAME PLATE	38818–040	13990	1
	SUCTION STICKER	6588AG	–––	1
	PRIMING STICKER	6588AH	–––	1
	DISCHARGE STICKER	6588BJ	–––	1
OPTIONAL:				
	DISASSEMBLY TOOL	48711–020	–––	1
	/F FLANGE KIT	48213–041	–––	1
	–SUCTION	11402A	10010	1
	–DISCHARGE	11402B	10010	1
	/FM METRIC FLNG KIT	48213–078	–––	1
	–SUCTION	38642–502	10000	1
	–DISCHARGE	38642–503	10000	1
	WEAR PLATES:			
	–SPA ALLOY	46451–729	24160	1
	–TUNGSTEN CARBIDE	46451–726	2415D	1
	CASING HEATERS:			
	–120V	47811–004	–––	1
	–240V	47811–005	–––	1
	CHECK VALVE ASSYS:			
	–NEO SOLID TYPE	46411–019	–––	1
✓	–VITON SOLID	46411–078	–––	1
✓	–VITON BLOW–OUT	46411–088	–––	1
	PRESS RELIEF VALVES:			
	–SEWAGE TYPE	46431–628	–––	1
	–STAINLESS STEEL	26662–101	–––	1
	HI TEMP SHUT–DOWN KITS:			
	–145°F	48313–186	–––	1
	–130°F	48313–256	–––	1
	–120°F	48313–257	–––	1
	HI TEMP SHUT–DOWN THERMOSTAT KIT 145°F	48313–172	–––	1
	AIR RELEASE VALVES:			
	–10# COMP SPRING	GRP33–07A	–––	1
	–25# COMP SPRING	GRP33–07	–––	1
	–80# COMP SPRING	GRP33–07B	–––	1
	A/R VLVE MOUNTING KIT	46331–515	–––	1

* INDICATES PARTS RECOMMENDED FOR STOCK
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SECTION DRAWING

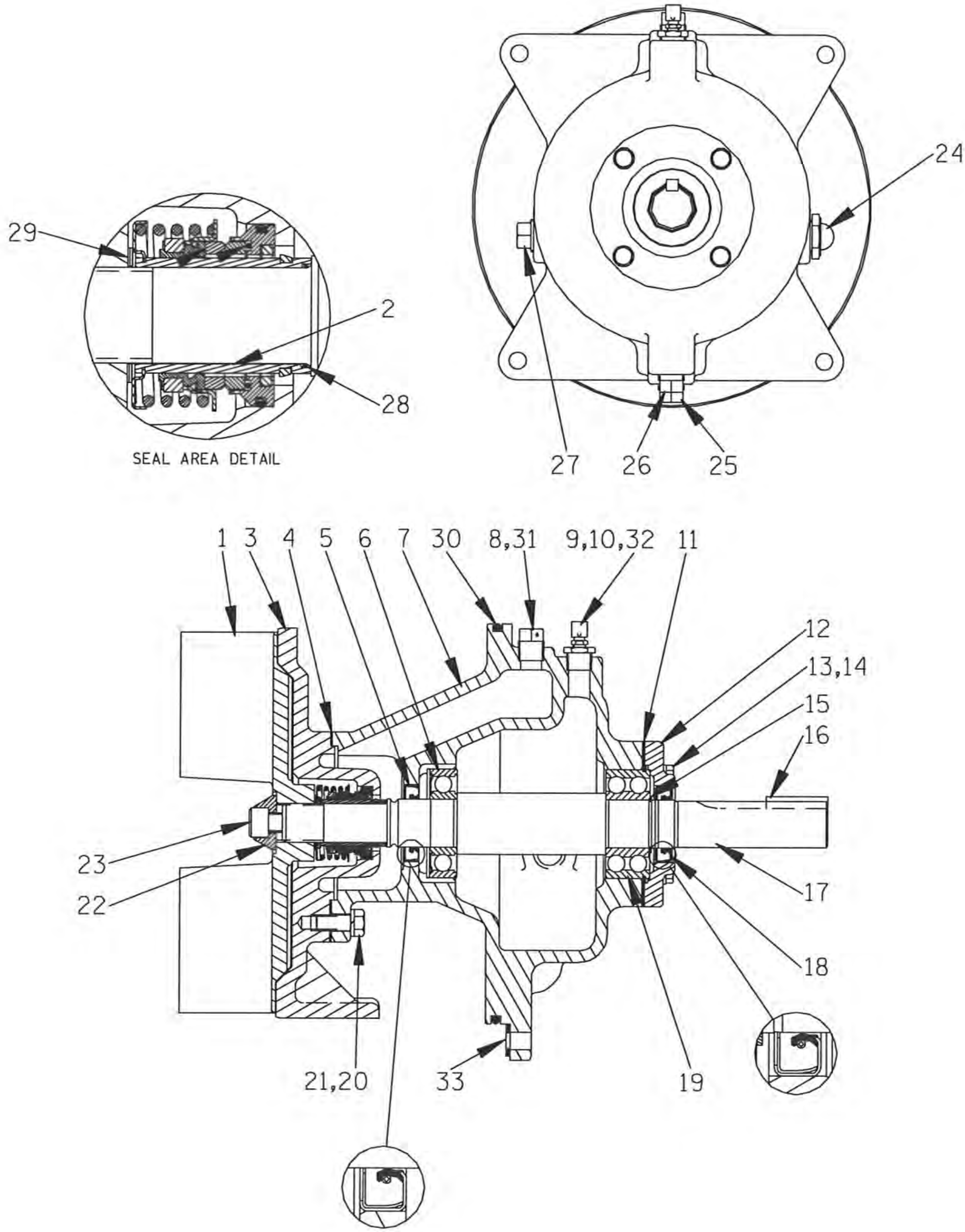

Figure 2. 44163−050 Repair Rotating Assembly

PARTS LIST
44163–050 Repair Rotating Assembly

ITEM NO.	PART NAME	PART NUMBER	MAT'L CODE	QTY
1 *	IMPELLER	10958	11010	1
2 *	SEAL ASSEMBLY	46513–151	---	1
3	SEAL PLATE	11837E	10010	1
4 *	SEAL PLATE GASKET	10959G	20000	1
5 *	INBOARD OIL SEAL	S1352	---	1
6 *	INBOARD BALL BEARING	23276–009	---	1
7	BEARING HOUSING	10959B	10010	1
8	VENTED PLUG	4823A	15079	1
9	AIR VENT	S1530	---	1
10	RED PIPE BUSHING	AP0802	15079	1
11 **	BEARING CAP GASKET	38683–248	18000	1
12	BEARING CAP	38322–215	10010	1
13	HEX HD CAPSCREW	B0605	15991	4
14	LOCKWASHER	J06	15991	4
15	RETAINING RING	S244	---	1
16 *	SHAFT KEY	N0612	15990	1
17 *	IMPELLER SHAFT	10529	16040	1
18 *	BEARING CAP OIL SEAL	S1352	---	1
19 *	OUTBD BALL BEARING	S1040	---	1
20	HEX HD CAPSCREW	B0805 1/2	15991	4
21	LOCKWASHER	J08	15991	4
22	IMPELLER WASHER	10278	15030	1
23	SOCKET HD CAPSCREW	DM1004S	15991	1
24	SIGHT GAUGE	S1471	---	1
25	SEAL CVTY DRAIN PLUG	P08	15079	1
26	BEARING DRAIN PLUG	P08	15079	1
27	PIPE PLUG	P12	15079	1
28 *	SEAL SLEEVE O-RING	25154–022	---	REF
29 *	IMPELLER ADJ SHIM SET	37J	17090	REF
30 *	ROTATING ASSY O-RING	S1676	---	1
31	SHIPPING PLUG	11495B	15079	1
32	SHIPPING PLUG	11495B	15079	1
33 *	ASSY ADJ SHIM SET	13131	17040	4
NOT SHOWN				
	ROTATION DECAL	2613M	---	1
	INSTRUCTION TAG	6588U	---	1
OPTIONAL:				
STAINLESS STEEL PARTS:				
	SEAL PLATE	38272–242	10010	1
	IMP SHAFT (LESS SLEEVE)	10529B	1706H	1
	SPACER WASHER (FOR SST SHAFT)	38329–040	17130	1
	ASTL SEAL SLEEVE	11876B	16000	1
	IMPELLERS:			
	–ADI	10958	1102H	1
	–TUNGS CARB COATED	10958A	1101D	1
	IMP CLEAN–OUT KIT	48783–003	---	1
	SEAL PLATE			
	–TUNG CARB COATED	11837F	1001D	1
	–ADI	11837E	1102H	1
† ★	AFLAS SEAL(W/SST SLEEVE OR SOLID SST SHAFT)	46512–194	---	1
†	PERMALON COATED MECH SEAL ASSY	46512–150	---	1
†	STD MECHANICAL SEAL ASSEMBLY	46512–047	---	1
†	MECH SEAL SHAFT SLEEVE	11876A	16000	1
† ✓	METAL BELLOWS MECH SEAL ASSY (VITON OR EQUAL	46512–147	---	1
† ✓	METAL BELLOWS MECH SEAL ASSY (KALREZ)	46512–142	---	1
	ROTATING ASSY O-RING			
✓	–VITON	25154–454	---	1

* INDICATES PARTS RECOMMENDED FOR STOCK

** FOR PUMPS WITH SERIAL NUMBERS **BELOW** 864836, ORDER 10530G/18000 BEARING CAP GASKET. IF **BOTH** BEARING CAP AND GASKET MUST BE REPLACED, ORDER PARTS LISTED ABOVE.

† OPTIONAL MECHANICAL SEAL(S) **MUST** BE USED WITH MECHANICAL SEAL SHAFT SLEEVE OR SOLID SST SHAFT.

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PUMP AND SEAL DISASSEMBLY AND REASSEMBLY

Review all SAFETY information in Section A.

Follow the instructions on all tags, label and decals attached to the pump.

This pump requires little service due to its rugged, minimum-maintenance design. However, if it becomes necessary to inspect or replace the wearing parts, follow these instructions which are keyed to the sectional views (see Figures 1 and 2) and the accompanying parts lists.

This manual will alert personnel to known procedures which require special attention, to those which could damage equipment, and to those which could be dangerous to personnel. However, this manual cannot possibly anticipate and provide detailed precautions for every situation that might occur during maintenance of the unit. Therefore, it is the responsibility of the owner/maintenance personnel to ensure that **only** safe, established maintenance procedures are used, and that any procedures not addressed in this manual are performed **only** after establishing that neither personal safety nor pump integrity are compromised by such practices.

Many service functions may be performed by draining the pump and removing the back cover assembly. If major repair is required, the piping and/or power source must be disconnected. The following instructions assume complete disassembly is required.

Before attempting to service the pump, disconnect or lock out the power source and take precautions to ensure that it will remain inoperative. Close all valves in the suction and discharge lines.

For power source disassembly and repair, consult the literature supplied with the power source, or contact your local power source representative.

WARNING!

Before attempting to open or service the pump:

1. **Familiarize yourself with this manual.**
2. **Disconnect or lock out the power source to ensure that the pump will remain inoperative.**
3. **Allow the pump to completely cool if overheated.**
4. **Check the temperature before opening any covers, plates, or plugs.**
5. **Close the suction and discharge valves.**
6. **Vent the pump slowly and cautiously.**
7. **Drain the pump.**

WARNING!

Use lifting and moving equipment in good repair and with adequate capacity to prevent injuries to personnel or damage to equipment.

Back Cover And Wear Plate Removal

(Figure 1)

The wear plate (12) is easily accessible and may be serviced by removing the back cover assembly (17). Before attempting to service the pump, remove the pump casing drain plug (16) and drain the pump. Clean and reinstall the drain plug.

Remove the back cover nuts (24) and pull the back cover and assembled wear plate from the pump casing (1). Inspect the wear plate, and replace it if badly scored or worn. To remove the wear plate, disengage the hardware (13 and 14).

Inspect the back cover O-ring (15) and replace it if damaged or worn.

Suction Check Valve Removal

(Figure 1)

If the check valve assembly (29) is to be serviced, remove the check valve pin (31), reach through the back cover opening and pull the complete assembly from the suction flange (30).

NOTE

Further disassembly of the check valve is not required since it must be replaced as a complete unit.

Individual parts are not sold separately.

Rotating Assembly Removal

(Figure 2)

The rotating assembly may be serviced without disconnecting the suction or discharge piping; however, the power source must be removed to provide clearance.

The impeller (1) should be loosened while the rotating assembly is still secured to the pump casing. Before loosening the impeller, remove the seal cavity drain plug (25) and drain the seal lubricant. This will prevent the oil in the seal cavity from escaping when the impeller is loosened. Clean and reinstall the seal cavity drain plug.

Immobilize the impeller by wedging a block wood between the vanes and the pump casing, and remove the impeller capscrew and washer (22 and 23).

Install a lathe dog on the drive end of the shaft (17) with the "V" notch positioned over the shaft keyway.

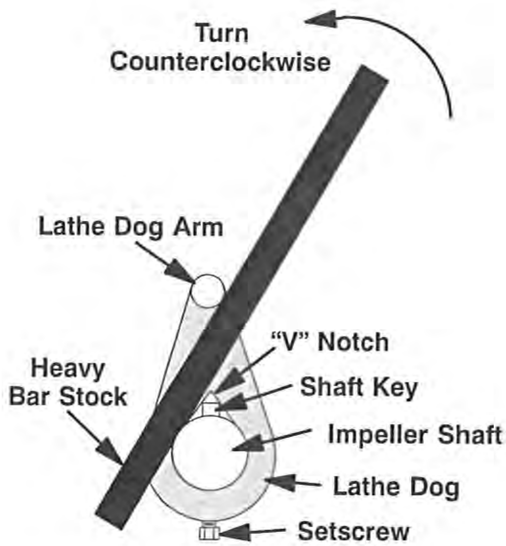

Figure 3. Loosening Impeller

With the impeller rotation still blocked, see Figure 3 and use a long piece of heavy bar stock to pry against the arm of the lathe dog in a counterclockwise direction (when facing the drive end of the shaft). **Use caution** not to damage the shaft or keyway. When the impeller breaks loose, remove the lathe dog and wood block.

NOTE

Do not remove the impeller until the rotating assembly has been removed from the pump casing.

(Figure 1)

Remove the hardware (9 and 10) securing the rotating assembly to the pump casing. Separate the rotating assembly by pulling straight away from the pump casing.

NOTE

An optional disassembly tool is available from the factory. If the tool is used, follow the instructions packed with it. A similar tool may be assembled using 1/2-inch pipe (schedule 80 steel or malleable iron) and a standard tee (see Figure 4). All threads are 1/2-inch NPT. ***Do not pre-assemble the tool.***

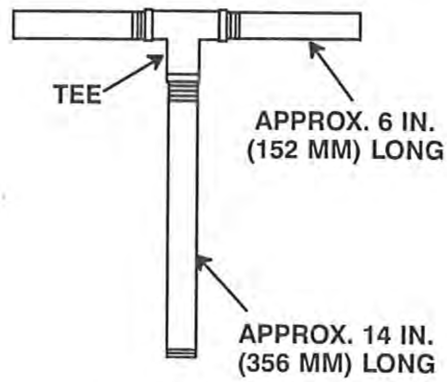

Figure 4. Rotating Assembly Tool

To install the tool, remove the air vent (9, Figure 2) from the bearing housing, and screw the longest length of pipe into the vent hole until fully engaged. Install the tee, and screw the handles into the tee. Use caution when lifting the rotating assembly to avoid injury to personnel or damage to the assembly.

Remove the bearing housing O-ring (8).

Impeller Removal

(Figure 2)

With the rotating assembly removed from the pump casing, unscrew the impeller from the shaft.

Use caution when unscrewing the impeller; tension on the shaft seal spring will be released as the impeller is removed. Inspect the impeller and replace if cracked or badly worn.

Remove the impeller adjusting shims (29); tie and tag the shims, or measure and record their thickness for ease of reassembly.

Seal Removal

(Figure 2)

Slide the integral shaft sleeve and rotating portion of the seal off the shaft as a unit.

Use a pair of stiff wires with hooked ends to remove the stationary element and seat.

An alternate method of removing the stationary seal components is to remove the hardware (20 and 21) and separate the seal plate (3) and gasket (4) from the bearing housing (7). Position the seal plate on a flat surface with the impeller side down. Use a wooden dowel or other suitable tool to press on the back side of the stationary seat until the seat, O-rings, and stationary element can be removed.

Remove the shaft sleeve O-ring (28).

If no further disassembly is required, refer to **Seal Installation**.

Shaft and Bearing Removal and Disassembly

(Figure 2)

When the pump is properly operated and maintained, the bearing housing should not require disassembly. Disassemble the shaft and bearings **only** when there is evidence of wear or damage.

CAUTION

Shaft and bearing disassembly in the field is not recommended. These operations should be performed only in a properly-equipped shop by qualified personnel.

Remove the bearing housing drain plug (26) and drain the lubricant. Clean and reinstall the drain plug.

Disengage the hardware (13 and14) and slide the bearing cap (12) and oil seal (18) off the shaft.Remove the bearing cap gasket (11), and press the oil seal from the bearing cap.

Place a block of wood against the impeller end of the shaft and tap the shaft and assembled bearings (6 and 19) from the bearing housing.

After removing the shaft and bearings, clean and inspect the bearings **in place** as follows.

CAUTION

To prevent damage during removal from the shaft, it is recommended that bearings be cleaned and inspected **in place**. It is **strongly** recommended that the bearings be replaced **any** time the shaft and bearings are removed.

Clean the bearing housing, shaft and all component parts (except the bearings) with a soft cloth soaked in cleaning solvent. Inspect the parts for wear or damage and replace as necessary.

WARNING!

Most cleaning solvents are toxic and flammable. Use them only in a well ventilated area free from excessive heat, sparks, and flame. Read and follow all precautions printed on solvent containers.

Clean the bearings thoroughly in **fresh** cleaning solvent. Dry the bearings with filtered compressed air and coat with light oil.

CAUTION

Bearings must be kept free of all dirt and foreign material. Failure to do so will greatly shorten bearing life. **DO NOT** spin dry bearings. This may scratch the balls or races and cause premature bearing failure.

Rotate the bearings by hand to check for roughness or binding and inspect the bearing balls. If rotation is rough or the bearing balls are discolored, replace the bearings.

The bearing tolerances provide a tight press fit onto the shaft and a snug slip fit into the bearing housing. Replace the bearings, shaft, or bearing housing if the proper bearing fit is not achieved.

If bearing replacement is required, remove the outboard bearing retaining ring (15), and use a bearing puller to remove the bearings from the shaft.

Press the inboard oil seal (5) from the bearing housing.

Shaft and Bearing Reassembly and Installation

(Figure 2)

Clean the bearing housing, shaft and all component parts (except the bearings) with a soft cloth soaked in cleaning solvent. Inspect the parts for wear or damage as necessary.

WARNING!

Most cleaning solvents are toxic and flammable. Use them only in a well ventilated area free from excessive heat, sparks, and flame. Read and follow all precautions printed on solvent containers.

Inspect the shaft for distortion, nicks or scratches, or for thread damage on the impeller end. Dress small nicks and burrs with a fine file or emery cloth. Replace the shaft if defective.

Position the inboard oil seal (5) in the bearing housing bore with the lip positioned as shown in Figure 2. Press the oil seal into the housing until the face is **just flush** with the machined surface on the housing.

CAUTION

To prevent damage during removal from the shaft, it is recommended that bearings be cleaned and inspected **in place**. It is **strongly** recommended that the bearings be replaced **any** time the shaft and bearings are removed.

NOTE

Position the inboard bearing (6) on the shaft with the shielded side toward the impeller end of the shaft. Position the outboard bearing (19) on the shaft with the integral retaining ring on the bearing O.D. toward the drive end of the shaft.

The bearings may be heated to ease installation. An induction heater, hot oil bath, electric oven, or hot plate may be used to heat the bearings. Bearings should **never** be heated with a direct flame or directly on a hot plate.

NOTE

If a hot oil bath is used to heat the bearings, both the oil and the container must be ***absolutely*** *clean. If the oil has been previously used, it must be* ***thoroughly*** *filtered.*

Heat the bearings to a uniform temperature **no higher than** 250°F (120°C), and slide the bearings onto the shaft, one at a time, until they are fully seated. This should be done quickly, in one continuous motion, to prevent the bearings from cooling and sticking on the shaft.

After the bearings have been installed and allowed to cool, check to ensure that they have not moved away from the shaft shoulders in shrinking. If movement has occurred, use a suitable sized sleeve and a press to reposition the bearings against the shaft shoulders.

If heating the bearings is not practical, use a suitable sized sleeve, and an arbor (or hydraulic) press to install the bearings on the shaft.

CAUTION

When installing the bearings onto the shaft, **never** press or hit against the outer race, balls, or ball cage. Press **only** on the inner race.

Secure the outboard bearing on the shaft with the bearing retaining ring (15).

Slide the shaft and assembled bearings into the bearing housing until the retaining ring on the outboard bearing seats against the bearing housing.

CAUTION

When installing the shaft and bearings into the bearing bore, push against the outer race. **Never** hit the balls or ball cage.

Press the outboard oil seal (18) into the bearing cap (12) with the lip positioned as shown in Figure 2. Replace the bearing cap gasket (11), and secure the bearing cap with the hardware (13 and 14). **Be careful** not to damage the oil seal lip on the shaft keyway.

Install the bearing housing O-ring (30).

Lubricate the bearing housing as indicated in **LUBRICATION**.

Seal Installation

(Figures 2, 5, 6 and 7)

WARNING!

Most cleaning solvents are toxic and flammable. Use them only in a well ventilated area free from excessive heat, sparks, and flame. Read and follow all precautions printed on solvent containers.

Clean the seal cavity and shaft with a cloth soaked in fresh cleaning solvent. Inspect the stationary seat bore in the seal plate for dirt, nicks and burrs, and remove any that exist. The stationary seat bore **must** be completely clean before installing the seal.

CAUTION

A new seal assembly should be installed **any time** the old seal is removed from the pump. Wear patterns on the finished faces cannot be realigned during reassembly. Reusing an old seal could result in premature failure.

To ease installation of the seal, lubricate the shaft sleeve O-ring and the external stationary seat O-ring with a very **small** amount of light lubricating oil. See Figure 5 for seal part identification.

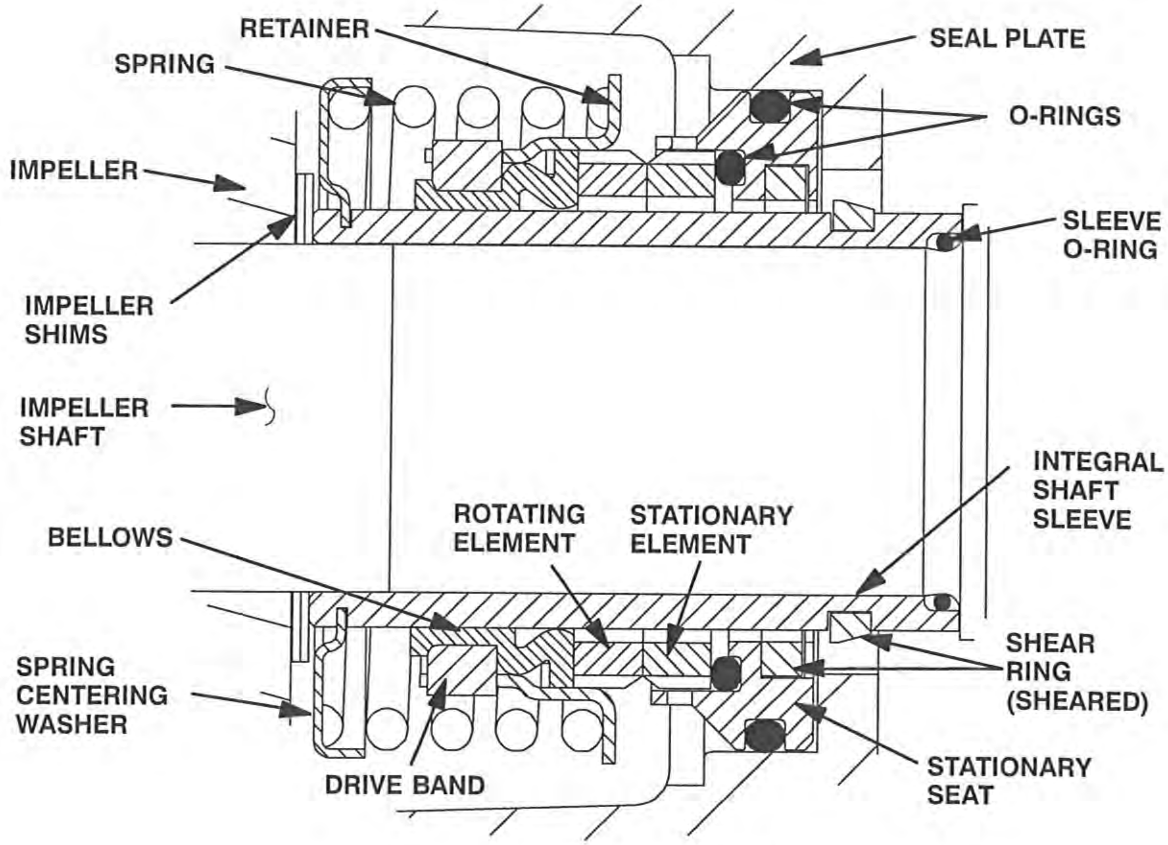

Figure 5. 46513−151 Cartridge Seal Assembly

CAUTION

This seal is not designed for operation at temperatures above 160°F (71°C). Do not use at higher operating temperatures.

If the seal plate was removed, install the seal plate gasket (4). Position the seal plate over the shaft and secure it to the intermediate with the hardware (20 and 21).

To prevent damaging the shaft sleeve O-ring (28) on the shaft threads, stretch the O-ring over a piece of tubing 1-1/4 I.D. x 1-1/2 O.D. x 2-inches long (32 mm x 38 mm x 51 mm). Slide the tube over the shaft threads, then slide the O-ring off the tube and onto the shaft. Remove the tube, and continue to slide the O-ring down the shaft until it seats against the shaft shoulder.

When installing a new cartridge seal assembly, remove the seal from the container, and remove the mylar storage tabs, if so equipped, from between the seal faces.

CAUTION

New cartridge seal assemblies may be equipped with mylar storage tabs between the seal faces. If so equipped, these storage tabs **must** be removed before installing the seal.

Lubricate the external stationary seat O-ring with light oil. Slide the seal assembly onto the shaft until the external stationary seat O-ring engages the bore in the seal plate.

Clean and inspect the impeller as described in **Impeller Installation and Adjustment**. Install the full set of impeller shims (29) provided with the seal, and screw the impeller onto the shaft until it is seated against the seal (see Figure 6).

Continue to screw the impeller onto the shaft. This will press the stationary seat into the seal plate bore.

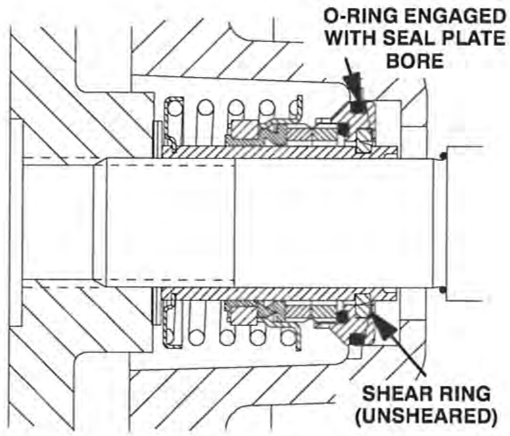

Figure 6. Seal Partially Installed

NOTE

A firm resistance will be felt as the impeller presses the stationary seat into the seal plate bore.

As the stationary seat becomes fully seated, the seal spring compresses, and the shaft sleeve will break the nylon shear ring. This allows the sleeve to slide down the shaft until seated against the shaft shoulder. Continue to screw the impeller onto the shaft until the impeller, shims, and sleeve are fully seated against the shaft shoulder (see Figure 7).

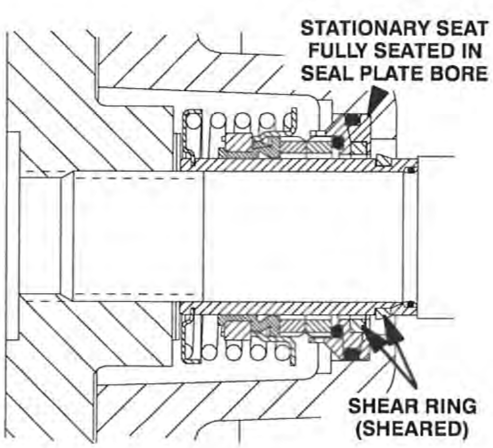

Figure 7. Seal Fully Installed

Measure the impeller-to-seal plate clearance, and remove impeller adjusting shims to obtain the proper clearance as described in **Impeller Installation and Adjustment**.

If necessary to reuse an old seal in an emergency, carefully separate the rotating and stationary seal faces from the bellows retainer and stationary seat.

CAUTION

A new seal assembly should be installed **any time** the old seal is removed from the pump. Wear patterns on the finished faces cannot be realigned during reassembly. Reusing an old seal could result in premature failure.

Handle the seal parts with extreme care to prevent damage. Be careful not to contaminate precision finished faces; even fingerprints on the faces can shorten seal life. If necessary, clean the faces with a non-oil based solvent and a clean, lint-free tissue. Wipe **lightly** in a concentric pattern to avoid scratching the faces.

Carefully wash all metallic parts in fresh cleaning solvent and allow to dry thoroughly.

CAUTION

Do not attempt to separate the rotating portion of the seal from the shaft sleeve when reusing an old seal. The rubber bellows will adhere to the sleeve during use, and attempting to separate them could damage the bellows.

Inspect the seal components for wear, scoring, grooves, and other damage that might cause leakage. Inspect the integral shaft sleeve for nicks or cuts on either end. If any components are worn, or the sleeve is damaged, replace the complete seal; **never mix old and new seal parts**.

Install the stationary seal element in the stationary seat. Press this stationary subassembly into the seal plate bore until it seats squarely against the bore shoulder. A push tube made from a piece of plastic pipe would aid this installation. The I.D. of

the pipe should be slightly larger than the O.D. of the shaft sleeve.

Slide the rotating portion of the seal (consisting of the integral shaft sleeve, spring centering washer, spring, bellows and retainer, and rotating element) onto the shaft until the seal faces contact.

Proceed with **Impeller Installation and Adjustment**.

Impeller Installation

(Figure 2)

Inspect the impeller, and replace it if cracked or badly worn. Inspect the impeller and shaft threads for dirt or damage, and clean or dress the threads as required.

CAUTION

The shaft and impeller threads **must** be completely clean before reinstalling the impeller. Even the slightest amount of dirt on the threads can cause the impeller to seize to the shaft, making future removal difficult or impossible without damage to the impeller or shaft.

Install the same thickness of impeller adjusting shims (29) as previously removed. Apply 'Never-Seez' or equivalent to the shaft threads and screw the impeller onto the shaft until tight.

NOTE

At the slightest sign of binding, immediately back the impeller off, and check the threads for dirt. ***Do not*** *try to force the impeller onto the shaft.*

A clearance of .025 to .040 inch (0,64 to 1,02 mm) between the impeller and the seal plate is recommended for maximum pump efficiency. Measure this clearance, and add or remove impeller adjusting shims as required.

NOTE

If the rotating assembly has been installed in the pump casing, this clearance may be measured by reaching through the priming port with a feeler gauge.

NOTE

Proceed with ***Rotating Assembly Installation*** *before installing the impeller capscrew and washer (22 and 23). The rotating assembly must be installed in the pump casing in order to torque the impeller capscrew.*

After the rotating assembly is installed in the pump casing, coat the threads of the impeller capscrew (23) with 'Never-Seez' or equivalent compound, and install the impeller washer (22) and capscrew; torque the capscrew to 90 ft. lbs. (1080 in. lbs. or 12,4 m. kg.).

Rotating Assembly Installation

(Figure 1)

NOTE

If the pump has been completely disassembled, it is recommended that the suction check valve and back cover assembly be reinstalled at this point. The back cover assembly must be in place to adjust the impeller face clearance.

Install the bearing housing and lubricate it with light grease. Ease the rotating assembly into the pump casing using the installation tool. **Be careful** not to damage the O-ring.

Install the four sets of rotating assembly adjusting shims (11) using the same thickness as previously removed. Secure the rotating assembly to the pump casing with the hardware (9 and 10). **Do not** fully tighten the capscrews until the back cover has been reinstalled and the impeller face clearance has been set.

A clearance of .010 to .020 inch (0,25 to 0,51 mm) between the impeller and the wear plate is also recommended for maximum pump efficiency. This clearance can be obtained by removing an equal amount of shims from each rotating assembly shim set until the impeller scrapes against the wear plate when the shaft is turned. After the impeller scrapes, add approximately .015 inch (0,4 mm) of shims to each shim set.

NOTE

An alternate method of adjusting this clearance is to

reach through the suction port with a feeler gauge and measure the gap. Add or subtract rotating assembly shims accordingly.

Suction Check Valve Installation

(Figure 1)

Inspect the check valve assembly (29), and replace it if badly worn.

NOTE

The check valve assembly must be replaced as a complete unit. Individual parts are not sold separately.

Reach through the back cover opening with the check valve (29), and position the check valve adaptor in the mounting slot in the suction flange (30). Align the adaptor with the flange hole, and secure the assembly with the check valve pin (31).

NOTE

If the suction or discharge flanges were removed, replace the respective gaskets, apply 'Permatex Aviation No. 3 Form-A-Gasket' or equivalent compound to the mating surfaces, and secure them to the pump casing with the attaching hardware.

Back Cover Installation

(Figure 1)

If the wear plate (12) was removed for replacement, carefully center it on the back cover and secure it with the hardware (13 and 14). The wear plate **must** be concentric to prevent binding when the back cover is installed.

Replace the back cover O-ring (15), and lubricate it with a generous amount of No. 2 grease. Clean any scale or debris from the contacting surfaces in the pump casing that might interfere or prevent a good seal with the back cover. Slide the back cover assembly into the pump casing. Be sure the wear plate does not bind against the impeller.

NOTE

To ease future disassembly, apply a film of grease or 'Never-Seez' on the back cover shoulder, or any surface which contacts the pump casing. This action will reduce rust and scale build-up.

Secure the back cover assembly by tightening the back cover nuts (24) evenly. **Do not** over-tighten the hand nuts; they should be just tight enough to ensure a good seal at the back cover shoulder. Be sure the wear plate does not bind against the casing.

PRESSURE RELIEF VALVE MAINTENANCE

(Figure 1)

The back cover is equipped with a pressure relief valve (20) to provide additional safety for the pump and operator (refer to **Liquid Temperature And Overheating** in **OPERATION**).

It is recommended that the pressure relief valve assembly be replaced at each overhaul, or any time the pump overheats and activates the valve. **Never** replace this valve with a substitute which has not been specified or provided by the Gorman-Rupp Company.

Periodically, the valve should be removed for inspection and cleaning. When reinstalling the relief valve, apply 'Loctite Pipe Sealant With Teflon No. 592', or equivalent compound, on the relief valve threads. Position the valve as shown in Figure 1 with the discharge port pointing down.

Final Pump Assembly

(Figure 1)

Install the shaft key (16, Figure 2) and reconnect the power source. Be sure to install any guards used over the rotating members.

WARNING!

Do not operate the pump without the guards in place over the rotating parts. Exposed rotating parts can catch clothing, fingers, or tools, causing severe injury to personnel.

Install the suction and discharge lines and open all valves. Make certain that all piping connections are tight, properly supported and secure.

Be sure the pump and power source have been properly lubricated, see **LUBRICATION**.

Remove the fill cover assembly (36) and fill the pump casing with clean liquid. Reinstall the fill cover and tighten it. Refer to **OPERATION**, Section C, before putting the pump back into service.

LUBRICATION

Seal Assembly

(Figure 2)

Before starting the pump, remove the vented plug (8) and fill the seal cavity with approximately 40 ounces (1,4 liters) of SAE No. 30 non-detergent oil, or to a level just below the tapped vented plug hole. Clean and reinstall the vented plug. Maintain the oil at this level.

Bearings

(Figure 2)

The bearing housing was fully lubricated when shipped from the factory. Check the oil level regularly through the sight gauge (24) and maintain it at the middle of the gauge. When lubrication is required, add SAE No. 30 non-detergent oil through the hole for the air vent (9). **Do not** over-lubricate. Over-lubrication can cause the bearings to overheat, resulting in premature bearing failure.

NOTE

The white reflector in the sight gauge must be positioned horizontally to provide proper drainage.

Under normal conditions, drain the bearing housing once each year and refill with approximately 32 ounces (1 liter) clean oil. Change the oil more frequently if the pump is operated continuously or installed in an environment with rapid temperature change.

CAUTION

Monitor the condition of the bearing lubricant regularly for evidence of rust or moisture condensation. This is especially important in areas where variable hot and cold temperatures are common.

For cold weather operation, consult the factory or a lubricant supplier for the recommended grade of oil.

Power Source

Consult the literature supplied with the power source, or contact your local power source representative.

THE GORMAN-RUPP COMPANY AND GORMAN-RUPP OF CANADA LIMITED 12 MONTH LIMITED WARRANTY

EXTENT AND DURATION OF WARRANTY

Coverage: The Gorman-Rupp Company or Gorman-Rupp of Canada Limited (herein individually referred to as "GR") each individually warrant that its products and parts shall be free from defects in material and workmanship for twelve (12) months from the date of purchase by the original end user.

Exceptions: This Limited Warranty shall not apply to the following products and parts: engines, motors, trade accessories and other products, components or materials not manufactured by GR. With respect to submersible pumps, the pump and motor are an integral unit and are therefore warranted as a unit. However, with respect to the electrical components in submersible pumps, this warranty is valid **only** when electrical controls for the pump have been specified and/or provided by GR. Wear and tear on any product resulting from normal use is not covered by this Limited Warranty.

LIMITATIONS

GR'S SOLE AND EXCLUSIVE WARRANTY WITH RESPECT TO ITS PRODUCTS AND PARTS IS THIS LIMITED WARRANTY. THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER EXPRESS AND/OR IMPLIED WARRANTIES, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE.

EXCLUSIVE REMEDY AND DAMAGES

The sole and exclusive remedy for breach of this Limited Warranty by GR, and the entire extent of its liability for such breach or for damages arising and/or resulting from the use of the products and parts covered by this Limited Warranty shall be as follows:

1. **Repair or replacement:** If inspection shows that any GR product or part covered under this LimitedWarranty is defective in materials or workmanship, GR shall repair or replace the defective product or part at its option, without charge. You must have properly installed, maintained and used the product or part claimed to be defective in accordance with the maintenance schedule and/or manual which comes with the product. *No allowance will be made for labor, transportation or other charges incurred by you in connection with such repair or replacement.*

2. **To obtain the above remedy:**

   a) Immediately notify GR at the address below of the claimed defect in materials or workmanship and provide the serial number or date code of the product and/or part and provide a copy of the invoice or bill of sale referencing the product and/or part by no later than the expiration date of the Limited Warranty period.

   b) GR will advise whether inspection of the product and/or part will be necessary and whether and how repair or replacement will be effected. If inspection by GR is necessary, the product or part must be sent freight prepaid to GR at the address stated below. Return shipment of the repaired product or part will be F.O.B. the address stated below.

3. **Damages:** GR's liability for damages for breach of this Limited Warranty shall not exceed the amount of the purchase price of the product or part in respect to which damages are claimed. **IN NO EVENT SHALL GR BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES FOR BREACH OF THIS LIMITED WARRANTY OTHER THAN AS STATED HEREIN.**

   Some states do not allow the exclusion or limitation of incidental or consequential damages. Accordingly, the above may not apply to you. This Limited Warranty gives you specific legal rights, and you may also have other rights which vary from state to state and province to province.

THE GORMAN-RUPP COMPANY
P.O. BOX 1217
MANSFIELD, OH 44901–1217
Phone: (419) 755–1011

GORMAN-RUPP OF CANADA LIMITED
70 Burwell Road
St. Thomas, Ontario N5P 3R7
Phone: (519) 631–2870

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4.0 Supporting Documentation

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4.1 Sewer Connection Information

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Fax: Jen Bradley 464-6006

CUSTOMER NAME	CUSTOMER ID NUMBER	SERVICE LOCATION	METER ID NUMBER
Borrelli's Pastry Shop	107136	765 Tiogue Ave.	39539596 W
Boston Neck Realty	116473	1650 Nooseneck Hill Rd.	60106589 W
Coventry Credit Union	114468	1584 Nooseneck Hill Rd.	31599205 W
Cumberland Farms	111938	1600 Nooseneck Hill Rd.	39597778 W
CVS Store #00621-01	105876	743 Tiogue Ave.	47624300 W
Glenwood Park	110981	978 Tiogue Ave.	31918077 W
HallKeen Management Inc.	113021	100 Woodland Dr.	60106571 W
HallKeen Management Inc.	113019	207 Goldfinch Dr.	60106564 W
HallKeen Management Inc.	113020	309 Woodland Dr.	60106584 W
HallKeen Management Inc.	113018	400 Goldfinch Dr.	60107146 W
HallKeen Management Inc.	112973	110 Goldfinch Dr.	60106590 W
HallKeen Management Inc.	112972	310 Goldfinch Dr.	60106566 W
HallKeen Management Inc.	112974	Goldfinch Dr.	23717273 W
HallKeen Management Inc.	113230	1 Viero Ln.	33825338 W
HallKeen Management Inc.	113022	20 Woodland Dr.	60106557 W
HallKeen Management Inc.	113206	20 Woodland Dr.	70174067 W
HallKeen Management Inc.	113023	200 Woodland Dr.	60106562 W
HallKeen Management Inc.	113111	100 Viero Ln.	60106561 W
Haven Eldercare of New England	113312	11 Woodland Dr.	66302032 W
Kent County Hospital / Cov. Care	113623	1620 Nooseneck Hill Rd.	39539501 W
Kenyon Oil Company, Inc.	107955	851 Tiogue Ave.	39749439 W
Leisure Village	113353	1620 Nooseneck Hill Road	1155706 W
Lockwood McKinnon Taco Venture	115274	784 Tiogue Ave.	37272428 W
SOCO / Leisure Condo's	116734	1700 Nooseneck Hill Rd.	
St. John & Paul Parish Church	106734	341 South Main St.	51006475 W
Farther John V Doyle School	109438	343 South Main St.	
Star Brite Car Wash	113709	1620 Nooseneck Hill Rd.	31947081 W
Star Brite Laundromat	113315	1602 Nooseneck Hill Rd.	31947084 W
Stop & Shop	115336	900 Tiogue Ave.	31962731 W
Stop & Shop	115337	900 Tiogue Ave.	31962731A W
Stop & Shop	115341	900 Tiogue Ave.	3196027 W
Stop & Shop	115342	900 Tiogue Ave.	3196027A W
Tiogue Avenue Assoc.	114013	1036 Tiogue Ave.	31166858 W
Tiogue Veterinary Clinic	105287	916 Tiogue Ave.	34944727 W
Tom's Fruit & Deli Inc.	107959	821 Tiogue Ave.	39117010 W
U.S. Post Office	114758	1550 Nooseneck Hill Rd.	31923991 W
VHS Realty	113545	1600 Nooseneck Hill Rd.	39597727 W
VHS Realty	112452	785 Tiogue Ave.	37517545 W
Wal-Mart Stores, Inc.	115603	1173 Tiogue Ave.	31988583A W
Wal-Mart Stores, Inc.	115662	1173 Tiogue Ave.	31988583
Westwood Estates	115650	14 Liena Rose Way	70006788A W

To: Len Bradley
464-6006

	Acct #	Address	Consumption	2.075 / 12
Borrellis	107136 ✓	765 Tiogue	18,100	113.13
Boston Neck	116473 ✓	1650 Nooseneck	81,000	506.25
Coventry C.U.	114468 ✓	1584 Nooseneck	34,000	212.50
Cumb. Farms	111938 ✓	1600 Nooseneck	10,500	65.63
CVS	105876 ✓	743 Tiogue	10,000	62.50
Glenwood	110981 ✓	978 Tiogue	341,000	2131.25
Hall Keen	113021 –	100 woodland	115,000	718.75
	113019 –	207 Goldfinch	38,000	237.50
	113020 –	309 woodland	53,000	331.25
	113018 –	400 Goldfinch	74,000	462.50
	112973 –	110 Goldfinch	132,000	825.–
	112972 –	310 Goldfinch	118,000	737.50
	112974 –	Goldfinch	3,000	18.75
	113230 –	1 Viero Ln	500	3.13
	113022 –	20 woodland	41,000	256.25
	113206 –	20 woodland	218,472	1365.45
	113023 –	200 woodland	94,000	587.50
	113111 –	100 Viero Ln	121,000	756.25
Haven Health	113312 ✓	11 woodland	1,300,900	8130.63
Kent Hospital	113623 ✓	1620 Nooseneck	3700	23.13
Kenyon Oil	107955 ✓	857 Tiogue	18,200	113.75
Leisure Village	113353 ✓	1620 Nooseneck	110,427	690.17
Taco Bell	115274 ✓	784 Tiogue	42,000	262.50

2007 actual

	Acct #	Address	C.F. Consumption	x .075 ÷ 12
SOCO	116734	1700 Nooseneck	28,000 =	175
St John + Paul	106734	341 So. Main	7,206	45.04
Father Doyle School	109438	343 So. Main	47,000	293.75
Star Suds car wash	113709	1620 Nooseneck	203,000	1268.75
S.B. Laundromat	113315	1602 Nooseneck	510,000	3187.50
Stop + Shop	115336	900 Tiogue	— 0 —	
	115337	900 Tiogue	3,000	18.75
	115341	900 Tiogue	170,100	1063.13
	115342	900 Tiogue	3,000	18.75
Tiogue Ave Assoc	114013	1036 Tiogue	34,000	212.50
Tiogue V at	105387	916 Tiogue	12,000	75.00
Tom's Deli	107959	821 Tiogue	38,300	239.38
Post Office	114758	1550 Nooseneck	18,000	112.50
VHS Realty	113545	1600 Nooseneck	9,500	59.38
	112452	785 Tiogue	26,500	165.63
Walmart	115603	1173 Tiogue	15,000	93.75
Walmart	115642	1173 Tiogue	100,000	625 —
Westwood Estates →	115650	14 Liena Rose	1,777,000	11,106.25

133,275 CF

2006
2005
2004

APPENDIX K

Date	Jrn	Ref	Ref	Batch	Transaction Des	Beginning Balance	Debit	Credit	Ending Balance
108662 Woodland Manor Improv Associat (1-01-2008 - 10-30-2008)									
108662-1415.00 Escavation and Piping									
Total Account 108662-1415.00 - Escavation and Piping						103,000.00*	.00*	.00*	103,000.00*
108662-1420.00 Sewer Pump System									
Total Account 108662-1420.00 - Sewer Pump System						2,506,018.75*	.00*	.00*	2,506,018.75*
108662-1420.01 Building Improvements									
Total Account 108662-1420.01 - Building Improvements						4,200.00*	.00*	.00*	4,200.00*
108662-1420.02 Equipment - Pumps									
Total Account 108662-1420.02 - Equipment - Pumps						50,914.32*	.00*	.00*	50,914.32*
108662-1420.03 Equipment - Surveillance									
Total Account 108662-1420.03 - Equipment - Surveilla						3,720.50*	.00*	.00*	3,720.50*
108662-1420.04 Equipment - General									
Total Account 108662-1420.04 - Equipment - General						2,100.00*	.00*	.00*	2,100.00*
108662-1420.05 Equipment - Meters									
Total Account 108662-1420.05 - Equipment - Meters						34,630.46*	.00*	.00*	34,630.46*
108662-1430.00 Leasehold Improvements									
Total Account 108662-1430.00 - Leasehold Improvement						27,446.75*	.00*	.00*	27,446.75*
108662-1440.00 Building Equipment (Portable)									
Total Account 108662-1440.00 - Building Equipment (P						9,920.99*	.00*	.00*	9,920.99*
108662-1450.00 Furniture for Project									
Total Account 108662-1450.00 - Furniture for Project						11,083.92*	.00*	.00*	11,083.92*
108662-1460.00 Furnishings									
Total Account 108662-1460.00 - Furnishings						1,787.20*	.00*	.00*	1,787.20*
108662-1495.00 Reserve for Depreciation									
Total Account 108662-1495.00 - Reserve for Depreciat						204,912.00-*	.00*	.00*	204,912.00-*
108662-1495.01 Accum Depr Improvement									
Total Account 108662-1495.01 - Accum Depr Improvemen						65,933.0[illegible]-	.00*	.00*	65,933.00-*
108662-1495.02 Acum Depr Chlorine Pumps									
Total Account 108662-1495.02 - Acum Depr Chlorine Pu						33,703.38-*	.00*	.00*	33,703.38-*
108662-1495.03 Accum Depr Tank									
Total Account 108662-1495.03 - Accum Depr Tank						2,220.00-*	.00*	.00*	2,220.00-*
108662-1495.05 Accum Depr Furn & Fixture									
Total Account 108662-1495.05 - Accum Depr Furn & Fix						14,668.00-*	.00*	.00*	14,668.00-*
108662-1495.12 Accum Depr General Equipment									
Total Account 108662-1495.12 - Accum Depr General Eq						18,191.00-*	.00*	.00*	18,191.00-*
108662-6516.00 Repairs & Maintenance									
1-24-2008	API	Mult	3689	69785	Monitoring svc. 1/08-3/31/08		52.50		
1-24-2008	API	Siem	8828	69785	Bioxide		588.50		
1-24-2008	API	Siem	8828	69785	Bioxide		588.50		
1-31-2008	JE	jf		33297	reclass Monitor ing fee per bu			52.50-	
1-31-2008	JE	jf		33297	recl locating fee per budget		2,965.00		
1-31-2008	JE	jf		33297	reclass Dig Safe to 6516		173.00		
					Total 1-31-08	.00*	4,367.50*	52.50-*	4,315.00*
2-20-2008	API	Siem	8828	70433	Bioxide		588.50		
2-20-2008	API	Siem	8828	70433	Bioxide		588.50		
2-20-2008	API	Prem	3678	70451	Jan svc		1,450.00		
2-20-2008	API	Siem	8829	70451	Bioxide		588.50		
2-20-2008	API	Siem	8829	70451	Bioxide		588.50		
					Total 2-29-08	4,315.00*	3,804.00*	.00*	8,119.00*
3-18-2008	API	Siem	8829	71122	Bioxide WMIA		765.05		
3-18-2008	API	Siem	8829	71122	Bioxide WMIA		765.05		
3-24-2008	API	Siem	8829	71235	Bioxide WMIA		588.50		
3-24-2008	API	Siem	8829	71235	Bioxide WMIA		588.50		
3-31-2008	JE	jf		34387	rev inv record in Mar in error			52.50-	
3-31-2008	API	Siem	8829	71545	Bioxide WMIA		588.50		
3-31-2008	API	Siem	8829	71545	Bioxide WMIA		588.50		
3-31-2008	API	Mult	3749	71756	Monitoring service		52.50		
					Total 3-31-08	8,119.00*	3,936.60*	52.50-*	12,003.10*
4-01-2008	JE	jf		34387	Premium locating Inv per budge		2,900.00		
4-10-2008	API	Mult	3749	71756	(Rev)Monitoring service		52.50-		
4-10-2008	API	Mult	3749	71756	Monitoring service		52.50		
4-23-2008	API	Siem	8829	72048	Bioxide		588.50		
4-23-2008	API	Siem	8829	72048	Bioxide		588.50		

Date	Jrn	Ref	Ref	Batch	Transaction Des	Beginning Balance	Debit	Credit	Ending Balance
108662-6516.00 Repairs & Maintenance - Continued									
					Total 4-30-08	12,003.10*	4,077.00*	.00*	16,080.10*
5-12-2008	API	Siem	8829	72506	Bioxide		588.50		
5-12-2008	API	Siem	8829	72506	Bioxide		588.50		
5-19-2008	API	Prem	3882	72681	Locate & mark out WMIA		1,450.00		
5-27-2008	API	Siem	8830	72900	Bioxide		663.40		
5-27-2008	API	Siem	8830	72900	Bioxide		663.40		
5-27-2008	API	Siem	8830	72900	Bioxide		588.50		
5-27-2008	API	Siem	8830	72900	Bioxide		588.50		
					Total 5-31-08	16,080.10*	5,130.80*	.00*	21,210.90*
6-17-2008	API	Siem	8830	73445	Bioxide		588.50		
6-17-2008	API	Siem	8830	73445	Bioxide		588.50		
6-30-2008	JE	jf		35069	reclass Utility locat		1,450.00		
6-30-2008	API	Siem	8830	73783	Bioxide		588.50		
6-30-2008	API	Siem	8830	73783	Bioxide		588.50		
					Total 6-30-08	21,210.90*	3,804.00*	.00*	25,014.90*
7-09-2008	API	Mult	3808	73973	7/1-9/30/08 Monitor svc pump		52.50		
7-16-2008	API	Prem	4046	74105	Locate & mark out		1,450.00		
7-21-2008	API	Siem	8830	74217	Bioxide		588.50		
7-21-2008	API	Siem	8830	74217	Bioxide		588.50		
7-21-2008	API	Siem	8830	74217	Bioxide		588.50		
7-21-2008	API	Siem	8830	74217	Bioxide		588.50		
7-29-2008	API	M&jp	815	74376	Cleaned out sewer pump station		3,940.00		
7-31-2008	JE	jf		35431	reclass Monitoring fees			52.50-	
7-31-2008	API	Siem	8830	74565	Bioxide		612.04		
7-31-2008	API	Siem	8830	74565	Bioxide		588.50		
					Total 7-31-08	25,014.90*	8,997.04*	52.50-*	33,959.44*
8-19-2008	API	Siem	8830	74906	Bioxide-WMIA		588.50		
8-19-2008	API	Siem	8830	74906	Bioxide-WMIA		588.50		
8-31-2008	JE	jf		35475	reclass Premium Marking fees		1,580.00		
8-31-2008	API	Siem	8830	75171	Bioxide		588.50		
8-31-2008	API	Siem	8883	75171	Bioxide		411.95		
					Total 8-31-08	33,959.4	3,757.45*	.00*	37,716.89*
9-17-2008	API	Siem	8831	75473	Bioxide		588.50		
9-17-2008	API	Siem	8831	75473	Bioxide		588.50		
9-23-2008	API	Prem	4222	75628	Locate & mark out WMIA		1,580.00		
9-23-2008	API	Siem	8831	75628	Bioxide		588.50		
9-23-2008	API	Siem	8831	75628	Bioxide		588.50		
					Total 9-30-08	37,716.89*	3,934.00*	.00*	41,650.89*
10-06-2008	API	Mult	3869	75908	Qtrly monitoring service		52.50		
					Total 10-30-08	41,650.89*	52.50*	.00*	41,703.39*
Total Account 108662-6516.00 - Repairs & Maintenance						.00*	41,860.89*	157.50-*	41,703.39*
Total Property 108662 - Woodland Manor Improv Associ						2,415,195.51*	41,860.89*	157.50-*	2,456,898.90*
GRAND TOTALS						2,415,195.51*	41,860.89*	157.50-*	2,456,898.90*

Date	Jrn	Ref	Ref	Batch	Transaction Des	Beginning Balance	Debit	Credit	Ending Balance
108662 Woodland Manor Improv Associat (1-01-2007 - 12-31-2007)									
108662-1415.00 Escavation and Piping									
Total Account 108662-1415.00 - Escavation and Piping						103,000.00*	.00*	.00*	103,000.00*
108662-1420.00 Sewer Pump System									
3-15-2007	API	Siem	8825	62057	install meter/ pump		6,018.75		
Total Account 108662-1420.00 - Sewer Pump System						2,500,000.00*	6,018.75*	.00*	2,506,018.75*
108662-1420.01 Building Improvements									
Total Account 108662-1420.01 - Building Improvements						4,200.00*	.00*	.00*	4,200.00*
108662-1420.02 Equipment - Pumps									
Total Account 108662-1420.02 - Equipment - Pumps						50,914.32*	.00*	.00*	50,914.32*
108662-1420.03 Equipment - Surveillance									
Total Account 108662-1420.03 - Equipment - Surveilla						3,72[illegible]	.00*	.00*	3,720.50*
108662-1420.04 Equipment - General									
Total Account 108662-1420.04 - Equipment - General						2,100.00*	.00*	.00*	2,100.00*
108662-1420.05 Equipment - Meters									
Total Account 108662-1420.05 - Equipment - Meters						34,630.46*	.00*	.00*	34,630.46*
108662-1430.00 Leasehold Improvements									
Total Account 108662-1430.00 - Leasehold Improvement						27,446.75*	.00*	.00*	27,446.75*
108662-1440.00 Building Equipment (Portable)									
Total Account 108662-1440.00 - Building Equipment (P						9,920.99*	.00*	.00*	9,920.99*
108662-1450.00 Furniture for Project									
Total Account 108662-1450.00 - Furniture for Project						11,083.92*	.00*	.00*	11,083.92*
108662-1460.00 Furnishings									
Total Account 108662-1460.00 - Furnishings						1,787.20*	.00*	.00*	1,787.20*
108662-1495.00 Reserve for Depreciation									
12-31-2007	JE	AJE	#17	35673	record Depreciation			105,177.00-	
Total Account 108662-1495.00 - Reserve for Depreciat						99,735.00-*	.00*	105,177.00-*	204,912.00-*
108662-1495.01 Accum Depr Improvement									
12-31-2007	JE	AJE	#17	35673	record Depreciation			1,319.00-	
Total Account 108662-1495.01 - Accum Depr Improvemen						64,614.[illegible]-*	.00*	1,319.00-*	65,933.00-*
108662-1495.02 Acum Depr Chlorine Pumps									
12-31-2007	JE	AJE	#17	35673	record Depreciation			4,066.00-	
Total Account 108662-1495.02 - Acum Depr Chlorine Pu						29,637.38-*	.00*	4,066.00-*	33,703.38-*
108662-1495.03 Accum Depr Tank									
12-31-2007	JE	AJE	#17	35673	record Depreciation			97.00-	
Total Account 108662-1495.03 - Accum Depr Tank						2,123.00-*	.00*	97.00-*	2,220.00-*
108662-1495.05 Accum Depr Furn & Fixture									
Total Account 108662-1495.05 - Accum Depr Furn & Fix						14,668.00-*	.00*	.00*	14,668.00-*
108662-1495.12 Accum Depr General Equipment									
12-31-2007	JE	AJE	#17	35673	record Depreciation			4,947.00-	
Total Account 108662-1495.12 - Accum Depr General Eq						13,244.00-*	.00*	4,947.00-*	18,191.00-*
108662-6516.00 Repairs & Maintenance									
1-31-2007	JE	jf		29065	reclass chem treatment		1,177.00		
					Total 1-31-07	.00*	1,177.00*	.00*	1,177.00*
2-20-2007	API	Prem	8262	61332	Locating Utilities		1,450.00		
					Total 2-28-07	1,177.00*	1,450.00*	.00*	2,627.00*
3-15-2007	API	Prem	8265	62057	locate & mark out sewer 2/07		1,450.00		
3-15-2007	API	Siem	8825	62057	500 gal Bioxide		1,177.00		
3-20-2007	API	Siem	8825	62933	Bioxide		588.50		
3-20-2007	API	Siem	8825	62933	Bioxide		588.50		
					Total 3-31-07	2,627.[illegible]	3,804.00*	.00*	6,431.00*
4-18-2007	API	Powe	2377	62933	Generator rental 10/24-11/20/0		6,959.90		
4-30-2007	API	Siem	8825	63373	Bioxide		588.50		
4-30-2007	API	Siem	8025	63373	Bioxide		588.50		
4-30-2007	API	Siem	8825	63373	Bioxide		223.63		
4-30-2007	API	Siem	8825	63373	Bioxide		588.50		
					Total 4-30-07	6,431.00*	8,949.03*	.00*	15,380.03*
5-31-2007	JE	jf		30718	reclass to R & M		1,450.00		
					Total 5-31-07	15,380.03*	1,450.00*	.00*	16,830.03*
6-06-2007	API	Siem	8826	64274	Bioxide		588.50		
6-06-2007	API	Siem	8826	64274	Bioxide		588.50		

Date	Jrn	Ref	Ref	Batch	Transaction Des	Beginning Balance	Debit	Credit	Ending Balance
108662-6516.00 Repairs & Maintenance - Continued									
6-06-2007	API	Siem	8826	64274	Bioxide		588.50		
6-06-2007	API	Siem	8826	64274	Bioxide		588.50		
					Total 6-30-07	16,830.C.*	2,354.00*	.00*	19,184.03*
7-16-2007	API	Siem	8826	65089	Bioxide		588.50		
7-16-2007	API	Siem	8826	65089	Bioxide		588.50		
7-31-2007	JE	jf		31207	reclass repairs to 6516		14,719.27		
					Total 7-31-07	19,184.03*	15,896.27*	.00*	35,080.30*
8-09-2007	API	Siem	8826	65733	Bioxide		588.50		
8-09-2007	API	Siem	8826	65733	Bioxide		588.50		
					Total 8-31-07	35,080.30*	1,177.00*	.00*	36,257.30*
9-11-2007	API	Siem	8827	66484	bioxide		470.80		
9-11-2007	API	Siem	8827	66484	bioxide		470.80		
9-11-2007	API	Siem	8827	66484	bioxide		941.60		
					Total 9-30-07	36,257.30*	1,883.20*	.00*	38,140.50*
10-22-2007	API	Powe	2543	67408	maint agreement 12/07-12/08		265.00		
10-22-2007	API	Prem	3397	67408	locate m/o svc 9/30/07		1,450.00		
10-22-2007	API	Siem	8827	67408	bioxide		588.50		
10-22-2007	API	Siem	8827	67408	bioxide		588.50		
10-31-2007	API	Nati	7487	67690	Quarterly insp Annual		150.00		
10-31-2007	API	Siem	8227	67690	Bioxide		588.50		
10-31-2007	API	Siem	8227	67690	Bioxide		588.50		
10-31-2007	API	Siem	8827	67690	Bioxide		588.50		
10-31-2007	API	Siem	8827	67690	Bioxide		588.50		
					Total 10-31-07	38,140.50*	5,396.00*	.00*	43,536.50*
11-12-2007	API	Siem	8828	67975	Bioxide		588.50		
11-12-2007	API	Siem	8828	67975	Bioxide		588.50		
11-19-2007	API	Dipr	6451	68171	SEWER		527.30		
11-19-2007	API	Dipr	6556	68171	SEWER		1,273.75		
11-26-2007	API	Siem	8828	68256	Bioxide		588.50		
11-26-2007	API	Siem	8828	68256	Bioxide		588.50		
					Total 11-30-07	43,536.50*	4,155.05*	.00*	47,691.55*
12-31-2007	API	Siem	8828	69246	BIOXIDE		588.50		
12-31-2007	API	Siem	8828	69246	BIOXIDE		588.50		
12-31-2007	API	Wood	8047	69246	Repair Fence at Sewer Station		587.00		
12-31-2007	API	Siem	8828	69554	Bioxide		588.50		
12-31-2007	API	Siem	8828	69554	Bioxide		588.50		
					Total 12-31-07	47,691.55*	2,941.00*	.00*	50,632.55*
Total Account 108662-6516.00 - Repairs & Maintenance						.00*	50,632.55*	.00*	50,632.55*
Total Property 108662 - Woodland Manor Improv Associ						2,524,782.76*	56,651.30*	115,606.00-*	2,465,828.06*
GRAND TOTALS						2,524,782.76*	56,651.30*	115,606.00-*	2,465,828.06*

Date	Jrn	Ref	Ref	Batch	Transaction Des	Beginning Balance	Debit	Credit	Ending Balance
108662 Woodland Manor Improv Associat (1-01-2006 - 12-31-2006)									
108662-1415.00 Escavation and Piping									
Total Account 108662-1415.00 - Escavation and Piping						103,000.00*	.00*	.00*	103,000.00*
108662-1420.00 Sewer Pump System									
1-26-2006	JE	jf		25267	Record Sewer lin Prom Note CSA		2,500,000.00		
1-31-2006	JE	jf		25288	record Note Payble to CSA		4,520,000.00		
					Total 1-31-06	2,500,000.00*	7,020,000.00*	.00*	2,500,000.00* !!
12-31-2006	JE	AJE	8	31919	record Conting note CSA			4,520,000.00-	
					Total 12-31-06	2,512,037.50*	.00*	4,520,000.00-*	2,007,962.50-*
Total Account 108662-1420.00 - Sewer Pump System						2,500,000.00*	7,020,000.00*	4,520,000.00-*	2,007,962.50-*!!
108662-1420.01 Building Improvements									
Total Account 108662-1420.01 - Building Improvements						4,200.00*	.00*	.00*	4,200.00*
108662-1420.02 Equipment - Pumps									
1-27-2006	API	fgle	1017	52646	Plumbing svc		9,916.76		
1-31-2006	JE	jf		25256	Rec Pick-up & rebuild Pump		13,390.40		
Total Account 108662-1420.02 - Equipment - Pumps						50,914.32*	23,307.16*	.00*	50,914.32* !!
108662-1420.03 Equipment - Surveillance									
Total Account 108662-1420.03 - Equipment - Surveilla						3,720.50*	.00*	.00*	3,720.50*
108662-1420.04 Equipment - General									
Total Account 108662-1420.04 - Equipment - General						2,100.00*	.00*	.00*	2,100.00*
108662-1420.05 Equipment - Meters									
Total Account 108662-1420.05 - Equipment - Meters						34,630.46*	.00*	.00*	34,630.46*
108662-1430.00 Leasehold Improvements									
2-01-2006	JE	jf		25256	Rev Pick-up & rebuild Pump			13,390.40-	
2-09-2006	API	FGLe	1082	51471	pick-up reassemble pipe		4,980.76		
2-09-2006	API	FGLe	1091	51471	ck valve , rebuild motor		8,409.64		
Total Account 108662-1430.00 - Leasehold Improvement						27,446.75*	13,390.40*	13,390.40-*	27,446.75*
108662-1440.00 Building Equipment (Portable)									
Total Account 108662-1440.00 - Building Equipment (P						9,920.99*	.00*	.00*	9,920.99*
108662-1450.00 Furniture for Project									
Total Account 108662-1450.00 - Furniture for Project						11,083.92*	.00*	.00*	11,083.92*
108662-1460.00 Furnishings									
Total Account 108662-1460.00 - Furnishings						1,787.20*	.00*	.00*	1,787.20*
108662-1495.00 Reserve for Depreciation									
Total Account 108662-1495.00 - Reserve for Depreciat						99,735.00-*	.00*	.00*	99,735.00-*
108662-1495.01 Accum Depr Improvement									
12-31-2006	JE	AJE	7	31919	Depreciation			53,402.00-	
Total Account 108662-1495.01 - Accum Depr Improvemen						64,614.00-*	.00*	53,402.00-*	118,016.00-*
108662-1495.02 Acum Depr Chlorine Pumps									
12-31-2006	JE	AJE	7	31919	Depreciation			2,402.00-	
Total Account 108662-1495.02 - Acum Depr Chlorine Pu						29,637.38-*	.00*	2,402.00-*	32,039.38-*
108662-1495.03 Accum Depr Tank									
12-31-2006	JE	AJE	7	31919	Depreciation			97.00-	
Total Account 108662-1495.03 - Accum Depr Tank						2,123.00-*	.00*	97.00-*	2,220.00-*
108662-1495.05 Accum Depr Furn & Fixture									
12-31-2006	JE	AJE	7	31919	Depreciation			4,872.00-	
Total Account 108662-1495.05 - Accum Depr Furn & Fix						14,668.00-*	.00*	4,872.00-*	19,540.00-*
108662-1495.12 Accum Depr General Equipment									
12-31-2006	JE	AJE	7	31919	Depreciation			4,947.00-	
Total Account 108662-1495.12 - Accum Depr General Eq						13,244.00-*	.00*	4,947.00-*	18,191.00-*
108662-6516.00 Repairs & Maintenance									
2-09-2006	API	FGLe	8792	51471	svc wet well pump		1,902.07		
2-09-2006	API	FGLe	9644	51471	repair sump pump		541.56		
2-09-2006	API	FGLe	1067	51471	repair sump pump		402.16		
2-09-2006	API	FGLe	8792	51471	(Rev)svc wet well pump		1,902.07-		
2-09-2006	API	FGLe	9644	51471	(Rev)repair sump pump		541.56-		
2-09-2006	API	FGLe	1067	51471	(Rev)repair sump pump		402.16-		
					Total 2-28-06	20,412.68*	.00*	.00*	20,412.68*
7-25-2006	API	Mann	1468	56088	pump station chlorine		667.00		
7-31-2006	API	FGLe	1195	56385	repair ck valves pool house		910.00		
7-31-2006	API	FGLe	1211	56385	wet well at pump station		1,838.00		
7-31-2006	API	Sani	3147	56385	bleach & chlorine		312.37		
7-31-2006	API	FGLe	1195	56385	(Rev)repair ck valves pool hou		910.00-		
7-31-2006	API	FGLe	1195	56385	repair ck valves pumphouse		910.00		

Date	Jrn	Ref	Ref	Batch	Transaction Des	Beginning Balance	Debit	Credit	Ending Balance
108662-6516.00 Repairs & Maintenance - Continued									
					Total 7-31-06	71,045.23*	3,727.37*	.00*	109,185.73* !!
8-17-2006	API	Digs	2698	56788	request and membership fee		178.00		
8-31-2006	API	Mann	1489	57092	chem for pump station		667.00		
					Total 8-31-06	109,185.73*	845.00*	.00*	150,994.12* !!
9-21-2006	API	FGle	1226	57709	replace solenoid		677.86		
9-21-2006	API	FGle	1227	57709	chlorine system		610.00		
9-21-2006	API	Powe	6516	57709	emrgency generator service		922.34		
9-21-2006	API	Sani	3150	57709	mercury for pump station		266.43		
					Total 9-30-06	150,994.12*	2,476.63*	.00*	150,994.12* !!
10-19-2006	API	Rhod	2493	58401	service pump		807.50		
10-31-2006	API	Powe	2331	58884	generator rental		6,892.00		
10-31-2006	API	Powe	2331	58884	repair generator		1,069.60		
10-31-2006	API	RTnu	0771	58884	sanitary sewer/ pump station		1,850.00		
					Total 10-31-06	150,994.12*	10,619.10*	.00*	161,613.22*
11-15-2006	API	RHod	2253	59085	cesspool pump truck-emergency		960.00		
11-15-2006	API	WHpe	549	59085	replace curcuit breaker		475.58		
					Total 11-30-06	161,613.22*	1,435.58*	.00*	163,048.80*
12-11-2006	API	Mann	1567	59591	chlorine		667.00		
12-31-2006	JE	jf		29194	Reclass Station Supplies to 65		642.00		
					Total 12-31-06	163,048.80*	1,309.00*	.00*	164,357.80*
Total Account 108662-6516.00 - Repairs & Maintenance						20,412.68*	20,412.68*	.00*	164,357.80* !!
Total Property 108662 - Woodland Manor Improv Associ						2,545,195.44*	7,077,110.24*	4,599,110.40-*	1,884,541.94-*
GRAND TOTALS						2,545,195.44*	7,077,110.24*	4,599,110.40-*	1,884,541.94-*

Rent Roll As Of ?)ct 2008

Unit	Type	Stat	Market	Name	Entity	----- Charges -----			----- Credits -----			Net Change	Tenant
							Code	Amount		Code	Amount	In Balance	Balance
24	024	O	81.67	Soco	508662	CA	UTIL	81.67				81.67	332.61
001	001	O	113.13	Borelli's Bakery		CA	UTIL	113.13				113.13	0.00
002	002	O	506.25	Boston Neck Realty		CA	UTIL	506.25				506.25	2422.50
003	003	O	212.50	Coventry Credit Union		CA	UTIL	212.50				212.50	325.00
004	004	O	62.50	CVS, Site #00621-01		CA	UTIL	62.50				62.50	-337.50
005	005	O	113.75	Drake Petroleum Co., Inc.		CA	UTIL	113.75				113.75	113.75
006	006	V	0.00	Vacant Unit		CA	UTIL	0.00	PT	VAC	0.00	0.00	0.00
007	007	O	8130.63	Haven Health Center		CA	UTIL	8130.63				8130.63	-2688.80
008	008	O	690.17	Leisure Village		CA	UTIL	690.17				690.17	-695.68
009	009	O	5118.88	Springfield Armoury, LLC		CA	UTIL	5118.88				5118.88	0.00
010	010	O	520.19	Star Brite Car Wash		CA	UTIL	520.19				520.19	7615.76
011	011	O	1243.13	Star Brite Laundromat		CA	UTIL	1243.13				1243.13	7154.15
012	012	O	338.79	Father Paul R. Grenon		CA	UTIL	338.79				338.79	5396.33
013	013	O	1100.63	Stop & Shop Supermarket Co		CA	UTIL	1100.63				1100.63	3060.69
014	014	O	262.50	Taco Bell Corp. #5261		CA	UTIL	262.50				262.50	262.50
015	015	O	212.50	Tiogue Avenue Assoc.		CA	UTIL	212.50				212.50	-6575.00
016	016	O	75.00	Tiogue Veterinary Clinic		CA	UTIL	75.00				75.00	-156.25
017	017	O	239.38	Tom's Fruit & Deli		CA	UTIL	239.38				239.38	314.50
018	018	O	112.50	U.S. Postal Office		CA	UTIL	112.50				112.50	568.75
019	019	O	718.75	Wal-Mart Stores, Inc. #228		CA	UTIL	718.75				718.75	-223.31
020	020	O	2555.72	Westwood Estates		CA	UTIL	2555.72				2555.72	-939.28
021	021	O	290.63	Vhs Realty		CA	UTIL	290.63				290.63	5418.86
022	022	V	0.00	Vacant Unit		CA	UTIL	0.00	PT	VAC	0.00	0.00	0.00
023	023	O	23.13	Coventry Primary Care Asso		CA	UTIL	23.13				23.13	-391.14

Rent Roll As Of 8 Oct 2008

Unit	Type	Stat	Market	Name	Entity	Charges Code		Charges Amount	Credits Code		Credits Amount	Net Change In Balance	Tenant Balance
			22722.33					22722.33			0.00	22722.33	20978.44
						CA	UTIL	22722.33	PT	VAC	0.00		

Total Market Rent: $ 22,722.33 - Gain/Loss To Lease: $ 0.00 Net Rent: $ 22,722.33

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4.2 KCWA Water Flow Readings

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UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 113022 Cust Name HALLKEEN MANAGEMENT INC

Serv Loc ID 113022 Serv Loc 20 WOODLAND DR

Service No 01 Meter ID/Type 60106557 W Book/RT 199/0300458

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
Q	RS25	20080933	09/30/2008	53900	A	92	9000	.00	341.10
Q	RS25	20080631	06/30/2008	53000	A	91	7000	.00	265.30
Q	RS25	20080333	03/31/2008	52300	A	91	16000	.00	606.40
Q	RS25	20071234	12/31/2007	50700	A	92	9000	.00	336.06
Q	RS25	20070933	09/30/2007	49800	A	92	10000	.00	362.30
Q	RS25	20070634	06/30/2007	48800	A	91	11000	.00	398.53
Q	RS25	20070334	03/31/2007	47700	A	90	11000	.00	398.53
Q	RS25	20061234	12/31/2006	46600	A	92	8000	.00	289.84
Q	RS25	20060934	09/30/2006	45800	A	102	8000	.00	289.84
Q	RS25	20060633	06/20/2006	45000	A	81	7000	.00	253.61
Q	RS25	20060333	03/31/2006	44300	A	90	9000	.00	326.07
Q	RS25	20051234	12/31/2005	43400	A	92	37000	.00	1267.99
Q	RS25	20050934	09/30/2005	39700	A	92	18000	.00	616.86
Q	RS25	20050633	06/30/2005	37900	A	91	7000	.00	199.57
Q	RS25	20050334	03/31/2005	37200	A	101	9000	.00	256.59
Q	RS25	20041234	12/20/2004	36300	A	81	9000	-214.90	256.59
Q	RS25	20040933	09/30/2004	35400	A	92	16000	.00	456.16
Q	RS25	20040631	06/30/2004	33800	A	91	18000	.00	513.18

Consumption Graph

Average Cons 12,166.67 Totals -214.90 7,434.52

Avg Reading Days 91.33

Exit

Enter

UTILITY CUSTOMER ACCOUNTING

Edit Functions Help Tools System

Service History

Cust ID 113230 Cust Name HALLKEEN MANAGEMENT INC

Serv Loc ID 113230 Serv Loc 1 VIERO LN

Service No. 01 Meter ID/Type 33825398 Book/RT 124/0001310

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
N	RS01	20080731	07/15/2008	34600	A	110	0	.00	.00
N	RS01	20080430	03/27/2008	34600	A	91	0	.00	.00
N	RS01	20080132	12/27/2007	34600	A	90	100	.00	3.79
N	RS01	20071031	09/28/2007	34500	A	81	0	.00	.00
N	RS01	20070731	07/09/2007	34500	A	102	0	.00	.00
N	RS01	20070430	03/29/2007	34500	A	80	400	.00	14.49
N	RS01	20070131	01/08/2007	34100	A	94	100	.00	3.62
N	RS01	20061031	10/06/2006	34000	A	87	200	.00	7.25
N	RS01	20060731	07/11/2006	33800	A	95	100	.00	3.62
N	RS01	20060430	04/07/2006	33700	A	86	0	.00	.00
N	RS01	20060131	01/11/2006	33700	A	91	0	.00	.00
N	RS01	20051031	10/12/2005	33700	A	98	5600	.00	196.35
N	RS01	20050731	07/06/2005	28100	A	93	8100	.00	246.25
N	RS01	20050430	04/04/2005	20000	A	76	100	.00	2.85
N	RS01	20050131	01/18/2005	19900	A	92	0	.00	.00
N	RS01	20041030	10/18/2004	19900	A	102	1700	.00	48.47
N	RS01	20040731	07/08/2004	18200	A	91	7500	.00	213.83
N	RS01	20040430	04/08/2004	10700	A	94	0	.00	.00

Consumption Graph

Average Cons 1,327.78 Totals .00 736.52

Avg Reading Days 91.83

Enter

Exit

Brandon Carr
30 pages
464-6006

APPENDIX K

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 107136 Cust Name BORRELLI'S PASTRY SHOP

Serv Loc ID 107136 Serv Loc 765 TIOGUE AVE

Service No. [illegible] Meter ID/Type [illegible]

Book/RT [illegible]

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC01	20080731	07/08/2008	262600	A	103	5700	.00	216.03
D	IC01	20080430	03/27/2008	256900	A	86	4400	.00	166.76
D	IC01	20080132	01/02/2008	252500	A	97	5400	.00	204.66
D	IC01	20071031	09/27/2007	247100	A	77	3900	.00	141.30
D	IC01	20070731	07/12/2007	243200	A	101	5300	.00	192.02
D	IC01	20070430	04/02/2007	237900	A	90	4300	.00	155.79
D	IC01	20070131	01/02/2007	233600	A	82	4600	.00	166.66
D	IC01	20061031	10/12/2006	229000	A	92	4200	.00	152.17
D	IC01	20060731	07/12/2006	224800	A	99	4600	.00	163.04
D	IC01	20060430	04/04/2006	220300	A	85	4300	.00	155.79
D	IC01	20060131	01/09/2006	216000	A	88	3600	.00	135.62
D	IC01	20051031	10/13/2005	212200	A	87	3900	.00	138.14
D	IC01	20050731	07/18/2005	208300	A	104	4400	.00	130.50
D	IC01	20050430	04/05/2005	203900	A	88	4200	.00	119.74
D	IC01	20050131	01/07/2005	199700	A	81	4000	.00	114.04
D	IC01	20041030	10/18/2004	195700	A	103	4500	.00	128.30
D	IC01	20040731	07/07/2004	191200	A	90	4400	.00	125.44
D	IC01	20040430	04/08/2004	186800	A	94	4500	.00	128.30

Consumption Graph

Average Cons 4,461.11 Totals .00 2,734.30

Avg Reading Days 91.44

Enter Exit

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 113206 Cust Name HALLKEEN MANAGEMENT INC

Serv Loc ID 113206 Serv Loc 20 WOODLAND DR

Service No Meter ID/Type Book/RT

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
Q	RS07	20080933	09/30/2008	26771	A	92	7005	.00	250.54
Q	RS07	20080631	06/30/2008	18966	A	91	4877	.00	156.55
Q	RS07	20080333	03/31/2008	14089	A	91	2877	.00	92.35
Q	RS07	20071234	12/31/2007	11212	A	92	4567	.00	144.45
Q	RS07	20070933	09/30/2007	6645	A	94	13375	.00	410.48
Q	RS27	20070634	06/30/2007	642968	A	91	103030	.00	3161.99
Q	RS27	20070334	03/31/2007	532665	A	90	97600	.00	2992.28
Q	RS27	20061234	12/31/2006	622916	A	92	146690	.00	4501.92
Q	RS27	20060934	09/30/2006	608246	A	102	312760	.00	9598.60
Q	RS27	20060633	06/20/2006	576970	A	81	228540	.00	7013.89
Q	RS27	20060333	03/31/2006	554116	A	90	135270	.00	4151.44
Q	RS27	20051234	12/31/2005	540589	A	92	134320	.00	3900.66
Q	RS27	20050934	09/30/2005	627157	A	92	290080	.00	6681.52
Q	RS27	20050633	06/30/2005	504149	A	91	157610	.00	4049.46
Q	RS27	20050334	03/31/2005	487388	A	101	142350	.00	3439.18
Q	RS27	20041234	12/20/2004	473153	A	81	132970	.00	3212.56
Q	RS27	20040933	09/30/2004	459856	A	92	106660	.00	4509.71
Q	RS27	20040631	06/30/2004	441198	A	91	159210	.00	3846.51

Consumption Graph

Average Cons 122,805.06 Totals .00 62,114.08

Avg Reading Days 91.44

Exit

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UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 116086 Cust Name HALLKEEN MANAGEMENT INC

Serv Loc ID 116086 Serv Loc 20 WOODLAND DR

Service No. 01 Meter ID/Type 20174067A W

Book/RT 190/0000462

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
Q	RS02	20080933	09/30/2008	470143	A	92	97000	.00	3676.30
Q	RS02	20080631	06/30/2008	373143	A	91	101817	.00	3858.86
Q	RS02	20080333	03/31/2008	271326	A	91	88892	.00	3369.01
Q	RS02	20071234	12/31/2007	182434	A	92	92360	.00	3448.72
Q	RS02	20070933	09/30/2007	90074	A	94	90074	.00	3263.38

Consumption Graph

Average Cons 94,028.60 Totals .00 17,616.27

Avg Reading Days 92.00

Exit

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UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 116473 Cust Name BOSTON NECK REALTY CORP

Serv Loc ID 116473 Serv Loc 1650 NOOSENECK HILL RD

Service No

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
N	IC05	20080731	07/15/2008	45800	A	110	23000	.00	871.70
N	IC05	20080430	03/27/2008	43500	A	91	17000	.00	644.30
N	IC05	20080131	12/27/2007	41800	A	90	19000	.00	720.10
N	IC05	20071031	09/28/2007	39900	A	81	18000	.00	652.14
N	IC05	20070731	07/09/2007	38100	A	102	20000	.00	724.60
N	IC05	20070430	03/29/2007	36100	A	80	13000	.00	470.99
N	IC05	20070131	01/08/2007	34800	A	95	30000	.00	1066.90
N	IC05	20061031	10/05/2006	31800	A	86	7000	.00	253.61
N	IC05	20060731	07/11/2006	31100	A	95	14000	.00	607.22
N	IC05	20060430	04/07/2006	29700	A	86	15000	.00	543.45
N	IC05	20060131	01/11/2006	28200	A	91	14000	.00	499.66
N	IC05	20051031	10/12/2005	26800	A	98	16000	.00	566.72
N	IC05	20050731	07/06/2005	25200	A	93	16000	.00	474.56
N	IC05	20050430	04/04/2005	23600	A	76	10000	.00	285.10
N	IC05	20050131	01/18/2005	22600	A	92	14000	.00	399.14
N	IC05	20041031	10/18/2004	21200	A	102	19000	.00	541.69
N	IC05	20040731	07/08/2004	19300	A	91	17000	.00	404.67
N	IC05	20040430	04/08/2004	17600	A	94	14000	.00	399.14

Consumption Graph | Average Cons 16,444.44 | Totals .00 10,125.69

Avg Reading Days 91.83

Exit

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APPENDIX K

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Cust ID 103549 Cust Name VENTURA, JOSEPH

Serv Loc ID 103549 Serv Loc 1076 MAIN ST

Service No 01

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
2	RS01	20080831	07/29/2008	81400	A	98	2600	.00	98.54
2	RS01	20080531	04/22/2008	78800	A	85	2300	.00	87.17
2	RS01	20080229	01/28/2008	76500	A	84	2300	.00	87.17
2	RS01	20071131	11/06/2007	74200	A	88	2900	.00	106.69
2	RS01	20070831	08/09/2007	71300	A	94	2600	.00	94.20
2	RS01	20070531	05/07/2007	68700	A	98	3100	.00	112.31
2	RS01	20070228	01/29/2007	65600	A	83	2400	.00	86.95
2	RS01	20061130	11/07/2006	63200	A	90	3000	.00	108.69
2	RS01	20060831	08/09/2006	60200	A	107	3300	.00	119.56
2	RS01	20060531	04/24/2006	56900	A	82	2400	.00	86.95
2	RS01	20060228	02/01/2006	54500	A	93	3000	.00	107.08
2	RS01	20051130	10/31/2005	51500	A	81	2800	.00	99.18
2	RS01	20050831	08/11/2005	48700	A	99	3600	.00	115.09
2	RS01	20050531	05/04/2005	45100	A	79	2100	.00	59.87
2	RS01	20050228	02/14/2005	43000	A	102	3100	.00	88.38
2	RS01	20041130	11/04/2004	39900	A	92	2900	.00	82.68
2	RS01	20040832	08/04/2004	37000	A	85	3000	.00	85.53
2	RS01	20040531	05/10/2004	34000	A	97	3100	.00	88.38

Consumption Graph

Average Cons 2,805.56 Totals .00 1,715.22

Avg Reading Days 91.00

Exit

Enter

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 110977 Cust Name COVENTRY CREDIT UNION

Serv Loc ID 110977 Serv Loc 1076 MAIN ST

Service No Meter ID/Type 94081370 W Book/RT 107/0008230

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC01	20080731	07/03/2008	70300	A	87	800	.00	30.32
D	IC01	20080430	04/07/2008	69500	A	88	700	.00	26.59
D	IC01	20080132	01/10/2008	68800	A	101	600	.00	22.74
D	IC01	20071031	10/01/2007	68200	A	77	600	.00	21.74
D	IC01	20070731	07/16/2007	67600	A	104	800	.00	28.90
D	IC01	20070430	04/03/2007	66800	A	88	800	.00	28.90
D	IC01	20070131	01/05/2007	66000	A	79	700	.00	25.36
D	IC01	20061031	10/18/2006	65300	A	97	1400	.00	50.72
D	IC01	20060731	07/13/2006	63900	A	93	1000	.00	36.23
D	IC01	20060430	04/11/2006	62900	A	88	1100	.00	39.85
D	IC01	20060131	01/13/2006	61800	A	87	800	.00	28.55
D	IC01	20051031	10/18/2005	61000	A	90	800	.00	28.34
D	IC01	20050731	07/20/2005	60200	A	99	1100	.00	32.63
D	IC01	20050430	04/12/2005	59100	A	91	1000	.00	28.51
D	IC01	20050131	01/11/2005	58100	A	81	900	.00	25.66
D	IC01	20041030	10/22/2004	57200	A	94	1100	.00	31.36
D	IC01	20040731	07/20/2004	56100	A	96	1200	.00	34.21
D	IC01	20040430	04/15/2004	54900	A	99	1100	.00	31.36

Consumption Graph

Average Cons 916.67 Totals .00 552.07

Avg Reading Days 91.06

Exit

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APPENDIX K

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 105876 Cust Name CVS STORE #00621-01

Serv Loc ID 105876 Serv Loc 743 TIOGUE AVE

Service No 01 Meter ID/Type

Book/RT

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC03	20080731	07/08/2008	11300	A	103	3000	.00	113.70
D	IC03	20080430	03/27/2008	11000	A	85	2000	.00	75.80
D	IC03	20080132	01/02/2008	10800	A	97	4000	.00	151.60
D	IC03	20071031	09/27/2007	10400	A	77	2000	.00	72.46
D	IC03	20070731	07/12/2007	10200	A	101	3000	.00	108.69
D	IC03	20070430	04/02/2007	9900	A	90	3000	.00	108.69
D	IC03	20070131	01/02/2007	9600	A	82	2000	.00	72.46
D	IC03	20061031	10/12/2006	9400	A	92	3000	.00	108.69
D	IC03	20060731	07/12/2006	9100	A	73	2000	.00	72.46
D	IC03	20060430	04/30/2006	8900	A	111	3000	.00	108.69
D	IC03	20060131	01/09/2006	8600	A	88	2000	.00	71.38
D	IC03	20051031	10/13/2005	8400	A	87	2000	.00	70.84
D	IC03	20050731	07/18/2005	8200	A	104	3000	.00	88.98
D	IC03	20050430	04/05/2005	7900	A	88	1000	.00	28.51
D	IC03	20050131	01/07/2005	7800	A	81	2000	.00	57.02
D	IC03	20041030	10/18/2004	7600	A	103	2000	.00	57.02
D	IC03	20040731	07/07/2004	7400	A	90	2000	.00	57.02
D	IC03	20040430	04/08/2004	7200	A	94	5000	.00	142.55

Average Cons 2,555.56 Totals .00 1,566.56

Avg Reading Days 91.44

Consumption Graph

Enter

Exit

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 113312 Cust Name HAVEN ELDERCARE OF NEW ENGLAND

Serv Loc ID 113312 Serv Loc 10 WOODLAND DR

Service No 01

Exit

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
Q	IC27	20080933	09/30/2008	33066	A	92	257500	.00	8265.76
Q	IC27	20080631	06/30/2008	30481	A	91	426700	.00	13761.27
Q	IC27	20080333	03/31/2008	26194	A	91	447100	.00	14351.91
Q	IC27	20071234	12/31/2007	21723	A	92	301300	.00	9590.12
Q	IC27	20070933	09/30/2007	18710	A	92	337100	.00	10345.60
Q	IC27	20070634	06/30/2007	15339	A	91	373800	.00	11471.92
Q	IC27	20070334	03/31/2007	11601	A	90	288700	.00	8860.20
Q	IC27	20061234	12/31/2006	8714	A	92	262000	.00	8040.78
Q	IC27	20060934	09/30/2006	6094	A	102	394700	.00	12113.34
Q	IC27	20060633	06/20/2006	2147	A	81	360700	.00	11069.88
Q	IC27	20060333	03/31/2006	432866	A	90	412000	.00	12644.28
Q	IC27	20051234	12/31/2005	428766	A	92	429100	.00	12461.86
Q	IC27	20050934	09/30/2005	424477	A	92	419900	.00	12193.90
Q	IC27	20050633	06/30/2005	420278	A	91	400100	.00	9666.42
Q	IC27	20050334	03/31/2005	416277	A	101	444000	.00	10727.04
Q	IC27	20041234	12/20/2004	411837	A	81	422800	.00	10214.85
Q	IC27	20040933	09/30/2004	407609	A	92	418400	.00	10108.54
Q	IC27	20040631	06/30/2004	403425	A	91	336100	.00	8120.18

Consumption Graph

Average Cons 374,111.11 Totals .00 193,947.04

Avg Reading Days 91.33

Enter

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 113353 Cust Name LEISURE VILLAGE INC

Serv Loc ID 113353 Serv Loc 1620 NOOSENECK HILL RD

Service No 01 Meter ID/Type 55248907 V Book/RT 199/0000473

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
Q	RS28	20080933	09/30/2008	261400	A	92	36000	.00	979.56
Q	RS28	20080631	06/30/2008	225400	A	91	25600	.00	696.58
Q	RS28	20080333	03/31/2008	199800	A	91	62273	.00	1694.45
Q	RS28	20071234	12/31/2007	137527	E	92	23000	.00	616.63
Q	RS28	20070933	09/30/2007	114527	A	92	27827	.00	723.78
Q	RS28	20070634	06/30/2007	86700	A	91	27000	.00	702.27
Q	RS28	20070334	03/31/2007	59700	A	90	32600	.00	847.93
Q	RS28	20061234	12/31/2006	27100	A	95	23217	.00	603.87
Q	RS28	20060934	09/27/2006	3880	A	99	28783	.00	748.65
Q	RS28	20060633	06/20/2006	50811	A	81	28900	.00	751.69
Q	RS28	20060333	03/31/2006	50522	A	90	27700	.00	720.48
Q	RS28	20051234	12/31/2005	50245	A	92	33200	.00	816.72
Q	RS28	20050934	09/30/2005	57913	A	92	48100	.00	1183.26
Q	RS28	20050633	06/30/2005	57432	A	91	42100	.00	861.79
Q	RS28	20050334	03/31/2005	57011	A	86	37100	.00	759.44
Q	RS28	20041234	01/04/2005	56640	A	96	46400	.00	949.81
Q	RS28	20040933	09/30/2004	56176	A	92	46500	.00	951.06
Q	RS28	20040631	06/30/2004	55711	A	91	42100	.00	861.79

Consumption Graph

Average Cons 35,466.67 Totals .00 15,470.56

Avg Reading Days 91.39

Exit

Enter

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 113315 Cust Name STAR BRITE LAUNDRAMAT II

Serv Loc ID 113315 Serv Loc 1602 NOOSENECK HILL RD

Service No

Meter ID/Type

Book/RT

Exit

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
M	IC15	20080933	09/30/2008	676300	A	30	39000	.00	1476.10
M	IC15	20080832	08/31/2008	672400	A	31	35000	.00	1325.50
M	IC15	20080732	07/31/2008	668900	A	31	37000	.00	1402.30
M	IC15	20080631	06/30/2008	665200	A	30	41000	.00	1553.90
M	IC15	20080532	05/31/2008	661100	A	31	42000	.00	1591.80
M	IC15	20080431	04/30/2008	656900	A	30	44000	.00	1667.60
M	IC15	20080333	03/31/2008	652500	A	41	37000	.00	1402.30
M	IC15	20080230	02/19/2008	648800	A	28	38000	.00	1440.20
M	IC15	20080131	01/22/2008	645000	A	22	46000	.00	1743.40
M	IC15	20071235	12/31/2007	640400	A	31	41000	.00	1553.90
M	IC15	20071130	11/30/2007	636300	A	30	40000	.00	1516.00
M	IC15	20071032	10/31/2007	632300	A	31	46000	.00	1666.58
M	IC15	20070933	09/30/2007	627700	A	30	45000	.00	1630.36
M	IC15	20070832	08/31/2007	623200	A	31	37000	.00	1340.51
M	IC15	20070732	07/31/2007	619500	A	31	47000	.00	1702.81
M	IC15	20070634	06/30/2007	614800	A	31	40000	.00	1449.20
M	IC15	20070532	05/30/2007	610000	A	30	40000	.00	1449.20
M	IC15	20070431	04/30/2007	606000	A	30	49000	.00	1775.27

Consumption Graph

Average Cons 41,333.33 Totals .00 27,689.92

Avg Reading Days 30.50

Enter

APPENDIX K

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 113405 Cust Name OLYMPIC FLAME INC

Serv Loc ID 113405 Serv Loc 1600 NOOSENECK HILL RD

Service No 01 Meter ID/Type 39597775 W

Book/RT 124/0001400

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
N	IC01	20080731	07/15/2008	167200	A	110	3500	.00	132.65
N	IC01	20080430	03/27/2008	163700	A	91	3200	.00	121.28
N	IC01	20080132	12/27/2007	160500	A	90	3000	.00	113.70
N	IC01	20071031	09/28/2007	157500	A	80	2600	.00	94.20
N	IC01	20070731	07/10/2007	154900	A	103	3400	.00	123.18
N	IC01	20070430	03/29/2007	151500	A	80	2600	.00	94.20
N	IC01	20070131	01/08/2007	148900	A	95	3400	.00	123.18
N	IC01	20061031	10/05/2006	145500	A	86	5700	44.40	206.51
N	IC01	20060731	07/11/2006	139800	A	95	12600	.00	456.50
N	IC01	20060430	04/07/2006	127200	A	86	8900	.00	322.45
N	IC01	20060131	01/11/2006	118300	A	91	6600	.00	235.55
N	IC01	20051031	10/12/2005	111700	A	98	4200	.00	148.76
N	IC01	20050731	07/06/2005	107500	A	93	2700	.00	80.08
N	IC01	20050430	04/04/2005	104800	A	76	2600	.00	74.13
N	IC01	20050131	01/18/2005	102200	A	92	3800	.00	108.34
N	IC01	20041030	10/18/2004	98400	A	102	4600	.00	131.15
N	IC01	20040731	07/08/2004	93800	A	69	2900	.00	82.68
N	IC01	20040430	04/30/2004	90900	A	116	4000	.00	114.04

Consumption Graph

Average Cons 4,461.11 Totals 44.40 2,762.58

Avg Reading Days 91.89

Enter

Exit

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 106734 Cust Name ST JOHN & PAUL PARISH

Serv Loc ID 106734 Serv Loc 341 SO MAIN ST

Service No 01 Meter ID/Type [illegible] Book/RT [illegible]

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	RS03	20080731	07/14/2008	4454	A	96	991	.00	37.56
D	RS03	20080430	04/09/2008	3463	A	84	453	.00	17.17
D	RS03	20080132	01/16/2008	3010	A	104	754	.00	28.58
D	RS03	20071031	10/04/2007	2256	A	79	861	.00	31.19
D	RS03	20070731	07/17/2007	1395	A	97	874	.00	31.67
D	RS03	20070430	04/11/2007	521	A	70	521	.00	18.88
D	RS03	20070131	01/31/2007	0	A	92	4950	.00	179.34
D	RS03	20061031	10/31/2006	7300	A	92	3000	.00	108.69
D	RS03	20060731	07/31/2006	7000	A	92	6000	.00	217.38
D	RS03	20060430	04/30/2006	6400	A	89	3000	.00	108.69
D	RS03	20060131	01/31/2006	6100	A	98	4000	.00	142.76
D	RS03	20051031	10/25/2005	5700	A	86	2000	.00	70.84
D	RS03	20050731	07/31/2005	5500	A	101	6000	.00	177.96
D	RS03	20050430	04/21/2005	4900	E	80	2000	.00	57.02
D	RS03	20050131	01/31/2005	4700	E	90	1000	.00	28.51
D	RS03	20041030	11/02/2004	4600	A	103	1000	.00	28.51
D	RS03	20040731	07/22/2004	4500	A	90	1000	.00	28.51
D	RS03	20040430	04/23/2004	4400	A	92	3000	.00	86.53

Consumption Graph Average Cons 2,900.22 Totals .00 1,398.79

Avg Reading Days 90.83

Enter Exit

Church

APPENDIX K

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 109430 Cust Name ST JOHN & PAUL RECTORY

Serv Loc ID 109430 Serv Loc 341 SO MAIN ST

Service No 01

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	GT05	20080731	07/14/2008	68000	A	94	16000	.00	606.40
D	GT05	20080430	04/11/2008	65400	A	86	23000	.00	871.70
D	GT05	20080132	01/16/2008	64100	A	104	28000	.00	1061.20
D	GT05	20071031	10/04/2007	61300	A	79	10000	.00	362.30
D	GT05	20070731	07/17/2007	60300	A	97	12000	.00	434.76
D	GT05	20070430	04/11/2007	59100	A	85	13000	.00	470.99
D	GT05	20070131	01/16/2007	57800	A	77	12000	.00	434.76
D	GT05	20061031	10/31/2006	56600	A	104	10000	.00	362.30
D	GT05	20060731	07/19/2006	55600	A	96	9000	.00	326.07
D	GT05	20060430	04/14/2006	54700	A	73	15000	.00	543.46
D	GT05	20060131	01/31/2006	53200	E	90	10000	.00	356.90
D	GT05	20051031	10/25/2005	52200	A	98	9000	.00	318.70
D	GT05	20050731	07/19/2005	51300	A	95	9000	.00	266.94
D	GT05	20050430	04/15/2005	50400	A	87	13000	.00	370.63
D	GT05	20050131	01/18/2005	49100	A	77	10000	.00	285.10
D	GT05	20041030	11/02/2004	48100	A	103	12000	.00	342.12
D	GT05	20040731	07/22/2004	46900	A	90	10000	.00	285.10
D	GT05	20040430	04/23/2004	45900	A	91	13000	.00	370.63

Consumption Graph

Average Cons 13,000.00 Totals .00 8,070.13

Avg Reading Days 90.78

Exit

Enter

School

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

A C S

Cust ID 109439 Cust Name ST JOHN & PAUL RECTORY

Serv Loc ID 109439 Serv Loc 341 SO MAIN ST

Service No

Meter ID/Type

Book/RT

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	GT07	20080731	07/14/2008	700	A	94	0	.00	.00
D	GT07	20080430	04/11/2008	700	A	85	1000	.00	32.10
D	GT07	20080132	01/17/2008	600	A	105	0	.00	.00
D	GT07	20071031	10/04/2007	600	A	79	0	.00	.00
D	GT07	20070731	07/17/2007	600	A	97	0	.00	.00
D	GT07	20070430	04/11/2007	600	A	85	1000	.00	30.69
D	GT07	20070131	01/16/2007	500	A	85	0	.00	.00
D	GT07	20061031	10/23/2006	500	A	96	0	.00	.00
D	GT07	20060731	07/19/2006	500	A	96	1000	.00	30.69
D	GT07	20060430	04/14/2006	400	A	84	0	.00	.00
D	GT07	20060131	01/20/2006	400	A	87	1000	.00	30.24
D	GT07	20051031	10/25/2005	300	A	98	0	.00	.00
D	GT07	20050731	07/19/2005	300	A	95	1000	.00	25.14
D	GT07	20050430	04/15/2005	200	A	87	1000	.00	24.16
D	GT07	20050131	01/18/2005	100	A	76	0	.00	.00
D	GT07	20041030	11/03/2004	100	A	95	2750	.00	66.44
D	GT05	20040731	08/30/2004	74409	A	122	4700	.00	134.00
D	GT05	20040430	04/30/2004	74019	A	90	4370	.00	124.59

Consumption Graph

Average Cons 990.00 Totals .00 498.05

Avg Reading Days 92.00

Exit

Enter

Rectory

APPENDIX K

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 116692 Cust Name ST JOHN & PAUL RECTORY

Serv Loc ID 116692 Serv Loc 341 SO MAIN ST

Service No [illegible] Meter ID/Type 70135743A V

Book/RT 106/0001241

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	GT03	20080731	07/14/2008	6900	A	94	4000	.00	151.60
D	GT03	20080430	04/11/2008	6500	A	85	3000	.00	113.70
D	GT03	20080132	01/17/2008	6200	A	105	4000	.00	151.60
D	GT03	20071031	10/04/2007	5800	A	79	3000	.00	108.69
D	GT03	20070731	07/17/2007	5500	A	97	4000	.00	144.92
D	GT03	20070430	04/11/2007	5100	A	85	3000	.00	108.69
D	GT03	20070131	01/16/2007	4800	A	85	3000	.00	108.69
D	GT03	20061031	10/23/2006	4500	A	96	4000	.00	144.92
D	GT03	20060731	07/19/2006	4100	A	96	4000	.00	144.92
D	GT03	20060430	04/14/2006	3700	A	84	5000	.00	181.15
D	GT03	20060131	01/20/2006	3200	A	87	7000	.00	249.83
D	GT03	20051031	10/25/2005	2500	A	98	6000	.00	212.52
D	GT03	20050731	07/19/2005	1900	A	95	5000	.00	148.30
D	GT03	20050430	04/15/2005	1400	A	87	8000	.00	228.08
D	GT03	20050131	01/18/2005	600	A	76	4000	.00	114.04
D	GT03	20041030	11/03/2004	200	A	95	4678	.00	133.37

Consumption Graph

Average Cons 4,479.88 Totals .00 2,446.02

Avg Reading Days 90.25

Exit

Enter

Rectory

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 115336 Cust Name UTILITY ACCOUNTS

Serv Loc ID 115336 Serv Loc 900 TIOGUE AVE

Service No

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC09	20080731	07/31/2008	0	A	126	0	.00	.00
D	IC09	20080430	03/27/2008	0	A	86	0	.00	.00
D	IC09	20080132	01/02/2008	0	A	63	0	.00	.00
D	IC09	20071031	10/31/2007	0	A	111	0	.00	.00
D	IC09	20070731	07/12/2007	0	A	101	0	.00	.00
D	IC09	20070430	04/02/2007	0	A	90	0	.00	.00
D	IC09	20070131	01/02/2007	0	A	63	0	.00	.00
D	IC09	20061031	10/31/2006	223	E	92	0	.00	.00
D	IC09	20060731	07/31/2006	223	E	92	0	.00	.00
D	IC09	20060430	04/30/2006	223	E	100	0	.00	.00
D	IC09	20060131	01/20/2006	223	A	86	0	.00	.00
D	IC09	20051031	10/26/2005	223	E	90	0	.00	.00
D	IC09	20050731	07/28/2005	223	A	99	2300	.00	40.99
D	IC09	20050430	04/20/2005	200	A	79	0	.00	.00
D	IC09	20050131	01/31/2005	200	E	93	0	.00	.00
D	IC09	20041030	10/30/2004	200	E	91	0	.00	.00
D	IC09	20040731	07/31/2004	200	A	92	0	.00	.00
D	IC09	20040430	04/30/2004	200	A	90	0	.00	.00

Consumption Graph

Average Cons 127.78 Totals .00 40.99

Avg Reading Days 91.28

Enter

Exit

APPENDIX K

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 115337 Cust Name UTILITY ACCOUNTS

Serv Loc ID 115337 Serv Loc 900 TIOGUE AVE

Service No 01 Meter ID/Type 81362731A U

Book/RT 105/0000464

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC05	20080731	07/31/2008	900	A	126	0	.00	.00
D	IC05	20080430	03/27/2008	900	A	85	1000	.00	37.90
D	IC05	20080132	01/02/2008	800	A	97	3000	.00	113.70
D	IC05	20071031	09/27/2007	500	A	77	2000	.00	72.46
D	IC05	20070731	07/12/2007	300	A	101	1000	.00	36.23
D	IC05	20070430	04/02/2007	200	A	61	0	.00	.00
D	IC05	20070131	01/31/2007	0	A	92	0	.00	.00
D	IC05	20061031	10/31/2006	1600	E	92	1000	.00	36.23
D	IC05	20060731	07/31/2006	1500	E	92	2000	.00	72.46
D	IC05	20060430	04/30/2006	1300	E	100	1000	.00	36.23
D	IC05	20060131	01/20/2006	1200	A	86	670	.00	23.91
D	IC05	20051031	10/26/2005	1133	E	90	1000	.00	35.42
D	IC05	20050731	07/20/2005	1033	A	114	2330	.00	69.11
D	IC05	20050430	04/05/2005	800	A	88	0	.00	.00
D	IC05	20050131	01/07/2005	800	A	81	0	.00	.00
D	IC05	20041030	10/18/2004	800	A	103	0	.00	.00
D	IC05	20040731	07/07/2004	800	A	90	0	.00	.00
D	IC05	20040430	04/08/2004	800	A	94	1000	.00	28.51

Average Cons 888.89 Totals .00 562.16

Avg Reading Days 92.72

Consumption Graph

Exit

Enter

APPENDIX K

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 115341 Cust Name UTILITY ACCOUNTS

Serv Loc ID 115341 Serv Loc 900 TIOGUE AVE

Service No 01

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC02	20080731	07/31/2008	694400	A	126	34600	.00	1311.34
D	IC02	20080430	03/27/2008	659800	A	91	32200	.00	1220.38
D	IC02	20080132	12/27/2007	627600	A	91	39800	.00	1508.42
D	IC02	20071031	09/27/2007	587800	A	77	40300	.00	1460.07
D	IC02	20070731	07/12/2007	547500	A	101	53600	.00	1938.31
D	IC02	20070430	04/02/2007	494000	A	90	38400	.00	1391.23
D	IC02	20070131	01/02/2007	455600	A	82	37900	.00	1373.12
D	IC02	20061031	10/12/2006	417700	A	92	55000	.00	1992.65
D	IC02	20060731	07/12/2006	362700	A	99	49100	.00	1778.89
D	IC02	20060430	04/04/2006	313600	A	85	61000	.00	2210.03
D	IC02	20060131	01/09/2006	252600	A	87	124000	.00	4425.55
D	IC02	20051031	10/14/2005	128600	A	78	141489	.00	5011.54
D	IC02	20050731	07/28/2005	45484	A	89	67341	.00	1997.33
D	IC02	20050430	04/05/2005	82000	A	88	34600	.00	986.45
D	IC02	20050131	01/07/2005	47400	A	68	28600	.00	821.09
D	IC02	20041030	10/30/2004	1018600	A	115	38000	.00	1083.38
D	IC02	20040731	07/07/2004	980600	A	90	33000	.00	940.83
D	IC02	20040430	04/08/2004	947600	A	68	29700	.00	846.75
		Average Cons		52,151.67			Totals	.00	32,297.37
		Avg Reading Days		89.89					

Consumption Graph

Enter

Exit

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 115342 Cust Name UTILITY ACCOUNTS

Serv Loc ID 115342 Serv Loc 900 TIOGUE AVE

Service No

Meter ID/Type

Book/RT

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC07	20080731	07/31/2008	2500	A	126	3000	.00	96.30
D	IC07	20080430	03/27/2008	2200	A	91	1000	.00	32.10
D	IC07	20080132	12/27/2007	2100	A	91	1000	.00	32.10
D	IC07	20071031	09/27/2007	2000	A	77	1000	.00	30.69
D	IC07	20070731	07/12/2007	1900	A	101	1000	.00	30.69
D	IC07	20070430	04/02/2007	1800	A	90	0	.00	.00
D	IC07	20070131	01/02/2007	1800	A	78	1000	.00	30.69
D	IC07	20061031	10/16/2006	1700	A	96	1000	.00	30.69
D	IC07	20060731	07/12/2006	1600	A	99	1000	.00	30.69
D	IC07	20060430	04/04/2006	1500	A	85	2000	.00	61.38
D	IC07	20060131	01/09/2006	1300	A	87	9000	.00	272.16
D	IC07	20051031	10/14/2005	400	A	75	3340	.00	100.23
D	IC07	20050731	07/31/2005	66	A	92	2038	.00	51.03
D	IC07	20050430	04/05/2005	3400	A	88	3000	.00	72.48
D	IC07	20050131	01/07/2005	3100	A	81	2000	.00	48.32
D	IC07	20041030	10/18/2004	2900	A	103	3000	.00	72.48
D	IC07	20040731	07/07/2004	2600	A	90	2000	.00	48.32
D	IC07	20040430	04/08/2004	2400	A	94	3000	.00	72.48

Consumption Graph

Average Cons 2,187.22 Totals .00 1,112.83

Avg Reading Days 91.33

Exit

Enter

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Exit

Cust ID 107959 Cust Name TOM'S FRUIT & DELI INC

Serv Loc ID 107959 Serv Loc 821 TIOGUE AVE

Service No

Meter ID/Type

Book/RT

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC01	20080731	07/08/2008	357400	A	103	11800	.00	447.22
D	IC01	20080430	03/27/2008	345600	A	85	7900	.00	299.41
D	IC01	20080132	01/02/2008	337700	A	97	9500	.00	360.05
D	IC01	20071031	09/27/2007	328200	A	77	9400	.00	340.56
D	IC01	20070731	07/12/2007	318800	A	101	10800	.00	391.28
D	IC01	20070430	04/02/2007	308000	A	90	9400	.00	340.56
D	IC01	20070131	01/02/2007	298600	A	82	8700	.00	315.20
D	IC01	20061031	10/12/2006	289900	A	92	10600	.00	384.04
D	IC01	20060731	07/12/2006	279300	A	99	10000	.00	362.30
D	IC01	20060430	04/04/2006	269300	A	85	7300	.00	264.48
D	IC01	20060131	01/09/2006	262000	A	88	8100	.00	289.09
D	IC01	20051031	10/13/2005	253900	A	87	8400	.00	297.53
D	IC01	20050731	07/18/2005	245500	A	104	10200	.00	302.53
D	IC01	20050430	04/05/2005	235900	A	86	8200	.00	233.78
D	IC01	20050131	01/07/2005	227100	A	81	7600	.00	216.68
D	IC01	20041030	10/18/2004	219500	A	103	10100	.00	287.95
D	IC01	20040731	07/07/2004	209400	A	98	9000	.00	256.59
D	IC01	20040430	04/08/2004	200400	A	94	8300	.00	236.63

Consumption Graph

Average Cons 9,183.33 Totals .00 5,625.88

Avg Reading Days 91.44

Enter

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 114758 Cust Name COVENTRY POST OFFICE

Serv Loc ID 114758 Serv Loc 1550 NOOSENECK HILL RD

Service No 01 Meter ID/Type 31920991 J

Book/RT 124/0001356

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
N	GT04	20080731	07/15/2008	10200	A	110	4000	.00	151.60
N	GT04	20080430	03/27/2008	9800	A	91	4000	.00	151.60
N	GT04	20080132	12/27/2007	9400	A	90	4000	.00	151.60
N	GT04	20071031	09/28/2007	9000	A	80	3000	.00	108.69
N	GT04	20070731	07/10/2007	8700	A	103	6000	.00	217.38
N	GT04	20070430	03/29/2007	8100	A	80	3000	.00	108.69
N	GT04	20070131	01/08/2007	7800	A	95	6000	.00	217.38
N	GT04	20061031	10/05/2006	7200	A	86	3000	.00	108.69
N	GT04	20060731	07/11/2006	6900	A	95	5000	.00	181.15
N	GT04	20060430	04/07/2006	6400	A	86	3000	.00	108.69
N	GT04	20060131	01/11/2006	6100	A	91	3000	.00	107.07
N	GT04	20051031	10/12/2005	5800	A	98	4000	.00	141.60
N	GT04	20050731	07/06/2005	5400	A	93	5000	.00	148.30
N	GT04	20050430	04/04/2005	4900	A	76	2000	.00	57.02
N	GT04	20050131	01/18/2005	4700	A	92	4000	.00	114.04
N	GT04	20041030	10/18/2004	4300	A	102	5000	.00	142.55
N	GT04	20040731	07/08/2004	3800	A	91	4000	.00	114.04
N	GT04	20040430	04/08/2004	3400	A	94	6000	.00	171.06

Consumption Graph

Average Cons 4,111.11 Totals .00 2,501.23

Avg Reading Days 91.83

Exit

Enter

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Cust ID 116032 Cust Name WAL-MART STORES EAST LP# 2283

Serv Loc ID 116032 Serv Loc 650 CENTRE OF N E BLVD

Service No

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC10	20080430	03/24/2008	1719	A	88	89	.00	2.42
D	IC10	20080132	12/27/2007	1630	A	93	1615	.00	43.94
D	IC10	20071031	09/25/2007	15	A	90	0	.00	.00
D	IC10	20070731	06/27/2007	15	A	58	1500	.00	39.02
D	IC10	20070430	04/30/2007	0	A	89	100	.00	2.60
D	IC10	20070131	01/31/2007	401	A	97	300	.00	7.80
D	IC10	20061031	10/26/2006	398	A	14	39800	.00	1035.20

Consumption Graph

Average Cons 6,200.57 Totals .00 1,130.98

Avg Reading Days 75.57

Exit

Enter

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 116833 Cust Name WAL-MART STORES EAST LP# 2203

Serv Loc ID 116833 Serv Loc 650 CENTRE OF N E BLVD

Service No 01 Meter ID/Type

Book/RT

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC05	20080430	03/24/2008	278542	A	88	68412	.00	2592.81
D	IC05	20080132	12/27/2007	210130	A	93	68850	.00	2609.42
D	IC05	20071031	09/25/2007	141280	A	56	77650	.00	2813.26
D	IC05	20070731	06/27/2007	6363	A	58	63630	.00	2305.31
D	IC05	20070430	04/30/2007	0	A	89	79500	.00	2880.29
D	IC05	20070131	01/31/2007	6254	A	97	48710	448.55	1764.76
D	IC05	20061031	10/26/2006	1383	A	14	13830	.00	501.06

Consumption Graph

Average Cons 60,083.14 Totals 448.55 15,466.91

Avg Reading Days 70.71

Exit

Enter

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 115342 Cust Name UTILITY ACCOUNTS

Serv Loc ID 115342 Serv Loc 900 TIOGUE AVE

Service No 01

Meter ID/Type

Book/RT

Exit

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC07	20080731	07/31/2008	2500	A	126	3000	.00	96.30
D	IC07	20080430	03/27/2008	2200	A	91	1000	.00	32.10
D	IC07	20080132	12/27/2007	2100	A	91	1000	.00	32.10
D	IC07	20071031	09/27/2007	2000	A	77	1000	.00	30.69
D	IC07	20070731	07/12/2007	1900	A	101	1000	.00	30.69
D	IC07	20070430	04/02/2007	1800	A	90	0	.00	.00
D	IC07	20070131	01/02/2007	1800	A	78	1000	.00	30.69
D	IC07	20061031	10/16/2006	1700	A	96	1000	.00	30.69
D	IC07	20060731	07/12/2006	1600	A	99	1000	.00	30.69
D	IC07	20060430	04/04/2006	1500	A	85	2000	.00	61.38
D	IC07	20060131	01/09/2006	1300	A	87	9000	.00	272.16
D	IC07	20051031	10/14/2005	400	A	75	3340	.00	100.23
D	IC07	20050731	07/31/2005	66	A	92	2030	.00	51.03
D	IC07	20050430	04/05/2005	3400	A	88	3000	.00	72.48
D	IC07	20050131	01/07/2005	3100	A	81	2000	.00	48.32
D	IC07	20041030	10/18/2004	2900	A	103	3000	.00	72.48
D	IC07	20040731	07/07/2004	2600	A	90	2000	.00	48.32
D	IC07	20040430	04/08/2004	2400	A	94	3000	.00	72.48

Consumption Graph

Average Cons 2,187.22 Totals .00 1,112.83

Avg Reading Days 91.33

Enter

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

A C S

Cust ID 113353 Cust Name LEISURE VILLAGE INC

Serv Loc ID 113353 Serv Loc 1620 NOOSENECK HILL RD

Service No 01 Meter ID/Type 65348987 W

Book/RT 1997/0081470

Balance | Open Items | Events | Deposit | Payment | Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
Q	RS20	20080933	09/30/2008	261400	A	92	36000	.00	979.56
Q	RS20	20080631	06/30/2008	225400	A	91	25600	.00	695.58
Q	RS20	20080333	03/31/2008	199800	A	91	62273	.00	1694.45
Q	RS20	20071234	12/31/2007	137527	E	92	23000	.00	616.63
Q	RS20	20070933	09/30/2007	114527	A	92	27827	.00	723.70
Q	RS20	20070634	06/30/2007	86700	A	91	27000	.00	702.27
Q	RS20	20070334	03/31/2007	59700	A	90	32600	.00	847.93
Q	RS20	20061234	12/31/2006	27100	A	95	23217	.00	603.87
Q	RS20	20060934	09/27/2006	3883	A	99	28783	.00	748.65
Q	RS20	20060633	06/28/2006	58811	A	81	28900	.00	751.69
Q	RS20	20060333	03/31/2006	58522	A	90	27700	.00	720.48
Q	RS20	20051234	12/31/2005	58245	A	92	33200	.00	816.72
Q	RS20	20050934	09/30/2005	57913	A	92	48100	.00	1183.26
Q	RS20	20050633	06/30/2005	57432	A	91	42100	.00	861.79
Q	RS20	20050334	03/31/2005	57011	A	86	37100	.00	759.44
Q	RS20	20041234	01/04/2005	56640	A	96	46400	.00	949.81
Q	RS20	20040933	09/30/2004	56176	A	92	46500	.00	951.06
Q	RS20	20040631	06/30/2004	55711	A	91	42100	.00	861.79

Consumption Graph

Average Cons 35,466.67 Totals .00 15,470.56

Avg Reading Days 91.33

Exit

Enter

Fleet: 7 | US1150

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 113353 Cust Name LEISURE VILLAGE INC

Serv Loc ID 113353 Serv Loc 1628 NOOSENECK HILL RD

Service No Meter ID/Type Book/RT

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
Q	RS28	20080933	09/30/2008	261400	A	92	36000	.00	979.56
Q	RS28	20080631	06/30/2008	225400	A	91	25600	.00	696.58
Q	RS28	20080333	03/31/2008	199800	A	91	62273	.00	1694.45
Q	RS28	20071234	12/31/2007	137527	E	92	23000	.00	616.63
Q	RS28	20070933	09/30/2007	114527	A	92	27827	.00	723.78
Q	RS28	20070634	06/30/2007	86700	A	91	27000	.00	702.27
Q	RS28	20070334	03/31/2007	59700	A	90	32500	.00	847.93
Q	RS28	20061234	12/31/2006	27100	A	95	23217	.00	603.87
Q	RS28	20060934	09/27/2006	3883	A	99	28763	.00	748.65
Q	RS28	20060633	06/20/2006	58811	A	81	28900	.00	751.69
Q	RS28	20060333	03/31/2006	58522	A	90	27700	.00	720.48
Q	RS28	20051234	12/31/2005	58245	A	92	33200	.00	816.72
Q	RS28	20050934	09/30/2005	57913	A	92	48100	.00	1103.26
Q	RS28	20050633	06/30/2005	57432	A	91	42100	.00	861.79
Q	RS28	20050334	03/31/2005	57011	A	86	37100	.00	759.44
Q	RS28	20041234	01/04/2005	56640	A	96	46400	.00	949.81
Q	RS28	20040933	09/30/2004	56176	A	92	46500	.00	951.86
Q	RS28	20040631	06/30/2004	55711	A	91	42100	.00	861.79

Consumption Graph

Average Cons 35,466.67 Totals .00 15,470.56

Avg Reading Days 91.33

Enter Exit

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 113623 Cust Name COVENTRY PRIMARY CARE REALTY

Serv Loc ID 113623 Serv Loc 1620 NOOSENECK HILL RD

Service No 01 Meter ID/Type [illegible]

Book/RT [illegible]

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
N	IC01	20080731	07/16/2008	37900	A	111	1000	.00	37.90
N	IC01	20080430	03/27/2008	36900	A	91	700	.00	26.53
N	IC01	20080132	12/27/2007	36200	A	90	500	.00	18.95
N	IC01	20071031	09/28/2007	35700	A	81	600	.00	21.74
N	IC01	20070731	07/09/2007	35100	A	102	300	.00	10.87
N	IC01	20070430	03/29/2007	34800	A	80	400	.00	14.49
N	IC01	20070131	01/08/2007	34400	A	95	2400	.00	86.95
N	IC01	20061031	10/05/2006	32000	A	86	1200	.00	43.48
N	IC01	20060731	07/11/2006	30800	A	95	500	.00	18.12
N	IC01	20060430	04/07/2006	30300	A	86	400	.00	14.49
N	IC01	20060131	01/11/2006	29900	A	91	600	.00	21.41
N	IC01	20051031	10/12/2005	29300	A	98	500	.00	17.71
N	IC01	20050731	07/06/2005	28800	A	93	500	.00	14.83
N	IC01	20050430	04/04/2005	28300	A	76	400	.00	11.40
N	IC01	20050131	01/18/2005	27900	A	92	500	.00	14.26
N	IC01	20041030	10/18/2004	27400	A	102	600	.00	17.11
N	IC01	20040731	07/08/2004	26800	A	91	600	.00	17.11
N	IC01	20040430	04/08/2004	26200	A	94	700	.00	19.96

Average Cons 688.89 Totals .00 427.31

Avg Reading Days 91.89

Consumption Graph

Exit

Enter

Files: 2

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Customer Balance Inquiry

Cust ID 113709 Cust Name STAR-BRITE CAR WASH

Serv Loc ID 113709 Serv Loc 1620 NOOSENECK HILL RD

Notes MAIL CK 07/30/07 JS

Balance

Exit
Switch
Notepad

Since Last Bill Amounts

Last Bill Amount	3478.65
Pmts, Applied Dep	-3478.65
Adjustments	.00
Penalty/Discount	.00
Current Charges	.00

Period-to-Date Amounts

Previous Balance	.00
Pmts, Applied Dep	-8726.84
Adjustments	.00
Penalty/Discount	.00
Current Charges	8726.84

Current Information

Current Balance	.00
Balance Record Status	A

Last Billing Information

Last Payment Amt	3478.65
Last Payment Date	09/03/2008
Last Bill ID	20080731
Last Bill Date	07/31/2008
Payment Cutoff Date	07/31/2008

Status Indicators

Budget Billing	
Late Payment	Y
Delinquent Notice	N

Enter

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 106799 Cust Name SIMAS PROPERTIES LLC

Serv Loc ID 106799 Serv Loc 915 TIOGUE AVE

Service No 01

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC01	20080731	07/08/2008	57400	A	103	6500	.00	246.35
D	IC01	20080430	03/27/2008	50900	A	85	4600	.00	174.34
D	IC01	20080132	01/02/2008	46300	A	97	7400	.00	280.46
D	IC01	20071031	09/27/2007	38900	A	77	4600	.00	166.66
D	IC01	20070731	07/12/2007	34300	A	101	6600	.00	239.12
D	IC01	20070430	04/02/2007	27700	A	90	3900	.00	141.30
D	IC01	20070131	01/02/2007	23800	A	63	1600	.00	57.97
D	IC01	20061031	10/31/2006	22200	E	92	0	.00	.00
D	IC01	20060731	07/31/2006	22200	E	92	0	.00	.00
D	IC01	20060430	04/30/2006	22200	E	111	3000	410.01	108.69
D	IC01	20060131	01/09/2006	19200	A	88	4300	.00	153.47
D	IC01	20051031	10/13/2005	14900	A	86	4900	170.00	173.56
D	IC01	20050731	07/19/2005	10000	A	105	6200	.00	103.89
D	IC01	20050430	04/05/2005	3800	A	71	3800	.00	108.34
D	IC01	20050131	01/24/2005	0	A	86	7100	114.84	202.42
D	IC01	20041030	10/30/2004	91000	E	91	6700	.00	191.02
D	IC01	20040731	07/31/2004	91800	A	114	2200	.00	62.72
D	IC01	20040430	04/08/2004	89600	A	94	7200	255.88	205.27

Consumption Graph

Average Cons 4,477.78 Totals 951.73 2,695.58

Avg Reading Days 91.44

Enter

APPENDIX K

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 113175 Cust Name NEWPORT CREAMERY LLC

Serv Loc ID 113175 Serv Loc 781 TIOGUE AVE

Service No 01

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC04	20080731	07/08/2008	114600	A	103	28000	.00	1061.20
D	IC04	20080430	03/27/2008	111800	A	86	19000	895.39	720.10
D	IC04	20080132	01/02/2008	109900	A	97	21000	.00	795.90
D	IC04	20071031	09/27/2007	107800	A	77	19000	.00	688.37
D	IC04	20070731	07/12/2007	105900	A	101	24000	.00	869.52
D	IC04	20070430	04/02/2007	103500	A	90	19000	.00	588.37
D	IC04	20070131	01/02/2007	101600	A	82	17000	.00	615.91
D	IC04	20061031	10/12/2006	99900	A	92	22000	.00	797.06
D	IC04	20060731	07/12/2006	97700	A	99	24000	.00	869.52
D	IC04	20060430	04/04/2006	95300	A	85	17000	.00	615.91
D	IC04	20060131	01/09/2006	93600	A	88	17000	.00	606.73
D	IC04	20051031	10/13/2005	91900	A	87	18000	.00	637.56
D	IC04	20050731	07/18/2005	90100	A	104	23000	.00	682.18
D	IC04	20050430	04/05/2005	87800	A	88	16000	.00	456.16
D	IC04	20050131	01/07/2005	86200	A	81	14000	.00	399.14
D	IC04	20041030	10/18/2004	84800	A	103	22000	.00	627.22
D	IC04	20040731	07/07/2004	82600	A	90	22000	.00	627.22
D	IC04	20040430	04/08/2004	80400	A	94	17000	.00	404.67

Consumption Graph

Average Cons 19,944.44 Totals 895.39 12,242.74

Avg Reading Days 91.44

Enter

APPENDIX K

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 108509 Cust Name ROJOE REALTY

Serv Loc ID 108509 Serv Loc 151 SANDY BOTTOM RD WOOD

Service No.

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC05	20080731	07/14/2008	22600	A	94	6000	.00	227.40
D	IC05	20080430	04/11/2008	22200	A	85	4000	.00	151.60
D	IC05	20080132	01/17/2008	21800	A	105	4000	.00	151.60
D	IC05	20071031	10/04/2007	21400	A	79	7000	.00	253.61
D	IC05	20070731	07/17/2007	20700	A	97	14000	.00	507.22
D	IC05	20070430	04/11/2007	19300	A	85	6000	.00	217.38
D	IC05	20070131	01/16/2007	18700	A	85	6000	.00	217.38
D	IC05	20061031	10/23/2006	18100	A	96	7000	.00	253.61
D	IC05	20060731	07/19/2006	17400	A	97	4000	.00	144.92
D	IC05	20060430	04/13/2006	17000	A	83	2000	.00	72.46
D	IC05	20060131	01/20/2006	16800	A	87	1000	.00	35.69
D	IC05	20051031	10/25/2005	16700	A	98	2000	.00	70.84
D	IC05	20050731	07/19/2005	16500	A	96	2000	.00	59.32
D	IC05	20050430	04/14/2005	16300	A	85	1000	.00	28.51
D	IC05	20050131	01/19/2005	16200	A	82	4000	.00	114.04
D	IC05	20041030	10/29/2004	15800	A	99	4000	.00	114.04
D	IC05	20040731	07/22/2004	15400	A	90	7000	.00	199.57
D	IC05	20040430	04/23/2004	14700	A	91	3000	.00	85.53

Consumption Graph

Average Cons 4,666.67 Totals .00 2,904.72

Avg Reading Days 90.78

Enter

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

637- 639

Cust ID 109083 Cust Name PAWTUXET REALTY

Serv Loc ID 109083 Serv Loc 639 WASHINGTON ST

Service No 01

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
1	RS05	20080731	07/10/2008	3600	A	98	3000	.00	113.70
1	RS05	20080430	04/03/2008	3300	A	86	5000	.00	189.50
1	RS05	20080132	01/08/2008	2800	A	83	3000	.00	113.70
1	RS05	20071031	10/17/2007	2500	A	99	4000	.00	144.92
1	RS05	20070731	07/10/2007	2100	A	97	4000	.00	144.92
1	RS05	20070430	04/04/2007	1700	A	85	2000	.00	72.46
1	RS05	20070131	01/09/2007	1500	A	91	3000	.00	108.69
1	RS05	20061031	10/10/2006	1200	A	89	1000	.00	36.23
1	RS05	20060731	07/13/2006	1100	A	91	1000	.00	36.23
1	RS05	20060430	04/13/2006	1000	A	91	2000	.00	72.46
1	RS05	20060131	01/12/2006	800	A	86	1000	.00	35.69
1	RS05	20051031	10/18/2005	700	A	97	1000	.00	35.42
1	RS05	20050731	07/19/2005	600	A	93	1000	.00	29.66
1	RS05	20050430	04/11/2005	500	A	82	1000	.00	28.51
1	RS05	20050131	01/19/2005	400	A	84	1000	.00	28.51
1	RS05	20041030	10/27/2004	300	A	104	1000	.00	28.51
1	RS05	20040731	07/15/2004	200	A	94	0	.00	.00
1	RS05	20040430	04/12/2004	200	A	82	0	.00	.00

Consumption Graph

Average Cons 1,888.89 Totals .00 1,219.11

Avg Reading Days 90.67

Enter

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 107590 Cust Name NELMOR REALTY CORP

Serv Loc ID 107590 Serv Loc 635 WASHINGTON ST

633- 635

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
1	IC03	20080731	07/10/2008	14400	A	98	5000	.00	189.50
1	IC03	20080430	04/03/2008	13900	A	86	4000	.00	151.60
1	IC03	20080132	01/08/2008	13500	A	83	4000	.00	151.60
1	IC03	20071031	10/17/2007	13100	A	99	6000	.00	217.38
1	IC03	20070731	07/10/2007	12500	A	97	5000	.00	181.15
1	IC03	20070430	04/04/2007	12000	A	85	4000	.00	144.92
1	IC03	20070131	01/09/2007	11600	A	91	5000	.00	181.15
1	IC03	20061031	10/10/2006	11100	A	89	4000	.00	144.92
1	IC03	20060731	07/13/2006	10700	A	91	5000	.00	181.15
1	IC03	20060430	04/13/2006	10200	A	91	5000	.00	181.15
1	IC03	20060131	01/12/2006	9700	A	86	5000	.00	178.45
1	IC03	20051031	10/18/2005	9200	A	97	4000	.00	141.60
1	IC03	20050731	07/13/2005	8800	A	93	5000	.00	148.30
1	IC03	20050430	04/11/2005	8300	A	82	5000	.00	142.55
1	IC03	20050131	01/19/2005	7000	A	84	5000	.00	142.55
1	IC03	20041030	10/27/2004	7300	A	104	5000	.00	142.55
1	IC03	20040731	07/15/2004	6800	A	94	5000	.00	142.55
1	IC03	20040430	04/12/2004	6300	A	82	4000	.00	114.04

Consumption Graph

Average Cons 4,722.22 Totals .00 2,877.19

Avg Reading Days 90.67

Enter

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 116465 Cust Name GORDON DND, WILLIAM M

Serv Loc ID 116465 Serv Loc 840 TIOGUE AVE

Service No 01

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC05	20080731	07/08/2008	20900	A	103	20000	.00	758.00
D	IC05	20080430	03/27/2008	18900	A	85	5000	.00	189.50
D	IC05	20080132	01/02/2008	18400	A	97	9000	.00	341.10
D	IC05	20071031	09/27/2007	17500	A	77	20000	.00	724.60
D	IC05	20070731	07/12/2007	15500	A	101	8000	.00	289.04
D	IC05	20070430	04/02/2007	14700	A	90	3000	.00	108.69
D	IC05	20070131	01/02/2007	14400	A	78	5000	.00	181.15
D	IC05	20061031	10/16/2006	13900	A	96	13000	.00	470.99
D	IC05	20060731	07/12/2006	12600	A	99	8000	.00	289.04
D	IC05	20060430	04/04/2006	11800	A	85	3000	.00	108.69
D	IC05	20060131	01/09/2006	11500	A	87	4000	.00	142.76
D	IC05	20051031	10/14/2005	11100	A	88	21000	.00	743.82
D	IC05	20050731	07/18/2005	9000	A	103	11000	.00	326.26
D	IC05	20050430	04/06/2005	7900	A	89	4000	.00	114.04
D	IC05	20050131	01/07/2005	7500	A	81	4000	.00	114.04
D	IC05	20041030	10/18/2004	7100	A	103	17000	.00	404.67
D	IC05	20040731	07/07/2004	5400	A	90	10000	.00	205.10
D	IC05	20040430	04/08/2004	4400	A	94	2000	.00	57.02

Consumption Graph

Average Cons 9,277.78 Totals .00 5,730.11

Avg Reading Days 91.44

Enter

APPENDIX K

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 110444 Cust Name McLAUGHLIN, WALTER

Serv Loc ID 110444 Serv Loc 150 SANDY BOTTOM RD

Service

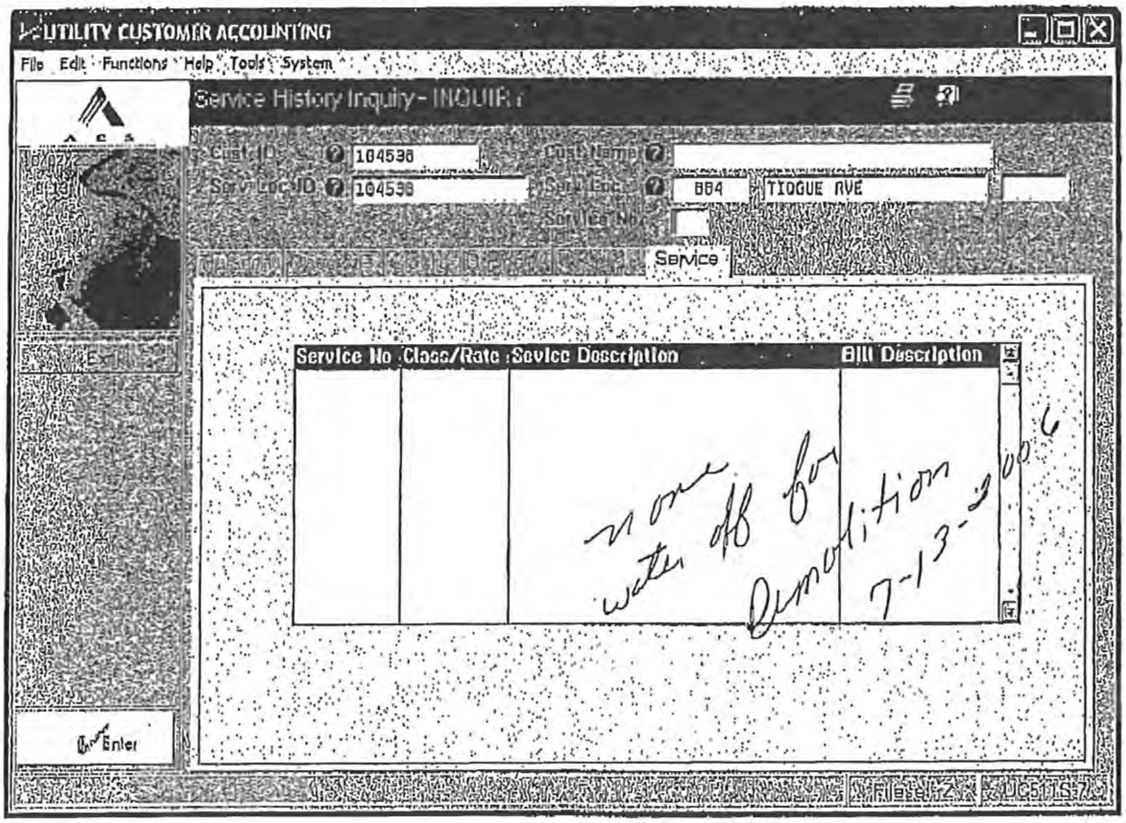
C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC01	20080731	07/14/2008	33000	A	94	500	.00	16.95
D	IC01	20080430	04/11/2008	32500	A	85	300	.00	11.37
D	IC01	20080132	01/17/2008	32200	A	105	500	.00	18.95
D	IC01	20071031	10/04/2007	31700	A	79	300	.00	10.87
D	IC01	20070731	07/17/2007	31400	A	97	500	.00	18.12
D	IC01	20070430	04/11/2007	30900	A	85	300	.00	10.67
D	IC01	20070131	01/16/2007	30600	A	85	400	.00	14.49
D	IC01	20061031	10/23/2006	30200	A	96	400	.00	14.49
D	IC01	20060731	07/19/2006	29800	A	96	400	.00	14.49
D	IC01	20060430	04/14/2006	29400	A	84	400	.00	14.49
D	IC01	20060131	01/20/2006	29000	A	87	300	.00	10.71
D	IC01	20051031	10/25/2005	28700	A	98	400	.00	14.17
D	IC01	20050731	07/19/2005	28300	A	97	400	.00	11.86
D	IC01	20050430	04/13/2005	27900	A	85	400	.00	11.40
D	IC01	20050131	01/18/2005	27500	A	77	300	.00	8.56
D	IC01	20041030	11/02/2004	27200	A	109	400	.00	11.40
D	IC01	20040731	07/22/2004	26800	A	90	400	.00	11.40
D	IC01	20040430	04/23/2004	26400	A	91	400	.00	11.40

Consumption Graph

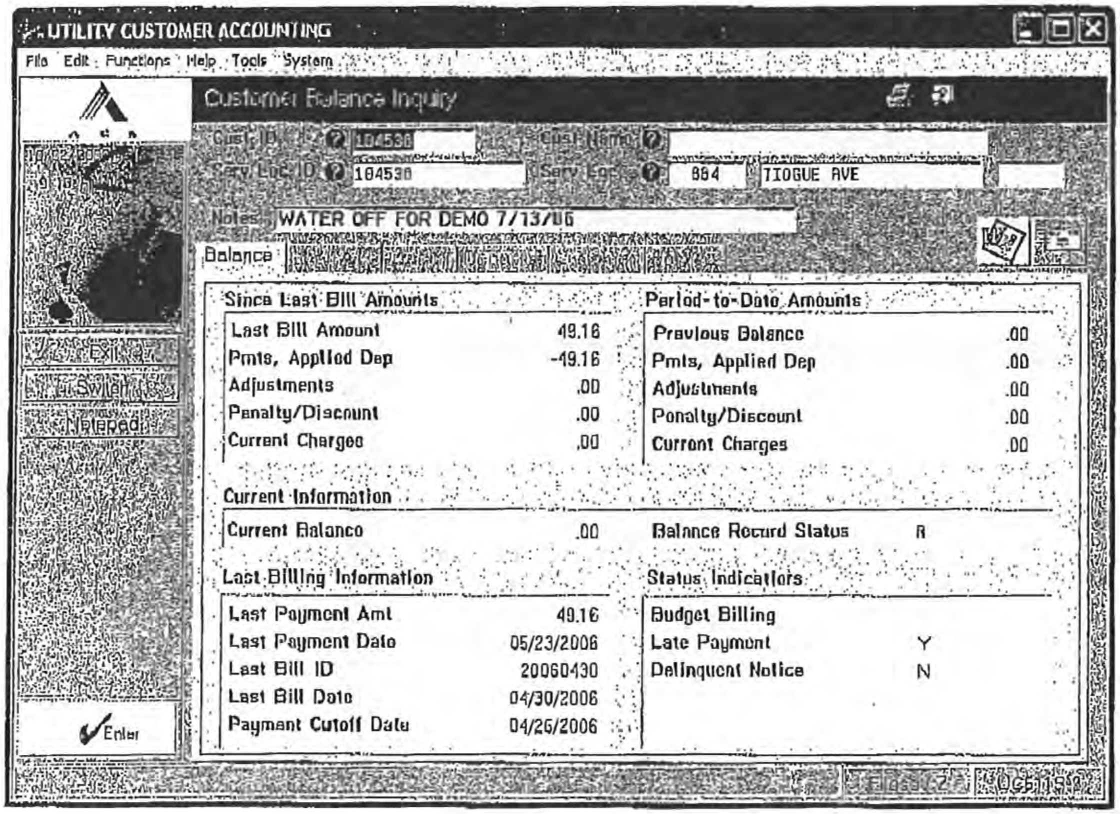
Average Cons 388.89 Totals .00 237.98

Avg Reading Days 90.78

Enter


UTILITY CUSTOMER ACCOUNTING
File Edit Functions Help Tools System
Service History Inquiry - INQUIRY
Cust ID 104538
Cust Name
Serv Loc ID 104538
Serv Loc 884 TIOGUE AVE
Service No
Service
Service No
Class/Rate
Sevice Description
Bill Description
none
water off for
Demolition
7-13-2006
Exit
Enter

APPENDIX K



UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Customer Balance Inquiry

Cust. ID 104538 Cust. Name

Serv Loc ID 104538 Serv Loc 864 TIOGUE AVE

Notes WATER OFF FOR DEMO 7/13/06

Balance

Exit

Switch

Notepad

Enter

Since Last Bill Amounts		Period-to-Date Amounts	
Last Bill Amount	49.16	Previous Balance	.00
Pmts, Applied Dep	-49.16	Pmts, Applied Dep	.00
Adjustments	.00	Adjustments	.00
Penalty/Discount	.00	Penalty/Discount	.00
Current Charges	.00	Current Charges	.00

Current Information

Current Balance	.00	Balance Record Status	R

Last Billing Information		Status Indicators	
Last Payment Amt	49.16	Budget Billing	
Last Payment Date	05/23/2006	Late Payment	Y
Last Bill ID	20060430	Delinquent Notice	N
Last Bill Date	04/30/2006		
Payment Cutoff Date	04/26/2006		

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 105729 Cust Name TOWN OF COVENTRY

Serv Loc ID 105729 Serv Loc 60 WOOD ST

Service No 01 Meter ID/Type

Book/RT

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	GT05	20080731	07/15/2008	124700	A	95	54000	.00	2046.60
D	GT05	20080430	04/11/2008	119300	A	86	13000	.00	492.70
D	GT05	20080132	01/16/2008	118000	A	104	38000	.00	1440.20
D	GT05	20071031	10/04/2007	114200	A	79	59000	.00	2137.57
D	GT05	20070731	07/17/2007	108300	A	97	52000	.00	1883.96
D	GT05	20070430	04/11/2007	103100	A	85	15000	.00	543.45
D	GT05	20070131	01/16/2007	101600	A	85	22000	.00	797.06
D	GT05	20061031	10/29/2006	99400	A	96	73000	.00	2644.79
D	GT05	20060731	07/19/2006	92100	A	97	55000	.00	1992.65
D	GT05	20060430	04/13/2006	86600	A	83	26000	.00	941.98
D	GT05	20060131	01/20/2006	84000	A	87	34000	.00	1213.46
D	GT05	20051031	10/25/2005	80600	A	98	61000	.00	2169.62
D	GT05	20050731	07/19/2005	74500	A	96	25000	.00	741.50
D	GT05	20050430	04/14/2005	72000	A	85	10000	.00	513.10
D	GT05	20050131	01/19/2005	70200	A	82	15000	.00	427.65
D	GT05	20041030	10/29/2004	68700	A	99	24000	.00	684.24
D	GT05	20040731	07/22/2004	66300	A	90	22000	.00	627.22
D	GT05	20040430	04/23/2004	64100	A	91	27000	.00	769.77

Consumption Graph

Average Cons 35,166.67 Totals .00 22,058.60

Avg Reading Days 90.89

Enter

APPENDIX K

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 104521 Cust Name COPPOLLELI, BERNARD

Serv Loc ID 104521 Serv Loc 134 SANDY BOTTOM RD WELL

Service No 01

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC01	20080731	07/14/2008	44400	A	94	1100	.00	41.69
D	IC01	20080430	04/11/2008	43300	A	85	1000	.00	37.90
D	IC01	20080132	01/17/2008	42300	A	105	1000	.00	37.90
D	IC01	20071031	10/04/2007	41300	A	79	900	.00	32.61
D	IC01	20070731	07/17/2007	40400	A	97	1200	.00	43.48
D	IC01	20070430	04/11/2007	39200	A	85	1400	.00	50.72
D	IC01	20070131	01/16/2007	37800	A	85	1400	.00	50.72
D	IC01	20061031	10/23/2006	36400	A	96	1800	.00	65.21
D	IC01	20060731	07/19/2006	34600	A	96	1700	.00	61.59
D	IC01	20060430	04/14/2006	32900	A	84	1500	.00	54.35
D	IC01	20060131	01/20/2006	31400	A	87	1400	.00	49.97
D	IC01	20051031	10/25/2005	30000	A	98	1400	.00	49.59
D	IC01	20050731	07/19/2005	28600	A	97	1300	.00	38.56
D	IC01	20050430	04/13/2005	27300	A	85	1300	.00	37.06
D	IC01	20050131	01/18/2005	26000	A	77	1200	.00	34.21
D	IC01	20041030	11/02/2004	24800	A	103	1200	.00	34.21
D	IC01	20040731	07/22/2004	23600	A	90	1200	.00	34.21
D	IC01	20040430	04/23/2004	22400	A	91	1100	.00	31.36

Consumption Graph

Average Cons 1,283.33 Totals .00 785.94

Avg Reading Days 90.78

Enter

APPENDIX K

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 103606 Cust Name GORTON FUNERAL HOME

Serv Loc ID 103606 Serv Loc 721 WASHINGTON ST

Service 01 Meter ID/ Book/RT

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
1	IC01	20080731	07/10/2008	172700	A	99	3400	.00	120.86
1	IC01	20080430	04/02/2008	169300	A	85	200	.00	7.58
1	IC01	20080132	01/08/2008	169100	A	83	400	.00	15.16
1	IC01	20071031	10/17/2007	168700	A	99	5700	.00	206.51
1	IC01	20070731	07/10/2007	163000	A	71	2800	.00	101.44
1	IC01	20070430	04/30/2007	160200	A	111	500	.00	18.12
1	IC01	20070131	01/09/2007	159700	A	91	700	.00	25.36
1	IC01	20061031	10/10/2006	159000	A	89	3500	.00	126.81
1	IC01	20060731	07/13/2006	155500	A	91	3400	.00	123.18
1	IC01	20060430	04/13/2006	152100	A	91	500	.00	18.12
1	IC01	20060131	01/12/2006	151600	A	86	500	.00	17.85
1	IC01	20051031	10/18/2005	151100	A	97	4900	.00	173.56
1	IC01	20050731	07/13/2005	146200	A	93	4100	.00	121.61
1	IC01	20050430	04/11/2005	142100	A	82	600	.00	17.11
1	IC01	20050131	01/19/2005	141500	A	84	600	.00	17.11
1	IC01	20041030	10/27/2004	140900	A	105	4300	.00	122.59
1	IC01	20040731	07/14/2004	136600	A	97	3400	.00	96.93
1	IC01	20040430	04/08/2004	133200	A	78	600	.00	17.11

Consumption Graph

Average Cons 2,227.78 Totals .00 1,355.01

Avg Reading Days 90.67

Enter

APPENDIX K

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 107959 Cust Name TOM'S FRUIT & DELI INC

Serv Loc ID 107959 Serv Loc 821 TIDGUE AVE

Service No

Motor ID/Type

Book/RT

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC01	20080731	07/08/2008	357400	A	103	11800	.00	447.22
D	IC01	20080430	03/27/2008	345600	A	85	7900	.00	299.41
D	IC01	20080132	01/02/2008	337700	A	97	9500	.00	360.65
D	IC01	20071031	09/27/2007	328200	A	77	9400	.00	340.56
D	IC01	20070731	07/12/2007	318800	A	101	10800	.00	391.28
D	IC01	20070430	04/02/2007	308000	A	90	9400	.00	340.56
D	IC01	20070131	01/02/2007	298600	A	82	8700	.00	315.20
D	IC01	20061031	10/12/2006	289900	A	92	10600	.00	384.04
D	IC01	20060731	07/12/2006	279300	A	99	10000	.00	362.90
D	IC01	20060430	04/04/2006	269300	A	85	7300	.00	264.48
D	IC01	20060131	01/09/2006	262000	A	88	8100	.00	289.09
D	IC01	20051031	10/13/2005	253900	A	87	8400	.00	297.53
D	IC01	20050731	07/18/2005	245500	A	104	10200	.00	302.53
D	IC01	20050430	04/05/2005	235300	A	88	8200	.00	293.70
D	IC01	20050131	01/07/2005	227100	A	81	7600	.00	216.68
D	IC01	20041030	10/18/2004	219500	A	103	10100	.00	287.95
D	IC01	20040731	07/07/2004	209400	A	90	9000	.00	256.59
D	IC01	20040430	04/08/2004	200400	A	94	8300	.00	236.63

Consumption Graph

Average Cons 9,183.33 Totals .00 5,625.88

Avg Reading Days 91.44

Enter

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 116796 Cust Name COMMERCE PARK ASSOCIATES 13

Serv Loc ID 116796 Serv Loc 710 CENTRE OF N E BLVD 720

Service No 01 Meter ID/Type Book/RT

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC05	20080430	03/24/2008	9300	A	88	12000	.00	454.80
D	IC05	20080132	12/27/2007	8100	A	93	12000	.00	454.80
D	IC05	20071031	09/25/2007	6900	A	90	15000	.00	543.45
D	IC05	20070731	06/27/2007	5400	A	93	15000	.00	543.45
D	IC05	20070430	03/26/2007	3900	A	89	14000	.00	507.22
D	IC05	20070131	12/27/2006	2500	A	86	10000	.00	352.30
D	IC05	20061031	10/02/2006	1500	A	91	6000	.00	217.38
D	IC05	20060731	07/03/2006	900	A	96	6000	.00	217.38
D	IC05	20060430	03/29/2006	300	A	70	3000	.00	108.69

Consumption Graph

Average Cons 10,333.33 Totals .00 3,409.47

Avg Reading Days 88.44

Enter

710 - 720

APPENDIX K

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 116799 Cust Name COMMERCE PARK ASSOC 13 LLC

Serv Loc ID 116799 Serv Loc 670 CENTRE OF N E BLVD 678

Service No

Service

6 70 - 678

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC05	20080430	03/24/2008	4000	A	88	5000	.00	189.50
D	IC05	20080132	12/27/2007	3500	A	93	6000	.00	227.40
D	IC05	20071031	09/25/2007	2900	A	90	5000	.00	181.15
D	IC05	20070731	06/27/2007	2400	A	93	11000	.00	398.53
D	IC05	20070430	03/26/2007	1300	A	89	5000	.00	181.15
D	IC05	20070131	12/27/2006	800	A	86	5000	.00	181.15
D	IC05	20061031	10/02/2006	300	A	91	2000	.00	72.46
D	IC05	20060731	07/03/2006	100	A	495	1000	.00	36.23

Consumption Graph Average Cons 5,000.00 Totals .00 1,467.57

Avg Reading Days 148.63

Enter

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 116386 Cust Name THE HERTZ CORP

Serv Loc ID 116386 Serv Loc 140 CENTRE OF N E BLVD

Service No

Service

C	CL/RT	Bill ID	Read Date	Reading	CD.	Days	Consumption	Adj Amount	Srv Charge
D	IC05	20080731	07/31/2008	59300	A	126	67000	.00	2539.30
D	IC05	20080430	03/27/2008	56600	A	87	10000	.00	379.00
D	IC05	20080132	12/31/2007	55600	A	95	11000	.00	416.90
D	IC05	20071031	09/27/2007	54500	A	78	41000	.00	1465.43
D	IC05	20070731	07/11/2007	50400	A	100	32000	.00	1159.36
D	IC05	20070430	04/02/2007	47200	A	89	15000	2541.65	543.45
D	IC05	20070131	01/03/2007	45700	A	82	21000	.00	750.83
D	IC05	20061031	10/13/2006	43600	A	94	62000	.00	2246.26
D	IC05	20060731	07/11/2006	37400	A	98	30000	.00	1006.90
D	IC05	20060430	04/04/2006	34400	A	85	14000	.00	507.22
D	IC05	20060131	01/09/2006	33000	A	88	25000	.00	892.25
D	IC05	20051031	10/13/2005	30500	A	87	36000	.00	1275.12
D	IC05	20050731	07/18/2005	26900	A	103	15000	.00	444.90
D	IC05	20050430	04/06/2005	25400	A	89	10000	.00	285.10
D	IC05	20050131	01/07/2005	24400	A	81	4000	.00	114.04
D	IC05	20041030	10/18/2004	24000	A	104	31000	.00	883.81
D	IC05	20040731	07/06/2004	20900	A	88	16000	.00	456.16
D	IC05	20040430	04/09/2004	19300	A	95	6000	.00	171.06

Consumption Graph

Average Cons 24,777.78 Totals 2,541.65 15,647.09

Avg Reading Days 92.72

Enter

APPENDIX K

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID: 116082 Cust Name: WAL-MART STORES EAST LPA 2283

Serv Loc ID: 116082 Serv Loc: 650 CENTRE OF N E BLVD

Service No:

Service

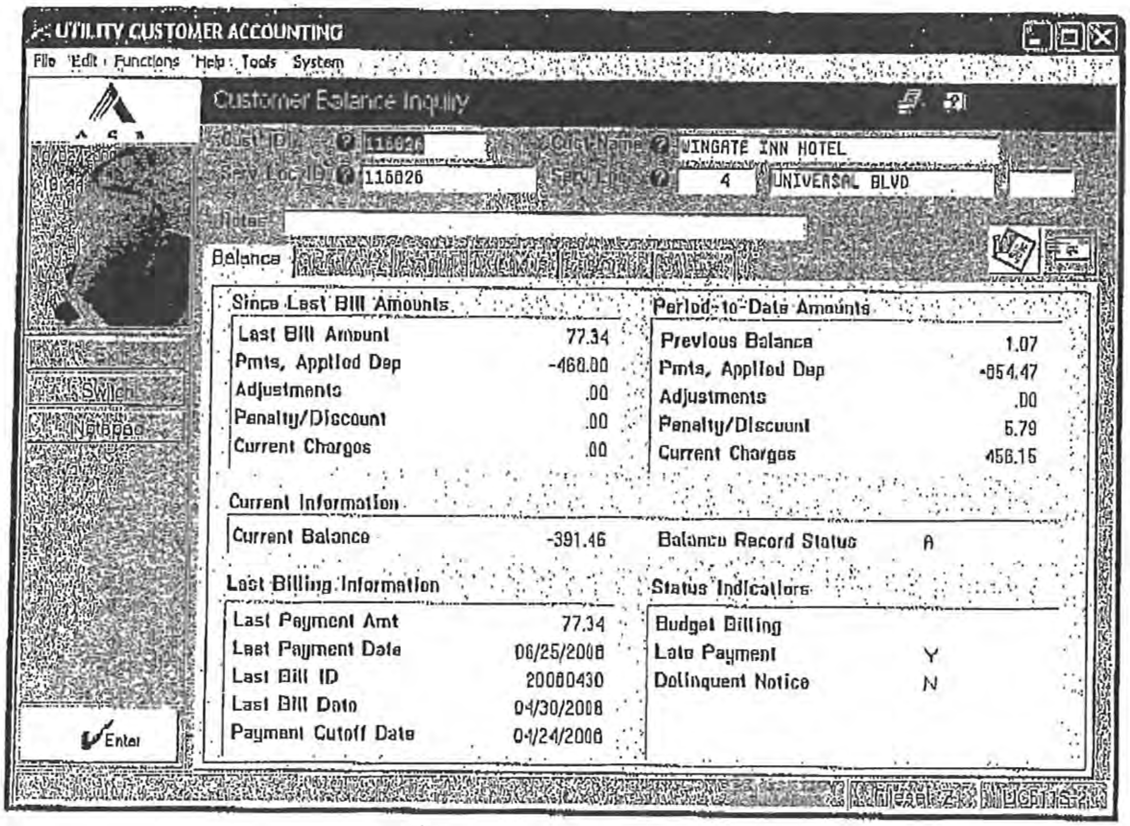
C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC10	20080430	03/24/2008	1719	A	88	89	.00	2.42
D	IC10	20080132	12/27/2007	1630	A	93	1615	.00	43.94
D	IC10	20071031	09/25/2007	15	A	90	0	.00	.00
D	IC10	20070731	06/27/2007	15	A	58	1500	.00	39.02
D	IC10	20070430	04/30/2007	0	A	89	100	.00	2.60
D	IC10	20070131	01/31/2007	401	A	97	300	.00	7.80
D	IC10	20061031	10/26/2006	398	A	14	39000	.00	1035.20

Consumption Graph

Average Cons 6,200.57 Totals .00 1,130.98

Avg Reading Days 75.57

Enter


UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Customer Balance Inquiry

Cust ID 116826 Cust Name WINGATE INN HOTEL

Serv Loc ID 116826 Serv Loc 4 UNIVERSAL BLVD

Notes

Balance

Switch

Notepad

Enter

Since Last Bill Amounts

Last Bill Amount	77.34
Pmts, Applied Dep	-460.00
Adjustments	.00
Penalty/Discount	.00
Current Charges	.00

Period-to-Date Amounts

Previous Balance	1.07
Pmts, Applied Dep	-854.47
Adjustments	.00
Penalty/Discount	5.79
Current Charges	456.15

Current Information

Current Balance	-391.46
Balance Record Status	A

Last Billing Information

Last Payment Amt	77.34
Last Payment Date	06/25/2008
Last Bill ID	20080430
Last Bill Date	04/30/2008
Payment Cutoff Date	04/24/2008

Status Indicators

Budget Billing	
Late Payment	Y
Delinquent Notice	N

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 116736 Cust Name HOME DEPOT USA

Serv Loc ID 116736 Serv Loc 700 CENTRE OF N E BLVD

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC10	20080430	03/24/2008	100	A	88	0	.00	.00
D	IC10	20080132	12/27/2007	100	A	93	0	.00	.00
D	IC10	20071031	09/25/2007	100	A	90	0	.00	.00
D	IC10	20070731	06/27/2007	100	A	93	0	.00	.00
D	IC10	20070430	03/26/2007	100	A	89	0	.00	.00
D	IC10	20070131	12/27/2006	100	A	86	0	.00	.00
D	IC10	20061031	10/02/2006	100	A	91	0	.00	.00
D	IC10	20060731	07/03/2006	100	A	96	0	.00	.00
D	IC10	20060430	03/29/2006	100	A	90	0	.00	.00
D	IC10	20060131	12/29/2005	100	A	87	0	.00	.00
D	IC10	20051031	10/03/2005	100	A	64	0	.00	.00
D	IC10	20050731	07/31/2005	100	A	96	0	.00	.00
D	IC10	20050430	04/25/2005	100	A	25	10000	.00	204.70

Consumption Graph

Average Cons 769.23 Totals .00 204.70

Avg Reading Days 83.69

Enter

Exit

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Customer Balance Inquiry

Cust ID: 116737 Cust Name: HOME DEPOT USA

Serv Loc ID: 116737 Serv Loc: 700 CENTRE OF N E BLVD

Notes:

Balance

Exit

Switch

Notepad

Enter

Since Last Bill Amounts

Last Bill Amount	299.20
Pmts, Applied Dep	-555.66
Adjustments	256.46
Penalty/Discount	.00
Current Charges	.00

Period-to-Date Amounts

Previous Balance	.00
Pmts, Applied Dep	-854.86
Adjustments	256.46
Penalty/Discount	.00
Current Charges	598.40

Current Information

Current Balance	.00
Balance Record Status	A

Last Billing Information

Last Payment Amt	256.46
Last Payment Date	07/07/2008
Last Bill ID	20080430
Last Bill Date	04/30/2008
Payment Cutoff Date	04/24/2008

Status Indicators

Budget Billing	
Late Payment	Y
Delinquent Notice	Y

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

Cust ID 116323 Cust Name BJ' S WHOLESALE CLUB INC

Serv Loc ID 116323 Serv Loc 790 CENTRE OF N E BLVD

Service No

Meter ID/Type

Book/RT

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC10	20080430	03/24/2008	100	A	88	0	.00	.00
D	IC10	20080132	12/27/2007	100	A	93	0	.00	.00
D	IC10	20071031	09/25/2007	100	A	90	0	.00	.00
D	IC10	20070731	06/27/2007	100	A	93	0	.00	.00
D	IC10	20070430	03/26/2007	100	A	89	0	.00	.00
D	IC10	20070131	12/27/2006	100	A	86	0	.00	.00
D	IC10	20061031	10/02/2006	100	A	91	0	.00	.00
D	IC10	20060731	07/03/2006	100	A	96	0	.00	.00
D	IC10	20060430	03/29/2006	100	A	90	0	.00	.00
D	IC10	20060131	12/29/2005	100	A	87	0	.00	.00
D	IC10	20051031	10/03/2005	100	A	90	0	.00	.00
D	IC10	20050731	07/05/2005	100	A	95	0	.00	.00
D	IC10	20050430	04/01/2005	100	A	60	0	.00	.00
D	IC10	20050131	01/31/2005	100	A	93	0	.00	.00
D	IC10	20041030	10/30/2004	100	A	116	0	.00	.00
D	IC10	20040731	07/06/2004	100	A	97	0	.00	.00
D	IC10	20040430	03/31/2004	100	A	93	0	.00	.00
D	IC10	20040132	12/29/2003	100	A	91	0	.00	.00

Consumption Graph Average Cons .00 Totals .00 .00

Avg Reading Days 91.00

Enter

UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Service History

116390

116390

APPLEBEE'S INTERNATION INC

830 CENTRE OF N E BLVD

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC05	20080430	03/24/2008	129700	A	88	36000	.00	1364.40
D	IC05	20080132	12/27/2007	126100	A	93	39000	.00	1478.10
D	IC05	20071031	09/25/2007	122200	A	90	51000	.00	1847.73
D	IC05	20070731	06/27/2007	117100	A	93	41000	.00	1485.43
D	IC05	20070430	03/26/2007	113000	A	89	36000	.00	1304.28
D	IC05	20070131	12/27/2006	109400	A	86	34000	.00	1231.82
D	IC05	20061031	10/02/2006	106000	A	91	44000	.00	1594.12
D	IC05	20060731	07/03/2006	101600	A	96	55000	.00	1992.65
D	IC05	20060430	03/29/2006	96100	A	90	37000	.00	1340.51
D	IC05	20060131	12/29/2005	92400	A	87	40000	.00	1427.60
D	IC05	20051031	10/03/2005	88400	A	90	56000	.00	1903.52
D	IC05	20050731	07/05/2005	82800	A	95	61000	.00	1512.66
D	IC05	20050430	04/01/2005	77700	A	60	34000	.00	959.34
D	IC05	20050131	01/31/2005	74300	E	93	40000	.00	1140.40
D	IC05	20041030	10/30/2004	70300	A	116	66000	.00	1881.66
D	IC05	20040731	07/06/2004	63700	A	97	45000	.00	1282.95
D	IC05	20040430	03/31/2004	59200	A	93	40000	.00	1140.40
D	IC05	20040132	12/29/2003	55200	A	91	40000	.00	1140.40

Consumption Graph

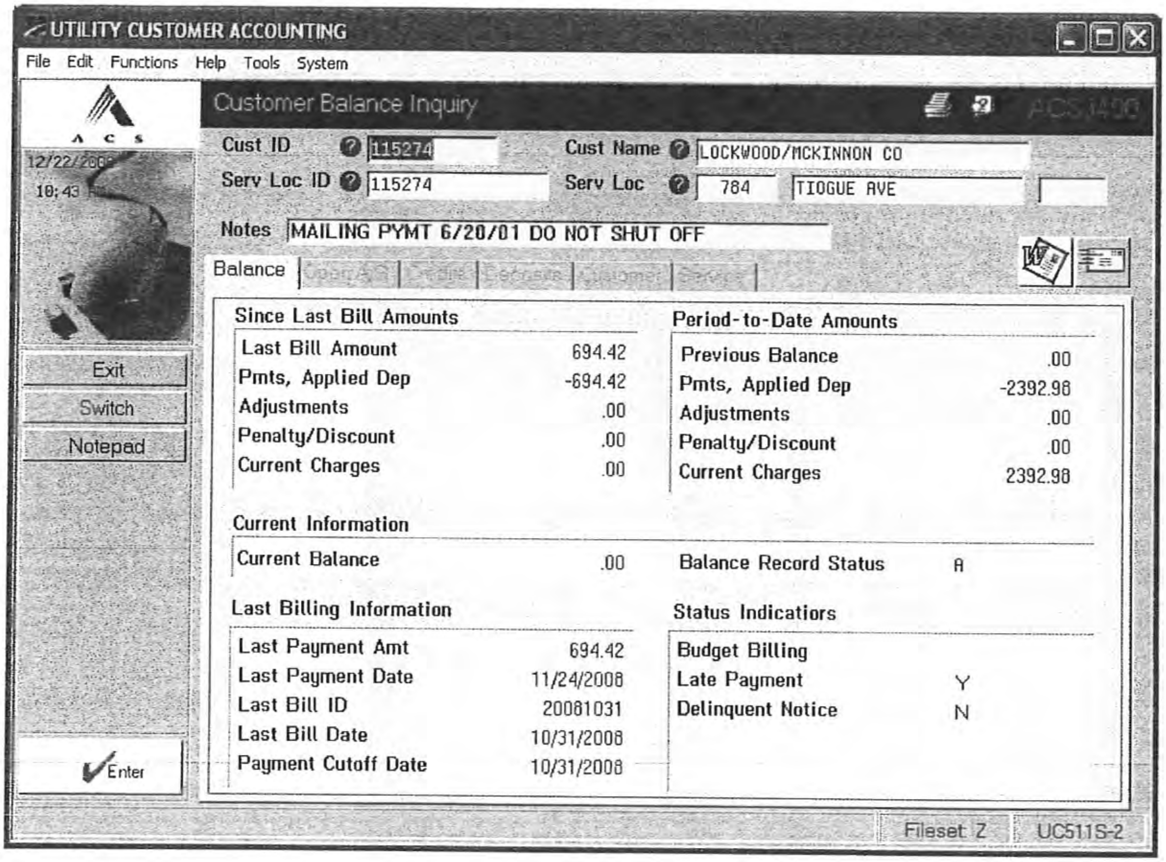
Average Cons 43,611.11

Avg Reading Days 91.00

Totals .00 26,117.97

Enter

APPENDIX K


UTILITY CUSTOMER ACCOUNTING
File Edit Functions Help Tools System
Customer Balance Inquiry
Cust ID 115274
Cust Name LOCKWOOD/MCKINNON CO
Serv Loc ID 115274
Serv Loc 784 TIOGUE AVE
Notes MAILING PYMT 6/20/01 DO NOT SHUT OFF
Balance
Exit
Switch
Notepad
Enter
Since Last Bill Amounts
Last Bill Amount 694.42
Pmts, Applied Dep -694.42
Adjustments .00
Penalty/Discount .00
Current Charges .00
Period-to-Date Amounts
Previous Balance .00
Pmts, Applied Dep -2392.98
Adjustments .00
Penalty/Discount .00
Current Charges 2392.98
Current Information
Current Balance .00
Balance Record Status A
Last Billing Information
Last Payment Amt 694.42
Last Payment Date 11/24/2008
Last Bill ID 20081031
Last Bill Date 10/31/2008
Payment Cutoff Date 10/31/2008
Status Indicators
Budget Billing
Late Payment Y
Delinquent Notice N
Fileset Z
UC511S-2

Service History

File Edit Functions Help Tools

U511S8

Cust ID 115274 | Cust Name LOCKWOOD/MCKINNON CO | MP10250

Serv Loc ID 115274 | Serv Loc 784 TIOGUE AVE

Service No 01 | Serial # 115274 | Book/RT 106/0000545

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC03	20081031	10/23/2008	11200	A	107	16000	.00	606.40
D	IC03	20080731	07/08/2008	9600	A	103	16000	.00	606.40
D	IC03	20080430	03/27/2008	8000	A	85	12000	.00	454.80
D	IC03	20080132	01/02/2008	6800	A	97	11000	.00	416.90
D	IC03	20071031	09/27/2007	5700	A	77	11000	.00	398.53
D	IC03	20070731	07/12/2007	4600	A	101	14000	.00	507.22
D	IC03	20070430	04/02/2007	3200	A	90	10000	.00	362.30
D	IC03	20070131	01/02/2007	2200	A	78	7000	.00	253.61
D	IC03	20061031	10/16/2006	1500	A	96	10000	.00	362.30
D	IC03	20060731	07/12/2006	500	A	73	10210	.00	369.91
D	IC03	20060430	04/26/2006	28500	E	107	8000	.00	289.84
D	IC03	20060131	01/09/2006	27700	A	87	9000	.00	321.21
D	IC03	20051031	10/14/2005	26800	A	88	16000	.00	566.72
D	IC03	20050731	07/18/2005	25200	A	103	16000	.00	474.56
D	IC03	20050430	04/06/2005	23600	A	89	8000	.00	228.08
D	IC03	20050131	01/07/2005	22800	A	81	9000	.00	256.59
D	IC03	20041030	10/18/2004	21900	A	103	20000	.00	570.20
D	IC03	20040731	07/07/2004	19900	A	90	15000	.00	427.65

Consumption Graph | Average Cons 12,122.78 | Totals .00 7,473.22

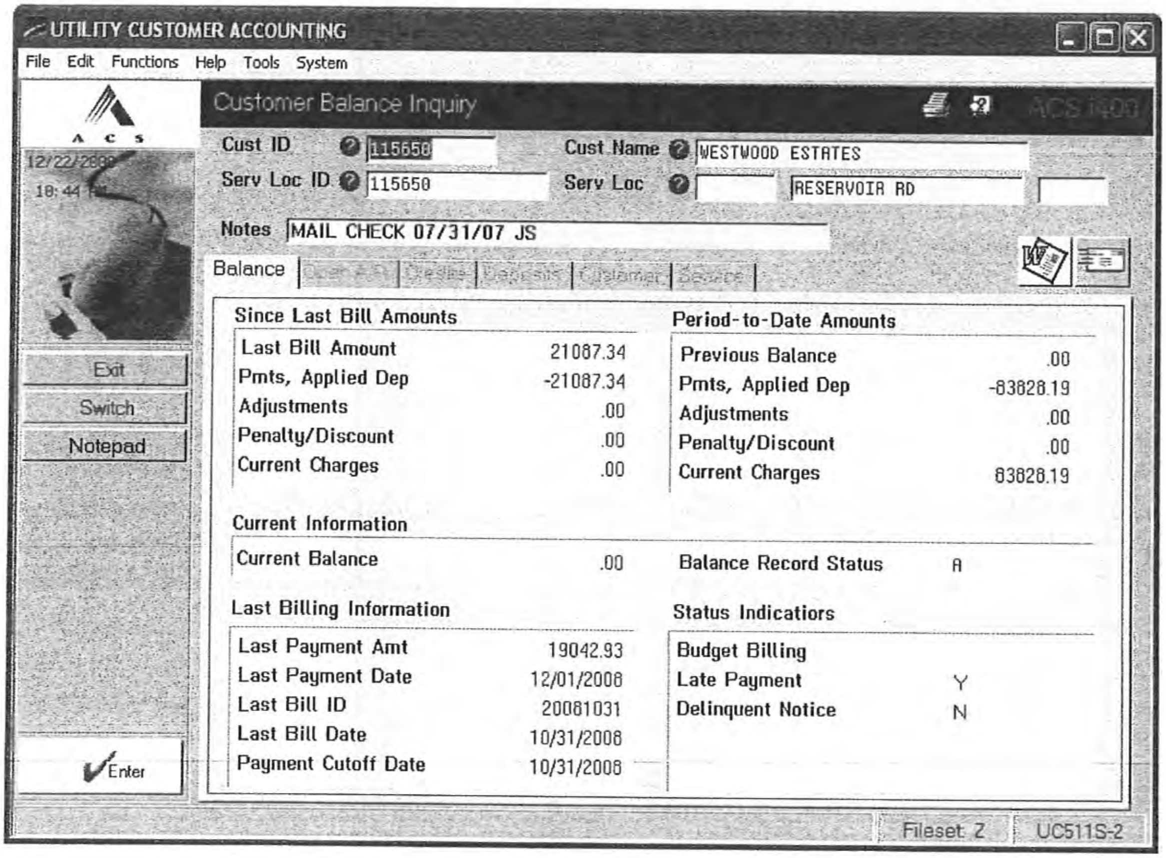
Avg Reading Days 91.94

Exit

Enter

Fileset Z | U511S8

APPENDIX K



UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Customer Balance Inquiry

Cust ID 115650 Cust Name WESTWOOD ESTATES

Serv Loc ID 115650 Serv Loc RESERVOIR RD

Notes MAIL CHECK 07/31/07 JS

Balance

Exit

Switch

Notepad

Enter

Since Last Bill Amounts

Last Bill Amount	21087.34
Pmts, Applied Dep	-21087.34
Adjustments	.00
Penalty/Discount	.00
Current Charges	.00

Period-to-Date Amounts

Previous Balance	.00
Pmts, Applied Dep	-83828.19
Adjustments	.00
Penalty/Discount	.00
Current Charges	83828.19

Current Information

Current Balance	.00	Balance Record Status	A

Last Billing Information

Last Payment Amt	19042.93
Last Payment Date	12/01/2008
Last Bill ID	20081031
Last Bill Date	10/31/2008
Payment Cutoff Date	10/31/2008

Status Indicators

Budget Billing	
Late Payment	Y
Delinquent Notice	N

Fileset Z UC511S-2

Service History

File Edit Functions Help Tools

U511S8

Cust ID 115650 Cust Name WESTWOOD ESTATES MP10250

Serv Loc ID 115650 Serv Loc RESERVOIR RD

Service No 01 Serial # 115650

Book/RT 126/0000248

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
N	RS05	20081031	10/01/2008	368800	A	83	526000	.00	19935.40
N	RS05	20080731	07/10/2008	316200	A	94	551000	.00	20882.90
N	RS05	20080430	04/07/2008	261100	A	89	500000	.00	18950.00
N	RS05	20080132	01/09/2008	211100	A	91	514000	.00	19480.60
N	RS05	20071031	10/10/2007	159700	A	90	474000	.00	17173.02
N	RS05	20070731	07/12/2007	112300	A	101	501000	.00	18151.23
N	RS05	20070430	04/02/2007	62200	A	61	414000	.00	14999.22
N	RS05	20070131	01/31/2007	1020800	A	92	388000	.00	14057.24
N	RS05	20061031	10/31/2006	982000	A	111	545000	.00	19745.35
N	RS05	20060731	07/12/2006	927500	A	91	480000	.00	17390.40
N	RS05	20060430	04/12/2006	879500	A	71	455000	.00	16484.65
N	RS05	20060131	01/31/2006	834000	A	110	451000	.00	16096.19
N	RS05	20051031	10/13/2005	788900	A	92	526000	.00	18630.92
N	RS05	20050731	07/13/2005	736300	A	93	522000	.00	15482.52
N	RS05	20050430	04/11/2005	684100	A	70	317000	.00	9037.67
N	RS05	20050131	01/31/2005	652400	E	96	497000	.00	14169.47
N	RS05	20041030	10/27/2004	602700	A	99	480000	.00	13684.80
N	RS05	20040731	07/20/2004	554700	A	97	478000	.00	13627.78

Consumption Graph

Average Cons 478,833.33 Totals .00 297,979.36

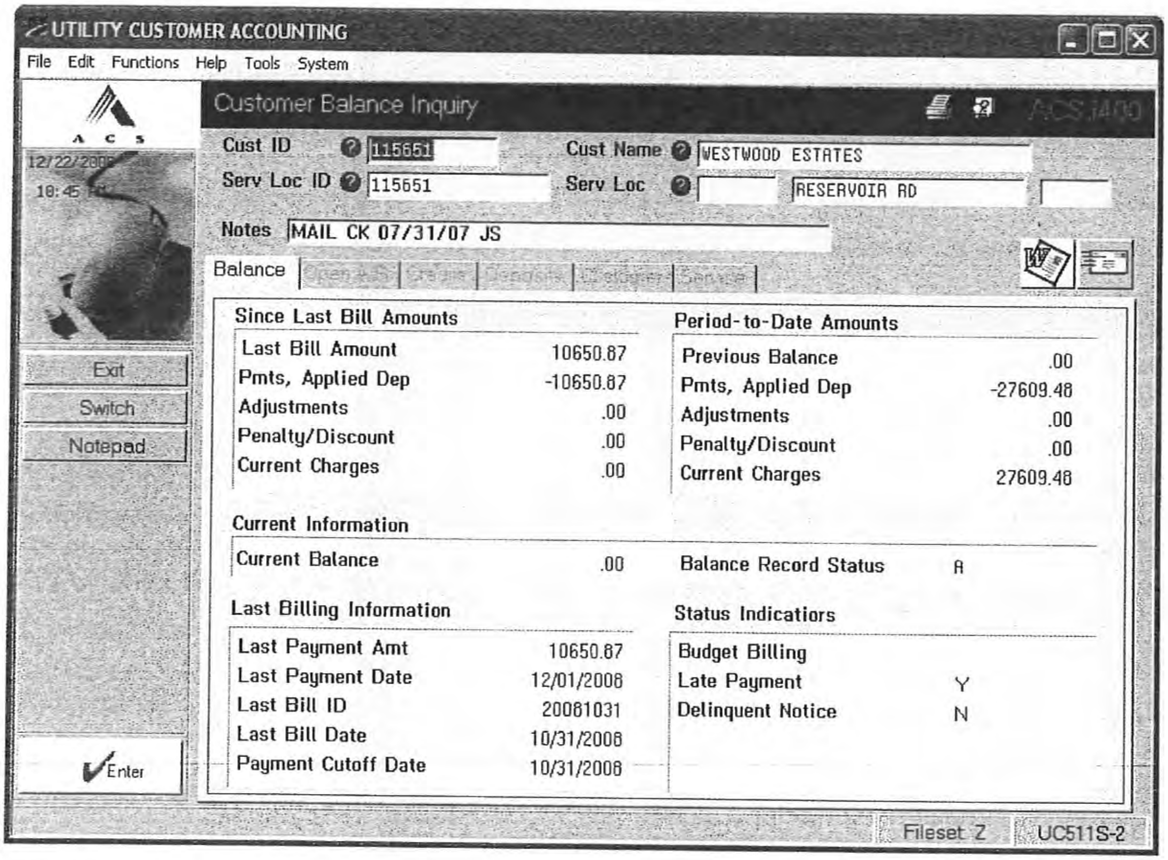
Avg Reading Days 90.61

Exit

Enter

Fileset Z U511S8

APPENDIX K



UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Customer Balance Inquiry

Cust ID 115651 Cust Name WESTWOOD ESTATES

Serv Loc ID 115651 Serv Loc RESERVOIR RD

Notes MAIL CK 07/31/07 JS

Balance

Exit

Switch

Notepad

Enter

Since Last Bill Amounts

Last Bill Amount	10650.87
Pmts, Applied Dep	-10650.87
Adjustments	.00
Penalty/Discount	.00
Current Charges	.00

Period-to-Date Amounts

Previous Balance	.00
Pmts, Applied Dep	-27609.48
Adjustments	.00
Penalty/Discount	.00
Current Charges	27609.48

Current Information

Current Balance	.00	Balance Record Status	A

Last Billing Information

Last Payment Amt	10650.87
Last Payment Date	12/01/2008
Last Bill ID	20081031
Last Bill Date	10/31/2008
Payment Cutoff Date	10/31/2008

Status Indicators

Budget Billing	
Late Payment	Y
Delinquent Notice	N

Fileset Z UC511S-2

Service History

File Edit Functions Help Tools

U511S8

Cust ID 115651 Cust Name WESTWOOD ESTATES MP10250

Serv Loc ID 115651 Serv Loc RESERVOIR RD

Service No 01 Serial # 115651

Book/RT 126/0000247

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
N	RS09	20081031	10/01/2008	172800	A	83	360000	.00	9795.60
N	RS09	20080731	07/10/2008	169200	A	94	280000	.00	7618.80
N	RS09	20080430	04/07/2008	166400	A	89	120000	.00	3265.20
N	RS09	20080132	01/09/2008	165200	A	91	170000	.00	4625.70
N	RS09	20071031	10/10/2007	163500	A	90	330000	.00	8583.30
N	RS09	20070731	07/12/2007	160200	A	101	220000	.00	5722.20
N	RS09	20070430	04/02/2007	158000	A	82	150000	.00	3901.50
N	RS09	20070131	01/10/2007	156500	A	79	140000	.00	3641.40
N	RS09	20061031	10/23/2006	155100	A	103	290000	.00	7542.90
N	RS09	20060731	07/12/2006	152200	A	91	250000	.00	6502.50
N	RS09	20060430	04/12/2006	149700	A	90	130000	.00	3381.30
N	RS09	20060131	01/12/2006	148400	A	91	140000	.00	3586.80
N	RS09	20051031	10/13/2005	147000	A	92	540000	.00	13732.20
N	RS09	20050731	07/13/2005	141600	A	93	500000	.00	10650.00
N	RS09	20050430	04/11/2005	136600	A	70	621000	.00	12711.87
N	RS09	20050131	01/31/2005	130390	E	96	39000	.00	798.33
N	RS09	20041030	10/27/2004	130000	A	99	470000	.00	9620.90
N	RS09	20040731	07/20/2004	125300	A	97	640000	.00	13100.80

Consumption Graph

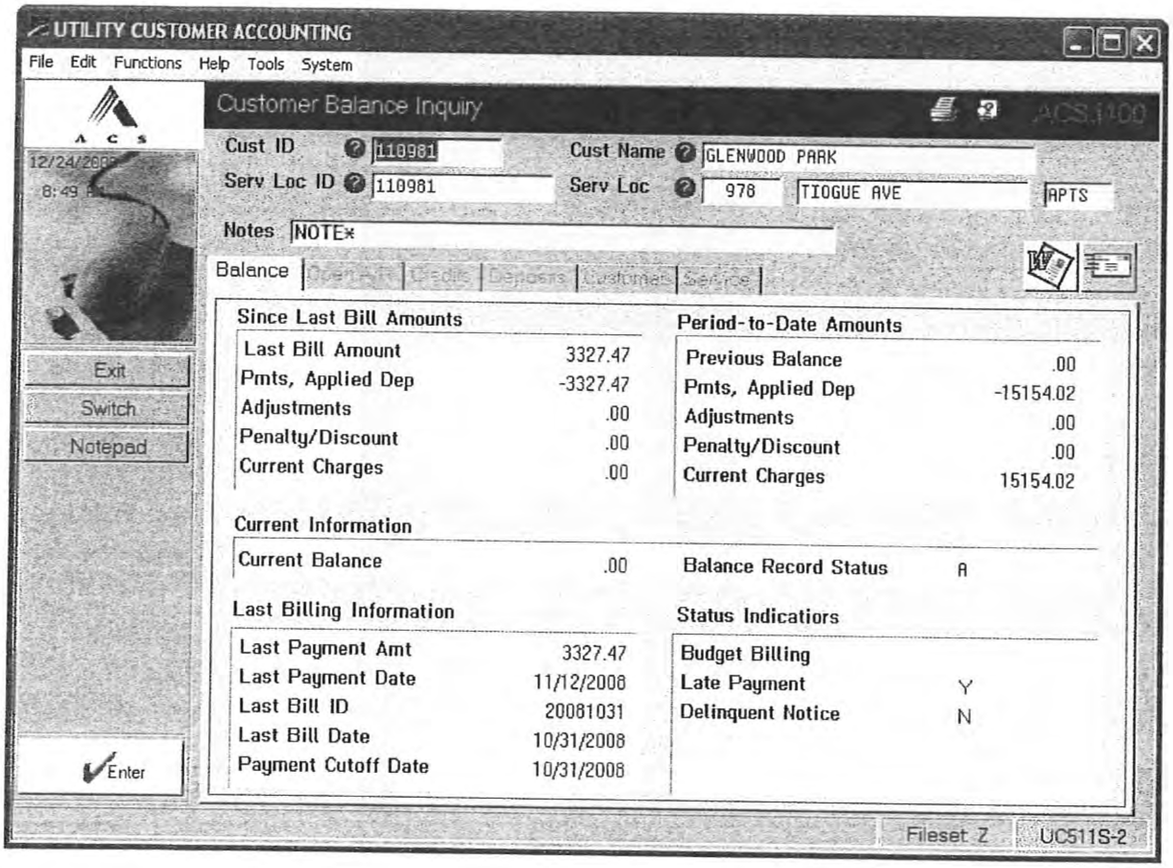
Average Cons 299,444.44 Totals .00 128,781.30

Avg Reading Days 90.61

Exit

Enter

Fileset Z U511S8



UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Customer Balance Inquiry ACS1100

12/24/2008

Exit

Switch

Notepad

Enter

Cust ID 110981 Cust Name GLENWOOD PARK

Serv Loc ID 110981 Serv Loc 978 TIOGUE AVE APTS

Notes NOTE*

Balance | Open A/R | Credits | Deposits | Customer | Service

Since Last Bill Amounts

Last Bill Amount	3327.47
Pmts, Applied Dep	-3327.47
Adjustments	.00
Penalty/Discount	.00
Current Charges	.00

Period-to-Date Amounts

Previous Balance	.00
Pmts, Applied Dep	-15154.02
Adjustments	.00
Penalty/Discount	.00
Current Charges	15154.02

Current Information

Current Balance	.00
Balance Record Status	A

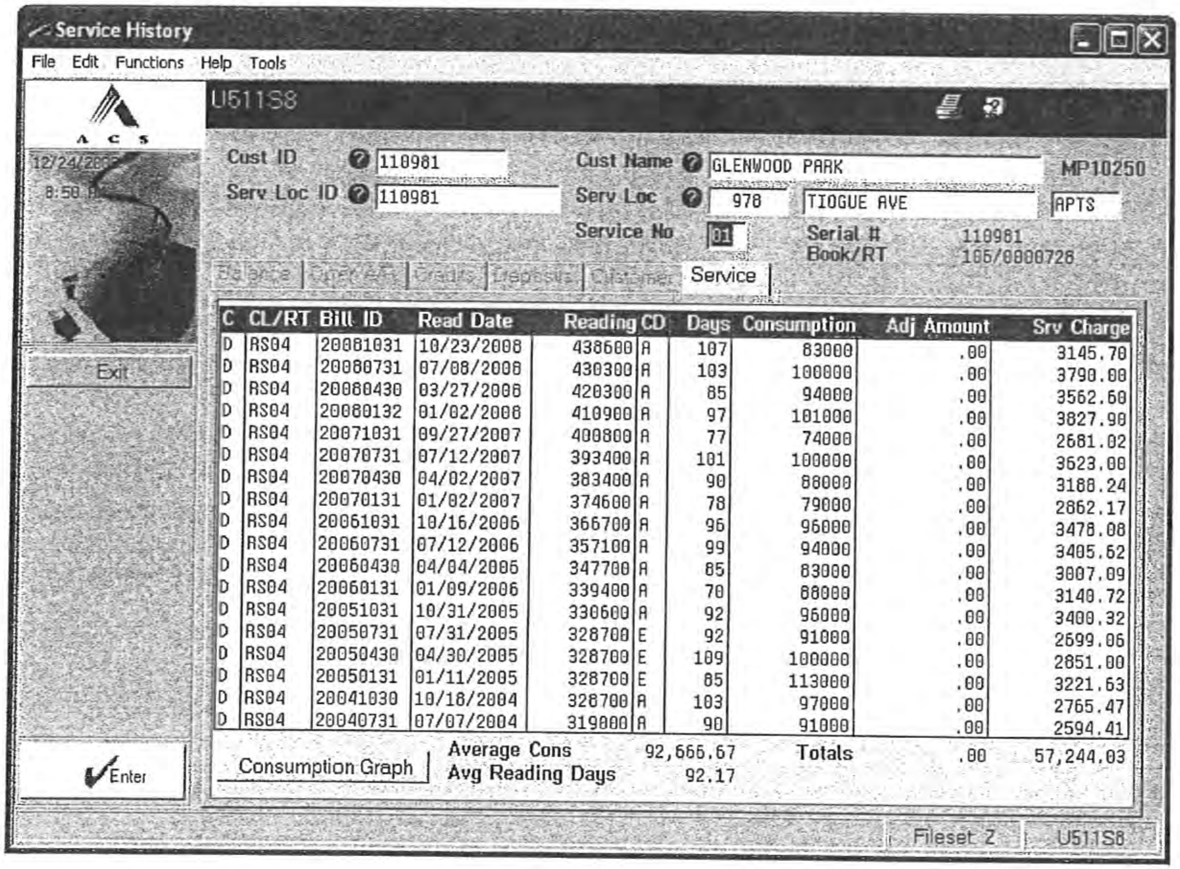
Last Billing Information

Last Payment Amt	3327.47
Last Payment Date	11/12/2008
Last Bill ID	20081031
Last Bill Date	10/31/2008
Payment Cutoff Date	10/31/2008

Status Indicators

Budget Billing	
Late Payment	Y
Delinquent Notice	N

Fileset Z UC511S-2



Service History

File Edit Functions Help Tools

U511S8

Cust ID 110981

Cust Name GLENWOOD PARK

MP10250

Serv Loc ID 110981

Serv Loc 978 TIOGUE AVE APTS

Service No 01

Serial # 110981

Book/RT 105/0000728

Balance | Open A/R | Credits | Deposits | Customer | Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	RS04	20081031	10/23/2008	438600	A	107	83000	.00	3145.70
D	RS04	20080731	07/08/2008	430300	A	103	100000	.00	3790.00
D	RS04	20080430	03/27/2008	420300	A	85	94000	.00	3562.60
D	RS04	20080132	01/02/2008	410900	A	97	101000	.00	3827.90
D	RS04	20071031	09/27/2007	400800	A	77	74000	.00	2681.02
D	RS04	20070731	07/12/2007	393400	A	101	100000	.00	3623.00
D	RS04	20070430	04/02/2007	383400	A	90	88000	.00	3188.24
D	RS04	20070131	01/02/2007	374600	A	78	79000	.00	2862.17
D	RS04	20061031	10/16/2006	366700	A	96	96000	.00	3478.08
D	RS04	20060731	07/12/2006	357100	A	99	94000	.00	3405.62
D	RS04	20060430	04/04/2006	347700	A	85	83000	.00	3007.09
D	RS04	20060131	01/09/2006	339400	A	70	88000	.00	3140.72
D	RS04	20051031	10/31/2005	330600	A	92	96000	.00	3400.32
D	RS04	20050731	07/31/2005	328700	E	92	91000	.00	2699.06
D	RS04	20050430	04/30/2005	328700	E	109	100000	.00	2851.00
D	RS04	20050131	01/11/2005	328700	E	85	113000	.00	3221.63
D	RS04	20041030	10/18/2004	328700	A	103	97000	.00	2765.47
D	RS04	20040731	07/07/2004	319000	A	90	91000	.00	2594.41

Consumption Graph

Average Cons 92,666.67 Totals .00 57,244.03

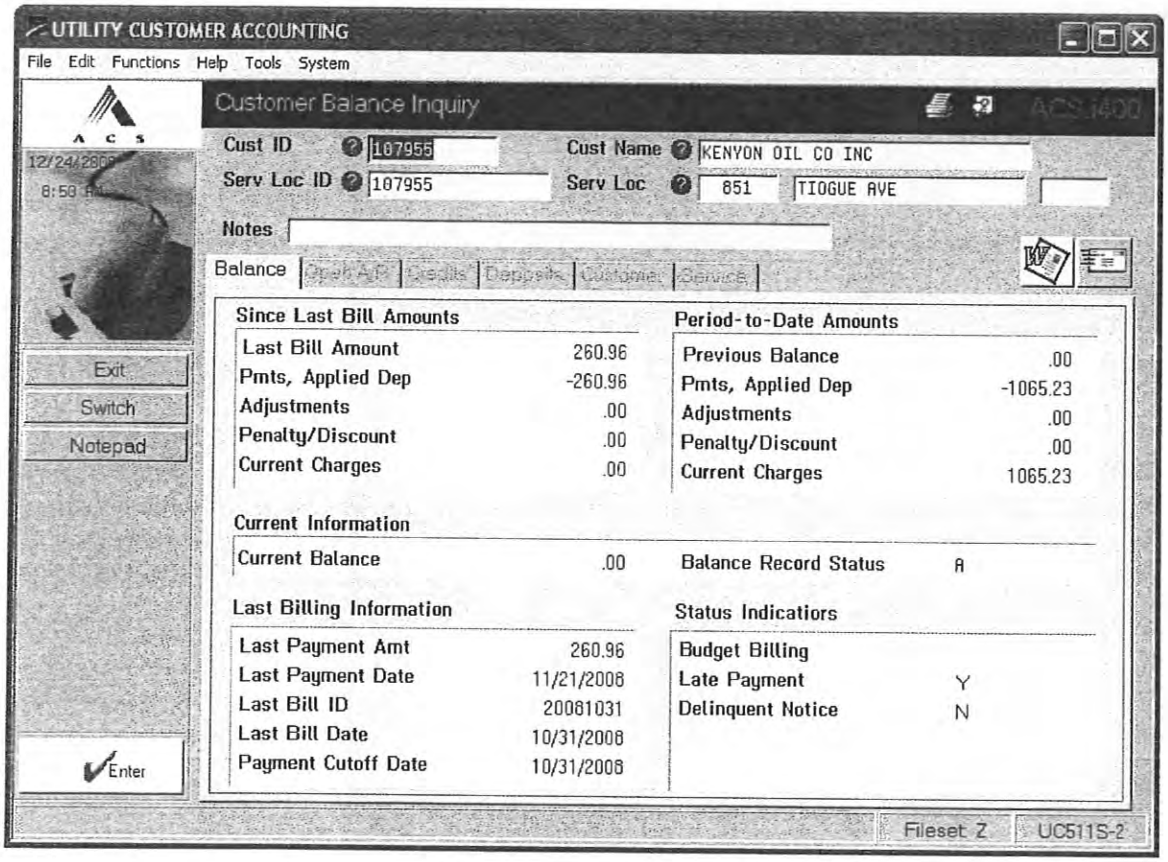
Avg Reading Days 92.17

Exit

Enter

Fileset Z U511S8

APPENDIX K


UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

A C S

12/24/2008

8:58 AM

Exit

Switch

Notepad

Enter

Customer Balance Inquiry

Cust ID 107955 Cust Name KENYON OIL CO INC

Serv Loc ID 107955 Serv Loc 851 TIOGUE AVE

Notes

Balance | Open A/R | Credits | Deposits | Customer | Service

Since Last Bill Amounts

Last Bill Amount	260.96
Pmts, Applied Dep	-260.96
Adjustments	.00
Penalty/Discount	.00
Current Charges	.00

Period-to-Date Amounts

Previous Balance	.00
Pmts, Applied Dep	-1065.23
Adjustments	.00
Penalty/Discount	.00
Current Charges	1065.23

Current Information

Current Balance	.00	Balance Record Status	A

Last Billing Information

Last Payment Amt	260.96
Last Payment Date	11/21/2008
Last Bill ID	20081031
Last Bill Date	10/31/2008
Payment Cutoff Date	10/31/2008

Status Indicators

Budget Billing	
Late Payment	Y
Delinquent Notice	N

Fileset Z UC511S-2

Service History

File Edit Functions Help Tools

U511S8

Cust ID 107955 Cust Name KENYON OIL CO INC MP10250

Serv Loc ID 107955 Serv Loc 851 TIOGUE AVE

Service No 01 Serial # 107955

Book/RT 106/0000328

Balance | Open A/R | Credits | Deposits | Customer | Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
D	IC01	20081031	10/23/2008	137200	A	107	5900	.00	223.61
D	IC01	20080731	07/08/2008	131300	A	103	7200	.00	272.88
D	IC01	20080430	03/27/2008	124100	A	85	5500	.00	208.45
D	IC01	20080132	01/02/2008	118600	A	97	5500	.00	208.45
D	IC01	20071031	09/27/2007	113100	A	58	4300	.00	155.79
D	IC01	20070731	07/31/2007	108800	A	120	6700	.00	242.74
D	IC01	20070430	04/02/2007	102100	A	90	4100	.00	148.54
D	IC01	20070131	01/02/2007	98000	A	82	3100	.00	112.31
D	IC01	20061031	10/12/2006	94900	A	92	2500	.00	90.58
D	IC01	20060731	07/12/2006	92400	A	99	3000	.00	108.69
D	IC01	20060430	04/04/2006	89400	A	85	1800	.00	65.21
D	IC01	20060131	01/09/2006	87600	A	88	1900	.00	67.81
D	IC01	20051031	10/13/2005	85700	A	87	2900	.00	102.72
D	IC01	20050731	07/18/2005	82800	A	104	2900	.00	86.01
D	IC01	20050430	04/05/2005	79900	A	88	2000	.00	57.02
D	IC01	20050131	01/07/2005	77900	A	81	1900	.00	54.17
D	IC01	20041030	10/18/2004	76000	A	103	2700	.00	76.98
D	IC01	20040731	07/07/2004	73300	A	90	2700	.00	76.98

Consumption Graph

Average Cons 3,700.00 Totals .00 2,358.94

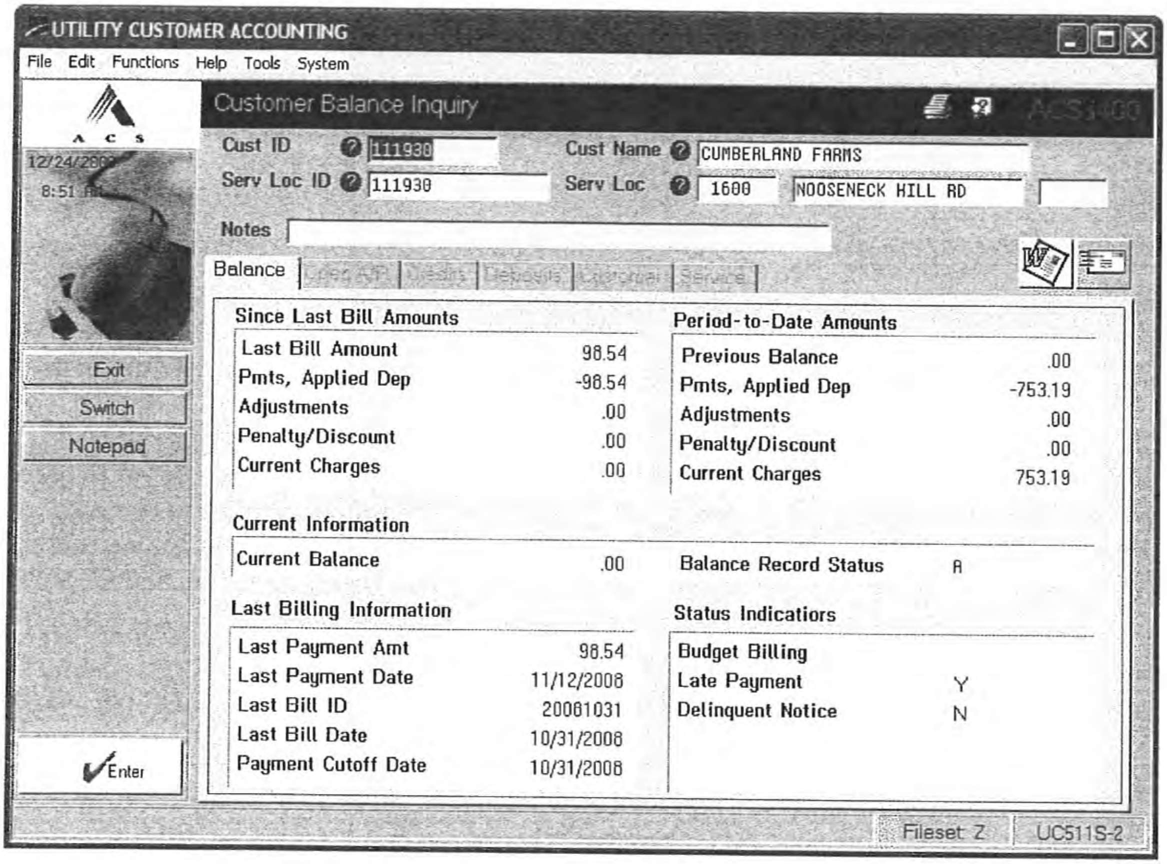
Avg Reading Days 92.17

Exit

Enter

Fileset Z U511S8

APPENDIX K


UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Customer Balance Inquiry

Cust ID	111930	Cust Name	CUMBERLAND FARMS
Serv Loc ID	111930	Serv Loc	1600 NOOSENECK HILL RD
Notes			

Balance

Since Last Bill Amounts

Last Bill Amount	98.54
Pmts, Applied Dep	-98.54
Adjustments	.00
Penalty/Discount	.00
Current Charges	.00

Period-to-Date Amounts

Previous Balance	.00
Pmts, Applied Dep	-753.19
Adjustments	.00
Penalty/Discount	.00
Current Charges	753.19

Current Information

Current Balance	.00	Balance Record Status	A

Last Billing Information

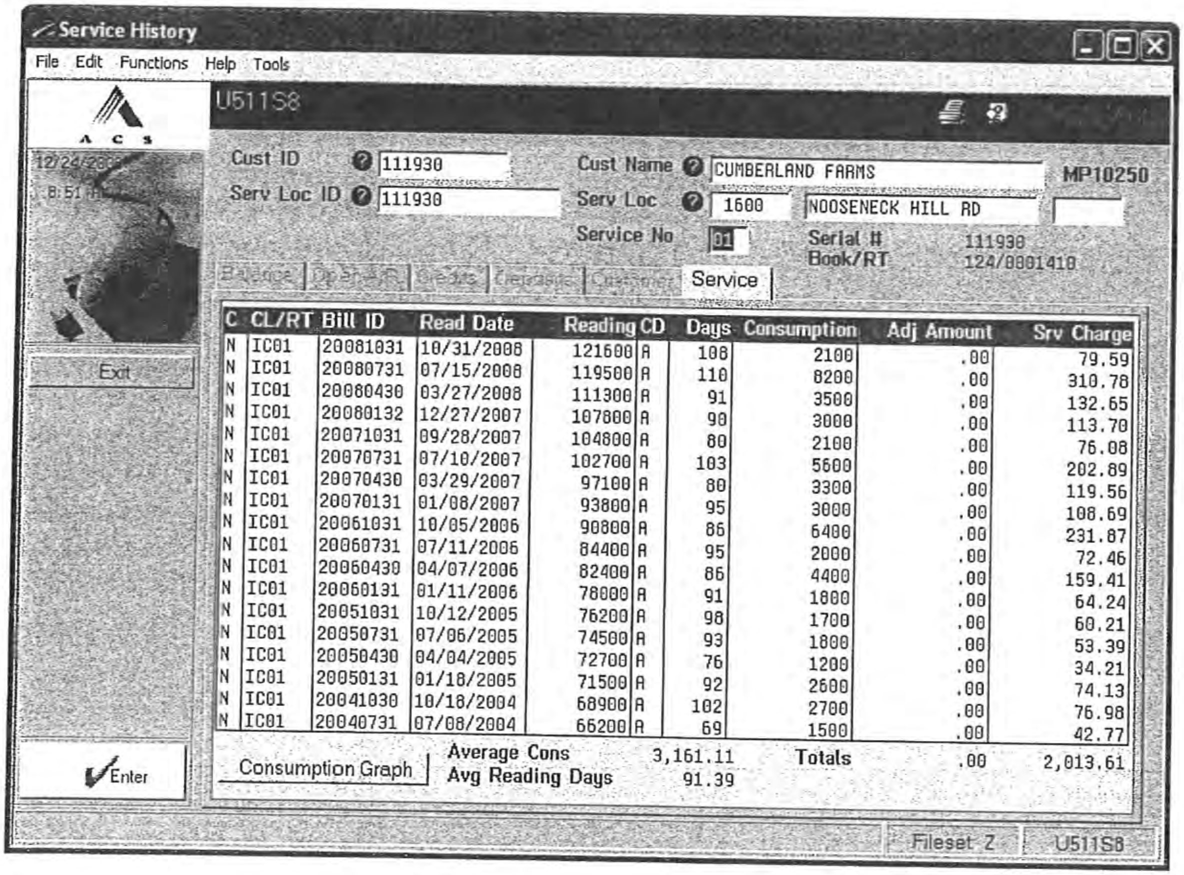
Last Payment Amt	98.54
Last Payment Date	11/12/2008
Last Bill ID	20081031
Last Bill Date	10/31/2008
Payment Cutoff Date	10/31/2008

Status Indicators

Budget Billing	
Late Payment	Y
Delinquent Notice	N

Exit Switch Notepad Enter

Fileset Z UC511S-2



Service History

File Edit Functions Help Tools

U511S8

Cust ID 111930 | Cust Name CUMBERLAND FARMS | MP10250

Serv Loc ID 111930 | Serv Loc 1600 NOOSENECK HILL RD

Service No 01 | Serial # 111930 | Book/RT 124/0001410

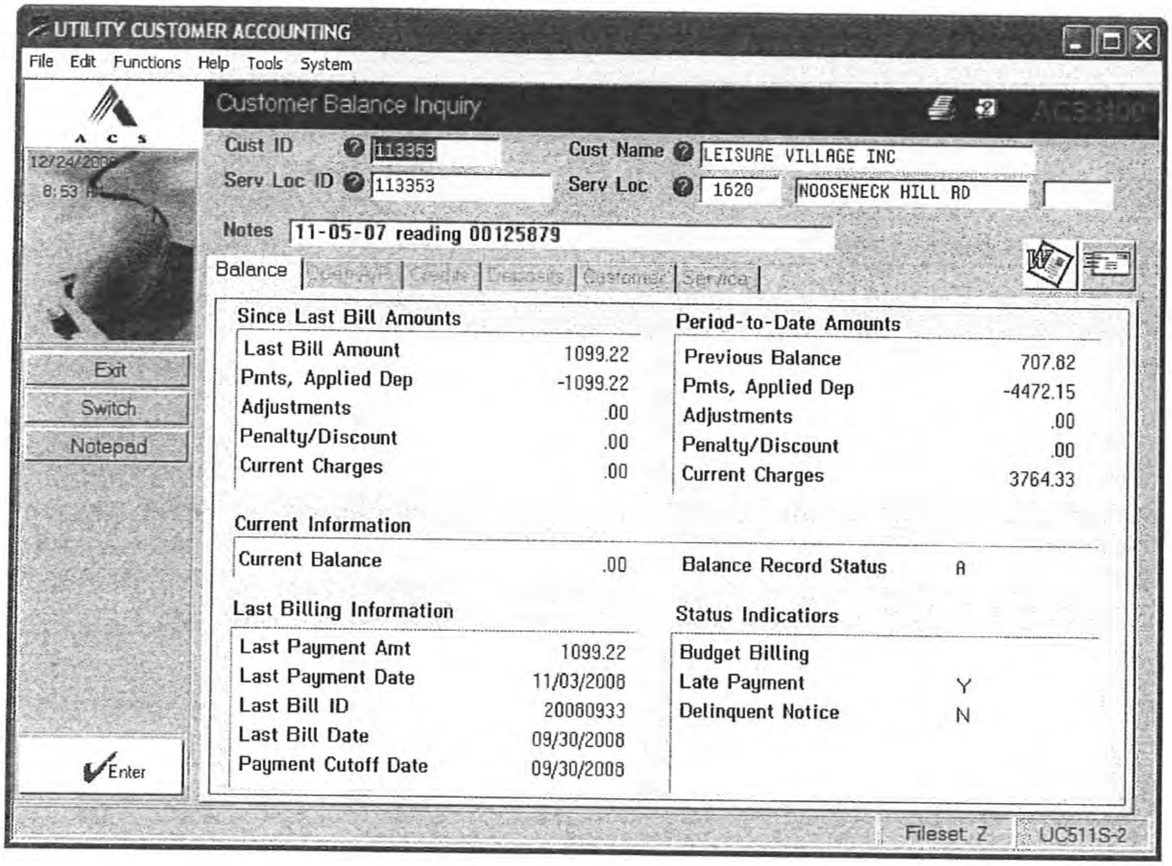
Balance | Open A/R | Credits | Deposits | Customer | Service

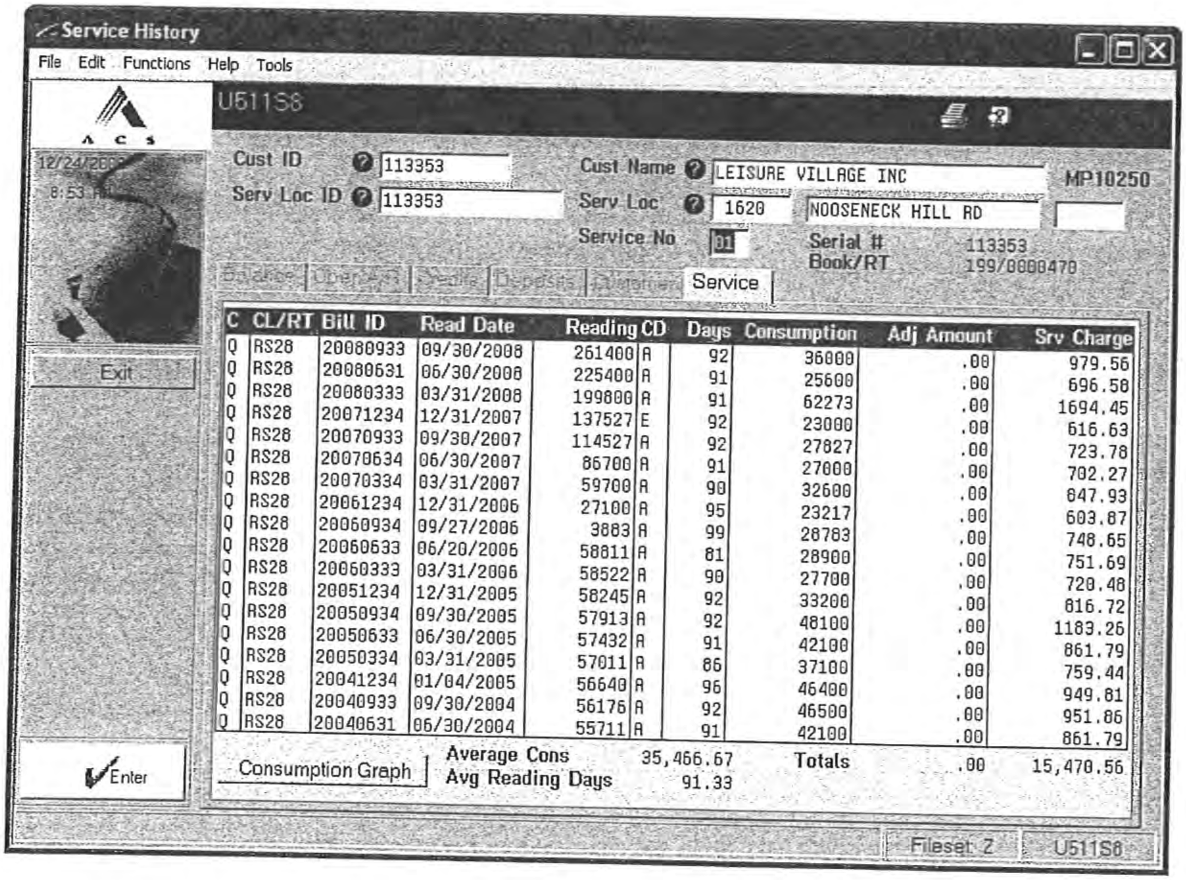
C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
N	IC01	20081031	10/31/2008	121600	A	108	2100	.00	79.59
N	IC01	20080731	07/15/2008	119500	A	110	8200	.00	310.78
N	IC01	20080430	03/27/2008	111300	A	91	3500	.00	132.65
N	IC01	20080132	12/27/2007	107800	A	90	3000	.00	113.70
N	IC01	20071031	09/28/2007	104800	A	80	2100	.00	76.08
N	IC01	20070731	07/10/2007	102700	A	103	5600	.00	202.89
N	IC01	20070430	03/29/2007	97100	A	80	3300	.00	119.56
N	IC01	20070131	01/08/2007	93800	A	95	3000	.00	108.69
N	IC01	20061031	10/05/2006	90800	A	86	6400	.00	231.87
N	IC01	20060731	07/11/2006	84400	A	95	2000	.00	72.46
N	IC01	20060430	04/07/2006	82400	A	86	4400	.00	159.41
N	IC01	20060131	01/11/2006	78000	A	91	1800	.00	64.24
N	IC01	20051031	10/12/2005	76200	A	98	1700	.00	60.21
N	IC01	20050731	07/06/2005	74500	A	93	1800	.00	53.39
N	IC01	20050430	04/04/2005	72700	A	76	1200	.00	34.21
N	IC01	20050131	01/18/2005	71500	A	92	2600	.00	74.13
N	IC01	20041030	10/18/2004	68900	A	102	2700	.00	76.98
N	IC01	20040731	07/08/2004	66200	A	69	1500	.00	42.77

Consumption Graph | Average Cons 3,161.11 | Avg Reading Days 91.39 | Totals .00 | 2,013.61

Exit | Enter | Fileset Z | U511S8

APPENDIX K


UTILITY CUSTOMER ACCOUNTING
File Edit Functions Help Tools System
Customer Balance Inquiry
Cust ID 113353
Cust Name LEISURE VILLAGE INC
Serv Loc ID 113353
Serv Loc 1620 NOOSENECK HILL RD
Notes 11-05-07 reading 00125879
Balance
Exit
Switch
Notepad
Enter
Since Last Bill Amounts
Last Bill Amount 1099.22
Pmts, Applied Dep -1099.22
Adjustments .00
Penalty/Discount .00
Current Charges .00
Period-to-Date Amounts
Previous Balance 707.82
Pmts, Applied Dep -4472.15
Adjustments .00
Penalty/Discount .00
Current Charges 3764.33
Current Information
Current Balance .00
Balance Record Status A
Last Billing Information
Last Payment Amt 1099.22
Last Payment Date 11/03/2008
Last Bill ID 20080933
Last Bill Date 09/30/2008
Payment Cutoff Date 09/30/2008
Status Indicators
Budget Billing
Late Payment Y
Delinquent Notice N
Fileset Z
UC511S-2



Service History

File Edit Functions Help Tools

U511S8

Cust ID 113353 Cust Name LEISURE VILLAGE INC MP10250

Serv Loc ID 113353 Serv Loc 1620 NOOSENECK HILL RD

Service No 01 Serial # 113353

Book/RT 199/0000470

Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
Q	RS28	20080933	09/30/2008	261400	A	92	36000	.00	979.56
Q	RS28	20080631	06/30/2008	225400	A	91	25600	.00	696.50
Q	RS28	20080333	03/31/2008	199800	A	91	62273	.00	1694.45
Q	RS28	20071234	12/31/2007	137527	E	92	23000	.00	616.63
Q	RS28	20070933	09/30/2007	114527	A	92	27827	.00	723.78
Q	RS28	20070634	06/30/2007	86700	A	91	27000	.00	702.27
Q	RS28	20070334	03/31/2007	59700	A	90	32600	.00	847.93
Q	RS28	20061234	12/31/2006	27100	A	95	23217	.00	603.87
Q	RS28	20060934	09/27/2006	3883	A	99	28783	.00	748.65
Q	RS28	20060633	06/20/2006	58811	A	81	28900	.00	751.69
Q	RS28	20060333	03/31/2006	58522	A	90	27700	.00	720.48
Q	RS28	20051234	12/31/2005	58245	A	92	33200	.00	816.72
Q	RS28	20050934	09/30/2005	57913	A	92	48100	.00	1183.26
Q	RS28	20050633	06/30/2005	57432	A	91	42100	.00	861.79
Q	RS28	20050334	03/31/2005	57011	A	86	37100	.00	759.44
Q	RS28	20041234	01/04/2005	56640	A	96	46400	.00	949.81
Q	RS28	20040933	09/30/2004	56176	A	92	46500	.00	951.86
Q	RS28	20040631	06/30/2004	55711	A	91	42100	.00	861.79

Consumption Graph Average Cons 35,466.67 Totals .00 15,470.56

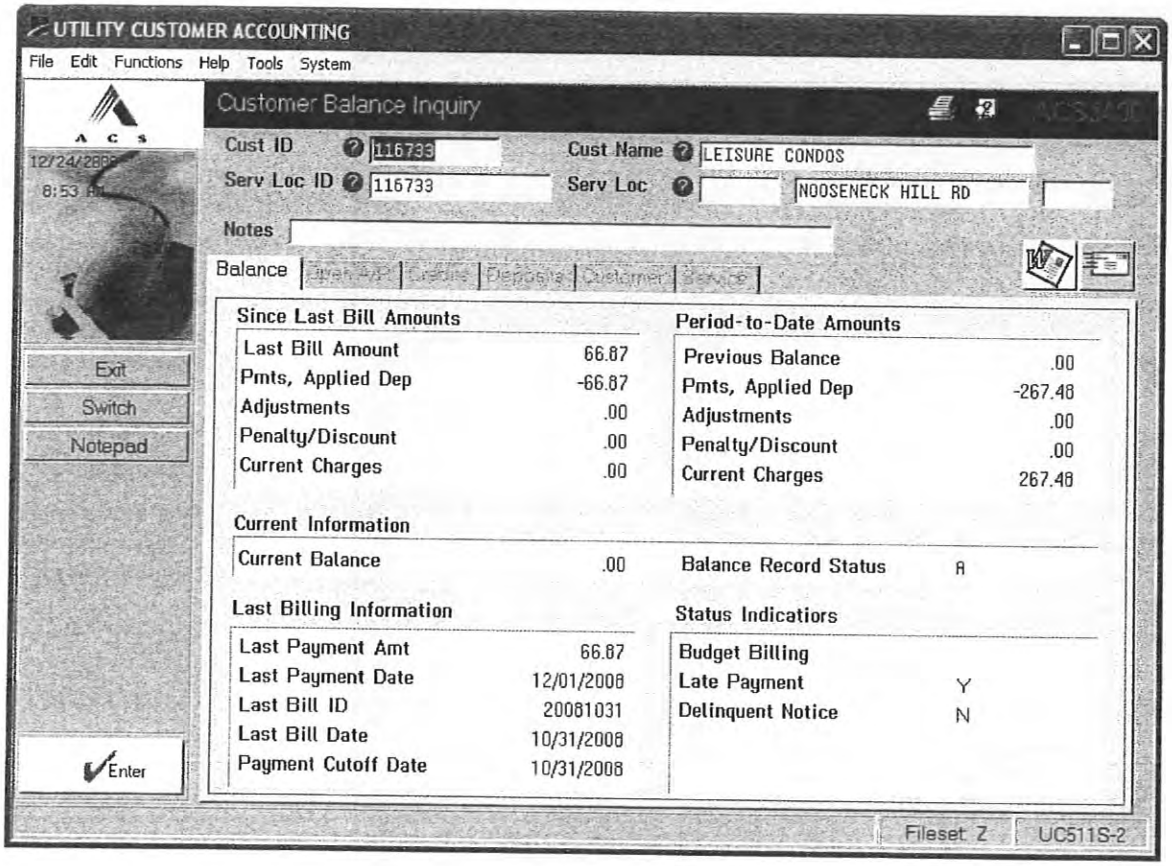
Avg Reading Days 91.33

Exit

Enter

Fileset: Z U511S8

APPENDIX K



UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Customer Balance Inquiry

12/24/2008
8:53 AM

Cust ID 116733 Cust Name LEISURE CONDOS

Serv Loc ID 116733 Serv Loc NOOSENECK HILL RD

Notes

Balance | Open A/R | Credits | Deposits | Customer | Service

Exit
Switch
Notepad
Enter

Since Last Bill Amounts

Last Bill Amount	66.87
Pmts, Applied Dep	-66.87
Adjustments	.00
Penalty/Discount	.00
Current Charges	.00

Period-to-Date Amounts

Previous Balance	.00
Pmts, Applied Dep	-267.48
Adjustments	.00
Penalty/Discount	.00
Current Charges	267.48

Current Information

Current Balance	.00	Balance Record Status	A

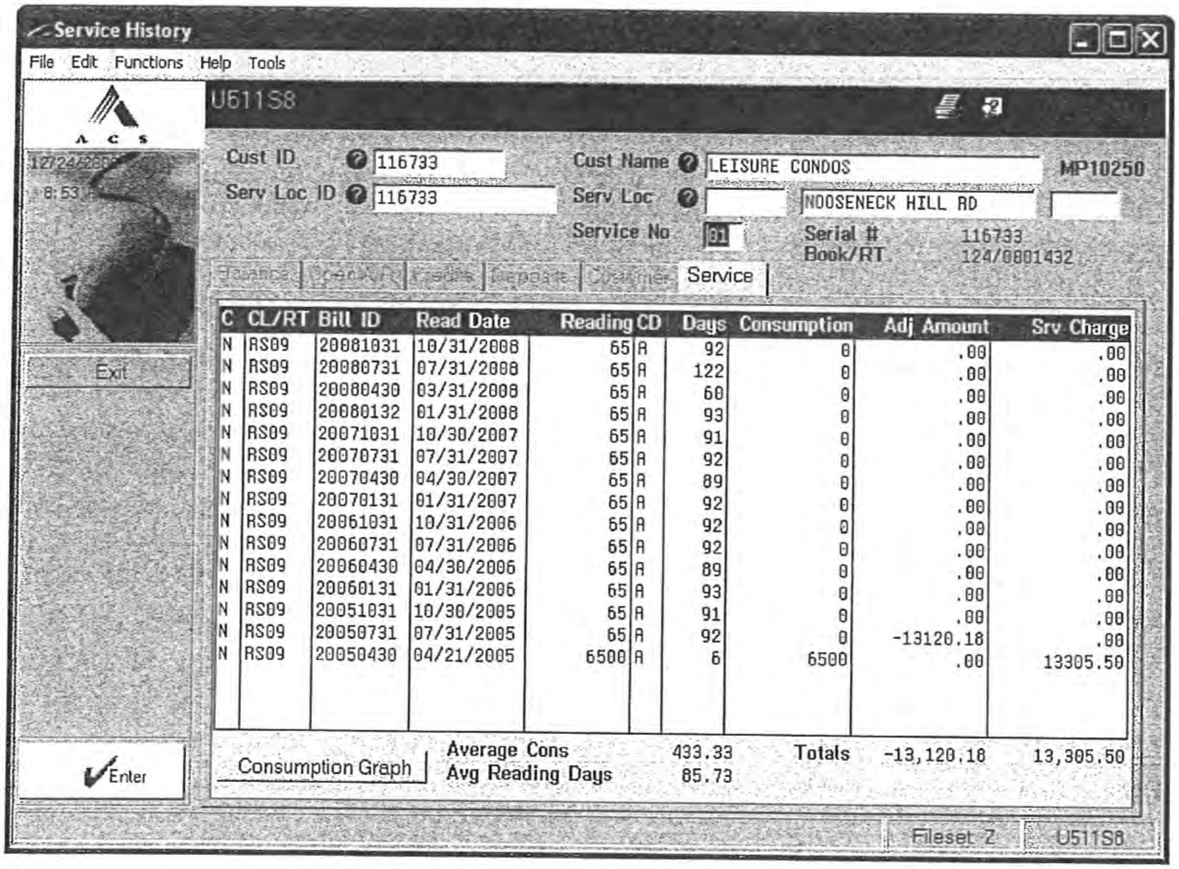
Last Billing Information

Last Payment Amt	66.87
Last Payment Date	12/01/2008
Last Bill ID	20081031
Last Bill Date	10/31/2008
Payment Cutoff Date	10/31/2008

Status Indicators

Budget Billing	
Late Payment	Y
Delinquent Notice	N

Fileset Z UC511S-2



Service History

File Edit Functions Help Tools

U511S8

Cust ID 116733 Cust Name LEISURE CONDOS MP10250

Serv Loc ID 116733 Serv Loc NOOSENECK HILL RD

Service No 01 Serial # 116733 Book/RT 124/0001432

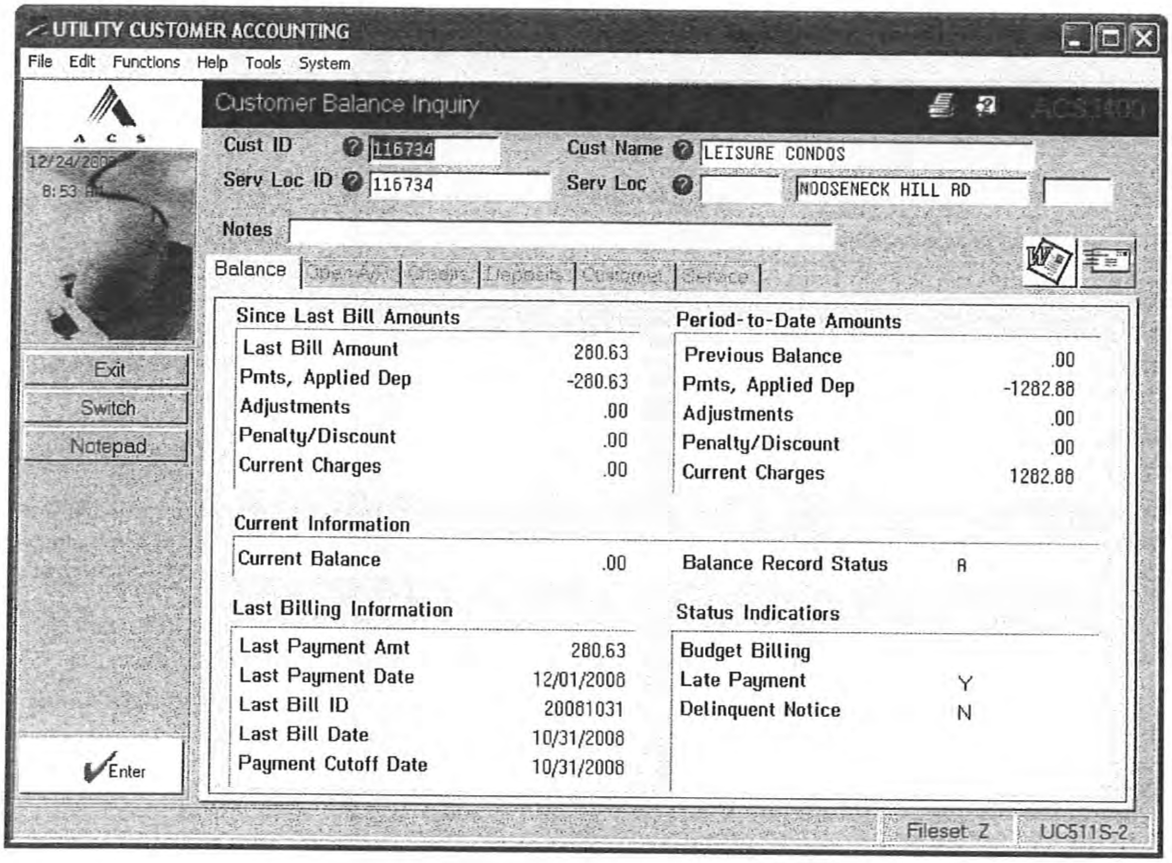
Balance | Open A/R | Credits | Deposits | Customer | Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
N	RS09	20081031	10/31/2008	65	A	92	0	.00	.00
N	RS09	20080731	07/31/2008	65	A	122	0	.00	.00
N	RS09	20080430	03/31/2008	65	A	60	0	.00	.00
N	RS09	20080132	01/31/2008	65	A	93	0	.00	.00
N	RS09	20071031	10/30/2007	65	A	91	0	.00	.00
N	RS09	20070731	07/31/2007	65	A	92	0	.00	.00
N	RS09	20070430	04/30/2007	65	A	89	0	.00	.00
N	RS09	20070131	01/31/2007	65	A	92	0	.00	.00
N	RS09	20061031	10/31/2006	65	A	92	0	.00	.00
N	RS09	20060731	07/31/2006	65	A	92	0	.00	.00
N	RS09	20060430	04/30/2006	65	A	89	0	.00	.00
N	RS09	20060131	01/31/2006	65	A	93	0	.00	.00
N	RS09	20051031	10/30/2005	65	A	91	0	.00	.00
N	RS09	20050731	07/31/2005	65	A	92	0	-13120.18	.00
N	RS09	20050430	04/21/2005	6500	A	6	6500	.00	13305.50

Consumption Graph Average Cons 433.33 Avg Reading Days 85.73 Totals -13,120.18 13,305.50

Exit Enter Fileset 2 U511S8

APPENDIX K



UTILITY CUSTOMER ACCOUNTING

File Edit Functions Help Tools System

Customer Balance Inquiry

Cust ID 116734 Cust Name LEISURE CONDOS

Serv Loc ID 116734 Serv Loc NOOSENECK HILL RD

Notes

Balance | Open A/R | Credits | Deposits | Customer | Service

Exit

Switch

Notepad

Enter

Since Last Bill Amounts

Last Bill Amount	280.63
Pmts, Applied Dep	-280.63
Adjustments	.00
Penalty/Discount	.00
Current Charges	.00

Period-to-Date Amounts

Previous Balance	.00
Pmts, Applied Dep	-1282.88
Adjustments	.00
Penalty/Discount	.00
Current Charges	1282.88

Current Information

Current Balance	.00
Balance Record Status	A

Last Billing Information

Last Payment Amt	280.63
Last Payment Date	12/01/2008
Last Bill ID	20081031
Last Bill Date	10/31/2008
Payment Cutoff Date	10/31/2008

Status Indicators

Budget Billing	
Late Payment	Y
Delinquent Notice	N

Fileset Z UC511S-2

Service History

File Edit Functions Help Tools

U511S8

Cust ID 116734 Cust Name LEISURE CONDOS MP10250

Serv Loc ID 116734 Serv Loc NOOSENECK HILL RD

Service No 01 Serial # 116734

Book/RT 124/0001434

Balance | Open A/R | Credits | Deposits | Customer | Service

C	CL/RT	Bill ID	Read Date	Reading	CD	Days	Consumption	Adj Amount	Srv Charge
N	RS05	20081031	10/31/2008	7800	A	108	7000	.00	265.30
N	RS05	20080731	07/15/2008	7100	A	110	10000	.00	379.00
N	RS05	20080430	03/27/2008	6100	A	91	8000	.00	303.20
N	RS05	20080132	12/27/2007	5300	A	90	7000	.00	265.30
N	RS05	20071031	09/28/2007	4600	A	81	7000	.00	253.61
N	RS05	20070731	07/09/2007	3900	A	102	8000	.00	289.84
N	RS05	20070430	03/29/2007	3100	A	80	6000	.00	217.38
N	RS05	20070131	01/08/2007	2500	A	95	7000	.00	253.61
N	RS05	20061031	10/05/2006	1800	A	86	3000	.00	108.69
N	RS05	20060731	07/11/2006	1500	A	95	3000	.00	108.69
N	RS05	20060430	04/07/2006	1200	A	86	3000	.00	108.69
N	RS05	20060131	01/11/2006	900	A	91	3000	.00	107.07
N	RS05	20051031	10/12/2005	600	A	73	1000	.00	35.42
N	RS05	20050731	07/31/2005	500	A	92	660	-1199.15	19.58
N	RS05	20050430	04/21/2005	4340	A	6	4340	.00	1237.33

Consumption Graph

Average Cons 5,200.00 Totals -1,199.15 3,952.71

Avg Reading Days 85.73

Exit

Enter

Fileset Z U511S8

APPENDIX K

Appendix L
Town Owned Pump Station Flow Records

	Sandy Bottom Road PS			Pulaski Street Flume			Tiogue Ave Meter Pit (Woodland Manor)			Flat River Road PS		
Date	Totalizer Reading	GPD	Notes	Totalizer Reading	GPD	Notes	Totalizer Reading	GPD	Notes	Totalizer Reading	GPD	Notes
6/30/2015	150,121,000	318,276		1,355,617,000	1,027,172		263,341,440	16,728		429,000	1,621	
6/1/2015	140,891,000	249,355		1,325,829,000	961,839		262,856,320	3,034		382,000	1,645	
5/1/2015	133,161,000	212,400		1,296,012,000	1,021,133		262,762,260	14,835		331,000	NA	
4/1/2015	126,789,000	118,133		1,265,378,000	1,019,100		262,317,220	42,727		NA	NA	
3/2/2015	123,245,000	119,115		1,234,805,000	931,328		261,035,400	17,215		NA	NA	
12/31/2014	115,979,000	205,433		1,177,994,000	946,500		259,985,300	22,587		NA	NA	
12/1/2014	109,816,000	114,032		1,149,599,000	1,208,626		259,307,700	41,139		NA	NA	
10/31/2014	106,281,000	70,767		1,112,131,600	425,723		258,032,380	63,875		NA	NA	
10/1/2014	104,158,000	80,517		1,099,359,900	1,115,997		256,116,120	59,161		NA	NA	
9/2/2014	101,823,000	113,969		1,066,996,000	935,688		254,400,440	51,532		NA	NA	
8/1/2014	98,176,000	108,194		1,037,054,000	960,194		252,751,420	43,712		NA	NA	
7/1/2014	94,822,000	131,345		1,007,288,000	967,448		251,396,360	42,330		NA	NA	
6/2/2014	91,013,000	115,875		979,232,000	946,000		250,168,800	NA		NA	NA	
5/1/2014	87,305,000	216,167		948,960,000	1,075,100		NA	NA		NA	NA	
4/1/2014	80,820,000	455,000		916,707,000	953,688		NA	NA		NA	NA	
2/28/2014	66,260,000	351,714		886,189,000	953,893		NA	NA		NA	NA	
1/31/2014	56,412,000	367,034		859,480,000	862,069		NA	NA		NA	NA	
1/2/2014	45,768,000	433,806		834,480,000	NA		NA	NA		NA	NA	
12/2/2013	32,320,000	138,258		*819,013,000*	NA	*Meter failed and is being repaired.*	NA	NA		NA	NA	
11/1/2013	28,034,000	108,742		*819,013,000*	NA	*Meter failed and is being repaired.*	NA	NA		NA	NA	
10/1/2013	24,663,000	228,750		*818,874,000*	NA	*Meter failed and is being repaired.*	NA	NA		NA	NA	
8/30/2013	17,343,000	216,966		*818,874,000*	NA	*Meter failed and is being repaired.*	NA	NA		NA	NA	
8/1/2013	11,051,000	*NA*	*Flow Meter Reset*	808,172,000	707,258		NA	NA		NA	NA	
7/1/2013	1,004,595,000	274,357		786,247,000	518,393		NA	NA		NA	NA	
6/3/2013	996,913,000	181,485		771,732,000	431,636		NA	NA		NA	NA	
5/1/2013	990,924,000	218,600		757,488,000	471,733		NA	NA		NA	NA	
4/1/2013	984,366,000	268,290		743,336,000	523,258		NA	NA		NA	NA	
3/1/2013	976,049,000	191,586		727,115,000	472,552		NA	NA		NA	NA	
1/31/2013	970,493,000	214,935		713,411,000	450,484		NA	NA		NA	NA	
12/31/2012	963,830,000	166,964		699,446,000	450,429		NA	NA		NA	NA	
12/3/2012	959,155,000	155,455		686,834,000	430,030		NA	NA		NA	NA	
10/31/2012	954,025,000	132,367		672,643,000	425,100		NA	NA		NA	NA	
10/1/2012	950,054,000	127,333		659,890,000	388,000		NA	NA		NA	NA	
9/28/2012	949,672,000	123,750		658,726,000	425,750		NA	NA		NA	NA	
9/4/2012	946,702,000	144,029		648,508,000	444,286		NA	NA		NA	NA	
7/31/2012	941,661,000	153,621		632,958,000	443,793		NA	NA		NA	NA	
7/2/2012	937,206,000	214,000		620,088,000	462,333		NA	NA		NA	NA	
6/29/2012	936,564,000	225,286		618,701,000	223,821		NA	NA		NA	NA	
6/1/2012	930,256,000	NA		612,434,000	NA		NA	NA		NA	NA	
Average		196,376	Note 1		714,556			34,906			1,633	
Maximum		455,000	Note 2		1,208,626	Note 2		63,875	Note 2		1,645	Note 2

Notes

1. Each pump at the Sandy Bottom Road PS is capable of 1,800 gpm (2,592,000 gpd) max capacity.
2. Maximum flows are maximum flow during the time period of this table.

Weston & Sampson

5 Centennial Drive, Peabody, MA 01960 (HQ)
Tel: 978.532.1900

Town of Coventry, Rhode Island
W&S Job No. 2140605

September 8, 2016

Mr. Arthur G. Zeman, P.E.
Principal Engineer
RIDEM Office of Water Resources
235 Promenade Street, 2nd Floor
Providence, Rhode Island 02908-5767

Re: Town of Coventry Facilities Plan Update (DEM File #16-C)
Response to Comments (2nd Response)

Dear Mr. Zeman:

Per discussions with you related to the ownership of the Woodland Manor capacity at the West Warwick Treatment Plant, Weston & Sampson, Inc. has updated the Facilities Plan Update (FPU) for the Town of Coventry. Enclosed are excerpts from the FPU showing the updated changes (highlighted in yellow).

Should you have any questions or require additional information, please contact me at 1-800-SAMPSON Ext. 2421.

Very truly yours,

WESTON & SAMPSON, INC.

Tim DeGuglielmo
Project Manager

Enclosure
cc: Graham Waters, Town Manager, Coventry

1 EXECUTIVE SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

1.0 General

There is currently only a limited wastewater collection system existing in the Town of Coventry. Approximately 97 percent of the residences in Coventry rely on onsite wastewater treatment systems (OWTSs) for treatment and disposal of wastewater.

Previous wastewater planning studies for Coventry recommended construction of wastewater collection facilities, with transmission to the regional wastewater treatment facility (WWTF) in West Warwick for treatment, to serve much of the densely populated eastern portion of Town. OWTS problems in the eastern portions of Town are common. In 1984 the Town executed an inter-municipal agreement (IMA) with West Warwick reserving an average daily flow of 2.25 million gallons per day (MGD) of wastewater capacity in their regional WWTF. In December 2013, the Town acquired a pump station and forcemain that were previously privately owned by the Woodland Manor Estates development. This pump station/forcemain serves properties whose capacity fall under a separate 200,000 gallons per day flow allocation in the West Warwick WWTF (future IMA revisions will be needed to address allocating this capacity to the Town).

Since the installation of the main interceptor, which collects and transports wastewater to the WWTF, the Town has begun to expand their collection system to congested and environmentally sensitive areas.

The purpose of this Facility Plan (FP) Update is to investigate and address the following:

1. Update of the projected wastewater flows for the 20-year (2035) and 50-year (2065) planning periods.
2. Provide review and evaluation of need for wastewater collection facilities, including:
    a. delineation of problem areas,
    b. determination of OWTS rehabilitation (or repair) feasibility, and
    c. prioritization of sewer needs areas.
3. Examine relevant wastewater project financing options available and feasibility of implementation.

1.1 Findings

Chapters 3 and 4 of this Facilities Plan examine the current and expected future conditions in eastern Coventry, with specific interest in the treatment and disposal of wastewater. The investigations performed included review of all available relevant documents. The results of the OWTS survey (**Appendix A**) confirms a preponderance of OWTS problems in several areas of eastern Coventry. These areas have been delineated and were prioritized (Phase I) for sewering in the 1995 FP and subsequent reaffirmations/updates. The conclusion reached through these examinations is that the current system of wastewater disposal through onsite wastewater treatment systems (OWTSs) is not an acceptable long term solution in some areas of eastern Coventry. Continued operation of OWTSs may increase pollutant loads to ground and surface and adjacent parcels along Hopkins Hill Road. The Phase I system, when completed, will also directly service approximately 933 properties, including many multi-family and commercial properties. The capital cost associated with the remaining Phase I construction program (Contracts 8, 9 and 11) is approximately $6,681,000 (2015 dollars). Chapter 7 in this report outlines the implementation necessary to maintain and continue the expansion of the existing sewer system.

The Phase II sewer program could be implemented both during and following completion of Phase I, depending on economic feasibility and need. Phase II consists of approximately 203,400 feet of interceptor and lateral sewers, and eight wastewater pump stations with approximately 6,375 feet of forcemains. The Phase II system consists mainly of lateral (collector) sewers, and when completed will service approximately 3,846 properties (in addition to those served by Phase I). The total capital cost associated with Phase II is approximately $51,662,000 (2015 dollars). Due to its magnitude, this phase would most likely be constructed over an eight to ten year period.

The Phase III sewer program could be implemented both during and after completion of the Phase II system, depending on economic feasibility and need. Phase III consists of approximately 45,150 feet of lateral sewers, and three wastewater pump stations with approximately 2,800 feet of forcemains. The Phase III system would service approximately 1,064 properties (in addition to those served by Phases I and II) when completed. The total construction cost associated with Phase III is approximately $11,554,000 (2015 dollars). At this time, construction of the Phase III system may not commence for eight to ten years. Sewers under this phase would likely be constructed on an area by area (contract) basis, as needs arise.

Once constructed, administration, operation and maintenance of the wastewater collection system should be provided by the Town of Coventry. This will likely continue to initially include the hiring of private contractors to provide sewer system operation and maintenance services. The eventual establishment of a Coventry Sewer Department, under the current Public Works Department, is also a possibility. Included in the sewer system administration tasks would be the billing of Coventry sewer users.

Portions of Town to the north and west of the areas to be sewered will continue to be served by OWTS. Septage from the periodic pumping of these OWTSs should be disposed of at the West Warwick Regional WWTF, or Cranston WWTF. In these areas, and more importantly in areas where OWTS problems are prevalent, future provisions should be made for a public information program on the proper care and maintenance of OWTSs.

1.3 West Warwick Regional Sewer System

Wastewater and septage generated in Coventry will be transported to the West Warwick Regional Wastewater Treatment Facility (WWTF). Coventry currently has a reserve capacity of 2.25 mgd (average daily flow) in the WWTF. This is sufficient to cover the design year 2035 flow of 1.985 mgd from all phases outlined in the recommended sewer program. As of 2014, Coventry is contributing about 0.226 mgd (average daily flow) to the West Warwick WWTF (not including flows from the Woodland Manor sewer system which total 0.065 mgd, and East Greenwich/Amgen Pharmaceuticals). To date, Coventry has paid approximately $10.9 million (in addition to the amount paid for the acquisition of the Woodland Manor infrastructure) for this capacity in West Warwick program. The cost of the sewer projects will be paid for through assessments to sewered properties. The Town has established the method of assessment in their sewer use ordinance. This method is summarized in **Chapter 7**.

1.5 Summary

The conclusions reached from this FP Update echo those conclusions from the 1995 FP, the 2003 FP Reaffirmation and the 2010 FP Update. It is recommended that the existing sewer system be expanded to serve portions of eastern Coventry that can no longer rely on OWTSs for long term wastewater management. The plan recommended herein, however, revises the previous recommended sewer plan to provide flow allocations in areas where future development will require additional wastewater management capacity and/or add additional areas based on the additional capacity available for the Woodland Manor pump station/forcemain acquisition. This plan will still meet the need for sewering of the more densely populated areas within eastern Coventry, while also allowing the Town to provide sewer capacity for proposed developments, which are important to the local economy.

The recommended plan should be adopted, and implementation of the remainder of the Phase I sewer construction program should continue, as outlined in Chapter 7. This plan will result in a fully functioning sewer system which will serve Coventry through the year 2035 and beyond.

In order to remain eligible for State and/or Federal funding assistance, this Wastewater Treatment Facilities Plan should be reaffirmed every five years and should be updated or amended as necessary when significant changes occur that might otherwise impact the recommendations outlined in this report.

O:\Coventry RI\2140605 - 2014 Facilities Plan Update\2014 Update Report\Section 1 - Executive Summary.docx supporting their designated uses due to pollution. At the time of this Facilities Plan Update, all of the Pawtuxet River in Coventry was able to support all designated uses and was deemed fishable/swimmable.

Although there seems to be a significant increase in the water quality in Coventry, there is no way to estimate the actual number of direct wastewater and stormwater discharges in Coventry without a more comprehensive study.

3.6 Existing Wastewater Collection and Treatment System

3.6.1 West Warwick Regional Wastewater Treatment Facilities

As noted in Chapter 2 of this report, the State's 208 Areawide Water Quality Management Plan (WQMP) recommended that wastewater from Coventry be treated at the West Warwick Regional Wastewater Treatment Facility. This contradicted the previous recommendations for an independent Coventry Wastewater Treatment Facility made by earlier reports ("Preliminary Engineering Survey and Report on Sewerage and Sewage Treatment for the Town of Coventry", Fenton G. Keyes Associates, November 1966, and "Facilities Plan for Wastewater Collection and Treatment Facilities", C.E. Maguire, Inc., 1977). The recommendation of the 208 study has since been implemented, and Coventry is now a member community in the West Warwick regional system.

In 1984, the Town of Coventry signed an Inter-Municipal Agreement (IMA) with the Town of West Warwick, which provided 2.25 mgd (average daily flow) of capacity for Coventry in the West Warwick Regional Wastewater Treatment Facility.

In December 2013, the Town of Coventry acquired the Woodland Manor Estates pump station and forcemain. The capacity allocation in the West Warwick system for the Woodland Manor pump station/forcemain is 0.2 mgd. Future IMA revisions will be needed to address allocating the Woodland Manor capacity to the Town, however this additional capacity is not required for projected wastewater flows until 2065, see **Table 4-5** and **Appendix B**.

The West Warwick Regional Wastewater Treatment Facility is located off Pontiac Avenue, in the northeast corner of West Warwick. The treatment facility discharges treated effluent to the Pawtuxet River. The facility can discharge an average daily flow of 10.5 mgd (peak flow of 25.34 mgd). West Warwick's facility consists of an activated sludge treatment process, along with a biological activated filter and UV disinfection.

The West Warwick facility currently has the equipment to properly accept septage for treatment. However, at this time no septage is accepted at the facility. The IMA between West Warwick and Coventry has a stipulation that would allow Coventry to dispose of septage at the facility if it were to be accepted from any other communities (including West Warwick).

Specific information on the existing and proposed West Warwick Regional Wastewater Treatment Facilities is contained in the West Warwick Wastewater Facilities Plan.

Development Corp. entered into an agreement with West Warwick to allow the discharge of 200,000 gallons per day to the West Warwick system. Since the construction of the Woodland Manor force main, the pipeline owners have allowed several pressure connections along the length of Tiogue Avenue. These connections have typically been to commercial establishments with severe OWTS problems. Such connections were approved by both West Warwick and Coventry (whose plant capacity was utilized for the connections).

Up until December 2013, this was a privately owned and operated sewer system, separate from the Town of Coventry system, and designed to provide sewer service to an area within eastern Coventry. In December 2013, the Town of Coventry acquired the Woodland Manor Estates pump station and forcemain (future IMA revisions will be needed to address allocating this capacity to the Town).

Two assessments had been performed on the pump station and forcemain, and were reviewed by the Town prior to the acquisition of the infrastructure. The assessment performed by DiPrete Engineering can be found in **Appendix K**. The other assessment performed by Fuss & O'Neill is with the Town's Engineer. These assessments outlined recommended repairs and upgrades to the pump station. It is recommended the Town perform the repairs/upgrades as part of their yearly infrastructure maintenance plan.

In addition, Weston & Sampson Services has been contracted by the Town to operate and maintain the system since the acquisition. Flow records from the station can be found in **Appendix L**.

3.6.2.h Contract 03-01

The Contract 03-01 sewer project was constructed in 2004 by the Town of Coventry to service portions of Tiogue Avenue and Washington Street. This contract connected the system to the Sandy Bottom Road pump station, built under Contract 03-02 by the Town of Coventry. The connection to the pump station under the Pawtuxet River was by a depressed sewer made up of a series of ductile iron pipes (3 barrels - one 16-inch and two 12-inch pipes). Two 12-inch ductile iron force mains extend from the pump station to the intersection of Washington Street and Knotty Oak Road (approximately 2,500 feet). A 30-inch PVC gravity sewer pipe extends from the intersection of Washington Street and Knotty Oak Road to the intersection of Washington Street and Pulaski Street (approximately 6,100 feet). A 24-inch PVC gravity sewer extends from the pump station to approximately 3,000 feet west along Tiogue Avenue. This line connected to the previously "dry" sewer line installed in Hopkins Hill Road, and allowed for the activation of that sewer line.

As part of this project a flume/flow meter vault was installed to monitor and track flows from the interceptor into West Warwick. These flow records can be found in **Appendix L**. The existing telephone line communications system to send out the flow meter readings has had issues in the past. It is recommended to perform an evaluation on the communication system to see if a more suitable alternative (i.e. radio, high speed internet) is available.

3.6.3 Existing Wastewater Flows

As described above, the Town of Coventry owns approximately 2.25 mgd of total capacity in the West Warwick Wastewater Treatment Facility. This average daily flow capacity was based on the Year 2000 projections in the 1981 Amended Facilities Plan. The current estimated wastewater flow from Coventry to the West Warwick sewer system is approximately 291,000± gallons per day (gpd) average daily flow (including 65,000± gpd related to the Woodland Manor system), as shown in **Table 3-6**. The existing flows are based on of KCWA water use records. This is a conservative value, as it would be expected that sewer flows would typically represent 80% to 90% of the parcels water use. This wastewater flow also does not include flows from the Amgen facility, as they do not count against Coventry's capacity allocation in West Warwick. The present peak flow from Coventry can therefore be estimated as 1,367,000± gpd using a peaking factor of 4.7 (see **Figure 3-12**).

The Town has a total of five wastewater flowmeters located in the sewered areas. Data from these flowmeters is included in **Appendix L**. These flowmeter locations are as follows:

- Pulaski Street Flow Meter: This flowmeter is located on Pulaski Street near the West Warwick Town Line. It measures flow from the Contract 03-01 interceptor that runs east on Washington Street.

- Sandy Bottom Road Pump Station Flow Meter: This flowmeter is located on the discharge piping in the Sandy Bottom Road Pump Station (Contract 03-02). This flowmeter measures all flow pumped from the station.

- Industrial Drive Pump Station Flow Meter: This flowmeter is located on the discharge piping in the Industrial Drive Pump Station (Contract 7 & 7A). This flowmeter measures all flow pumped from the station.

- Woodland Manor Forcemain Flow Meter: This flowmeter is located on the Woodland Manor Forcemain, on Tiogue Avenue near the intersection of Darton Street (near #354 Tiogue Avenue). This flowmeter measures all flow pumped from the station, in addition to any ancillary parcels that are connected to the Woodland Manor Forcemain.

- Highlands at Hopkins Hill Condo Flowmeter: This flowmeter is located on Hopkins Hill Road near the intersections of Dante Drive and Enzo Drive. This flowmeter measures flow from the Highlands at Hopkins Hill Condo Development. This flowmeter was installed for billing purposes, because the detached condos do not have separate water meters. The Town typically bills sewer use charges based on water meter readings from KCWA.

industrial facility has connected into Coventry's sewer system and "mothballed" the WWTF. Further discussions on remaining WWTF infrastructure and potential use to the Town of Coventry remain unresolved.

2. West Warwick Regional Wastewater Treatment Facility

As discussed above, treatment of Coventry's wastewater at the West Warwick regional WWTF is a principal recommendation of the 208 WQMP. The 1981 Amended FP and the 1982 FP Supplement also recommended this treatment option.

Based on the previous 1995 FP, 2003 FP Reaffirmation and 2010 FP Update, the Town of Coventry has finished construction on a limited municipal sewer system. This system includes interceptor and lateral piping that collects wastewater flow from portions of the planning areas, including residences, businesses and institutions, and transports this flow to the West Warwick Wastewater Treatment Plant (WWTP).

To allow this discharge into the West Warwick sewer system, and eventually the WWTP, Coventry entered into an intermunicipal agreement (IMA) with West Warwick (originally dated November 28, 1994). The agreement included provisions for Coventry to reimburse West Warwick for capital costs related to the WWTF capacity and collection system expansions required to allow service to Coventry. West Warwick then proceeded with upgrading their WWTF to provide secondary treatment levels, and expanding the treatment plant's capacity to allow connection of the Coventry system. West Warwick also increased the capacity of their interceptors to allow the transmission of Coventry's wastewater to the regional WWTF. The IMA allows a certain amount of flow (2.25 mgd) and pollutant loading to be discharged into the West Warwick system by Coventry. All flow treated by the West Warwick WWTF is discharged into the Pawtuxet River.

In December 2013, the Town of Coventry acquired the Woodland Manor Estates pump station and forcemain. The capacity allocation in the West Warwick system for the Woodland Manor pump station/forcemain is 0.2 mgd. Future IMA revisions will be needed to address allocating the Woodland Manor capacity to the Town, however this additional capacity is not required for projected wastewater flows until 2065.

Since construction of portions of the planned sewer system interceptors has been completed based upon recommendations set forth in the 1995 FP, 2003 FP Reaffirmation and 2010 FP Update, planned extension of this sewer system to serve the planning areas has been evaluated as part of this FP Update. Careful considerations were made so that the current and table, and as discussed in Chapter 4, the 'no action' option is estimated to have the greatest detrimental long-term effect on the area, mostly by way of water quality and quality of life. The probable effect of a public education program, or an OWTS rehabilitation program, alone would be similar to the 'no action' option, though lesser in magnitude, and would likely result in some minor short-term construction related impacts. The effects of a sewer installation program on the project area would have significant short-term construction related impacts. Such a program would, however, result in significant long-term benefits to the community, both in water quality and in quality of life.

5.8 Financial Considerations for Alternatives

The final consideration for selecting an appropriate option for addressing the planning area OWTS problems is project cost. From a public opinion standpoint, this is perhaps the most important consideration. The question of the affordability of a project most often determines whether it is eventually implemented, or falls by the wayside. In Coventry past initiatives based on recommendations from prior FPs have failed, mostly due to real or perceived financial impacts of the proposed sewer construction program. Therefore, financial considerations will continue to play a major role in selecting the best available option.

For the purposes of this analysis, a planning period of 20 years has been used. Analyses include an estimated present worth value for each option discussed.

5.8.1 No Action

The 'no action' alternative is always the most advantageous from an initial cost viewpoint. Since this option requires no initial capital input by the Town, the capital cost associated with it (other than for individual OWTS care and maintenance) is negligible. Actual annual costs associated with this option would be borne by individual property owners, and are difficult to predict. Such costs would include OWTS maintenance pumping, and repair and potential replacement of failing OWTSs. Based on the average system pumping criteria of one pump-out per three years used to estimate septage volumes in Chapter 4, and an average pump-out charge of $200 as determined from previous Septage Hauler Interviews, the minimum cost of this option is approximately $67 per home per year.

In addition, costs already expended by the Town for a sewer system would be wasted if this option was selected. To date these costs include approximately $10.9 million (in addition to the amount paid for the acquisition of the Woodland Manor infrastructure), for capacity in the West Warwick sewer system and WWTF upgrades, and approximately $20.6 million for installation of existing pump station, interceptor and lateral sewers. Unfortunately, selection of the `no action' alternative provides no wastewater management benefit to the Town. Where significant water quality and public health concerns currently exist, this is not an acceptable alternative.

limited OWTS failures, this option is cost effective, but could be considered equivalent to the 'no action' option, since OWTS reconstruction can be left to the individual property owner. For areas where a significant percentage of existing OWTS systems are failing, this option is not as acceptable, since the costs for rehabilitating many systems is significant, and may approach the cost of lateral sewer installation.

5.8.5 Wastewater Collection and Treatment System

In many areas, the installation of a wastewater collection system is the only reasonable alternative for permanently ending the chronic OWTS failure problems.

5.8.5.a Sewer Interceptor System

The previous 1995 FP and 2010 FP Update outlined the three most logical options for proposed sewer interceptor systems. The option previously recommended and constructed is briefly described below. The original interceptor plan from the 1995 FP is included in **Figure 5-1** (Note that since the 1995 FP and 2010 FP Update some of the interceptors have been constructed, see **Figure 3-10** for the current existing interceptors):

Central Pumping Station at Tiogue Avenue and Washington Street Interceptor: This option included constructing a pump station on Sandy Bottom Road. A new force main was installed on Sandy Bottom Road that discharges to a gravity interceptor at the approximate intersection of Washington Street and Knotty Oak Road. This gravity interceptor would then travel east along Washington Street to the intersection of Quidnick Avenue where it would then follow an abandoned railroad bed to Whitford Street and down Pulaski Street to the West Warwick Town boundary.

This option was selected in the previous report based on the proposed benefits and the project's cost effectiveness. Based on this recommendation of the 1995 FP, this option, including the Sandy Bottom Road Pump Station, forcemain and Washington Street interceptor to the West Warwick Town boundary were constructed.

In December 2013, the Town of Coventry acquired the Woodland Manor Estates pump station and forcemain. With the existing pump station and forcemain infrastructure already being installed, there is potential to use this pump station/forcemain to sewer adjacent areas previously eliminated or deemed to be not cost effective to sewer due to location (i.e. Planning Area N/N-1). Also, as portions of the forcemain may be flowing under gravity conditions, further investigation should be made to assess the feasibility of using portions of Woodland Manor force main to service parcels along Tiogue Avenue where collection sewers have yet to be constructed. Future IMA revisions will be needed to address allocating the Woodland Manor capacity to the Town prior to any of these potential projects being constructed, however this additional capacity is not required for projected wastewater flows until 2065, see **Table 4-5** and **Appendix B**.

In the 2003 FP Reaffirmation, additional wastewater treatment capacity was allocated for two proposed developments (Pine Ridge Subdivision and Center of New England) that would significantly change the original assumption for sewer flow for the parcels. Due to this additional wastewater allocation need, Planning Areas (AA and AB) with less need for sewering were removed and instead it was recommended to continue the utilization of the existing OWTSs.

In the 2010 FP Update, additional wastewater treatment capacity was allocated for multiple proposed developments that significantly changed the original assumption for sewer flow for the parcels, and two industrial properties (Clariant Corporation and Rhodes Technologies) that were granted connection to the system, that previously had a private WWTF and were unaccounted for in previous FP's allocated wastewater treatment capacity. As part of the 2010 FP Update, Planning Areas AF, AD, Y and portions of Planning Areas AE, N, O, X and Z with less need for sewering were removed and instead it was recommended to continue the utilization of the existing OWTSs.

The Town's wastewater capacity per their existing IMA with West Warwick, provides the Town with a total wastewater treatment capacity of 2.25 mgd in the West Warwick system. Future IMA revisions will be needed to address officially allocating the 0.2 mgd of the Woodland Manor capacity to the Town, however this additional capacity is not required for projected wastewater flows until 2065, see **Table 4-5** and **Appendix B**.

As part of the selected plan areas adjacent to the Woodland Manor pump station and forcemain that were previously ruled out or eliminated due to conventional sewer construction feasibility were analyzed with regards to this recently acquired infrastructure. Also, a small area to the southwest of Planning Area N that was not included in the original "sewered" area plan was analyzed to determine the potential need for sewering.

6.1.2 Revised Recommended Plan

The revised recommended revisions to the 2010 FP Update sewering plan are described below and include the addition of properties in Planning Area N previously removed in previous FP Update and inclusion of an area to the southwest of Planning Area N that was not originally included in the original "sewered" area plan, but is in a location that was determined to have a need for sewering.

Information collected for each Planning Area to determine sewer needs is summarized in **Table 6-1**. Based upon this information, a new recommended sewer plan can be established. **Figure 6-1** shows this revised sewer plan, and the areas that are recommended for removal. It should be noted that the full or partial removal of an area does not mean that area will never receive municipal sewers. Circumstances could arise that cause a Planning Area to be reinstated to the recommended plan for sewering, such as a sudden increase in need or increased available wastewater treatment capacity obtained by the Town. These circumstances will continue to be monitored in future planning exercises and changes made based upon the findings.

The following sub-sections 6.1.2.a to 6.1.2.ii briefly describe each planning area and based on information presented in this report, either confirm the recommendations of the

6.1.2.m Planning Area M

Planning Area M was recommended for sewering as part of the 1995 FP, 2003 FP Reaffirmation and 2010 FP Update reports. This was due to certain economic and on-site restrictions prohibiting properly functioning OWTSs and justifying the need to provide the parcels with an off-site wastewater management solution (see previous Chapters and the 1995 FP for a more detailed evaluation of this area). The majority of wastewater from this area originates from the mobile home compounds located in the northeast portions of the planning area and is pumped south along Reservoir Road into the Tiogue Avenue Interceptor (West). This area was proposed to be sewered as part of the Phase III sewer program, meaning the area was deemed to be poor for OWTS construction, but that other areas (Phase I and Phase II areas) were deemed either to have a greater need for sewers or their locations were such that sewering was more economically feasible.

Currently, the mobile home compounds located in this area are connected into the Woodland Manor Forcemain located on Tiogue Avenue. The Town's recent acquisition of the Woodland Manor Pump Station/Forcemain provides potential connection to these parcels into the Town's system. However, prior to this potential connection, future IMA revisions will be needed to address officially allocating Woodland Manor capacity to the Town.

Based upon updated information obtained for this report, the need to serve the remaining parcels in this area by means of an off-site wastewater management solution still exists. Therefore, the recommendation for this area to remain in the Phase III sewer program is confirmed.

6.1.2.n Planning Area N

Planning Area N was recommended for sewering as part of the 1995 FP report. This was due to certain economic and on-site restrictions prohibiting properly functioning OWTSs and justifying the need to provide the parcels with an off-site wastewater management solution (see previous Chapters and the 1995 FP for a more detailed evaluation of this area). The majority of wastewater from this area is to flow to the now Town owned Woodland Manor Pump Station, which transmits flow to West Warwick. This area was proposed to be sewered as part of the Phase III sewer program, meaning the area was deemed to be poor for OWTS construction, but that other areas (Phase I and Phase II areas) were deemed either to have a greater need for sewers or their locations were such that sewering them was more economically feasible.

Based on information in the 2010 FP Update, it was recommended that all parcels in this area are removed from the sewering plan, in favor of the continued use of existing OWTSs for wastewater disposal, with the exception of those parcels able to be served by gravity sewers from the existing system (see Chapter 6 of the 2010 FP Update for more detailed information).

However, because of the Town's recent acquisition of the Woodland Manor forcemain and pump station, there is the ability for some of the parcels in this area to be sewered by gravity to this pump station. This will allow a portion of the parcels previously recommended to continue the use of OWTS systems, to be allowed to connect to the municipal sewer system. Prior to allowing this potential connection, IMA revisions will be needed to address officially allocating the Woodland Manor capacity to the Town.

Other parcels located in this planning area that are still in a remote location and would require pump stations or low pressure sewers to be installed based on the topography of this area will continue utilize the existing OWTSs for wastewater disposal. As stated in the 2010 FP Update, drawbacks to the continued removal of these parcels from the sewer plan are its close proximity to Johnson Pond and the possibility that poor soils not conductive to on-site systems may be located in the area. However, due to the increased treatment capabilities of current conventional or A/E OWTS technologies for use where possible site restrictions are a factor, options exist for providing adequate treatment of wastewater by use of OWTSs in this planning area. This factor compiled with the fact that the area has a large concentration of single family homes where a majority of the lot sizes are sufficient for conventional OWTS construction making sewering this area a lower priority.

Therefore, it is recommended that all parcels able to flow by gravity into the Woodland Manor Pump Station be recommended for sewering, while the remaining parcels are recommended for the continued use of existing OWTSs for wastewater disposal.

Due to continued reliance on OWTSs and their possible impact with the environment caused by improperly functioning OWTS, coupled with lack of general knowledge that most homeowners have regarding operation and maintenance (O&M) their septic systems, a public education program (as described in Chapter 5) is recommended in this planning area. This area should continue to be monitored for any future signs of widespread OWTS failure.

Additional flows generated by sewering this area can be reallocated by the use of the additional capacity gained by the Town from the purchase of the Woodland Manor Forcemain/Pump Station. Prior to allowing this potential connection, IMA revisions will be needed to address officially allocating the Woodland Manor capacity to the Town.

6.1.2.n.1 Planning Area N-1

Due to the Town's purchase of the Woodland Manor Forcemain/Pump Station infrastructure and the now Town owned infrastructure in close proximity, there are some additional adjacent areas that can be served by this pump station. This area is southwest of Planning Area N, and included the parcels bordering Nooseneck Hill Road to the Town line. This area includes both residential and commercial properties, including a mobile home park (Maple Root Village), in close proximity to Maple Root Pond, which is tributary to the south branch of the Pawtuxet River. Maple Root Village consists of approximately 187 small mobile home lots located on a large parcel adjacent to Maple Root Pond. This area is also outlined as having poor soils for a properly functioning OWTS system. Also, the mobile homes present economic and on-site restrictions prohibiting properly functioning OWTSs (i.e. small lot sizes and densely populated). These reasons also diminish the feasibility of constructing newer properly functioning system.

Based upon updated information obtained for this report, the need to serve this area by means of an off-site wastewater management solution exists. Therefore, the recommendation for this area to be included in the Phase II sewer program is confirmed. . Prior to allowing this potential connection, IMA revisions will be needed to address officially allocating the Woodland Manor capacity to the Town.

6.1.2.o Planning Area O

Planning Area O was recommended for sewering as part of the 1995 FP report. This was due to certain economic and on-site restrictions prohibiting properly functioning OWTSs and justifying the need to provide the parcels with an off-site wastewater management solution (see previous Chapters and the 1995 FP for a more detailed evaluation of this area). The majority of wastewater from this area is proposed to flow to the Washington Street Interceptor via a pump station to be constructed. This area was proposed to be sewered as part of the Phase III sewer program, meaning the area was deemed to be poor for OWTS construction, but that other areas (Phase I and Phase II areas) were deemed either to have a greater need for sewers or their locations were such that sewering was more economically feasible.

Based on information in the 2010 FP Update, it was recommended that a portion of the parcels in this area that would require a pump station to reach the Washington Street Interceptor were removed from the sewering plan, in favor of the continued use of existing OWTSs for wastewater disposal (see Chapter 6 of the 2010 FP Update for more detailed information). Upon the review of this area as part of this FP Update, the concerns over economic feasibility for sewer construction, and the relatively low occurrence of OWTS repairs from 2008-2014 (7% of the removed parcels, **Appendix A**) are still present and the recommendation to remove the selected parcels from the sewering plan remains.

6.1.2.p Planning Area P

Planning Area P was recommended for sewering as part of the 1995 FP, 2003 FP Reaffirmation and 2010 FP Update reports. This was due to certain economic and on-site restrictions prohibiting properly functioning OWTS and justifying the need to provide the parcels with an off-site wastewater management solution (see previous Chapters and the 1995 FP for a more detailed evaluation of this area). The wastewater from this area is proposed to flow through the existing Washington Street Interceptor by gravity into West Warwick. This area was proposed to be sewered as part of the Phase I sewer program, meaning the area was deemed to have the greatest need in the Town for an off-site wastewater management solution.

Based upon updated information obtained for this report, the need to serve this area by means of an off-site wastewater management solution still exists. Therefore, the recommendation for this area to remain in the Phase I sewer program is confirmed. Sewers have been installed to serve parcels adjacent to Washington Street, and the remaining parcels in this area will be served as part of Sewer Construction Contract No. 8. The estimated date of commencement for the project is March 2018, based upon the 2015 Priority Determination System's Project Information Sheets submitted to RI-DEM.

RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
235 Promenade Street, Providence, RI 02908-5767 TDD 401-222-4462

June 8, 2016

Tim DeGuglielmo, P.E.
Weston & Sampson
Five Centennial Drive
Peabody, MA 01960-7985

RE: Review of Coventry Facilities Plan Update (DEM file #16-C)
Coventry, Rhode Island

Dear Mr. DeGuglielmo:

The Rhode Island Department of Environmental Management, Office of Water Resources (OWR) has reviewed the above referenced Facilities Plan Update (FPU) and has the following comments that must be addressed prior to approval:

1. On page 1-5, please revise the last paragraph to "In order to remain eligible for State and/or Federal funding assistance, this Wastewater Treatment Facilities Plan should be reaffirmed every five years and should be updated or amended as necessary when significant changes occur that might otherwise impact the recommendations outlined in this report."

2. On page 3-14, under section 3.3.1, please change "Division of Air and Hazardous Materials" to "Office of Air Resources."

3. On page 3-29, section 3.6.1 (see also page 3-33 section 3.6.2.g and throughout the FPU) mentions the Intermunicipal Agreement between Coventry and West Warwick and the acquisition of Woodland Manor's 0.2 MGD of capacity. Has the Intermunicipal Agreement been formally amended to increase Coventry's allocated flow to West Warwick from 2.25 MGD to 2.45 MGD? If so, please append a copy of the executed new agreement to the FPU. Also, with the additional flow allocated to Coventry, have the percentages for Coventry's financial share of West Warwick's WWTF upgrades been adjusted to both party's satisfaction?

4. On page 3-34, section 3.6.2.i, the last sentence should be revised to, "The flows should be monitored, and once flows consistently reach 80% of the station's capacity, an upgrade should be performed to the station."

5. On pages 3-39, 4-11 and 7-9, the FPU recommends an I/I study in the older sewered sections of Town. Please include the preparation of an I/I study in Figure 7-1 Implementation Schedule.

6. On page 4-11, section 4.4, the first sentence states that there are eight additional proposed projects and the second sentence states that there are six. Please revise as necessary.

7. On page 6-11, last sentence, please revise the estimated date of commencement for Area P to match Contract 8's date of commencement in Figure 7-1 Implementation Schedule. As written, October 2010 seems incorrect, as does the reference to the 2010 PDS Project Information Sheet (it should reference

the 2015 PDS Project Information Sheet). Appendix G indicates a commencement date of March 2018 for Contract 8.

8. On page 6-22, section 6.1.2.ii, in the first sentence, change "AC" to "AI."

9. On page 7-1, in the second sentence, shouldn't the references be "As part of the 1995 Facilities Plan, 2003 FP Reaffirmation and **2010** FP update?"

10. On page 7-7, in Table 7-2, the Total Project Construction Cost and the Total Local Cost for Contract 10 – East Shore Drive Area don't agree. One is shown as $2,120,000 and the other is shown as $2,190,000. Please revise as necessary.

11. On page 7-9, section 7.1.9 explains the requirement for a Fiscal Sustainability Plan, but no Plan is presented in the FPU. The FPU should either include this Plan or include it as part of the Implementation Plan in section 7.2 and include its preparation as part of the Implementation Schedule on Figure 7-1. In order for project costs to be eligible for reimbursement through the SRF Program, a Fiscal Sustainability Plan must be completed.

12. Please include all Intergovernmental Review Process correspondence in Appendix M.

Please provide a written response to the above comments and submit copies of any revised pages. Once OWR determines that the comments have been satisfactorily addressed, OWR will direct the Town to schedule its final Public Hearing. Concurrently, OWR will advertise a thirty (30) day Public Notice of Intent to Issue a Finding of No Significant Impact in the Providence Journal. Once the Town's Public Hearing process is completed, please submit two (2) hard copies and one (1) electronic copy in .pdf format of the final FPU. The final FPU shall include all revisions made based on OWR's comments above and any other revisions made as a result of the Public Hearing and Intergovernmental Review processes. Upon receipt of the final FPU, OWR will issue an approval.

If you have any questions, please contact me at 401.222.4700, x7251 or at art.zeman@dem.ri.gov

Sincerely,

Art Zeman

Art Zeman, P.E., Principal Engineer
Wastewater Planning & Design Section
Office of Water Resources

AGZ/agz

Electronic copy: Kent Nichols, Weston & Sampson

Five Centennial Drive
Peabody, MA 01960-7985
tel: 978-532-1900 fax: 978-977-0100
www.westonandsampson.com
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Town of Coventry, Rhode Island
W&S Job No. 2140605

July 25, 2016

Mr. Arthur G. Zeman, P.E.
Principal Engineer
RIDEM Office of Water Resources
235 Promenade Street, 2nd Floor
Providence, Rhode Island 02908-5767

Re: Town of Coventry Facilities Plan Update (DEM File #16-C)
Response to Comments

Dear Mr. Zeman:

Weston & Sampson, Inc. has reviewed you letter dated June 8, 2016 and has addressed the comments concerning the recently reviewed Facilities Plan Update (FPU) for the Town of Coventry. The following are the requested narrative responses to your comments:

1. *On page 1-5, please revise the last paragraph to "In order to remain eligible for State and/or Federal funding assistance, this Wastewater Treatment Facilities Plan should be reaffirmed very five years and should be updated or amended as necessary when significant change occur that might otherwise impact the recommendations outlined in this report."*

    - The text has been revised as requested. Excerpts showing the revisions have been attached.

2. *On page 3-14,under section 3.3.1, please change "Division of Air and Hazardous Materials" to "Office of Air Resources".*

    - The text has been revised as requested. Excerpts showing the revisions have been attached.

3. *On page 3-29, section 3.6.1 (see also page 3-33 section 3.6.2.g and throughoutt the FPU) mentions the Intermunicipal Agreement between Coventry and West Warwick and the acquisition of the Woodland Manor's 0.2 MGD of capacity. Has the Intermunicipal Agreement been formally amended to increase Coventry's allocated flow to West Warwick from 2.25 MGD to 2.45 MGD? If so, please append a copy of the executed new agreement to the FPU. Also, with the additional flow allocated to Coventry, have the percentages for Coventry's financial share of West Warwick's WWTF upgrades been adjusted to both party's satisfaction?*

    - The IMA with West Warwick has not been amended. Text regarding this has been revised and Section 7 – Implementation has also been revised to show this future step for the Town. Currently the Town is in no danger of exceeding their existing capacity. This additional Woodland Manor capacity is only required to handle Coventry projected wastewater flows for future planning years (2065 and beyond). However, the IMA should be amended in the future to properly allocate the Woodland Manor's capacity to the Town.

4. *On page 3-34, section 3.6.2.i, the last sentence should be revised to, "the flows should be monitored, and once flows consistently reach 80% of the station's capacity, and upgrade should be performed to the station.*

   - The text has been revised as requested. Excerpts showing the revisions have been attached.

5. *On pages 3-39, 4-11 and 7-9, the FPU recommends an I/I study in the older sewered section of Town. Please include the preparation of an I/I study in Figure 7-1 Implementation Schedule.*

   - Figure 7-1 has been updated to show the recommended I/I investigations dates. The updated Figure has been attached.

6. *On pages 4-11, section 4.4, the first sentence states that there are eight additional proposed projects and the second sentence states that there are six. Please revise as necessary.*

   - The text has been revised to show six currently proposed projects, as per the 2015 Project Description Forms. Excerpts showing the revisions have been attached.

7. *On page 6-11, last sentence, please revise the estimated date of commencement for Area P to match Contract 8's date of commencement in Figure 7-1 Implementation Schedule. As written, October 2010 seems incorrect; as does the reference to the 2010 PDS Project Information Sheet (it should reference the 2015 PDS Project Information Sheet). Appendix G indicates a commencement date of March 2018 for Contract 8*

   - The text has been revised to show the March 2018 commencement date, as per the Town's 2015 PDS Project Information Sheet. Excerpts showing the revisions have been attached.

8. *On page 6-22, section 6.1.2.ii, in the first sentence, change "AC" to "AI".*

   - The text has been revised as requested. Excerpts showing the revisions have been attached.

9. *On page 7-1, in the second sentence, shouldn't the references be "As part of the 1995 Facilities Plan, 2003 FP Reaffirmation and **<u>2010</u>** FP Update?"*

   - Correct. The text has been revised as requested. Excerpts showing the revisions have been attached.

10. *On page 7-7, in Table 7-2, the Total Project Construction Cost and the Total Local Cost for Contract 10 – East Shore Drive Area don't agree. One is shown as $2,120,000 and the other is shown as $2,190,000. Please revise as necessary.*

    - The text has been revised to show the $2,120,000 project construction cost. Excerpts showing the revisions have been attached.

11. *On page 7-9, section 7.1.9 explains the requirement for a Fiscal Sustainability Plan, but no Plan is presented in the FPU. The FPU should wither include this Plan or include it as part of the*

Implementation Plan in section 7.2 and include its preparation as part of the Implementation Schedule on Figure 7-1. In order for project costs to be eligible for reimbursement through the SRF Program, a Fiscal Sustainability Plan must be completed.

- The text has been revised to note that a Fiscal Sustainability Plan will need to be complete for every project under the SRF Program. Figure 7-1 has also been revised to show this. Excerpts showing the revisions have been attached.

12. *Please include all Intergovernmental Review Process correspondence in Appendix M.*

    - We have provided the letter template and all the Intergovernmental Review Contracts that the letter was mailed to. In addition, any response letter received from various agencies has been attached as well. No responses were received other than from the agencies provided.

Should you have any questions or require additional information, please contact me at 1-800-SAMPSON Ext. 2421.

Very truly yours,

WESTON & SAMPSON ENGINEERS, INC.

Tim DeGuglielmo
Project Manager

Enclosure
cc: Graham Waters, Town Manager, Coventry

Excerpt(s) of FP for
RI-DEM Review Comment #1

Chapter 7 presents a method of financing the estimated costs of the proposed sewer program. The cost of the sewer projects will be paid for through assessments to sewered properties. The Town has established the method of assessment in their sewer use ordinance. This method is summarized in **Chapter 7**.

1.5 Summary

The conclusions reached from this FP Update echo those conclusions from the 1995 FP, the 2003 FP Reaffirmation and the 2010 FP Update. It is recommended that the existing sewer system be expanded to serve portions of eastern Coventry that can no longer rely on OWTSs for long term wastewater management. The plan recommended herein, however, revises the previous recommended sewer plan to provide flow allocations in areas where future development will require additional wastewater management capacity and/or add additional areas based on the additional capacity obtained by the Woodland Manor pump station/forcemain acquisition. This plan will still meet the need for sewering of the more densely populated areas within eastern Coventry, while also allowing the Town to provide sewer capacity for proposed developments, which are important to the local economy.

The recommended plan should be adopted, and implementation of the remainder of the Phase I sewer construction program should continue, as outlined in Chapter 7. This plan will result in a fully functioning sewer system which will serve Coventry through the year 2035 and beyond.

In order to remain eligible for State and/or Federal funding assistance, this Wastewater Treatment Facilities Plan should be reaffirmed every five years and should be updated or amended as necessary when significant changes occur that might otherwise impact the recommendations outlined in this report.

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Excerpt(s) of FP for
RI-DEM Review Comment #2

- Public and Semi-Public Uses, including schools, churches, town administrative facilities, Police and Fire Stations and other similar uses. These facilities are also concentrated in the eastern end of town convenient to the largest portion of Coventry's population.
- Parks, Recreation and Open Space Uses, including Agricultural Land, with the majority of open space and agricultural areas in the western and central parts of town.

Land use and development in Coventry is regulated by the town's Zoning Ordinance and Land and Subdivision Regulations. **Figure 3-7**, excerpted from the 2008 CCP (draft), shows the existing zoning districts for eastern Coventry.

3.3 Other Environmental Conditions

In addition to the areas discussed above, several other environmental conditions are relevant to the preparation of this wastewater facilities plan. These conditions include air quality, noise levels, wildlife and plant habitats, and other specific areas of concern as discussed below.

3.3.1 Air Quality

The Town of Coventry, as per the RIDEM Office of Air Resources, complies with the US Clean Air Act.

As of EPA's April 2012 Ozone Designations, Coventry is now in "Attainment" for the ground level ozone standards, however, in 2004 the entirety of Kent County was not in "Attainment" per the EPA's ground level ozone standards. The basis of the problem was "smog" created by hydrocarbons, oxygen and nitrogen combining in the presence of sunlight to form an inversion layer.

3.3.2 Noise Pollution

Industry-related stationary noise in Coventry is relatively light. Vehicular activity accounts for most of the Town's noise pollution with Route 3 (Tiogue Avenue) being the biggest offender, followed by Route 117 and, despite its volumes, Interstate 95 creates minimal impact due to its remote location on the fringe of Town. Coventry is located on a flight path to the T. F. Green State Airport and these flight patterns add significant noise impacts and visual disruptions to some areas of Coventry. In addition, some migratory bird patterns have been observed to be adversely affected by flight patterns over Coventry.

3.3.3 Wildlife

Coventry's approximate 62 square miles of land mass is home and habitat for numerous common and rare species of animals and plant life, all contributing to the delicate ecological balance of the area.

Excerpt(s) of FP for
RI-DEM Review Comment #3

1 EXECUTIVE SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

1.0 General

There is currently only a limited wastewater collection system existing in the Town of Coventry. Approximately 97 percent of the residences in Coventry rely on onsite wastewater treatment systems (OWTSs) for treatment and disposal of wastewater.

Previous wastewater planning studies for Coventry recommended construction of wastewater collection facilities, with transmission to the regional wastewater treatment facility (WWTF) in West Warwick for treatment, to serve much of the densely populated eastern portion of Town. OWTS problems in the eastern portions of Town are common. In 1984 the Town executed an inter-municipal agreement (IMA) with West Warwick reserving an average daily flow of 2.25 million gallons per day (MGD) of wastewater capacity in their regional WWTF. In December 2013, the Town acquired a pump station and forcemain that were previously privately owned by the Woodland Manor Estates development. This pump station/forcemain came with an additional 200,000 gallons per day of capacity in the West Warwick WWTF (future IMA revisions will be needed to address officially allocating this capacity to the Town).

Since the installation of the main interceptor, which collects and transports wastewater to the WWTF, the Town has begun to expand their collection system to congested and environmentally sensitive areas.

The purpose of this Facility Plan (FP) Update is to investigate and address the following:

1. Update of the projected wastewater flows for the 20-year (2035) and 50-year (2065) planning periods.
2. Provide re-allocation of flow capacity to study areas as a result of the newly acquired capacity from the Woodland Manor pump station/forcemain acquisition.
3. Provide review and evaluation of need for wastewater collection facilities, including:
    a. delineation of problem areas,
    b. determination of OWTS rehabilitation (or repair) feasibility, and
    c. prioritization of sewer needs areas.
4. Examine relevant wastewater project financing options available and feasibility of implementation.

1.1 Findings

Chapters 3 and 4 of this Facilities Plan examine the current and expected future conditions in eastern Coventry, with specific interest in the treatment and disposal of wastewater. The investigations performed included review of all available relevant documents. The results of the OWTS survey (**Appendix A**) confirms a preponderance of OWTS problems in several areas of eastern Coventry. These areas have been delineated and were prioritized (Phase I) for sewering in the 1995 FP and subsequent reaffirmations/updates. The conclusion reached through these examinations is that the current system of wastewater disposal through onsite wastewater treatment systems supporting their designated uses due to pollution. At the time of this Facilities Plan Update, all of the Pawtuxet River in Coventry was able to support all designated uses and was deemed fishable/swimmable.

Although there seems to be a significant increase in the water quality in Coventry, there is no way to estimate the actual number of direct wastewater and stormwater discharges in Coventry without a more comprehensive study.

3.6 Existing Wastewater Collection and Treatment System

3.6.1 West Warwick Regional Wastewater Treatment Facilities

As noted in Chapter 2 of this report, the State's 208 Areawide Water Quality Management Plan (WQMP) recommended that wastewater from Coventry be treated at the West Warwick Regional Wastewater Treatment Facility. This contradicted the previous recommendations for an independent Coventry Wastewater Treatment Facility made by earlier reports ("Preliminary Engineering Survey and Report on Sewerage and Sewage Treatment for the Town of Coventry", Fenton G. Keyes Associates, November 1966, and "Facilities Plan for Wastewater Collection and Treatment Facilities", C.E. Maguire, Inc., 1977). The recommendation of the 208 study has since been implemented, and Coventry is now a member community in the West Warwick regional system.

In 1984, the Town of Coventry signed an Inter-Municipal Agreement (IMA) with the Town of West Warwick, which provided 2.25 mgd (average daily flow) of capacity for Coventry in the West Warwick Regional Wastewater Treatment Facility.

In December 2013, the Town of Coventry acquired the Woodland Manor Estates pump station and forcemain along with its allocated capacity in the West Warwick system. The capacity allocation in the West Warwick system for the Woodland Manor pump station/forcemain is 0.2 mgd. With the existing West Warwick IMA capacity and the addition of the Woodland Manor capacity, the Town of Coventry has 2.45 mgd of average daily flow capacity in the West Warwick Regional WWTF. Future IMA revisions will be needed to address officially allocating the Woodland Manor capacity to the Town, however this additional capacity is not required for projected wastewater flows until 2065, see **Table 4-5** and **Appendix B**.

The West Warwick Regional Wastewater Treatment Facility is located off Pontiac Avenue, in the northeast corner of West Warwick. The treatment facility discharges treated effluent to the Pawtuxet River. The facility can discharge an average daily flow of 10.5 mgd (peak flow of 25.34 mgd). West Warwick's facility consists of an activated sludge treatment process, along with a biological activated filter and UV disinfection.

The West Warwick facility currently has the equipment to properly accept septage for treatment. However, at this time no septage is accepted at the facility. The IMA between West Warwick and Coventry has a stipulation that would allow Coventry to dispose of septage at the facility if it were to be accepted from any other communities (including West Warwick).

Development Corp. entered into an agreement with West Warwick to allow the discharge of 200,000 gallons per day to the West Warwick system. Since the construction of the Woodland Manor force main, the pipeline owners have allowed several pressure connections along the length of Tiogue Avenue. These connections have typically been to commercial establishments with severe OWTS problems. Such connections were approved by both West Warwick and Coventry (whose plant capacity was utilized for the connections).

Up until December 2013, this was a privately owned and operated sewer system, separate from the Town of Coventry system, and designed to provide sewer service to an area within eastern Coventry. In December 2013, the Town of Coventry acquired the Woodland Manor Estates pump station and forcemain along with its allocated capacity in the West Warwick system (future IMA revisions will be needed to address officially allocating this capacity to the Town).

Two assessments had been performed on the pump station and forcemain, and were reviewed by the Town prior to the acquisition of the infrastructure. The assessment performed by DiPrete Engineering can be found in **Appendix K**. The other assessment performed by Fuss & O'Neill is with the Town's Engineer. These assessments outlined recommended repairs and upgrades to the pump station. It is recommended the Town perform the repairs/upgrades as part of their yearly infrastructure maintenance plan.

In addition, Weston & Sampson Services has been contracted by the Town to operate and maintain the system since the acquisition. Flow records from the station can be found in **Appendix L**.

3.6.2.h Contract 03-01

The Contract 03-01 sewer project was constructed in 2004 by the Town of Coventry to service portions of Tiogue Avenue and Washington Street. This contract connected the system to the Sandy Bottom Road pump station, built under Contract 03-02 by the Town of Coventry. The connection to the pump station under the Pawtuxet River was by a depressed sewer made up of a series of ductile iron pipes (3 barrels - one 16-inch and two 12-inch pipes). Two 12-inch ductile iron force mains extend from the pump station to the intersection of Washington Street and Knotty Oak Road (approximately 2,500 feet). A 30-inch PVC gravity sewer pipe extends from the intersection of Washington Street and Knotty Oak Road to the intersection of Washington Street and Pulaski Street (approximately 6,100 feet). A 24-inch PVC gravity sewer extends from the pump station to approximately 3,000 feet west along Tiogue Avenue. This line connected to the previously "dry" sewer line installed in Hopkins Hill Road, and allowed for the activation of that sewer line.

As part of this project a flume/flow meter vault was installed to monitor and track flows from the interceptor into West Warwick. These flow records can be found in **Appendix L**. The existing telephone line communications system to send out the flow meter readings has had issues in the past. It is recommended to perform an evaluation on the communication system to see if a more suitable alternative (i.e. radio, high speed internet) is available.

limited OWTS failures, this option is cost effective, but could be considered equivalent to the 'no action' option, since OWTS reconstruction can be left to the individual property owner. For areas where a significant percentage of existing OWTS systems are failing, this option is not as acceptable, since the costs for rehabilitating many systems is significant, and may approach the cost of lateral sewer installation.

5.8.5 Wastewater Collection and Treatment System

In many areas, the installation of a wastewater collection system is the only reasonable alternative for permanently ending the chronic OWTS failure problems.

5.8.5.a Sewer Interceptor System

The previous 1995 FP and 2010 FP Update outlined the three most logical options for proposed sewer interceptor systems. The option previously recommended and constructed is briefly described below. The original interceptor plan from the 1995 FP is included in **Figure 5-1** (Note that since the 1995 FP and 2010 FP Update some of the interceptors have been constructed, see **Figure 3-10** for the current existing interceptors):

Central Pumping Station at Tiogue Avenue and Washington Street Interceptor: This option included constructing a pump station on Sandy Bottom Road. A new force main was installed on Sandy Bottom Road that discharges to a gravity interceptor at the approximate intersection of Washington Street and Knotty Oak Road. This gravity interceptor would then travel east along Washington Street to the intersection of Quidnick Avenue where it would then follow an abandoned railroad bed to Whitford Street and down Pulaski Street to the West Warwick Town boundary.

This option was selected in the previous report based on the proposed benefits and the project's cost effectiveness. Based on this recommendation of the 1995 FP, this option, including the Sandy Bottom Road Pump Station, forcemain and Washington Street interceptor to the West Warwick Town boundary were constructed.

In December 2013, the Town of Coventry acquired the Woodland Manor Estates pump station and forcemain along with its allocated capacity in the West Warwick system. With the existing pump station and forcemain infrastructure already being installed, there is potential to use this pump station/forcemain to sewer adjacent areas previously eliminated or deemed to be not cost effective to sewer due to location (i.e. Planning Area N/N-1). Also, as portions of the forcemain may be flowing under gravity conditions, further investigation should be made to assess the feasibility of using portions of Woodland Manor force main to service parcels along Tiogue Avenue where collection sewers have yet to be constructed. Future IMA revisions will be needed to address officially allocating the Woodland Manor capacity to the Town, however this additional capacity is not required for projected wastewater flows until 2065, see **Table 4-5** and **Appendix B**.

In the 2003 FP Reaffirmation, additional wastewater treatment capacity was allocated for two proposed developments (Pine Ridge Subdivision and Center of New England) that would significantly change the original assumption for sewer flow for the parcels. Due to this additional wastewater allocation need, Planning Areas (AA and AB) with less need for sewering were removed and instead it was recommended to continue the utilization of the existing OWTSs.

In the 2010 FP Update, additional wastewater treatment capacity was allocated for multiple proposed developments that significantly changed the original assumption for sewer flow for the parcels, and two industrial properties (Clariant Corporation and Rhodes Technologies) that were granted connection to the system, that previously had a private WWTF and were unaccounted for in previous FP's allocated wastewater treatment capacity. As part of the 2010 FP Update, Planning Areas AF, AD, Y and portions of Planning Areas AE, N, O, X and Z with less need for sewering were removed and instead it was recommended to continue the utilization of the existing OWTSs.

As part of this FP Update, the additional capacity obtained from the purchase of the Woodland Manor forcemain and pumping station (0.2 mgd) has caused an increase in the wastewater treatment capacity in West Warwick. The additional capacity from the Woodland Manor forcemain purchase combined with the amount of wastewater flow Coventry originally had capacity for in their existing IMA with West Warwick, provides the Town with a total wastewater treatment capacity of 2.45 mgd in the West Warwick system. Future IMA revisions will be needed to address officially allocating the Woodland Manor capacity to the Town, however this additional capacity is not required for projected wastewater flows until 2065, see **Table 4-5** and **Appendix B**.

As part of the selected plan areas adjacent to the Woodland Manor pump station and forcemain that were previously ruled out or eliminated due to conventional sewer construction feasibility were analyzed with regards to this recently acquired infrastructure. Also, a small area to the southwest of Planning Area N that was not included in the original "sewered" area plan was analyzed to determine the potential need for sewering.

6.1.2 Revised Recommended Plan

The revised recommended revisions to the 2010 FP Update sewering plan are described below and include the addition of properties in Planning Area N previously removed in previous FP Update and inclusion of an area to the southwest of Planning Area N that was not originally included in the original "sewered" area plan, but is in a location that was determined to have a need for sewering.

Information collected for each Planning Area to determine sewer needs is summarized in **Table 6-1**. Based upon this information, a new recommended sewer plan can be established. **Figure 6-1** shows this revised sewer plan, and the areas that are recommended for removal. It should be noted that the full or partial removal of an area does not mean that area will never receive municipal sewers. Circumstances could arise that cause a Planning Area to be reinstated to the recommended plan for sewering, such as a sudden increase in need or increased available wastewater treatment capacity obtained by the Town. These circumstances will continue to be monitored in future planning exercises and changes made based upon the findings.

1. Inventory of critical assets that are part of the infrastructure project;
2. Evaluation of the condition and performance of inventoried assets or asset groupings;
3. Certification that the recipient has evaluated and will be implementing water and energy conservation efforts as part of the project/plan; and
4. Plan for maintaining, repairing, funding, and as necessary, replacing infrastructure constructed.

The FSP pertains only to the assets/infrastructure being constructed as part of the project receiving SRF funding. However, the FSP's developed should be considered "living documents" that are meant to be reviewed, revised, expanded and implemented as part of the on-going operation and management of the Town's system. It is recommended the Town create and update their FSP prior to the implementation of future sewer projects.

7.2 Implementation Plan

This section discusses the steps necessary to assure proper implementation of the recommended plan. Included is a discussion of the administrative and institutional responsibilities for implementation, as well as a list of specific implementation steps and a preliminary implementation schedule. Several items are discussed in detail, including the recommended plan for administration and O&M of the sewer system.

7.2.1 Implementation Responsibilities

The parties responsible for implementation of the recommended plan include the town of Coventry, acting through its Town Council, Town Manager and with the help support of the Town's Sewer Sub-Committee, and the town of West Warwick, acting through its Town Council. The town of Coventry has jurisdiction over the construction and operation of a sewer system within the town of Coventry. The town of West Warwick has jurisdiction over the Regional Wastewater Collection System and Treatment Facilities located within the town of West Warwick.

The existing intermunicipal agreement between Coventry and West Warwick, included as **Appendix I** to this facilities plan, outlines the responsibilities of Coventry and West Warwick as they relate to the construction and operation of a wastewater collection system in Coventry. The financial acceptability of the wastewater facilities plan is principally the concern of the town of Coventry (acting through its Town Council). A majority of the financial responsibilities of Coventry to West Warwick for the construction of regional system components to date have been met. Payment of Coventry's share of remaining and future costs for the construction of regional system components are the only financial concern of West Warwick. The construction of sewers in Coventry is solely the financial responsibility of the Town of Coventry. Currently the elected Coventry Town Council is the acting deciding body for the Town. The Coventry Town Council currently has responsibility for the planning, constructing, financing, administration, operating and maintaining of all the Coventry wastewater collection system. The financial acceptability of the recommended sewer system will therefore be decided by the Town Council of Coventry.

Per the IMA agreement, the agreement should be reviewed annually by both parties and any necessary revisions should be negotiated. In addition, revisions to the IMA with West Warwick will be needed to address officially allocating the Woodland Manor capacity to the Town. This allocation of capacity may also change the responsibilities of the cost share for future regional system components.

The Coventry Sewer Sub-Committee (CSSC) was created in previous years as an advisory board that could provide guidance and recommendations to the Town Council to vote on for implementation. Items relating to planning, construction or connection into the municipal system are first heard by the CSSC, and then a recommendation is made to the Town Council to vote on.

While the O&M of the sewer system is the responsibility of the Town Council, the Coventry Department of Public Works (DPW) is designated by the Town Council to provide the necessary O&M to the sewer system.

Current sewer users in Coventry are billed user charges by both the Town of Coventry billing department and also by West Warwick. Users receive two billings from each municipality. This has led to confusion from residents and the unintentional non-payment of the bills. In order to remedy the confusion Coventry has decided to combine the West Warwick user charges, with the Coventry user charges and issue one single bill to the users. Coordination is on-going between both Coventry's and West Warwick's sewer billing entities and implementation of this billing process is expected to take place for the next fiscal year.

The implementation responsibilities of Coventry and West Warwick are summarized as follows:

Town of Coventry:
Following approval of this facilities plan, the Town of Coventry should take action to assure:

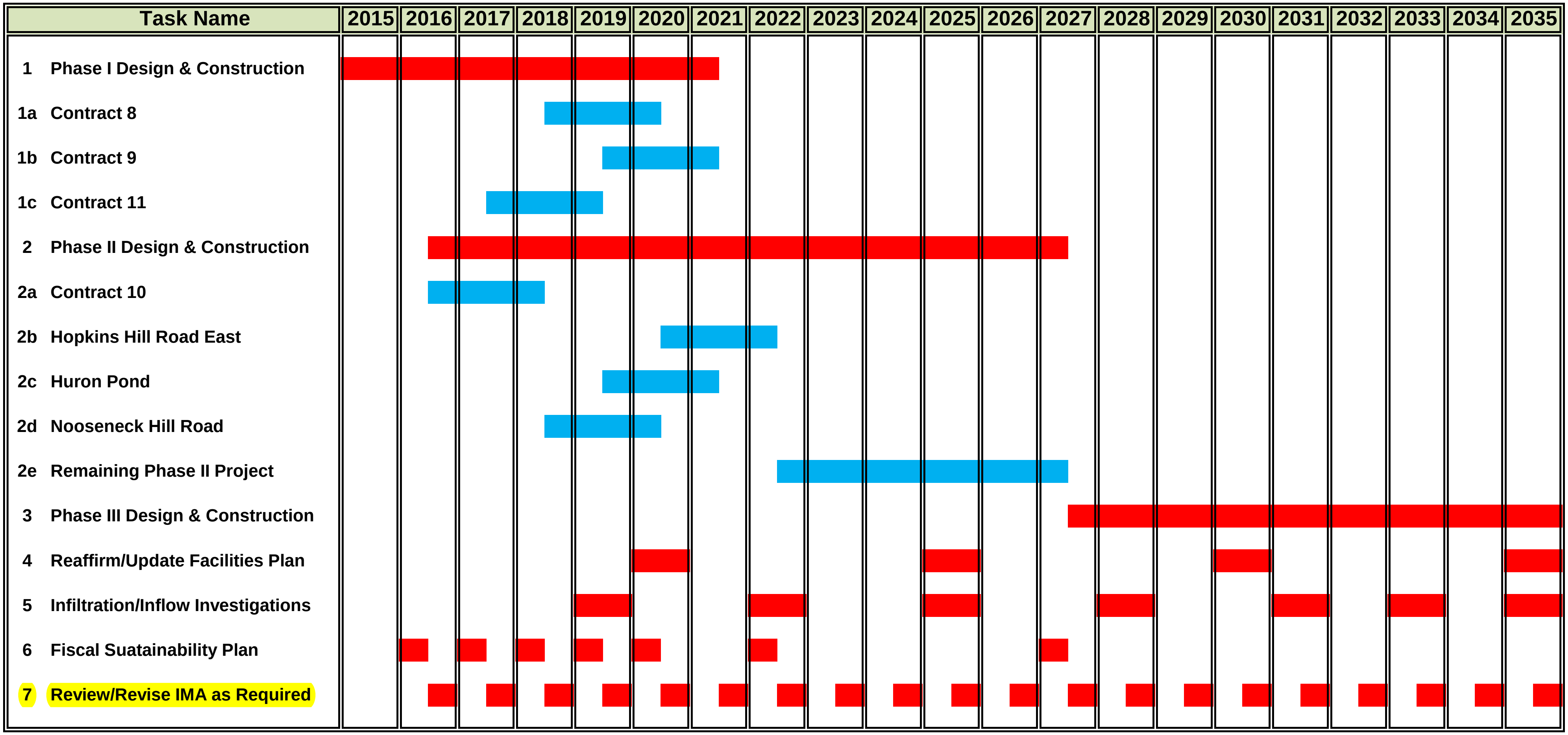
- the appropriation of the funds and the completion of design and construction of the recommended plan;
- the continued review and update as needed to the recently adopted sewer ordinance;
- the continued review and update as needed to the existing intermunicipal agreement with West Warwick. This includes the revisions needed to officially allocate the Woodland Manor capacity to the Town;
- the continued administration, operation and maintenance of the sewer system (including an approved system of sewer user charges);
- and review the IMA with West Warwick annually to revise/negotiate changes as necessary and ensure it is fair to both parties.

The completion of these implementation tasks will require appropriate actions by specific town authorities, including the Town Council, the Town Manager, the Director of Public Works, the Director of Planning, the Finance Director and the Tax Assessor.

West Warwick:
The Town of West Warwick should take action to assure the proper administration, operation and maintenance of the regional wastewater facilities.

The final approval of this wastewater facilities plan, should meet no opposition from sources outside of Coventry. The acceptability of this facilities plan to the Town of

Figure 7-1
Implementation Schedule



O:\Coventry RI\2140605 - 2014 Facilities Plan Update\2014 Update Report\Figures\Section 7\[Figure 7-1 Implementation Schedule.xlsx]Sheet1

Excerpt(s) of FP for
RI-DEM Review Comment #4

3.6.2.i Contract 03-02

The Sandy Bottom Road Pump Station was constructed under Contract 03-02 concurrently with the gravity sewers and force main in Contract 03-01. The Sandy Bottom Road Pump Station is a custom designed 3 level pump station with separate dry and wet process areas. The pump station was constructed with 2 pumps initially, but was designed for the addition of two larger pumps such that the future capacity of the upgraded station will be sufficient to handle flows from the majority of the sewered areas in eastern Coventry. The location and elevation of this station was selected to allow gravity sewer service to most of the areas along the South Branch of the Pawtuxet River.

The Sandy Bottom Road pump station includes sewage grinders in the wetwell area, and the station discharges through a dual 12-inch force main to allow for significant variations in design flow rates. The station is equipped with a flow meter and enhanced instrumentation and control (I&C) system.

The Town currently contracts out the operation and maintenance services for the station. The operation and maintenance service contract includes responding to any alarms/emergencies at the station and to repair the equipment as necessary to ensure proper operations.

This station is presently equipped to handle initial design flows from the Coventry system, including flows from the Amgen facility. The station will need to be upgraded with one or more additional or larger pumps as the service areas outlying from Tiogue Avenue, Hopkins Hill Road, and Main Street are sewered.

Flow records from the station have been included in **Appendix L**. These records show that the current pumps are able to handle the flows experienced at the station. At this time a pump capacity upgrade is not recommended. The flows should be monitored, and once flows consistently reach 80% of the station's capacity, an upgrade should be performed to the station.

3.6.2.j Contract 03-03

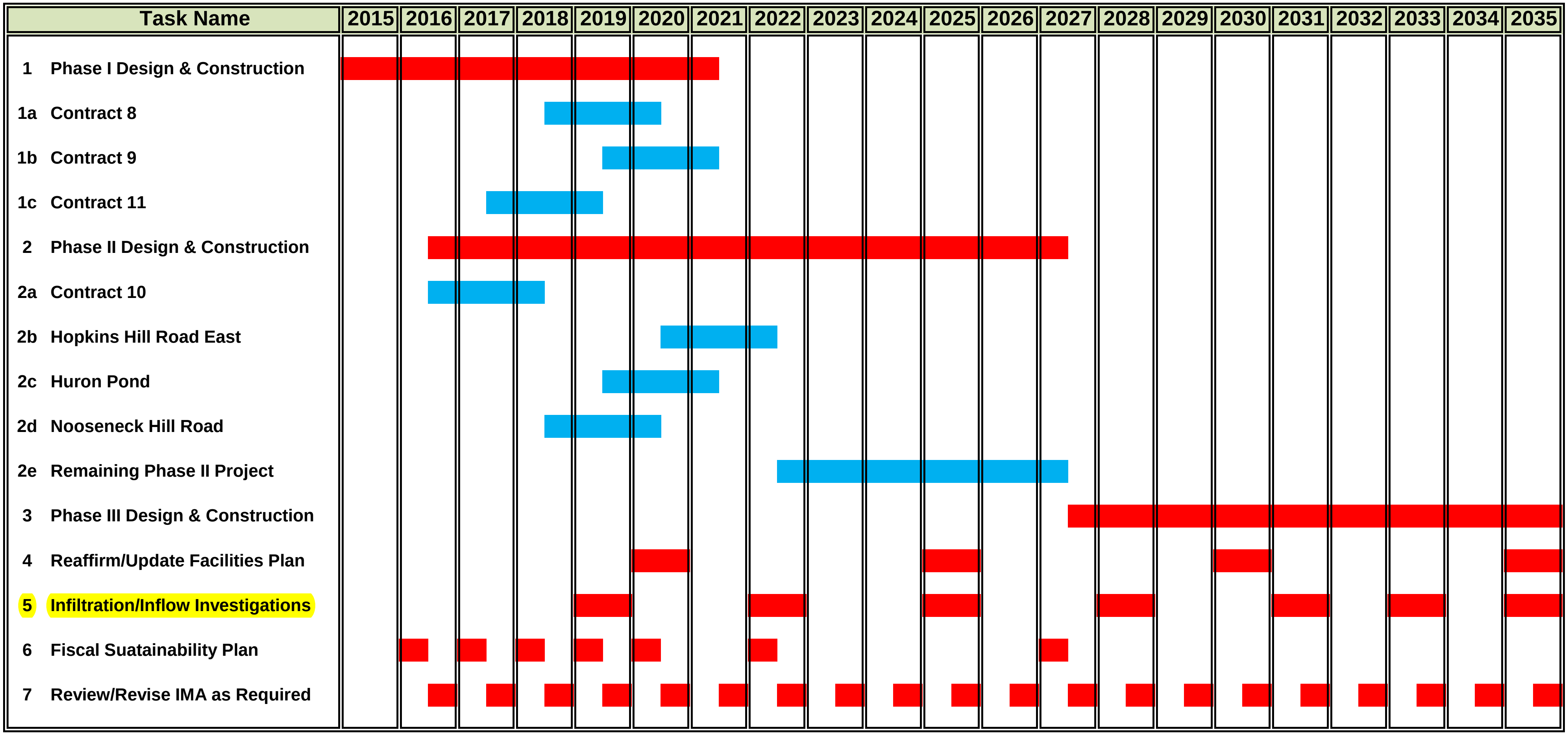
The Hopkins Hill Road force main was constructed in 2006 by the Town of Coventry to connect the West Greenwich Technology Park with the existing gravity sewer in Hopkins Hill Road. It consists of approximately 2,500 feet of 12-inch ductile iron force main from the Coventry / West Greenwich town line and 971 feet of 8-inch ductile iron force main on Hopkins Hill Road.

3.6.2.k Contract 4

The Tiogue Avenue gravity sewer system was constructed in 2007 by the Town of Coventry to provide service to more of Tiogue Avenue and Ramblewood Estates, a mobile home park in Coventry. It consisted of approximately 2,900 feet of 18-inch PVC pipe along Tiogue Avenue to Ramblewood Estates, 1,200 feet of 18-inch PVC pipe in Morningside Drive, 900 feet of 18-inch PVC pipe in "D" Lane, 500 feet 18-inch PVC pipe in Monroe Drive and 1,000 feet of 18-inch ductile iron pipe along a cross country portion. The project also includes 8-inch PVC lateral pipes in Anthony Street (820 feet) Fairview Avenue (1,270 feet), Ray Street (580 feet) and Wood Street (1,125 feet).

Excerpt(s) of FP for
RI-DEM Review Comment #5

Figure 7-1
Implementation Schedule



O:\Coventry RI\2140605 - 2014 Facilities Plan Update\2014 Update Report\Figures\Section 7\[Figure 7-1 Implementation Schedule.xlsx]Sheet1

Excerpt(s) of FP for RI-DEM Review Comment #6

Implementation of the water conservation program will help reduce Coventry's wastewater flows, and therefore the costs of transmitting and treating the wastewater.

4.3.3.b Infiltration/Inflow (I/I) Reduction

To date no studies of infiltration/inflow (I/I) problems have been conducted on the sewer pipelines located in Coventry. Since no study has been completed, an accurate estimate of the volume of I/I entering the system cannot be made. Due to the relatively recent age of the Coventry Sewer System, it is assumed that excessive I/I (i.e. more than 120 gpcd infiltration and 275 gpcd inflow) does not exist. However, it is recommended that the Town begin plans for I/I studies/investigations on areas in Town with older sewers constructed in the 1980s (i.e. Hopkins Hill Road, North Road Terrace, New London Turnpike). Any sources of I/I discovered in the I/I investigations should be eliminated.

4.3.3.c Industrial Pretreatment Program

There are several industrial users currently connected to the system. The wastewater discharged by these users is regulated by the West Warwick Industrial Pretreatment Program (IPP). The intent of this program is to achieve the objectives of the U.S. EPA's National Pretreatment Program. The West Warwick IPP was approved by the EPA on September 9, 1983 (most recent Code Ordinance update in 1990), and is currently in compliance with RI-DEM regulations.

As the Coventry wastewater collection system expands in the future, the West Warwick IPP will continue to govern industrial users of the sewer system. The IPP will be modified by West Warwick, as needed, to maintain compliance with state and federal pretreatment requirements.

4.4 Future Planned Sewer Construction Projects

Based on previous recommendations from the 1995 FP, existing sewer construction projects have been built and six additional proposed sewer construction projects are in the preliminary planning phase to be built. These six additional projects (Contracts 8, 9, 10, 11, Hopkins Hill East, and Huron Pond) have been submitted as part of the RI-DEM's Fiscal Year (FY) 2015 Priority Determination System for SRF funding, as described in Chapter 7 of this report. In addition, there is an area of need identified in this report that will be evaluated for sewering in the future (Nooseneck Hill Road Sewer Project). The submittal for this program is attached in **Appendix G.** The existing projects have been described in Chapter 3 and the eight proposed projects are described as follows. Please note that the contract numbering is only for discussion purposes, and does not mandate the order of implementation. A location plan of these projects can be seen in **Figure 4-3**.

Excerpt(s) of FP for
RI-DEM Review Comment #7

Based upon updated information obtained for this report, the need to serve this area by means of an off-site wastewater management solution exists. Therefore, the recommendation for this area to be included in the Phase II sewer program is confirmed.

6.1.2.o Planning Area O

Planning Area O was recommended for sewering as part of the 1995 FP report. This was due to certain economic and on-site restrictions prohibiting properly functioning OWTSs and justifying the need to provide the parcels with an off-site wastewater management solution (see previous Chapters and the 1995 FP for a more detailed evaluation of this area). The majority of wastewater from this area is proposed to flow to the Washington Street Interceptor via a pump station to be constructed. This area was proposed to be sewered as part of the Phase III sewer program, meaning the area was deemed to be poor for OWTS construction, but that other areas (Phase I and Phase II areas) were deemed either to have a greater need for sewers or their locations were such that sewering was more economically feasible.

Based on information in the 2010 FP Update, it was recommended that a portion of the parcels in this area that would require a pump station to reach the Washington Street Interceptor were removed from the sewering plan, in favor of the continued use of existing OWTSs for wastewater disposal (see Chapter 6 of the 2010 FP Update for more detailed information). Upon the review of this area as part of this FP Update, the concerns over economic feasibility for sewer construction, and the relatively low occurrence of OWTS repairs from 2008-2014 (7% of the removed parcels, **Appendix A**) are still present and the recommendation to remove the selected parcels from the sewering plan remains.

6.1.2.p Planning Area P

Planning Area P was recommended for sewering as part of the 1995 FP, 2003 FP Reaffirmation and 2010 FP Update reports. This was due to certain economic and on-site restrictions prohibiting properly functioning OWTS and justifying the need to provide the parcels with an off-site wastewater management solution (see previous Chapters and the 1995 FP for a more detailed evaluation of this area). The wastewater from this area is proposed to flow through the existing Washington Street Interceptor by gravity into West Warwick. This area was proposed to be sewered as part of the Phase I sewer program, meaning the area was deemed to have the greatest need in the Town for an off-site wastewater management solution.

Based upon updated information obtained for this report, the need to serve this area by means of an off-site wastewater management solution still exists. Therefore, the recommendation for this area to remain in the Phase I sewer program is confirmed. Sewers have been installed to serve parcels adjacent to Washington Street, and the remaining parcels in this area will be served as part of Sewer Construction Contract No. 8. The estimated date of commencement for the project is March 2018, based upon the 2015 Priority Determination System's Project Information Sheets submitted to RI-DEM.

Excerpt(s) of FP for
RI-DEM Review Comment #8

manage their wastewater (see previous Chapters and the 1995 FP for a more detailed evaluation of this area). This alternative was recommended because many lots in this area are undersized for conventional OWTS use; however, the remote location makes sewering this area through connection to the municipal sewer system economically in-feasible. The 1995 report recommended that localized collector sewer systems be installed for restrictive lots and that the systems transmit the wastewater from these parcels to a community OWTS for disposal.

Based upon updated information obtained for this report, the need for this area to be served by an off-site wastewater management solution still remains economically in-feasible option. Therefore, the recommendation for this area to remain excluded from the sewer program is confirmed.

6.1.2.ii Planning Area AI

Planning Area AI was not recommended for sewering as part of the 1995 FP report; it was instead recommended that this area continue to treat their wastewater on-site through the use of OWTSs (see previous and the 1995 FP for a more detailed evaluation of this area). Removal of this area was recommended to allow wastewater allocation to areas with a greater need for sewers.

Based upon updated information obtained for this report, the need for this area to be served by off-site wastewater management solution remains low and the projected flows for the area are better allocated to areas with greater need. Therefore, the recommendation that this area remain excluded from the sewer program is confirmed.

Based upon needs data, including OWTS repair information obtained from RI-DEM, development density and GIS mapping, the Planning Areas that were removed from the recommended sewer plan in previous FPs, FP Reaffirmations and FP Updates were determined to have the least need and greatest sewer construction difficulty and associated cost of the remaining areas to be sewered. OWTS information, presented in Chapter 3, show that these areas experience low to moderate OWTS problems in comparison to the remaining Planning Areas. Also, with the exception of Area Z, these Planning Areas were in the Phase III sewer construction, based on the 1995 Facilities Plan. Phase III construction represented areas with the least amount of sewering need, and areas where either sewer construction may be difficult or where Phase I and Phase II sewers needed to be built before sewer access could be obtained. Since Phase I sewers have yet to be completed, the Phase III sewers are still in the conceptual phase and given the current rate of the sewer installation, it may still be several years away from completion.

6.2 Recommended Sewer Collection System Cost Estimate

The cost of installing conventional sewer collection systems in the study areas for which they have been identified as a feasible option have been generated as part of this study. The detailed collection system costs are based on a preliminary layout of sewers on town assessor's maps, with the aid of topographic mapping prepared as part of the 1966 Keyes report. The estimated sewering costs for each study area are shown on **Table 6-2**. A detailed street by street breakdown of these costs is included in **Appendix F**.

Excerpt(s) of FP for
RI-DEM Review Comment #9

7 ARRANGEMENTS FOR IMPLEMENTATION

7.0 General

The final step in the facility planning process, after the alternatives have been evaluated and the final plan has been selected, is to begin implementation of the selected wastewater management plan. As part of the 1995 Facilities Plan, 2003 FP Reaffirmation and 2010 FP Update, the selected plan at that time began implementation based on the recommendations of this section. A three phased recommended sewer plan was created. Currently, Area U was completely served by the municipal sewer and Areas A, B, F, G, I, J, K, L, N, O, P, Q, R, S, V, W and AE have been partially served by the municipal sewer based upon that recommended sewer plan. Future sewer construction contracts 8, 9, 10, 11, Hopkins Hill Road East, Huron Pond, and Nooseneck Hill Road Sewer Projects have been proposed to sewer additional Phase I and Phase II sewer areas. Contract 9 and 11 will completely serve Area G, , Contract 8 will complete Area P, Contract 10 will complete Area C, Hopkins Hill Road East will serve approximately 60% of Area K (184 parcels), Huron Pond will serve parcels in the northern portion of Area J and the Nooseneck Hill Road Sewer Project will serve a portion of Area N and all of Area N-1. Once the completion of Contracts 8, 9 and 11 occur all Phase I recommended sewers will be constructed. The remaining proposed sewer contracts serve areas in the Phase II recommended sewer program. As part of this report, the implementation of this revised selected three-phased plan, as discussed in Chapter 6 of this report, will be reviewed.

The major factors which must be addressed to continue the wastewater management plan are: to identify the necessary implementation steps, including institutional responsibilities, system operation and maintenance requirements and an implementation schedule; and to establish a financial plan to fund the recommended improvements. The financial plan identifies methods for financing the costs associated with the project, including system construction financing, administration costs and yearly system operation, maintenance and replacement (OM & R) costs. These items are discussed in detail in the following sections.

7.1 Financial Plan

Previous sewer programs prior to the 1995 Facilities Plan were rejected by voters for various reasons, including the costs involved with the system construction. For this reason, perhaps the most important implementation issue to be addressed is the acceptability of financing of the recommended plan. A financial plan for a wastewater collection system must include a system for financing system construction (capital) costs, as well as annual system operation and maintenance (O&M) costs. Since a phased sewer construction program is selected, considerations for financing capital and annual costs for each phase of the recommended system construction must be considered. The financing of construction and O&M costs are emphasized in the following discussions.

7.1.1 Capital (Construction) Costs

Chapter 6 included a discussion of the estimated capital costs associated with each phase of the recommended sewer construction. Also discussed were Coventry's share of capital costs associated with improvements to the West Warwick Regional

Excerpt(s) of FP for RI-DEM Review Comment #10

the current assessment method and through sewer user charges (as discussed later in this chapter).

7.1.6 Future Phase Construction Cost Allocation

The cost of constructing the continuing and future phases of the recommended plan should also be considered in any proposed financing system, since financing used for Phase I will set a precedent for future construction. The estimated costs for construction of the recommended Phase II and Phase III sewer system, as presented in Chapter 6 and **Appendix F**, are summarized in **Table 7-2**. Sewer construction costs were obtained from actual bids by contractors on similar type projects. The costs do not include Phase I sewer construction costs which are included in **Table 7-1**. As noted for Phase I costs, the costs for West Warwick regional projects are not included in this discussion, but are discussed separately later in this chapter.

TABLE 7-2
SUMMARY OF PHASE II & III CAPITAL CONSTRUCTION COSTS

Proposed Sewer Construction Projects			
Phase II			
Project Description	Total Project Construction Cost	Less Grants	Total Local Cost
Contract 10 – East Shore Drive Area	$2,120,000	None	$2,120,000
Hopkins Hill Road East Sewer Project	$2,250,000	None	$2,250,000
Huron Pond Sewer Project	$2,110,000	None	$2,110,000
Nooseneck Hill Road	$3,300,000	None	$3,300,000
Totals	$9,780,000		

Remaining Sewer System			
	Phase II	Phase III	Total
Lateral Sewers	$35,270,000	$9,970,000	$45,240,000
Interceptors	$4,230,000	$630,000	$4,860,000
Pump Stations and Forcemains	$2,400,000	$950,000	$3,350,000
Totals	$41,900,000	$11,550,000	

7.1.7 West Warwick Regional System Costs

Chapter 6 included a summary of Coventry's share of costs of West Warwick regional projects. These costs are for projects completed to date as well as for planned projects. As discussed previously, Coventry has paid over $10.8 million to date to West Warwick for their share of the improvements to the regional facilities that were designed and constructed to serve Coventry. The West Warwick Treatment Plant is currently undergoing an upgrade to reduce the phosphorus in the facilities effluent. The estimated cost of this upgrade is $12.5 million. Coventry's share of the final total project cost is 23% per their IMA agreement.

Excerpt(s) of FP for RI-DEM Review Comment #11

1. Inventory of critical assets that are part of the infrastructure project;
2. Evaluation of the condition and performance of inventoried assets or asset groupings;
3. Certification that the recipient has evaluated and will be implementing water and energy conservation efforts as part of the project/plan; and
4. Plan for maintaining, repairing, funding, and as necessary, replacing infrastructure constructed.

The FSP pertains only to the assets/infrastructure being constructed as part of the project receiving SRF funding. However, the FSP's developed should be considered "living documents" that are meant to be reviewed, revised, expanded and implemented as part of the on-going operation and management of the Town's system. It is recommended the Town create and update their FSP prior to the implementation of future sewer projects.

7.2 Implementation Plan

This section discusses the steps necessary to assure proper implementation of the recommended plan. Included is a discussion of the administrative and institutional responsibilities for implementation, as well as a list of specific implementation steps and a preliminary implementation schedule. Several items are discussed in detail, including the recommended plan for administration and O&M of the sewer system.

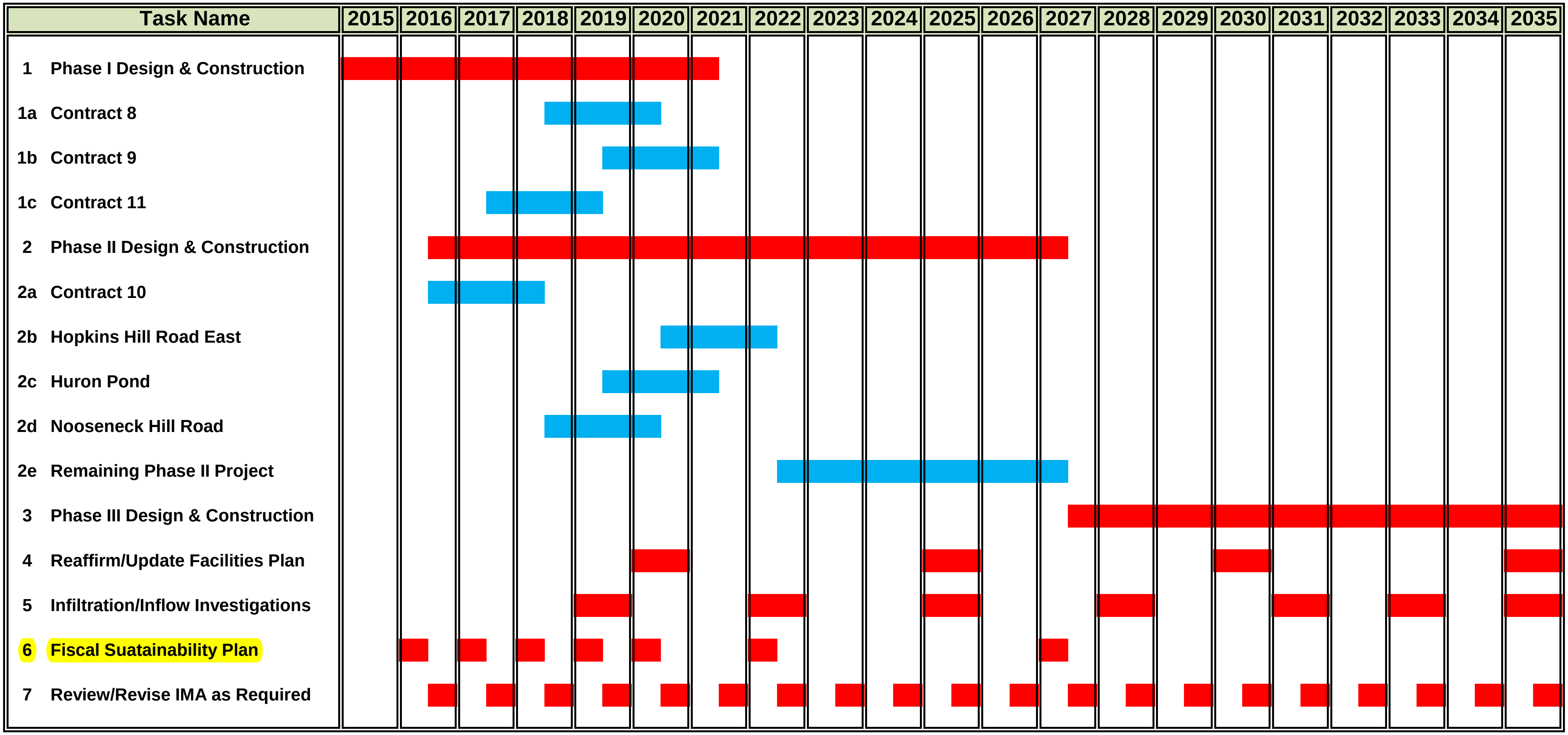
7.2.1 Implementation Responsibilities

The parties responsible for implementation of the recommended plan include the town of Coventry, acting through its Town Council, Town Manager and with the help support of the Town's Sewer Sub-Committee, and the town of West Warwick, acting through its Town Council. The town of Coventry has jurisdiction over the construction and operation of a sewer system within the town of Coventry. The town of West Warwick has jurisdiction over the Regional Wastewater Collection System and Treatment Facilities located within the town of West Warwick.

The existing intermunicipal agreement between Coventry and West Warwick, included as **Appendix I** to this facilities plan, outlines the responsibilities of Coventry and West Warwick as they relate to the construction and operation of a wastewater collection system in Coventry. The financial acceptability of the wastewater facilities plan is principally the concern of the town of Coventry (acting through its Town Council). A majority of the financial responsibilities of Coventry to West Warwick for the construction of regional system components to date have been met. Payment of Coventry's share of remaining and future costs for the construction of regional system components are the only financial concern of West Warwick. The construction of sewers in Coventry is solely the financial responsibility of the Town of Coventry. Currently the elected Coventry Town Council is the acting deciding body for the Town. The Coventry Town Council currently has responsibility for the planning, constructing, financing, administration, operating and maintaining of all the Coventry wastewater collection system. The financial acceptability of the recommended sewer system will therefore be decided by the Town Council of Coventry.

The Coventry Sewer Sub-Committee (CSSC) was created in previous years as an advisory board that could provide guidance and recommendations to the Town Council to vote on for implementation. Items relating to planning, construction or connection into

Figure 7-1
Implementation Schedule



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Excerpt(s) of FP for RI-DEM Review Comment #12

Intergovernmental Review
Contract List

Name	Misc1	Misc2	Misc3	Address	City State Zip
Mr. Christopher J. Raithel	RI Department of Environmental Management	Division of Fish and Wildlife	Great Swamp Field Headquarters	277 Great Neck Road	West Kingston, RI 02892
Ms. Nancy Hess	Principal Environmental Planner	RI Statewide Planning Program		One Captol Hill	Providence, RI 02908
Mr. Robert A. Smith, P.E.	Deputy Chief Engineer	RI Department of Transportation		Two Capitol Hill, Rm. 224	Providence, RI 02903-1124
Mr. Edward F. Sanderson, Executive Director	State historic Preservation Office	Historical Preservation & Heritage Commission	Old State House	150 Benefit Street	Providence, RI 02903-1029
Mr. John Brown	Historic Preservation Officer	Narragansett Tribal Historic Preservation Office		4425 South County Trail	Charlestown, RI 02813
Mr. Grover J. Fugate, Executive Director	Coastal Resources Management Council	Oliver H. Stedman Government Center		4808 Tower Hill Road, Suite 3	Wakefield, RI 02879-1900
Mr. Christopher Modisette	State Resource Conservationist	Natural Resources Conservation District		60 Quaker Lane, Suite 40	Warwick, RI 02886
Mr. Christopher Boelke	Field Office Supervisor	DOC/NOAA/NMFS/NERO		55 Great Republic Drive	Gloucester, MA 01930
Mr. Joseph Antonio	Senior Environmental Scientist	RI Department of Environmental Management	Office of Customer & Technical Assistance	235 Promenade Street	Providence, RI 02908

Five Centennial Drive
Peabody, MA 01960-7985
tel: 978-532-1900 fax: 978-977-0100
www.westonandsampson.com
engineering, energy, planning, permitting, design, construction, operation, maintenance
Weston&Sampson®

Town of Coventry, Rhode Island
W&S Project No. 2140605.A

March 25, 2016

«Name»
«Misc1»
«Misc2»
«Misc3»
«Address»
«City_State_Zip»

Re: Intergovernmental Review Request
Facilities Plan Update – Coventry, RI

Dear «Name»

On behalf of the Town of Coventry, Rhode Island, Weston & Sampson, Inc. is informing you of the impending submittal of an Update to the Town's Wastewater Facilities Plan (FP). This letter is to notify your department of the submittal provide a brief background of the changes incorporated into the FP Update and allow you to request a copy of the FP Update document for review, if your department has any questions/comments.

The original FP that this document is updating was approved to RI-DEM May 1995, with a Re-affirmation approved in 2003, and a previous update approved in 2009. This FP Update specifically addresses updated planning area projected wastewater flows, update of the current status of the Town's sewer program. This includes the additional infrastructure and associated capacity in the West Warwick Treatment Plan obtained by the Town of Coventry through the purchase of the Woodland Manor residential housing development's sewer system in 2013.

Research was conducted to update pertinent information and to determine the need for off-site wastewater management in the planning areas, as selected in the original 1995 FP. The Town is limited by an inter-municipal agreement (IMA) with West Warwick on the amount of wastewater capacity they own at the West Warwick Wastewater Treatment Facility. With the additional capacity associated with the Town's Woodland Manor sewer system purchase, the Town is proposing on adding an extension to their planning areas (new Planning Area N-1). This new planning area was analyzed based on considering the need for sewers, as well as any environmental and economic impacts incurred by sewering/not sewering the area. This new area is located southwest of existing Planning Area N, and is adjacent to Maple Root Pond. Sewering Planning Area N-1 will allow the extension of sewers to an area that is currently serviced by on-site treatment systems (i.e. septic systems), but has a need for offsite wastewater management solutions.

The attached Figure 6-1 shows the planning areas selected for sewering as part of the FP, as well as planning areas not recommended for sewering based on recommendations in the 1995 FP, 2003 Reaffirmation, 2009 FP Update and this 2016 FP Update.

Please note that the 21 day review period commences upon the receipt of this letter. We are assuming that if no questions and/or comments have been identified in this 21 day review period, then there are no concerns with the work under the FP Update within your department.

Planned draft submittal of the FP Update to RI-DEM is being made March 28th, and final submittal planed within the following months once all review comments have been addressed. If you or your department has any concerns, please request a copy of the FP Update that will be submitted to Mr. Art Zeman, at the RIDEM Office of Water Resources for review.

Please contact either myself (800-726-7766 x2408) or Tim DeGuglielmo (x2421) with any questions concerning the intergovernmental review of the Coventry Wastewater Facilities Plan Update.

Very truly yours,
WESTON & SAMPSON ENGINEERS, INC.

Tim DeGuglielmo, P.E.
Project Manager

Enclosures

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Department of Transportation
Two Capitol Hill
Providence, RI 02903

Office 401-222-2450
Fax 401-222-3905

April 22, 2016

Tim DeGuglielmo, P.E., Project Manager
Weston & Sampson Engineers, Inc.
Five Centennial Drive
Peabody, MA 01960-7985

Subject: Town of Coventry Wastewater Facilities Plan Update
Intergovernmental Review Request

Dear Mr. DeGuglielmo:

As requested, our office has reviewed your letter (attached) and the corresponding figure outlining the areas selected for proposed sewering. You indicate in the letter that the Update to the Town's Wastewater Facilities Plan is for the extension of existing sewers into areas that are currently serviced by on-site treatment systems.

With respect to the areas selected for sewering, our only requirement is that a Utility Permit(s) from the Rhode Island Department of Transportation (RIDOT) is required for any work within the State Right-of-Way. This includes any roads that may be owned or maintained by the State. We suggest that you consult with the RIDOT draft 10-year construction plan that is located on the following website: http://www.dot.ri.gov/documents/news/TAC_Submission/RIDOT_2015_TAC_Submission.pdf to determine if there are any proposed RIDOT projects that may affect the Town's Plan. Please note that the Department has a moratorium restricting the installation of utilities in a road for five (5) years after the pavement has been placed, with the exception of emergency situations.

If you have any questions or require any additional clarification, please do not hesitate to contact me or Luanne Nevitt, P.E., at 222-2023, extension 4049 or 4052, respectively.

Very Truly Yours,

Vincent J. Palumbo, P.E.

Attachments

VJP/lkn

cc: Messrs. Fish, Healey, Palumbo (all w/o attachments)
File (w/attachments)

State of Rhode Island and Providence Plantations
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 3
Wakefield, RI 02879-1900

(401) 783-3370
Fax (401) 783-3767

April 5, 2016

Mr. Tim DeGuglielmo, P.E.
Weston & Sampson Engineers, Inc.
Five Centennial Drive
Peabody, MA 01960-7985

Re: Town of Coventry Wastewater Facilities Plan Update – Intergovernmental Review Reference CRMC File 2016-03-113

Dear Mr. DeGuglielmo,

The consulting firm Weston & Sampson Engineers filed with the Coastal Resources Management Council (CRMC) an Intergovernmental Review Request for an update to the Town of Coventry Wastewater Facility Plan. The request and Revised Recommended Sewer Plan were received in this office on March 28, 2016. The CRMC has conducted a review as provided through the Department of Environmental Management Office of Water Resources. The Updated Plan has been prepared to add new sewer service areas within the town presently served by onsite wastewater treatment systems (OWTS).

The CRMC has reviewed the proposed Plan for conformance with the Coastal Resources Management Plan (CRMP) and as to whether the Plan would pose any adverse impact to coastal resources of the state. We have concluded that there will not be an adverse impact to coastal resources, provided the project is constructed, operated, and maintained in strict accordance with the state and EPA rules and regulations that govern such facilities. Based on the information you submitted, the CRMC will not request nor need to review the final Facility Plan Update that will be filed with RIDEM.

Sincerely,

James Boyd

James Boyd
CRMC Coastal Policy Analyst

/kc

cc: Grover J. Fugate, CRMC Executive Director
Jeffrey M. Willis, CRMC Deputy Director
CRMC File 2016-03-113
Art Zeman, RIDEM

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
HISTORICAL PRESERVATION & HERITAGE COMMISSION
Old State House • 150 Benefit Street • Providence, R.I. 02903-1209
TEL (401) 222-2678 FAX (401) 222-2968
TTY / Relay 711 Website www.preservation.ri.gov

RIHPHC No. 11606
160504.05

4 May 2016

Tim DeGuglielmo, P.E.
Project Manager
Weston & Sampson
Five Centennial Drive
Peabody, MA 01960

Re: Wastewater Facilities Plan Update
Coventry, Rhode Island

Dear Mr. DeGuglielmo:

The Rhode Island Historical Preservation and Heritage Commission (RIHPHC) staff has reviewed the information provided for the above-referenced project. The Town of Coventry has updated its Wastewater Facility Plan (FP). The FP Update identifies the need for additional infrastructure and an extension of the Town's planning area (Planning Area N-1).

Based on the information provided, the RIHPHC has concluded that the areas identified in the FP have a low potential to contain potentially significant archaeological resources. In order to adequately assess effects on significant architectural resources, the RIHPHC will need to review the locations of any proposed wastewater pump stations.

These comments are provided in accordance with the Rhode Island Historic Preservation Act and Rhode Island General Laws. If you have any questions, please contact Glenn Modica, Senior Project Review Coordinator of this office at glenn.modica@preservation.ri.gov or 401-222-2671.

Very truly yours,

for Edward F. Sanderson
Executive Director
State Historic Preservation Officer

Public Hearing

Coventry Sewer Sub-Committee Meeting

October 12, 2016

AMENDED
COVENTRY SEWER SUBCOMMITTEE
PUBLIC HEARING

Town Hall Council Chambers
1670 Flat River Road, Coventry, RI
Wednesday, October 12, 2016
6:00 pm

Glen Skurka
Chairman

Leonard Piette,
Vice Chairman

John Colaluca

Doug Finegan

Gregory
Laboissonniere

Kerry McGee

Tony Raposo

Joseph Spada

Charles Horan

1. Meeting call to order
2. Attendance
3. Review of Emergency Evacuation Plan
4. Approval of September 14, 2016 meeting minutes
5. Public Hearing – "Wastewater Facility Plan Update"
6. Adjournment

Posted: October 4, 2016

Cheryl A. George, CMC
Town Clerk

TOWN OF COVENTRY
1670 Flat River Road, Coventry, RI 02816
Tel. (401) 822-9173 Fax (401) 822-9132

Change to S.S.C.

October 4, 2016

Kent County Daily Times
1353 Main Street
West Warwick, RI 02893

Attn: Sara ***(Coventry Probate Account #10656)***

$61.28

Please advertise the following legal block ad October 7, 2016. per Sara-will adv. 10/ Saturday

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TOWN OF COVENTRY
SEWER SUBCOMMITTEE
PUBLIC HEARING

The Sewer Subcommittee will conduct a Public Hearing on October 12, 2016 at 6:00 pm in the Coventry Town Council Chambers, 1670 Flat River Road to discuss the "Wastewater Facility Plan Update".

Deborah A. Lavoie, Deputy
Deborah A. Lavoie, Deputy

TOWN OF COVENTRY
SEWER SUBCOMMITTEE
PUBLIC HEARING

The Sewer Subcommittee will conduct a Public Hearing on October 12, 2016 at 6:00 pm in the Coventry Town Council Chambers, 1670 Flat River Road to discuss the "Wastewater Facility Plan Update".

Deborah A. Lavoie, Deputy

transform your environment

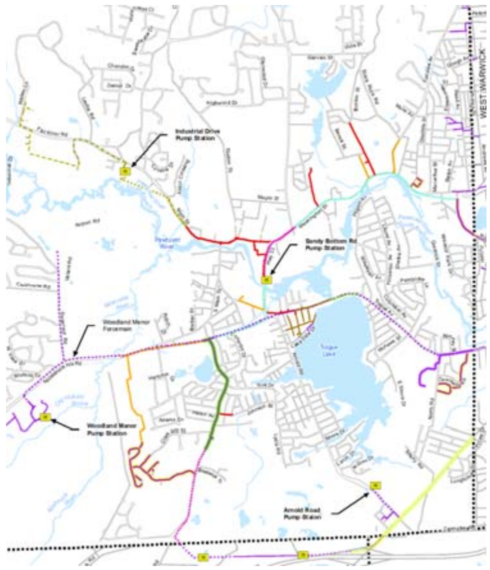
2015/16 Coventry Wastewater Facilities Plan Update

Presented by:
Kent Nichols, Weston & Sampson
Tim DeGuglielmo, Weston & Sampson

Presented at:
Coventry Sewer Subcommittee Meeting
October 12, 2016

Introduction

- History of Existing Sewer System
  - New London Turnpike Sewer (early 1980s)
  - Broad Street Sewers
  - Woodland Manor PS and FM (~1980)
  - Arnold Road Pumping Station and Force Main (~1985)
  - North Road Terrace Sewers (~1985)
  - North Branch Interceptor Sewer (~1985)
  - Hopkins Hill Road Sewer (1989-1991)
  - Contracts 03-01 & 03-02 (2004)
    - Tiogue Ave & Washington St Areas and Sandy Bottom Rd PS
  - Contract 03-03 (2006)
    - Hopkins Hill Rd FM
  - Contract 4 (2007)
    - Tiogue Ave/Anthony St/ Fairview Ave/Ramblewood Estates
  - Contract 5 (2008)
    - Main St/Contentment Dr/Boston St Areas
  - Contract 2008A (2008)
    - Johnson Blvd
  - Contract 6/6A (2012)
    - Lakeside Drive Areas
  - Contract 7/7A (2014)
    - Industrial Drive Areas



Weston & Sampson

Facility Plan Introduction

- Facility Plan (FP) to be updated every 5-years for a 20-year future planning period.
  - Last Update in 2015.
- Original Wastewater Studies began in late 1960s to early 1970s
- History of this Facility Plan
  - 1995 Facilities Plan
  - 2003 Facilities Plan Reaffirmation
  - 2010 Facilities Plan Update
- Purpose of this Update is to include any significant changes from previous FP
  - New users
  - Additional Infrastructure Acquisitions (i.e. Woodland Manor)
  - Proposed changes in Town Sewering Plan locations
- Approved FP is required to be eligible for the SRF program.

Weston & Sampson

Timeline

Submittal of Draft FP Update to RI-DEM	March 2016	√
RI-DEM issues 30-day Public Notice for Comments	September 19, 2016	√
Public Hearing on FP Update (Sewer Sub-Committee Meeting)	October 12, 2010	
RI-DEM Public Notice for Comments Ends	October 19, 2016	
RI-DEM Approval	Late October 2016	

Weston & Sampson

Changes Included in the 2016 FP Update

- Update/Confirm information from the previous FP document (2010 FP Update).
- Update Wastewater Flow Estimates for the 20-year Planning Period.
- Update the FP to include recently constructed and/or acquired sewer infrastructure.
  - Sewer Contract 6/6A (Lakeside Drive Area).
  - Sewer Contact 7/7A (Industrial Drive Area).
  - Woodland Manor System (Pump Station and Forcemain).
- Proposed utilization additional capacity in the Woodland Manor System to include additional areas of need (i.e. Area N-1 – Nooseneck Hill Road/Mapleroot Village).
- Provide recommendations for the Town's wastewater system moving forward.

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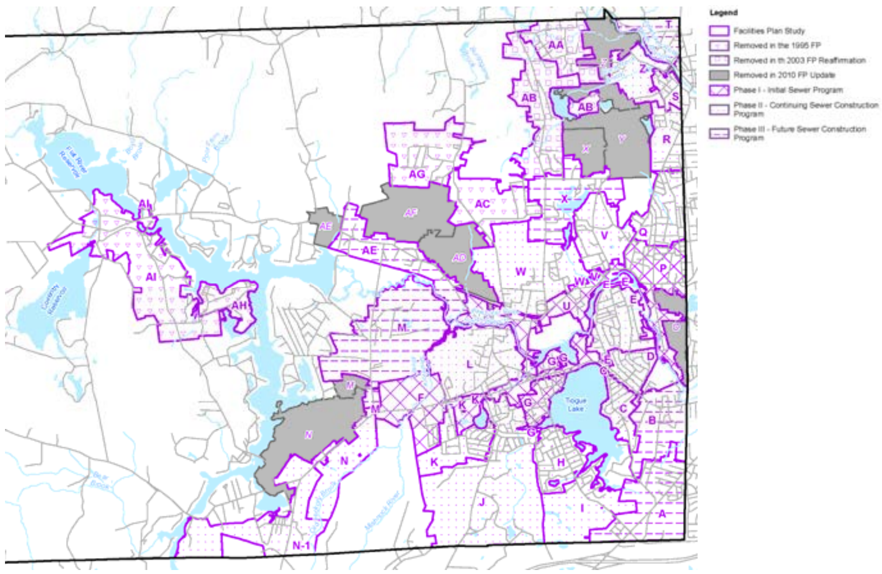
Existing Town Planning Areas



Sewer Flows from Planning Areas for 20-year & Full Buildout Planning Periods

	ADF Flow (GPD)			ADF Flow (GPD)			ADF Flow (GPD)	
Area	20-Year	Full BO	Area	20-Year	Full BO	Area	20-Year	Full BO
A	83,355	170,880	N*	2,042	4,205	Z*	45,177	46,476
B	20,198	55,803	N-1	68,508	70,548	AA	OWTS (2003)	
C	48,564	51,069	O*	4,271	10,754	AB	OWTS (2003)	
D	62,814	66,084	P	175,771	180,580	AC	OWTS (1995)	
E	100,485	105,283	Q	95,536	104,266	AD	OWTS (2010)	
F	110,801	118,662	R	33,394	37,729	AE*	2,590	64,107
G	66,918	71,838	S	28,586	30,836	AF	OWTS (2010)	
H	92,831	98,081	T	25,079	71,111	AG	OWTS (1995)	
I	42,389	44,009	U	114,857	121,121	AH	OWTS (1995)	
J	308,090	313,010	V	83,978	85,943	AI	OWTS (1995)	
K	71,419	75,589	W	108,503	111,668	WM	66,791	67,688
L	102,279	108,054	X*	1,470	60,784			
M	16,945	66,648	Y	OWTS (2010)				

TOTAL = 1,984,818 / 2,413,914

*** - Partial Area Removal (2010)**

Recommendations

- Continue with Sewer Program.
  - Lakeside II/Arnold Road Sewers
  - Quidnick Village Sewers
  - Hopkins Hill East Sewers
  - Huron Pond Sewers
  - Contracts “9”, “10”, “11”
  - Nooseneck Hill Road/Maple Root Village
  - Additional areas of need
- Review IMA Agreement with West Warwick
- Review “older” areas of sewer system for Infiltration/Inflow potential.
- Continue reviewing/updating assessment/sewer rates as needed.
- Update Facilities Plan (every 5 years)

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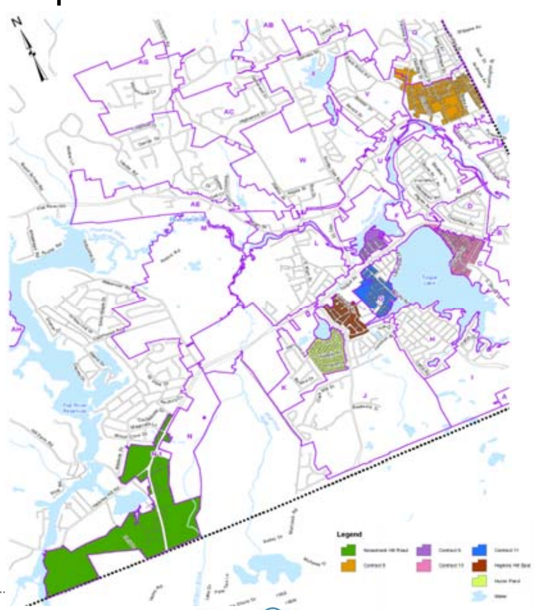
Future Proposed Sewer Construction Contacts



Weston & Sampson

thank you

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Town Council Meeting/Work Session

January 11, 2016

Wastewater Facilities Plan Update

Town Council Meeting
January 11, 2016

EXECUTIVE SESSION – 6:00 p.m.

1. Town Manager Recruitment per RIGL 42-46-5 (a) (1)

2. Miozzi Consent Judgment KC 2010-1574 per RIGL 42-46-5 (a) (2)

3. Imposition of Impact fees pursuant to agreement for the “Highlands” arising from litigation and potential litigation KC CA #03-444 and KC CA #13-5001 pursuant RIGL 42-46-5 (a) (2)

4. Imposition of Impact fees pursuant to agreement for the Village Green Condominiums arising from litigation and potential litigation KC CA #03-444 and KC CA #13-5001 pursuant to RIGL 42-46-5 (a) (2)

A motion was made by Councilman McGee seconded by Councilwoman Duxbury to come out of Executive Session. All voted aye.

A motion was made by Councilman McGee seconded by Councilwoman Duxbury to seal minutes of Executive Session. All voted aye.

WORK SESSION – 6:30 p.m.

1, Coventry Landfill Closure Update

Engineer Richard Hittinger updated the Town Council on the landfill closure and gave a power point presentation which included a proposed modification to the plan. Assisting and answering questions along with Mr. Hittinger were Attorney Joseph Farside, representing the town in this matter; Attorney David Graham who represents the PRP group; and Mr. Ed Summerly, design engineer.

Discussion centered around remediation and closure of the landfill, the BUD program and use of a synthetic cap. Mr. Hittinger went on to state that the consent decree for remediation requires that the town and the prp group remediate and close the inactive landfill on Arnold Road, with total cost of the work estimated at seven to ten million dollars. The BUD (Beneficial Use Determination) program was developed to help offset costs and was approved by both the Council and DEM in 2013. The site has been accepting BUD materials for 8 months, but the acceptance rates have been far below what was projected. The PRP group is considering BUD program modification pending tonight’s hearing.

Currently DEM approval calls for the installation of a low permeability soil cap, in order to limit surface water infiltration through the cap and also to control storm water runoff and soil erosion. Discussion tonight pertains to upgrading to an impermeable synthetic cap.

Mr. Hittinger went on to explain that one of the significant problems is that we have a total lead acceptance level of 500 parts per million, significantly lower than the Cranston or Central landfills, which have programs like this. The difference is that they both accept up to 2000 parts lead per million, which we would be able to accept if we agreed to put a synthetic cap on after we reach our final grade.

Interim Manager Kerbel added that as part of the contract with DiGregorio, they were charging

$20.00 a ton. I had a conversation early on with DEM, and it was agreed that there are a couple of issues. Maybe the fee is high and others are charging less, but others are allowed to accept a higher lead level. DiGregorio has reduced their fee from $20.00 to $15,00, we are recommending this impermeable cap, which will allow us to take a higher concentration of lead. The bottom line is that the lead content is too low for many of the soils.

At the current pace, closure could take more than ten years. DEM has indicated a willingness to allow soil with higher lead concentration if the soil cap is replaced by a synthetic cap. By changing it should allow closure in less than five years. The proposed design changes include a impervious cap, upgrade of storm water controls at the site and the institution of soil blending and odor monitoring. Cranston landfill has been doing this successfully for five years.

Councilwoman Duxbury is concerned about drainage, especially with the lake nearby. Mr. Hittinger went on to explain the benefits of closure with turf technology where the town will experience enhanced groundwater protection, decreased operation and maintenance costs, enhanced landfill gas and odor control, quicker implementation and become more compatible with solar power end use. It will be more aesthetically pleasing.

DEM's policy with a soil cap limits the lead concentration to a maximum of 500 parts per million. . We initially asked for 2,000 ppm. The low lead concentration of 500 ppm has been limiting some of the soil that is acceptable at the facility. DEM would like to see this landfill remediated and closed in five years.

With the modification, it will first be tested in a very small area under a controlled method. Manager Kerbel said that if the impervious cap has more runoff, that's good news as the runoff isn't going into the landfill but will run off the top. Mrs. Duxbury is also concerned about odor. Councilman Laboissonniere asked where the c & d facilities are and remarked that many years ago there was a facility on Colvintown Road, there was a lot of stuff going in there and he wonders if that particular facility is going to get ramped up again. There was a spontaneous combustion incident there that lasted six weeks. Mr. Hittinger replied that the facilities could be anywhere, but most likely they are in the RI area. This material comes from demo companies. Manager Kerbel stated that this is the reason why we are talking about very localized testing in the beginning. The materials will be tested first before they are accepted. DEM has a list of unacceptable materials and it is the job of onsite people to monitor and make sure testing is complied with. Councilman Laboissonniere asked if there is a vendor list. Mr. Hittinger did not know but Attorney Farside advised that there is a very extensive application process with DEM, so in the end we will know where they came from and what the contents are.

Solicitor Gorham asked how they could have been so far off the BUD projections. Attorney Hittinger said this is a concept that has worked very well for other clients, but not so well here. Besides the economy being an issue, originally we thought we could get the 2000 parts per million, but DEM's policy is that we can only take up to 500 ppm without a synthetic cap. There are not a lot of these projects in RI. Mr. Hittinger added that it was the Solid Waste Division of DEM that said we could not have 2000 ppm and lowered to 500 ppm without the synthetic cap. Cranston can have 2000 ppm because they have the synthetic cap. This is an unwritten policy of DEM, it is not totally fair. If we are going to mimic Cranston, then we are going to have to have a synthetic cap. It is actually beneficial for the town to make this change. Solicitor Gorham understands, but doesn't get why we didn't start with this design and strategy in the beginning.

After completion of remediation, it will require continued storm water maintenance and groundwater monitoring for 30 years.

With the synthetic cap, the lead will be isolated from the rain water. There is much more protection than with the soil cap, as the soil cap allows a small amount of water to go through. The synthetic cap stops all water from going through and the lead stays underneath. He went on to show a comparison of estimated costs, both with the current cap and with a synthetic cap. (See presentation for comparisons)

What is recommended is to submit an application to DEM to include the closure turf cap, and request that soil be acceptable with lead levels up to 2000 ppm and c & d fines. Then, implement a limited, phased trial of c & d fines with perimeter monitoring. The town will have authority to stop acceptance of c & d fines if odors become a problem. Control the placement of c & d fines and high lead soils in a predetermined area of the landfill. Councilman McGee wants to be assured of strict monitoring.

To date, $1.6 million has been spent on the landfill. President Shibley asked how the initial estimates of $7 million to $10, million would change if this is approved and Mr. Hittinger replied there would be a cost increase of about $1.3 million.

Manager Kerbel added that the town approved a $5 million bond and has already borrowed $860,000 of that five million authorization. The ironic part of all of this, when the cost goes up, revenue goes up and the town's out of pocket expenses are less under this program, if everything works right. If it doesn't, then we would have to borrow a lot more of that five million. This is why we want the town to have veto power of the c & d fines.

Councilwoman Duxbury asked the projected time period to finish the project and Mr. Hittinger replied five years. However, she is still concerned about the lead going from 500 ppm to 2000 ppm Mr. Hittinger responded that 2000 ppm is the maximum, the materials may not be that high, yet higher than the 500 ppm. Current we can only accept up to 500 ppm. Mrs. Duxbury feels there may be another idea out there and is not anxious to jump into this without making sure. She would like to wait and see if the reduction in tipping fees has an impact.

Councilman McGee feels much more confident with a barrier being put in there. President Shibley doesn't think it will matter waiting a month or so, they can still continue what they have been doing. If we have to go with the synthetic cap, that's the way we can get that landfill done in five years. Mr. Hittinger said that the application will take about six weeks to prepare.

Dog Park

Manager Kerbel gave a summary of previous discussions about a dog park behind the Town Hall Annex. However, the recommendation tonight is that it be relocated adjacent to the Oliveiri property on Route 117 near the sewer pump station, which is town owned and previously used as a t ball field.

Parks and Recreation Director Jay Primiano submitted a relocation request to the Town Council, requesting construction of a 150 x 100 foot dog park in conjunction with the Dog Park Committee.

Posts and rails from the greenway sewerage project will be repurposed, labor will come from the Parks division and dollars from the "Friends of Coventry Dog Park. One of the benefits to the dog park will be the ability for dogs and owners to socialize and it is within walking distance from more densely populated areas through use of the greenway. The park will service both small and large dogs separately. There will be limited square corners in the park which will diminish threatening dog cornering. As we foresee a potentially greater use of the Town Hall Annex for recreation programming, we would like to reserve the space at the annex for potential future programs.

The cost to the town will be little to no expense. The Parks Division will provide labor, machinery and fuel to run the machinery and will contribute already stockpiled materials currently stored at Central Coventry Park. The Dog Park Friends will contribute $3,800.

As far as future costs, dog waste bags will need to be replenished (contributed by Dog Park Friends), Parks and Recreation already cuts and trims the grass in the area and restriping of the parking lot will be completed eventually.

Councilwoman Carlson asked if there will still be room for the horse caravans and Mr. Primiano replied that there is sufficient space. She doesn't want to see the horses frightened by barking dogs. She also asked if the dogs will need to have current licenses and rabies tags, along with monitoring to make sure they are healthy. Mr. Primiano replied that our signage should accommodate that issue. This seems to be a group of people who are really self monitoring. It is possible that we may work with animal control and they could do spot checks from time to time. However, in Charlestown there was never any checks and there were also no problems over a 3 ½ year period.

Mrs. Carlson asked about liability insurance and what would happen if someone gets attacked? Will certain breeds, for example pit bulls, boxers, german shepherds, be allowed to come in? Who is liable? Mr. Primiano believes the Interlocal Trust would cover this. He also does not plan to discriminate against specific types of dog breeds, although that would be Council's choice.

As far as dog waste, there will be receptacles and Parks and Recreation would pick up periodically. In the budget you will see that the expenses will be covered by Dog Park Association; we would be handling the labor aspect of the project.

Councilman Laboissonniere asked whether he has had discussions with abutting neighbors and homeowners. There are a lot of homes over there and dogs do bark. If the neighbors have no problem with it, then he doesn't either, but thinks they do need to be consulted. Mr. Primiano replied that he has had a short discussion about running the program on site and there is a strong desire by the business owner to get more people over there. Eventually there will be a business there.

Councilwoman Carlson asked whether this project needs to go to the Zoning Board and Solicitor Gorham is not sure, will have to look into it. Councilman McGee added that we didn't think there was a need to go to zoning at the previous annex location. He thinks the dog park is a great idea, good location and we will be utilizing our town property. There is already an ordinance requiring that dogs are licensed, and in order to be licensed the rabies shots need to be up to date. He also doesn't think there should be any discrimination of breeds going into the park.

Councilman Laboissonniere asked who maintains the right of way and Mr. Primiano said that as he understands it, there is a 30 foot right of way on the western side of the property abutting the stone wall and it is maintained and plowed by the town. There is really very little development needed, the land is flat, grass is growing and it is in good condition. It is an ideal situation and could be done relatively quickly.

Councilwoman Duxbury thinks this is a good idea, but wants to make sure the operation is monitored, that there are waste bags available, that the waste is picked up and disposed of, that only licensed animals are allowed, who exactly will run the park and if it is the dog park association, are there policies regarding the operation of the park that they will have to follow? Will the town contribute any resourses? Mr. Primiano responded that there may be some collaboration, the association will continue to raise money and the town will be responsible for the property and cutting the grass, as we do already. Mrs. Duxbury wants to go into this with eyes open and wants to know how problems and issues get resolved if they arise.

Mr. Primiano does not see this as being a high maintenance project. Councilwoman Duxbury suggested speaking with Colonel Macdonald to see if Animal Control can have a plan if they are going to have to play a role in monitoring. She also believes that the people around that area have a right to know about the dog park. I don't have an issue with relocating the park as long as people in the neighborhood are fine with it. I understand the town will be a back up to the dog organization, certainly the town can support this type of thing. Mr. Primiano will report back to council after more details are worked out.

<u>Sewer Facility Plan</u>

Glen Skurka, Chairman of the Sewer Subcommittee and Kent Nichols of Weston and Sampson were present to discuss the sewer facities plan. Mr. Skurka advised that the plan needs to be restructured, as required by DEM. Mr. Nichols gave an update, referring to the handout summary with three maps attached. The plan is kind of a roadmap for the sewers in Coventry. It has already been changed and modified many times, The document tonight intends to show about a 20 year plan for the town. We have already done some pretty amazing things and there is a map included of our existing systems along with additional discussed projects. The town has a lot of capital that you are not using. The attached maps show the assessment of existing conditions on the first map, proposed sewer contracts on the second map and the revised recommended sewer plan on the third page.

He gave an overview of the facilities plan update, the goals of the new update, the current and future flows into the wastewater system and the assessment of future wastewater planning via future sewer contracts including operations, maintenance, and preventative maintenance items along with reviews from the town, Department of Environmental Management, comments and the final submission to DEM.

Coventry still has 9/10's of their capacity at the West Warwick plant. Manager Kerbel indicated that the Council needs to identify an area, as we have the bond money and are paying interest on the money.

Mr. Nichols went on to describe the many different areas outlined on the third map, those in purple as potential areas with some areas removed to dedicate more to economic development.

A few things continued to change since Contract 7, we were going to go on to Contract 8, but did not. However, there are a lot of future areas that can be expanded and part of this plan is to figure out where the needs might have changed for the updated plan. The town now is sitting with a couple of million dollars that needs to be allocated somehow and you need to identify where to go next. Contracts 8 – 10 have been plotted on the map to show us future projects. In addition there are a couple of spots where the town has talked about heading further west than the post office on Route 3, a great development area there. We are here to see what you want to do next. Manager Kerbel agreed that we need to identify a project and spend the money, approximately 2.2 million, and that is the next step for Council, to look at the maps, identify a project, come to a conclusion and get it underway.

Mr. Nichols went on to explain that Contract 8 was stopped because of the costs, with so much rock and ledge in the area. Councilmember McGee, also a member of the Sewer Subcommittee, advised that combining projects was also discussed due to costs, however, nothing is set in stone.

TOWN COUNCIL MEETING – 7:00 p.m.

Present: Councilman McGee, Councilwoman Duxbury, Vice-President Carlson, President Shibley, Councilman Laboissonniere, Town Manager Kerbel, Town Solicitor Gorham

Pledge of Allegiance
Invocation
Review of Emergency Evacuation Plan
Approval of Town Council minutes December 7 and December 14, 2015

Councilman Laboissonniere referred to the end of the December 7 minutes and asked that the incorrect spelling of his last name be corrected.

Councilwoman Duxbury asked that in the December 14 minutes, on page 8, third paragraph, that the word “trash” be inserted, where she refers to the “new program”, so it will read “new trash program”.

A motion was made by Councilman Laboissonniere seconded by Vice-President Carlson to approve minutes as corrected. All voted aye.

<u>President’s Comments</u>

President Shibley announced a ribbon cutting ceremony on Friday at 11:00 a.m. at the Pawtuxet River Stabilization site located at the General Nathanael Greene Bridge, having been postponed from December 11, 2015. The ceremony will take place outside, weather permitting.

Open House will be held at the Coventry High School, Regional Tech Career building, on January 16th from 6 p.m. to 8 p.m. New programs will be announced for 2016.

Superior Court Judge Silverstein approved the receiver’s petition to sell the Hope Mill. Coventry owns 7.5 acres there and is owed about $56,000. We hope to see that money and Solicitor Gorham understands that Coventry will be paid.

There is a vacancy on the Coventry Land Trust. If anyone is interested, send in your application to the Town Clerk.

<u>Council District Updates</u>

District 3 Councilman McGee was happy to report that a portion of Blackrock Road has been paved.

Distrtict 5 Councilwoman Duxbury commented that some vehicle thefts have occurred in her district and Coventry Police have increased patrols. Whoever is performing these thefts is not making noise and leaving car doors ajar, so please lock your cars.

There were no reports this evening from District 1 Vice-President Carlson and District 2 Councilman Laboissonniere.

District 4 President Shibley announced that the “Dollar House” on Washington Street has been razed and the gate house on Tiogue Lake has been vandalized. There was a fire at the plaza where Dragon Palace is located, but due to the rapid response from the adjoining fire district, damage was less severe than it could have been and was mostly smoke and water.

LICENSES

1. Renewal of Firearms licenses:

   (a) Rhode Island Gunworks, 303 S. Main Street
   (b) Mid-State Gun Co., LLC, 1200 Tiogue Avenue
   (c) Hawkins Machine Co., Inc., 374 Hopkins Hill Road

A motion was made by Councilman McGee seconded by Councilman Laboissonniere to approve renewals. All voted Aye.

RESOLUTIONS

1. Authorizing the Town Council President to enter into an agreement with the Town Manager

President Shibley announced that the new Town Manager is Mr. Graham Waters, currently a city manager in New Carrollton, MD. He was unanimously selected by the Town Council and will begin employment in Coventry on February 16, 2016.

A motion was made by Vice-President Carlson seconded by Councilman Laboissonniere to approve resolution. All voted Aye.

2. Appointing Tax Assessor for the Town of Coventry

Manager Kerbel announced that the new Tax Assessor, unanimously agreed upon by Council, currently works in Providence and has previously worked in Burrillville and Attleboro, MA. Mr. James Drew is a resident of Exeter.

A motion was made by Councilman Laboissonniere seconded by Vice-President Carlson to approve resolution. All voted aye.

3. Accepting the actuarial valuation of the Police Pension Plan for FY 17

Manager Kerbel advised that the funding percentage is going up. Although it is still low, it is heading in the right direction. However, the plan is consistent with the funding improvement plan submitted to the State of RI, which in 2012 was 9.9% funded; 10.3% in 2013; 12.9% in 2014 and currently 14.6% in 2015, per Finance Director Thibeault.

A motion was made by Councilman Laboissonniere seconded by Councilman McGee to approve resolution. All voted aye.

4. Adopting borrowing priorities

Manager Kerbel explained that the schedule for the bond requires action by the Council for borrowing that will occur later in the spring. We are borrowing approximately 3.9 million, which includes about $3.225 million for the road bond, $150,000 on the automated recycling program, and approximately $450,000 for landfill remediation. This is not a final number, we just need authorization. Included in the road bond , there is a policy issue, we will still borrow the maximum of $3,225 million, the maximum allowed, but in question is whether or not to do the off right of way, off pavement, on a state road, but is part of the RI Infrastructure Bank's priority projects. If you agree to it, we will use some town funds to do some streetscape projects. We need to know if this is a priority or if you just want to use the road bond to pave town roads.

DPW Director Kevin McGee stated that it is $880,000 for the streetscape; however, our portion would be $80,000, 10%. We have to decide if it will be done as part of the bond. If we don't do it, we will lose $800,000 of state money. This is a 10% match.

Mrs. Duxbury agrees, clarifying that it won't take money away from paving roads, except for the 10%. At some point Mrs. Duxbury would like to get a list of what we have done and what the costs of those items have been, in order to see what projects we have completed and what the costs were.

Councilman Laboissonniere feels that this is a great investment. Councilman McGee referred to the automated collection bond 5.5 million and we have about 1.2 million remaining. Finance Director Thibeault indicated that we will not use the whole $5.5 million; we have only issued what we have used. Councilwoman Duxbury asked if at the end of the year we can do a post audit, look at what Mr. Hoover's original prediction was that this was supposed to pay for itself and see how that compares with what has actually happened? He probably based that prediction on the $5.5 million, but with $1.2 million remaining, it exceeds expectations

A motion was made by Councilman McGee seconded by Councilman Laboissonniere to approve resolution. All voted aye.

5. <u>Rescheduling Town Council meeting</u>

A motion was made by Councilman McGee seconded by Vice-President Carlson to reschedule the Town Council meeting from January 25, 2016 to January 26, 2016. All voted aye.

Manager Kerbel explained that next three items are all for approval of appropriations using impact fees. The items are broken, but have a useful life of more then ten years. Each of the items was less than $10,000. We are recommending approval of these resolutions using impact fees.

6. <u>Approving replacement of hot water heater at annex</u>
7. <u>Approving purchase of repeater for antennae</u>
8. <u>Approving Tiogue Lake Gatehouse Repair</u>

A motion was made by Councilman McGee seconded by Councilwoman Duxbury to approve Resolution numbers 6, 7 and 8. All voted aye.

9. <u>Authorizing the Interim Town Manager to sign an agreement regarding "Village Green" Impact Fees</u>

10. <u>Authorizing the Interim Town Manager to sign an agreement for Impact Fees for the "Highlands" arising from litigation KC CA #03-444 and KC CA #13-5001</u>

Manager Kerbel asked to consider Resolutions #9 and #10 together. He was authorized to sign an agreement earlier that called for a range of impact fees in Village Green from $1700 to approximately $5200; in the Highlands from $1700 to about $7600. The solicitor and I have negotiated with Mr. Mihailidies, owner of the properties. He is looking for certificates of occupancy on about twenty units, twelve in Village Green and eight in the Highlands. He has also agreed to pay $1700, the lower amount in Village Green and $4450 in the Highlands. This will result in about $56,000 or so to the town.

A motion was made by Councilman Laboissonniere seconded by Councilwoman Duxbury to approve resolutions. All voted aye.

PUBLIC HEARINGS

1. Application for new Class B Ltd. liquor license by Leea Cavanaugh dba Greenway Café, 21 Hill Farm Road (formerly Pete's Pizza)

A motion was made by Councilman Laboissonniere seconded by Councilman McGee to open public hearing. All voted aye.

Leea Cavanagh was present and told the Council that she will be open for breakfast and lunch; operating hours will be from 6 a.m. to 3 p.m. She is confident that she will do well with the location being next to the greenway. Council agreed that she has a great location and wishes her luck.

There was no public comment.

A motion was made by Councilman Laboissonniere seconded by Vice-President Carlson to close public hearing. All voted aye.

A motion was made by Councilman McGee seconded by Vice-President Carlson to approve application. All voted aye.

2. Amending Chapter 153 of the Coventry Code of Ordinances, Licensed Businesses, Section 153-4 Closing hours for asphalt plants and cement plants

A motion was made by Councilman Laboissonniere seconded by Vice-President Carlson to open public hearing. All voted aye.

Manager Kerbel said what this amendment does is changes and includes the time for processing firewood and mulch including warming up machines and queuing or loading trucks, in the definition of operations. Solicitor Gorham explained that there is one exception and that would be for firewood harvested from one's own property. Then this ordinance does not apply.

Councilwoman Duxbury said that her reasons for this amendment are threefold: The first reason stems from many complaints from residents in the area about noise coming from operations other than asphalt plants; secondly, the police need more definition for enforcement; and thirdly if we have hours of operation that apply to businesses in an industrial park, it doesn't provide a fair playing ground when some businesses have hours and restrictions and some do not. We received feedback from Colonel MacDonald and it is important that the police have the tools to enforce. Chief MacDonald stated that he supports the proposed ordinance with the changes.

There was no public comment.

A motion was made by Councilman Laboissonniere seconded by Councilwoman Duxbury to close public hearing. All voted aye.

A motion was made by Councilwoman Duxbury seconded by Vice-President Carlson to approve ordinance amendment. All voted aye.

3. Amendment to the Zoning Ordinance to allow for reasonable citing of solar energy Facilities

A motion was made by Councilman Laboissonniere seconded by Vice-President Carlson to open public hearing. All voted aye.

Manager Kerbel pointed out that the recommendations from the Planning Commission have been included in the Council packets. The ordinance has been slightly modified and if you want to accept the Planning Commission recommendations, then you want to vote on the ordinance as amended by the Planning Commission.

Planning Director Paul Sprague advised that the Planning Commission recommended to additionally allow solar powered electrical generating stations on roof mounts in general business zones and industrial zones, the reason being that Planning felt there may be large buildings throughout this town that could accommodate solar on the rooftop, and made the recommendation that Council give consideration to allowing major solar energy in all zones except for Village Main Street Commercial.

President Shibley said that he doesn't see GB 1 on the matrix and Mr. Sprague replied that although there is a GB 1 and a GB, on the matrix it is just shown as GB. Solicitor Gorham asked if there were any other changes to text and Mr. Sprague responded there were not, just changing N (Not permitted) to S (Special Use) on the matrix with the exception of VMC. Only the matrix needed to be changed, no change in verbiage.

There was no public comment.

A motion was made by Councilman Laboissonniere seconded by Vice-President Carlson to close public hearing. All voted aye.

A motion was made by Councilman McGee seconded by Councilwoman Carlson to approve ordinance with amendments. All voted aye.

4. Transportation Improvement Program and adoption of resolution approving submission of program

A motion was made by Vice-President Carlson seconded by Councilwoman Duxbury to open public hearing. All voted aye.

Manager Kerbel stated that every few years the state requires the town to give input to the transportation improvement program. It requires cities and towns to submit priorities to them. We made our submission on Friday and you have in your packet the road paving priorities of the town including the completion of the trestle trail project and streetscape improvement projects that we talked about. We discussed all this briefly with the legislators at the December 15 meeting. We will see what happens.

There was no public comment.

A motion was made by Councilman Laboissonniere seconded by Vice-President Carlson to close public hearing. All voted aye.

A motion was made by Councilman McGee seconded by Councilman Laboissonniere to approve resolution. All voted aye.

PUBLIC COMMENT

Robert Lawrence, Darton Street, asked that Public Comment be placed at the beginning of the meeting.

A motion was made by Councilman McGee seconded by Councilman Laboissonniere to adjourn meeting. All voted aye.

____
Town Clerk

Facilities Plan Update

1. Introduction:
    a. Facility Plan to be updated every 5-years for a 20-year future planning period. Last update was performed in 2010

    b. History of this edition of the Facility Plan
        - 1995 Facilities Plan
        - 2003 Facilities Plan Reaffirmation
        - 2010 Facilities Plan Update

2. Goals of this Facility Plan Update:
    a. Existing wastewater system
        - Hopkins Hill Road Sewer Project
        - Old North Road Sewer Project
        - New London Turnpike Sewer Project
        - Sewer Contracts 1-7
        - Woodland Manor PS/FM infrastructure acquisition
        - Sewers built by subdivision contractors/other misc. projects

    b. Current and Future Flows into the Wastewater System
        - Total Coventry ADF Capacity = 2.25 MGD (excluding Woodland Manor)
        - Coventry Existing ADF = ~0.23 MGD (excluding Woodland Manor)
        - Woodland Manor ADF Capacity = 0.2 MGD
        - Woodland Manor Existing ADF = ~0.07 MGD

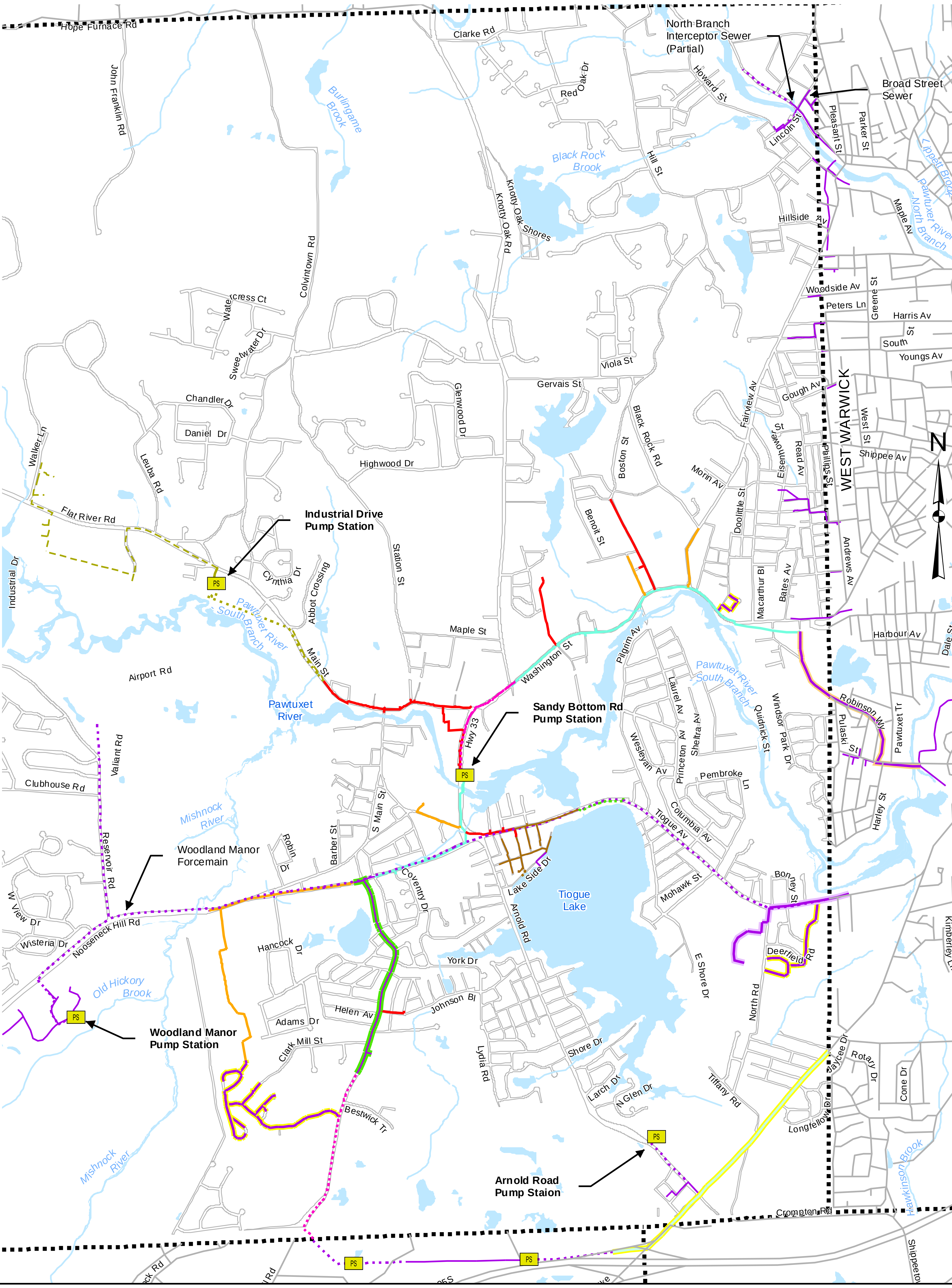
    c. Assessment of the future wastewater planning
        - Future Sewer Contracts
            1. Sewer Contracts 8 – 10
            2. Hopkins Hill Road West Sewer Project
            3. Huron Pond Sewer Project
            4. Nooseneck Hill Road Sewer Project (added Planning Area N-1)
        - O&M and preventative maintenance items
            1. Town owned pump stations
                - Sandy Bottom Road Pump Station
                - Woodland Manor Pump Station
                - Industrial Drive Pump Station
            2. Flow Meter Calibration/Coordination
            3. Investigation program looking at the older areas of gravity sewers in Town (i.e. North Branch Interceptor, New London Turnpike, etc.)

3. Remaining Items:
    a. Town Review and Comment

    b. RI-DEM Review and Comment

    c. Public Advertisement/Meeting

    d. Final Submittal to RI-DEM



Legend

PS Pump Station

Gravity Main

Contracts 03-01, 04, 05

- Contract 03-01
- Contract 03-03
- Contract 04
- Contract 05
- Contract 6
- Contract 7

Gravity Main - Other Sewer Projects

- North Road Terrace Sewer Project
- Old Port Authority Sewer Interceptor
- Pulaski Street / Robinson Way Sewer Project
- RIDOT Hopkins Hill Reconstruction Project
- Gravity Main - Subdivisions

Force Main

Contracts 03-01, 04, 05, 6

- Contract 03-01
- Contract 03-03
- Contract 04
- Contract 6
- Contract 6A
- Contract 7 (FM)
- Contract 7 (LP)

- Gravity Main Installed by Others
- Forcemain
- Low Pressure Sewer
- Lakes
- Town Boundaries

2,000 0 2,000

Scale In Feet

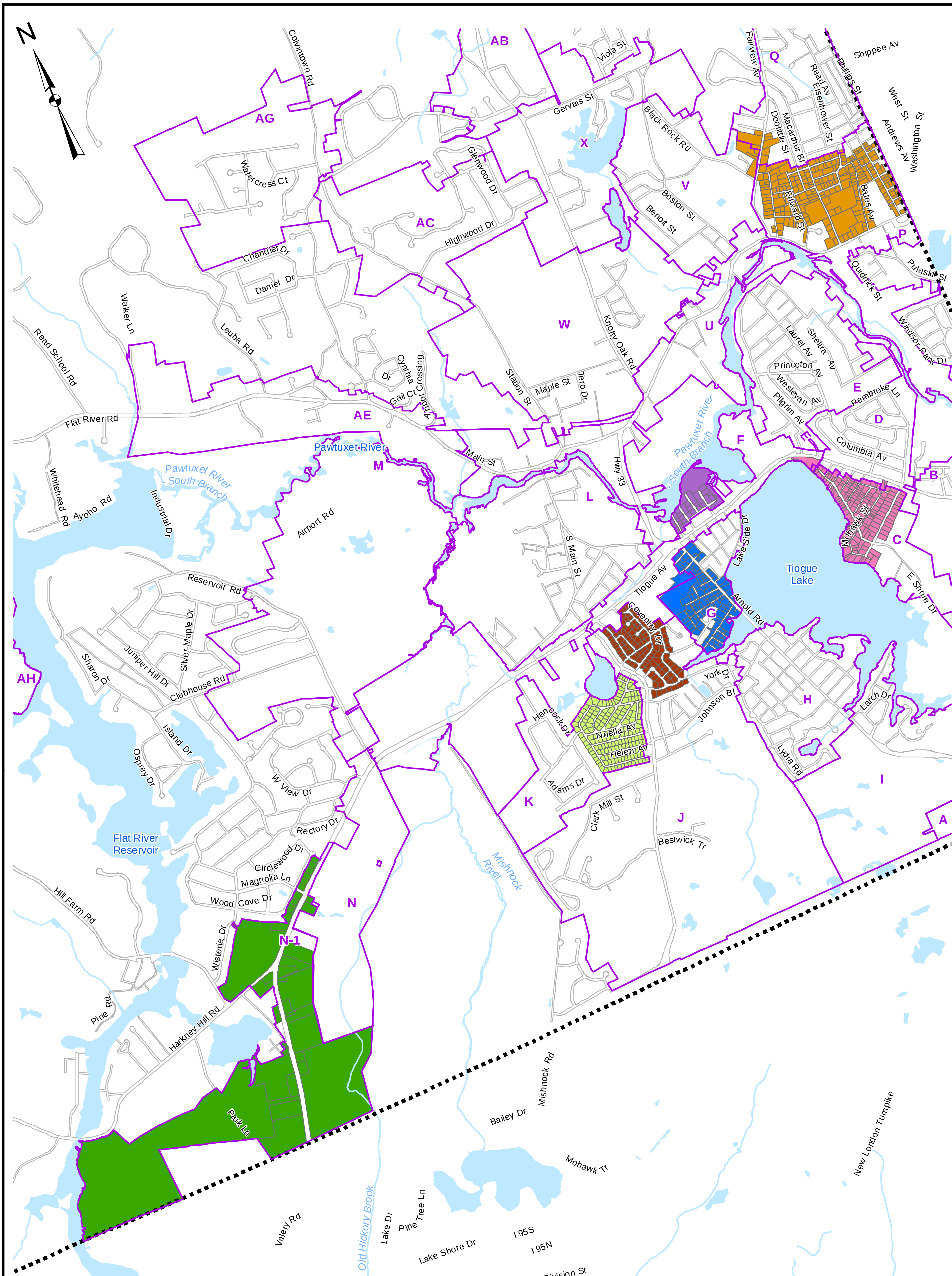
FIGURE 3-11

2015 FACILITIES PLAN UPDATE

EXISTING SEWER MAP

September 2015 SCALE: NOTED

Weston&Sampson



2,000 0 2,000

Scale In Feet

Legend

- Nooseneck Hill Road
- Contract 8
- Contract 9
- Contract 10
- Contract 11
- Hopkins Hill East
- Huron Pond
- Water

FIGURE 4-3

TOWN OF COVENTRY, RHODE ISLAND
2015 FACILITIES PLAN UPDATE

PROPOSED SEWER CONTRACTS

September 2015 SCALE: NOTED

Weston&Sampson

\\gisdatasrv\GIS\DataStore\Client\Coventry\Project\2140605.A\Figure 4-3 Contracts.mxd Date Saved: 10/14/2015 12:01:00 PM User Name: OzerekoZ

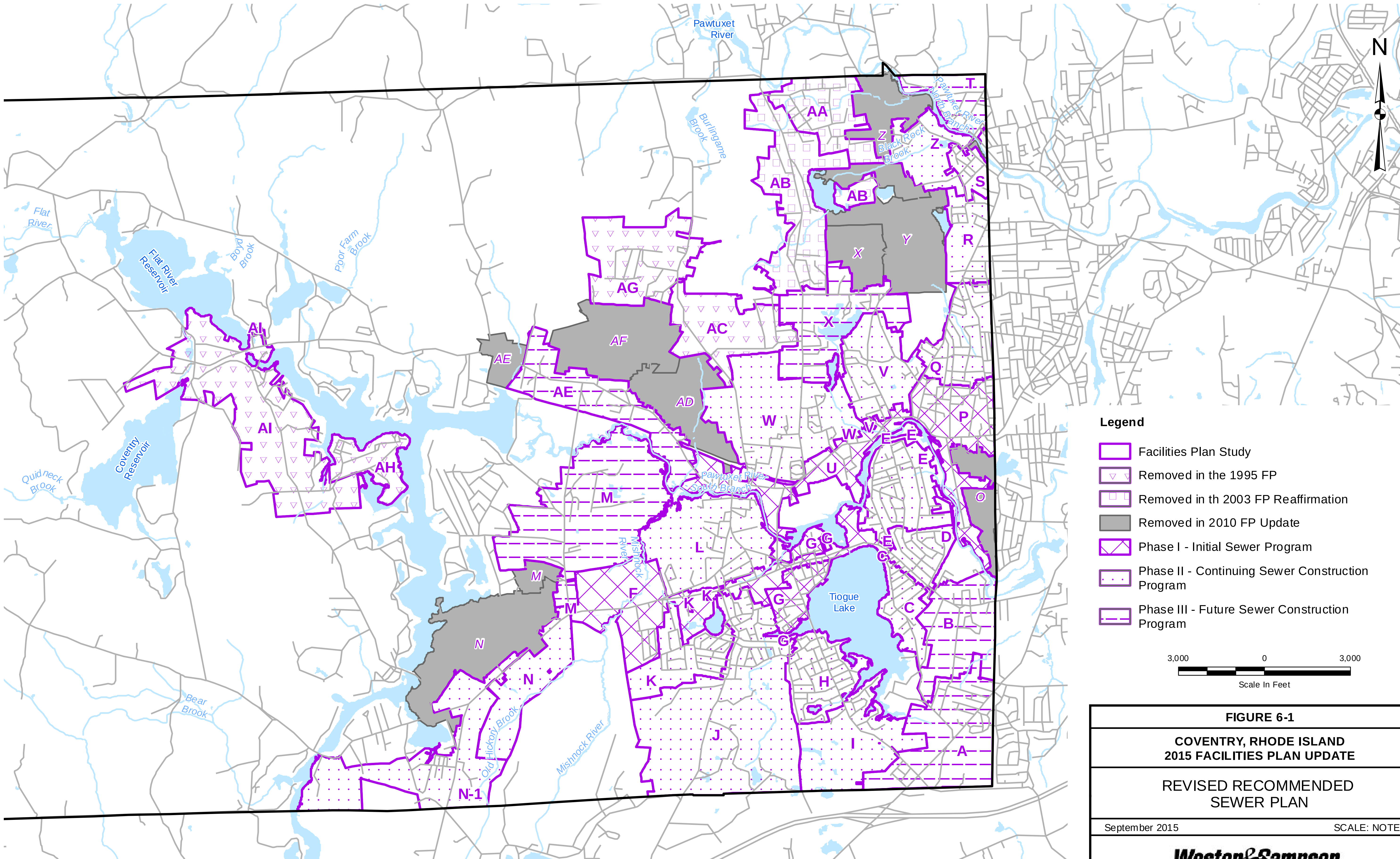


FIGURE 6-1

COVENTRY, RHODE ISLAND
2015 FACILITIES PLAN UPDATE

REVISED RECOMMENDED SEWER PLAN

September 2015 SCALE: NOTED

Weston&Sampson

Path: \\gisdatasrv\GIS\DataStore\Client\Coventry\Project\2140605.A\Figure6-1 Facilities plan update.mxd User: OzerekZ Saved: 10/14/2015 12:13:48 PM Opened: 10/14/2015 12:14:08 PM

Coventry Sewer Sub-Committee Meeting

October 15, 2015

Wastewater Facilities Plan Update

2015 Facilities Plan Update

1. Introduction:

   a. Facility Plan to be updated every 5-years for a 20-year future planning period. Last update was performed in 2010.

   b. History of this Facility Plan
      - 1995 Facilities Plan
      - 2003 Facilities Plan Reaffirmation
      - 2010 Facilities Plan Update

2. Goals of this Facility Plan Update:

   a. Assessment of the existing wastewater system (See attached Figure 3-11)

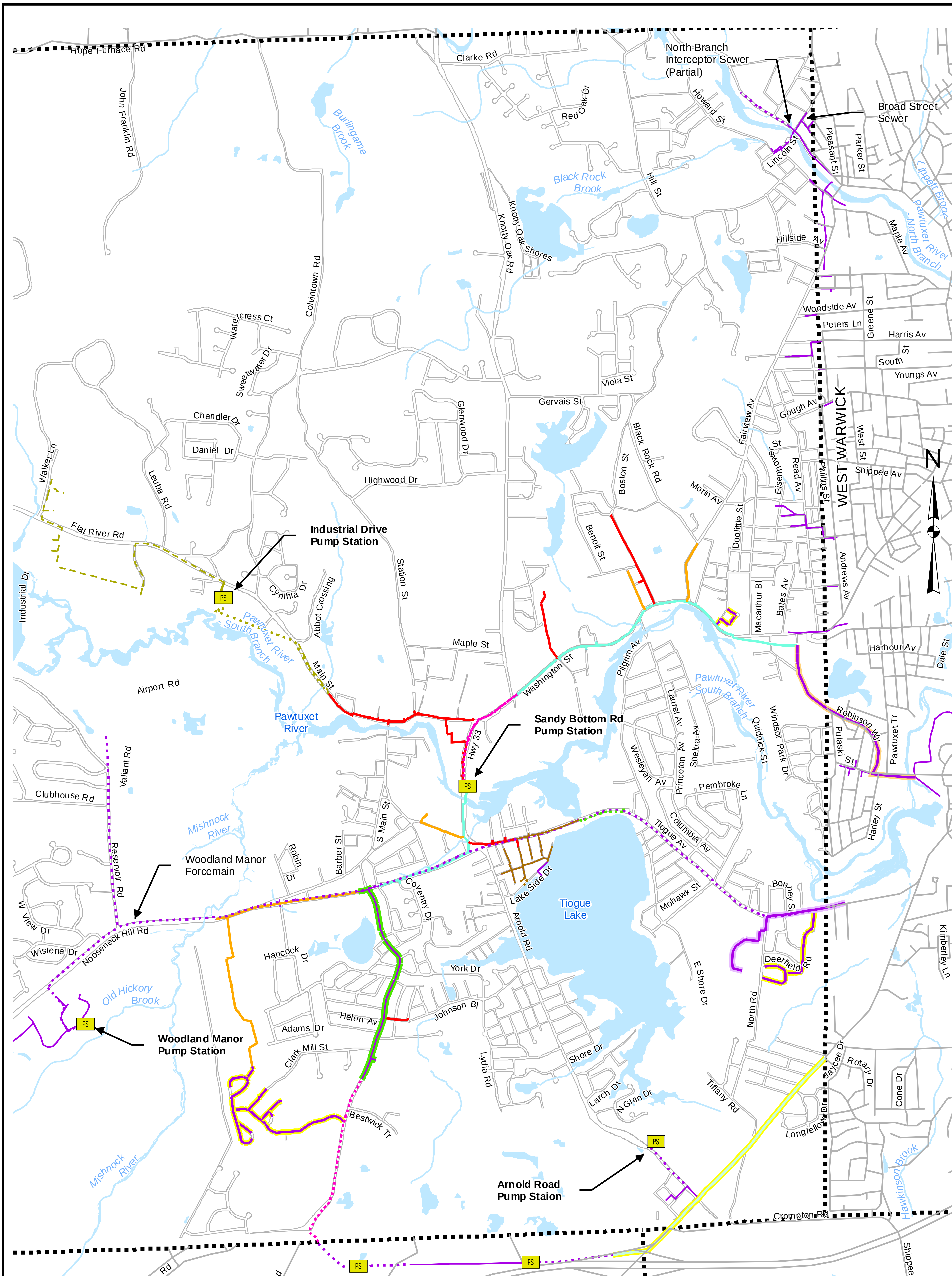
      - Hopkins Hill Road Sewer Project.
      - Old North Road Sewer Project.
      - New London Turnpike Sewer Project.
      - Sewer Contracts 1-7.
      - Woodland Manor PS/FM acquisition (including the increase in flow capacity in the West Warwick system
      - Sewers built by subdivision contractors/other misc. projects (i.e. Pine Ridge, Red Brook Meadow, etc.)

   b. Assessment Current and Future Flows into the wastewater system (See attached Tables 4-3 to 4-5).

   c. Assessment of the future wastewater planning (See attached Figure 4-3 and 6-1).

      - Future Sewer Contracts
        1. Sewer Contracts 8 – 10
        2. Hopkins Hill Road West Sewer Project
        3. Huron Pond Sewer Project
        4. Nooseneck Hill Road Sewer Project (added Planning Area N-1)
      - O&M and preventative maintenance items.
        1. Town owned pump stations
           - Sandy Bottom Road Pump Station
           - Woodland Manor Pump Station
           - Industrial Drive Pump Station.
        2. Investigation program looking at the older areas of gravity sewers in Town (i.e. Hopkins Hill Road, New London Turnpike, etc.)

3. Remaining Items:
   a. Town Review and Comment
   b. RI-DEM Review and Comment
   c. Public Advertisement and Public Meeting
   d. Final Submittal to RI-DEM



Legend

PS Pump Station

Gravity Main

Contracts 03-01, 04, 05

- Contract 03-01
- Contract 03-03
- Contract 04
- Contract 05
- Contract 6
- Contract 7

Gravity Main - Other Sewer Projects

- North Road Terrace Sewer Project
- Old Port Authority Sewer Interceptor
- Pulaski Street / Robinson Way Sewer Project
- RIDOT Hopkins Hill Reconstruction Project
- Gravity Main - Subdivisions

Force Main

Contracts 03-01, 04, 05, 6

- Contract 03-01
- Contract 03-03
- Contract 04
- Contract 6
- Contract 6A
- Contract 7 (FM)
- Contract 7 (LP)

- Gravity Main Installed by Others
- Forcemain
- Low Pressure Sewer
- Lakes
- Town Boundaries

2,000 0 2,000

Scale In Feet

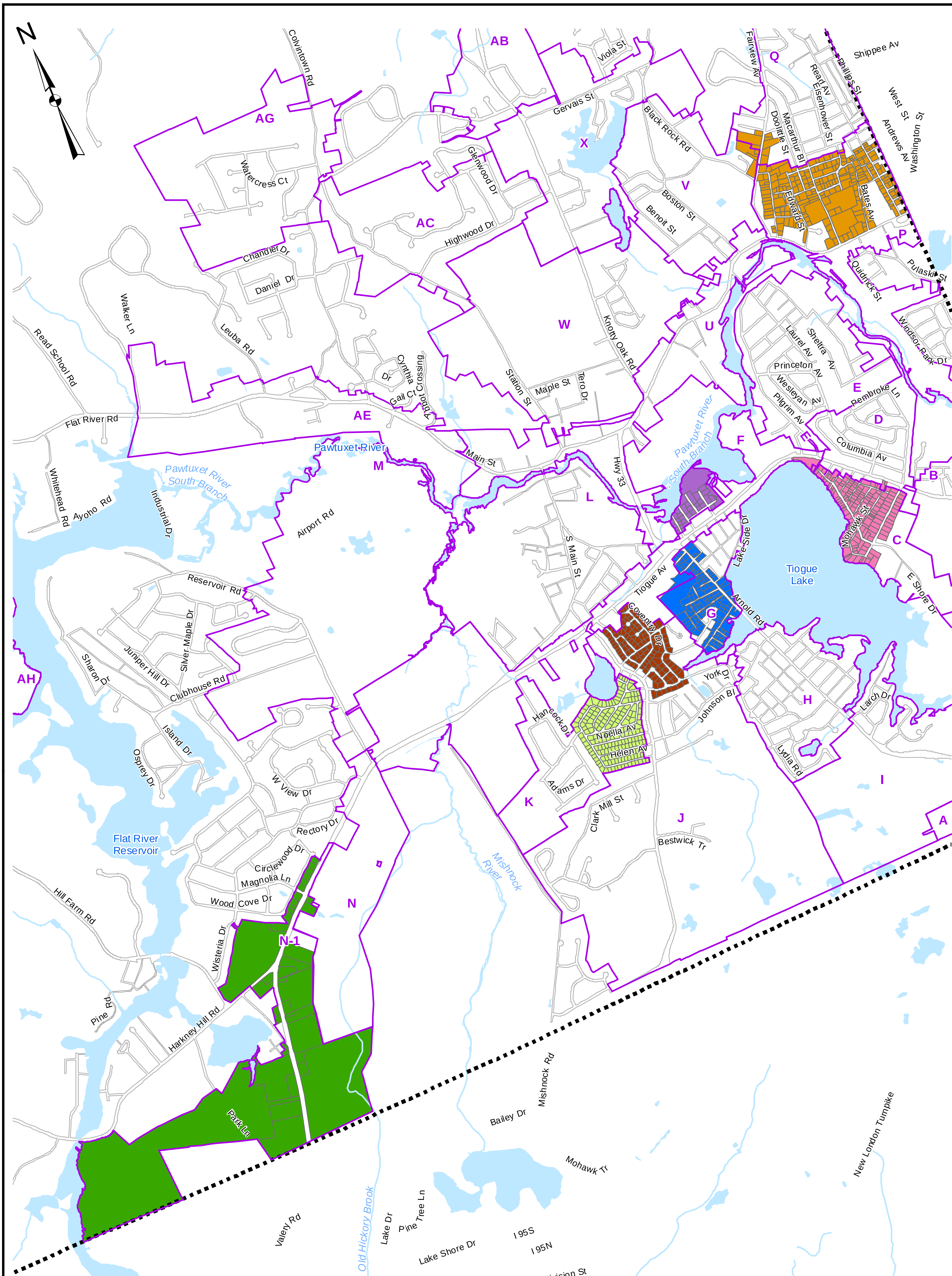
FIGURE 3-11

2015 FACILITIES PLAN UPDATE

EXISTING SEWER MAP

September 2015 SCALE: NOTED

Weston&Sampson



Legend

Nooseneck Hill Road	Contract 8
Contract 9	Contract 10
Contract 11	Hopkins Hill East
Huron Pond	Water

2,000 0 2,000

Scale In Feet

FIGURE 4-3

TOWN OF COVENTRY, RHODE ISLAND
2015 FACILITIES PLAN UPDATE

PROPOSED SEWER CONTRACTS

September 2015 SCALE: NOTED

Weston&Sampson

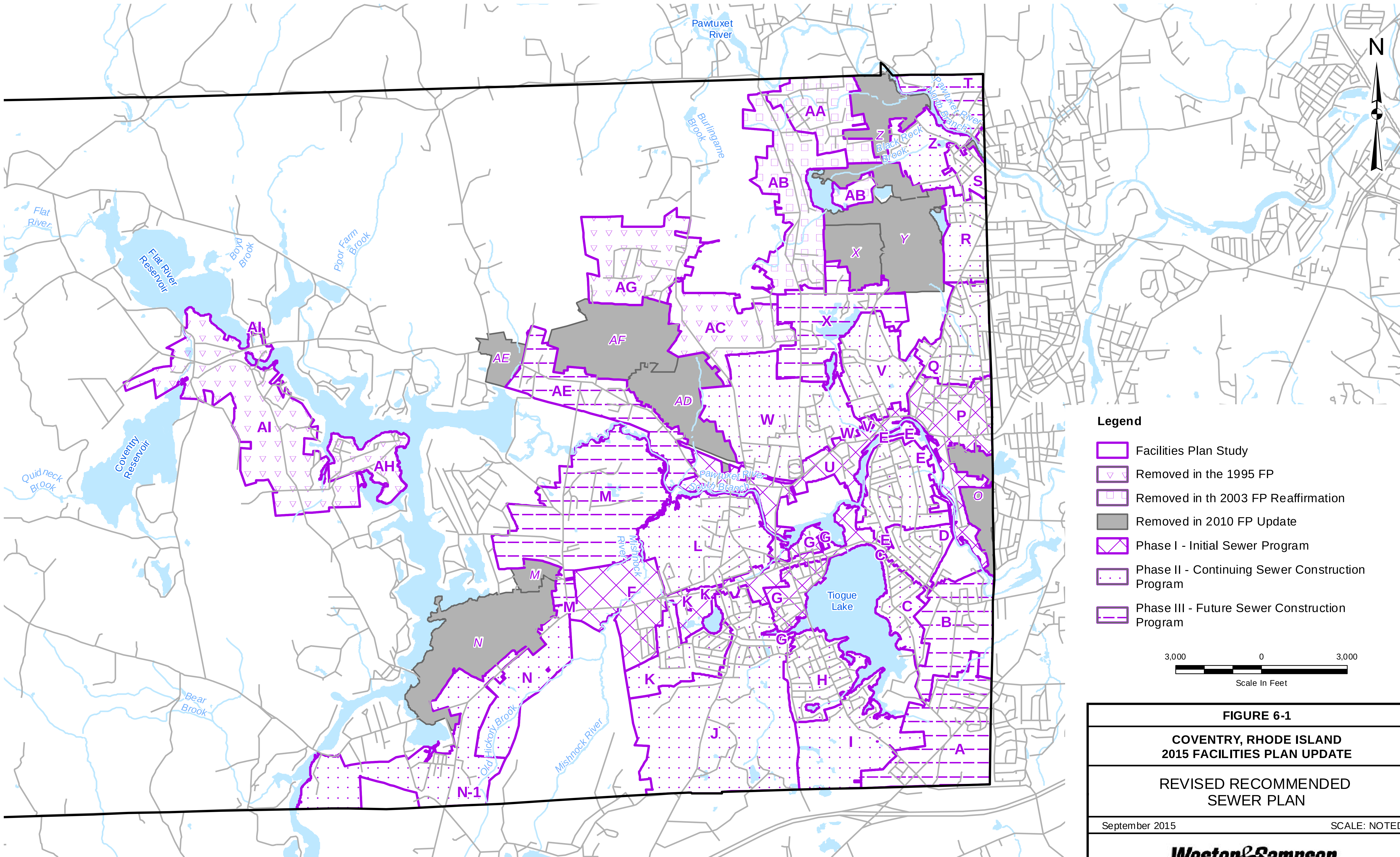


FIGURE 6-1

COVENTRY, RHODE ISLAND
2015 FACILITIES PLAN UPDATE

REVISED RECOMMENDED
SEWER PLAN

September 2015 SCALE: NOTED

Weston&Sampson

Path: \\gisdatasrv\GIS\DataStore\Client\Coventry\Project\2140605.A\Figure6-1 Facilities plan update.mxd **User:** OzerekoZ **Saved:** 10/14/2015 12:13:48 PM **Opened:** 10/14/2015 12:14:08 PM

Table 4-3
Study Area Projected Wastewater Flows
Average Daily Flow - Design Year 2015

Study Area	Domestic (gpd)	Industrial (gpd)	Commercial (gpd)	Institutional (gpd)	Infiltration and Inflow (gpd)	Total ADF (gpd)
A	1,873	922	63,588	0	490	66,873
B	15,430	0	0	0	1,875	17,304
C	0	0	0	0	0	0
D	193	0	0	0	21	213
E	600	0	0	0	60	660
F	10,407	0	15,956	963	3,560	30,886
G	3,396	0	0	0	607	4,002
H	0	0	0	0	0	0
I	0	274	0	0	23	297
J	14,685	0	0	0	1,307	15,992
K	143	0	0	0	24	167
L	743	0	287	0	172	1,202
M	0	0	14,536	0	12	14,548
N	0	0	0	0	0	0
N-1	0	0	0	0	0	0
O	1,578	0	132	0	2,040	3,750
P	3,269	8,186	75	0	592	12,122
Q	870	0	0	0	170	1,039
R	1,099	0	0	6	230	1,335
S	656	0	0	0	110	766
T	4,949	920	16,016	0	527	22,412
U	5,460	3,126	12,840	6,186	2,507	30,119
V	15,493	0	20	0	827	16,341
W	0	0	0	0	0	0
X	0	0	0	0	0	0
Y	Not included in sewer program (2010).					0
Z	0	0	0	0	0	0
AA	Not included in sewer program (2003).					0
AB	Not included in sewer program (2003).					0
AC	Not included in sewer program (1995).					0
AD	Not included in sewer program (2010).					0
AE	0	0	19	0	40	59
AF	Not included in sewer program (2010).					0
AG	1,090	0	0	0	0	1,090
AH	Not included in sewer program (1995).					0
AI	Not included in sewer program (1995).					0
WM	15,751	0	48,741	205	1,496	66,192

TOTAL TOWN	307,372

Note:

This table updates information presented in Table F-1 of the 1995 Facility Plan and Table 4-3 of the 2010 Facilities Plan Update.

Domestic flow based upon 3 people/EDU and 70 gallons per day per capita (gpcd).

Industrial flow based upon 500 gallons per day per acre (gpad).

Commercial/Institutional flow based upon 300 gpad.

Infiltration/Inflow based upon 250 gallons per day per inch diameter mile (gpdim).

O:\Coventry RI\2140605 - 2014 Facilities Plan Update\2014 Update Report\Figures\Section 4\[Table 4-2 to Table 4-5 Sewer Flows & Population per Area 1.xls]Table 4-3 Summary of Flows 2015

Table 4-4
Study Area Projected Wastewater Flows
Average Daily Flow - Design Year 2035

Study Area	Domestic (gpd)	Industrial (gpd)	Commercial (gpd)	Institutional (gpd)	Infiltration and Inflow (gpd)	Total ADF (gpd)
A	14,586	922	66,744	0	1,103	83,355
B	18,160	0	0	0	2,038	20,198
C	42,000	0	52	2,436	4,165	48,654
D	54,583	0	602	0	7,630	62,814
E	80,820	3,393	307	4,939	11,025	100,485
F	36,023	1,457	56,912	1,359	15,050	110,801
G	58,956	172	721	0	7,070	66,918
H	78,120	0	0	2,461	12,250	92,831
I	22,050	837	12,338	3,384	3,780	42,389
J	279,379	6,124	7,995	3,111	11,480	308,090
K	59,993	0	1,695	0	9,730	71,419
L	78,863	766	1,567	7,609	13,475	102,279
M	1,260	0	15,576	0	109	16,945
N	210	0	1,202	0	630	2,042
N-1	43,470	2,059	17,209	1,010	4,760	68,508
O	1,788	0	217	0	2,267	4,271
P	77,084	80,241	3,425	4,662	10,360	175,771
Q	79,410	283	186	2,147	13,510	95,536
R	29,029	0	123	6	4,235	33,394
S	24,806	0	0	0	3,780	28,586
T	5,999	920	17,428	0	731	25,079
U	64,021	3,126	20,780	13,700	13,230	114,857
V	72,823	0	4,408	2,162	4,585	83,978
W	62,710	0	563	37,845	7,385	108,503
X	1,470	0	0	0	0	1,470
Y	Not included in sewer program (2010).					0
Z	36,374	4,431	36	1,305	3,031	45,177
AA	Not included in sewer program (2003).					0
AB	Not included in sewer program (2003).					0
AC	Not included in sewer program (1995).					0
AD	Not included in sewer program (2010).					0
AE	0	0	2,469	0	121	2,590
AF	Not included in sewer program (2010).					0
AG	1,090	0	0	0	0	1,090
AH	Not included in sewer program (1995).					0
AI	Not included in sewer program (1995).					0
WM	15,751	0	48,741	205	2,094	66,791

TOTAL TOWN	1,984,818

Note:

This table updates information presented in Table F-1 of the 1995 Facility Plan and Table 4-3 of the 2010 Facilities Plan Update.

Domestic flow based upon 3 people/EDU and 70 gallons per day per capita (gpcd).

Industrial flow based upon 500 gallons per day per acre (gpad).

Commercial/Institutional flow based upon 300 gpad.

Infiltration/Inflow based upon 350 gallons per day per inch diameter mile (gpdim).

O:\Coventry RI\2140605 - 2014 Facilities Plan Update\2014 Update Report\Figures\Section 4\[Table 4-2 to Table 4-5 Sewer Flows & Population per Area 1.xls]Table 4-3 Summary of Flows 2015

Table 4-5
Study Area Projected Wastewater Flows
Average Daily Flow - Design Year 2065

Study Area	Domestic (gpd)	Industrial (gpd)	Commercial (gpd)	Institutional (gpd)	Infiltration and Inflow (gpd)	Total ADF (gpd)
A	66,876	2,796	74,333	0	14,800	158,805
B	47,770	0	241	41	6,200	54,253
C	42,630	0	52	2,436	4,760	49,879
D	54,583	0	602	0	8,720	63,904
E	80,820	3,393	307	5,012	12,600	102,133
F	36,023	1,457	56,912	1,511	17,200	113,102
G	60,846	172	721	0	8,080	69,818
H	78,120	0	0	2,461	14,000	94,581
I	22,050	837	12,338	3,384	4,320	42,929
J	279,379	6,124	7,995	3,111	13,120	309,730
K	59,993	0	1,695	0	11,120	72,809
L	78,863	766	1,567	7,609	15,400	104,204
M	17,220	603	24,852	21,623	1,880	66,178
N	420	0	1,802	0	720	2,942
N-1	43,470	2,059	17,209	1,010	5,440	69,188
O	1,998	0	217	0	5,440	7,655
P	77,084	80,241	3,425	4,785	11,840	177,374
Q	82,350	283	186	2,147	15,440	100,406
R	30,289	0	123	6	4,840	35,259
S	25,436	0	0	0	4,320	29,756
T	35,814	7,468	18,323	0	6,200	67,805
U	64,441	3,126	20,780	13,874	15,120	117,341
V	72,823	0	4,408	2,162	5,240	84,633
W	62,710	0	563	37,845	8,440	109,558
X	40,950	0	7,802	2,907	7,300	58,959
Y	Not included in sewer program (2010).					0
Z	36,374	4,431	36	1,305	3,464	45,610
AA	Not included in sewer program (2003).					0
AB	Not included in sewer program (2003).					0
AC	Not included in sewer program (1995).					0
AD	Not included in sewer program (2010).					0
AE	19,740	20,153	4,164	10,925	7,300	62,282
AF	Not included in sewer program (2010).					0
AG	1,090	0	0	0	0	1,090
AH	Not included in sewer program (1995).					0
AI	Not included in sewer program (1995).					0
WM	15,751	0	48,741	205	2,393	67,090

TOTAL TOWN	2,339,270

Note:

This table updates information presented in Table F-1 of the 1995 Facility Plan and Table 4-3 of the 2010 Facilities Plan Update.

Domestic flow based upon 3 people/EDU and 70 gallons per day per capita (gpcd).

Industrial flow based upon 500 gallons per day per acre (gpad).

Commercial/Institutional flow based upon 300 gpad.

Infiltration/Inflow based upon 400 gallons per day per inch diameter mile (gpdim).

O:\Coventry RI\2140605 - 2014 Facilities Plan Update\2014 Update Report\Figures\Section 4\[Table 4-2 to Table 4-5 Sewer Flows & Population per Area 1.xls]Table 4-3 Summary of Flows 2015

Table 6-2
Summary of Conventional Sewer Collection System Costs

Area	Length of Sewer Interceptor (feet)	Length of Lateral Sewer (feet)	Pump Stations Required	Length of Sewer Force Main (feet)	Approx. No. of Properties Served	Total Sewer Construction Cost	Cost per Unit	Comments
A	0	15,800	1	1300	230	$ 4,152,000.00	$ 18,052.17	To Existing New London Tpk Sewer
B	0	7,850	1	750	127	$ 2,023,000.00	$ 15,929.13	To West Warwick thru Tiogue Avenue
C	0	7,900	0	0	173	$ 1,817,000.00	$ 10,502.89	To Tiogue Avenue Interceptor - East
D	1,100	12,900	0	0	264	$ 3,352,000.00	$ 12,696.97	To Existing Washington Interceptor
E	3,250	16,100	1	750	306	$ 5,398,500.00	$ 17,642.16	To Existing Washington Interceptor
F	0	0	0	0	0	$ -	N/A	To Existing Tiogue Interceptor & Sandy Bottom Rd. PS
G	600	7,125	0	0	143	$ 1,848,750.00	$ 12,928.32	To Tiogue Avenue Interceptor - East
H	2,475	19,400	1	750	357	$ 5,598,750.00	$ 15,682.77	To Tiogue Avenue Interceptor - East
I	0	7,100	1	1,525	114	$ 1,988,750.00	$ 17,445.18	To Tiogue Avenue Interceptor - East
J	0	13,825	1	900	224	$ 3,466,750.00	$ 15,476.56	To Existing Hopkins Hill Rd. Sewer
K	0	17,825	0	0	300	$ 4,099,750.00	$ 13,665.83	To Existing Hopkins Hill Rd. Sewer
L	0	23,400	0	0	348	$ 5,382,000.00	$ 15,465.52	To Tiogue Avenue Interceptor - West
M	0	3,100	0	0	32	$ 713,000.00	$ 22,281.25	To Tiogue Avenue Interceptor - West
N	0	400	0	0	3	$ 92,000.00	$ 30,666.67	To Tiogue Avenue Interceptor - West. **Portions elim. (2009)**
N-1	0	11,125	1	4,000	222	$ 3,298,750.00	$ 14,859.23	Added (2015)
O	0	1,750	0	0	26	$ 402,500.00	$ 15,480.77	To Existing Washington Interceptor. **Portions elim. (2009)**
P	2,600	13,000	0	0	275	$ 3,900,000.00	$ 14,181.82	To Existing Washington Interceptor
Q	0	23,850	1	800	327	$ 5,956,500.00	$ 18,215.60	To Existing Washington Interceptor
R	0	6,750	0	0	100	$ 1,552,500.00	$ 15,525.00	To North Branch Interceptor
S	2,250	3,450	0	0	74	$ 1,581,000.00	$ 21,364.86	To North Branch Interceptor
T	1,800	4,550	0	0	80	$ 1,676,500.00	$ 20,956.25	To North Branch Interceptor
U	0	0	0	0	0	$ -	N/A	To Existing Sandy Bottom Rd. PS
V	3,000	7,550	0	0	150	$ 2,786,500.00	$ 18,576.67	To Existing Washington Interceptor
W	0	16,725	1	450	212	$ 4,037,250.00	$ 19,043.63	To Existing Washington Interceptor
X	0	11,650	1	750	175	$ 2,897,000.00	$ 16,554.29	To Existing Washington Interceptor. **Portions elim. (2009)**
Y	0	0	0	0	0	$ -	N/A	**Eliminated from Sewer Program (2009)**
Z	0	5,725	1	1,200	87	$ 1,574,750.00	$ 18,100.57	To North Branch Interceptor. **Portions elim. (2009)**
AA	0	0	0	0	0	$ -	N/A	**Eliminated from Sewer Program (2003)**
AB	0	0	0	0	0	$ -	N/A	**Eliminated from Sewer Program (2003)**
AC	0	0	0	0	0	$ -	N/A	**Eliminated from Sewer Program (1995)**
AD	0	0	0	0	0	$ -	N/A	**Eliminated from Sewer Program (2009)**
AE	0	0	0	0	16	$ 108,000.00	$ 6,750.00	To Existing Sandy Bottom Rd. PS. **Portions elim. (2009)**
AF	0	0	0	0	0	$ -	N/A	**Eliminated from Sewer Program (2009)**
AG	0	0	0	0	0	$ -	N/A	**Eliminated from Sewer Program (1995)**
AH	0	0	0	0	0	$ -	N/A	To Community OWTS System
AI	0	0	0	0	0	$ -	N/A	**Eliminated from Sewer Program (1995)**
TOTALS	**17,075**	**258,850**	**11**	**13,175**	**4,365**	**$ 69,703,500.00**	**$ 15,968.73**	

NOTES:
1. Costs in this table are based on 20 Cities ENR=10038.80 (June 2015)
2. See Appendix F for a detailed breakdown of pipeline lengths and costs.

O:\Coventry RI\2140605 - 2014 Facilities Plan Update\2014 Update Report\Figures\Section 6\[Table 6-2 - Summary of Sewer Cost.xls]Summary of Areas and Cost

Maple Root Village