



# Wareham, Massachusetts

Capital Improvement Plan Water Pollution Control Facility

# CAPITAL IMPROVEMENT PLAN WATER POLLUTION CONTROL FACILITY TOWN OF WAREHAM, MASSACHUSETTS

Prepared for

WAREHAM, MASSACHUSETTS

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# Study Overview

# 1.1 Overview

In September 2014, the Town of Wareham, Massachusetts (Town) retained GHD to develop a 20-year Capital Improvement Plan (CIP) for the Town's wastewater infrastructure. The contract time for the project is one year. The following tasks are included in the scope of the project:

- 1. Review existing wastewater infrastructure using available record drawings, site visits, and other information available from the Town.
- 2. Identify an age for facilities, estimate replacement age, and estimate replacement costs based on GHD's cost estimating experience.
- 3. Conduct pumping station-specific evaluations as needed.
- 4. Conduct a criticality analysis of systems within the scope of study.
- 5. Develop a CIP which includes the following:
  - a. Listing of the capital projects or equipment to be purchased.
  - b. Priority list for projects, if applicable.
  - c. Determination of project costs.
  - d. Financing plan for the listed projects.
  - e. Timeframe for the completion of each project.
  - f. Justification for each project.

The following tasks are not included in the scope of the project:

- 1. Identification of potential improvements which may be required to meet future, more stringent permits or upgraded capacity.
- 2. Identification of projects that do not involve existing infrastructure.
- 3. Flood-related mitigation measures.
- 4. Facility observations by specialists at targeted locations including structural, electrical, HVAC, and/or instrumentation engineers.

# 1.2 Past Studies and Data

The following past studies and data were reviewed as part of this evaluation:

- 1. Swifts Beach I/I Study-Letter Report, produced by OSD Engineering Consultants, November 2014.
- 2. Pumping station condition assessments compiled by Town of Wareham Water Pollution Control Facility (WPCF) staff.
- 3. WPCF Upgrade Project No. M02-03 drawings produced by Camp Dresser & McKee Inc., October 2001.

# 2. Criticality Analysis Methodology

# 2.1 Overview

The Town of Wareham owns and operates a WPCF that collects and treats wastewater from approximately 60% of the Town. The WPCF was originally constructed in the 1970s and upgraded in 2005. The facility has a 1.5 million gallons per day (mgd) design capacity. The majority of the original equipment at the WPCF was replaced during the 2005 upgrade. The Town's original collection system was also constructed during the 1970s and has since been expanded. The pumping stations in the collection system range in construction year from 1970 to 2012. The majority of the equipment in each station dates to its original construction date.

The design life of mechanical equipment is typically 20 years. Much of the equipment at the older pumping stations, as well as the WPCF equipment that was not replaced during the upgrade, is well past its design life. The design life of collection system piping and concrete structures (buildings and tanks) is assumed to be a minimum of 50 years. Portions of the existing collection system have either exceeded or are approaching their design life.

To determine renewal or replacement priorities and project future financial needs a criticality analysis was conducted. A criticality analysis is a decision-making tool that can be used to prioritize projects. It outlines capital projects recommended to maintain the existing level of service for the Town's infrastructure. No costs are included for potential improvements required to meet a future, more stringent effluent permit or for improvements to existing infrastructure (such as flood-proofing infrastructure). A criticality analysis is conducted by establishing a rating for three variables:

- Likelihood of Failure (LoF)
- Consequence of Failure (CoF)
- Risk Assessment Rating

The methodology used to determine each variable is described in this section.

# 2.2 Likelihood of Failure (LoF)

LoF is determined by considering both the condition and performance of existing equipment.

#### 2.2.1 Condition Assessment

Knowledge of the remaining life of an asset allows a facility to make a sound decision related to rehabilitation options and the timing of replacements. The challenge for most facilities is to spend less time on reactive maintenance and more time on preventative maintenance. When work can be planned, the cost of maintenance is significantly less.

Condition issues exist if the asset currently operates sufficiently, but either the critical equipment or structure is aged or in a deteriorated state. For this study, the design life of mechanical equipment is considered to be 20 years and the design life of concrete structures and underground pipes is a minimum of 50 years.

The criteria used in the condition assessment is outlined in Table 2-1.

**Table 2-1 Condition Assessment** 

Rating Guidelines							
<b>Condition Score</b>	Condition Description of Asset	Range of Remaining Life					
1 – Excellent	Asset is like new, fully operable and well maintained.	80 to 100% remaining life left					
2 – Good	Asset is sound and well maintained but may be showing some signs of wear.	55 to 80% remaining life left					
3 – Moderate	Asset is functionally sound, showing normal signs of wear relative to use and age.	25 to 55% remaining life left					
4 – Poor	Asset functions, but requires a sustained high level of maintenance to remain operational.	10 to 25 % remaining life left					
5 - Failing	Effective life exceeded and/or excessive maintenance cost incurred.	10% or less					

# 2.2.2 Performance Assessment

Performance issues exist if the asset is either unable to sufficiently meet a level of service or if extraordinary means are necessary to keep it working properly to meet a level of service. Performance issues were noted during site walk-throughs and/or during discussions with WPCF staff. The criteria used for the performance assessment is outlined in Table 2-2.

**Table 2-2 Performance Assessment** 

Rating Guidelines					
Performance Score	Performance Description of Asset				
1 – Excellent	Asset consistently performs at or above required design standard and full efficiency.				
2 – Good	Asset is performing at required design standard. Efficiency of equipment may be slightly diminished.				
3 – Moderate	Asset meets basic design standards but may require regular maintenance or other measures to perform at a high level. Asset has minor failures or diminished efficiency and some performance deterioration. Likely showing modest increased maintenance and/operations costs.				
4 – Poor	Asset cannot meet all required design standards (e.g. cannot meet peak conditions). Significant operational maintenance or other measures are required to sustain performance Near term scheduled rehabilitation or replacement needed.				
5 - Failing	Asset cannot meet the required design standard. Immediate replacement or rehabilitation is needed.				

# 2.2.3 Likelihood of Failure Ranking

After both a condition and performance score have been assessed, the higher of the two rankings is used as the LoF. For example, if a piece of equipment was installed a year ago (condition assessment rating of 1) but requires significant maintenance (performance assessment rating of 4), the LoF is rated as 4.

# 2.3 Consequence of Failure (CoF)

The criticality of a piece of equipment is determined by the CoF. Criticality can be significant in several areas including health and safety of personnel, meeting the facility's discharge permit limits, treatment process viability, damage to other assets that rely on the equipment, and cost for rehabilitation or replacement. The guidelines used to establish a CoF are outlined in Table 2-3.

**Table 2-3 Consequence of Failure Guidelines** 

Rating	Guidelines	WPCF Examples
1 – Negligible	Failure of asset will not result in significant consequential damages. Alternative systems or processes are in place to allow the asset to be out of service for an extended time period until repair/replacement, with negligible impact on performance or safety.	Failure of a plant water system if the facility can use potable water backup for all processes; or failure of an automatic control system for a process normally operated in manual mode; or failure of an HVAC system in a non-occupied building without cold or heatsensitive equipment.
2 – Marginal	Failure of asset may result in minor to moderate consequential damages, minor violations, inconvenience to personnel, inability to meet required design standard, or some adverse publicity or complaints. Often used for assets which can be repaired or replaced prior to critical consequences occurring.	Failure of gate/valves infrequently used; or failure of an HVAC system in a normally occupied building such as a Control Building; or failure of instrumentation used for monitoring only where manual samples could be used instead; or failure of an odor control system which could lead to some complaints but not major negative publicity.
3 – Critical	Failure of asset likely to result in injury, significant permit violation, significant consequential damages, or significant negative publicity.	Failure of an influent pumping system, resulting in sewage overflow until a bypass system can be put in place; or failure of treatment processes which could result in effluent permit violation.
4 - Catastrophic	Failure of asset likely to cause serious injury or loss of life, long-term environmental damage, or sudden failure of other significant assets.	Failure of the main power distribution system, resulting in loss of entire treatment facility operation; or failure of gaseous chlorination system which could cause serious injury or loss of life.

# 2.4 Prioritization of Needs Using the Risk Assessment Matrix

The concept of risk can be used to prioritize scarce capital and operating budgets. The risk of not meeting the established level of service for a portion of the infrastructure is a function of the probability the equipment will fail (LoF) and the consequence of it failing (CoF). The two variables are used to assign a risk rating from the risk assessment matrix, shown in Table 2-4.

**Table 2-4 Risk Assessment Matrix** 

CoF Rating → ↓ LoF Rating	Negligible (1)	Marginal (2)	Critical (3)	Catastrophic (4)
Failing (5)	Medium	High	Very High	Very High
Poor (4)	Medium	High	Very High	Very High
Moderate (3)	Low	Medium	High	Very High
Good (2)	Low	Low	Medium	High
Excellent (1)	Low	Low	Medium	High

# 2.5 Priority List of Projects and Timeframe for Project Completion

The risk assessment matrix allows the Town to develop a plan to prioritize projects by the risk they pose. The plan is divided into four stages; years 1 through 3, 4 through 5, 6 through 10, and 10+. Projects in the one- to three-year timeframe are those with a very high risk that should be addressed immediately. Projects with a high risk are qualified as needing improvements in the four-to five-year year timeframe. Medium risk projects are recommended for implementation in the 6- to 10-year timeframe. Low risk projects are anticipated in the 10+-year timeframe.

# 3. Current State of Wastewater Infrastructure

# 3.1 Wareham Water Pollution Control Facility

The Wareham WPCF was originally constructed in the 1970s and upgraded in 2005. The facility is designed to treat an annual average flow of 1.5 mgd. Most of the mechanical equipment at the facility was installed during the 2005 upgrade and is approximately halfway through its useful design life.

The individual components of the WPCF are outlined below.

# 3.1.1 Administration Building

The Administration Building was constructed in 2005 and houses the plant staff, control room, coffee room, mechanical room, conference room, storage, and restroom facilities.

#### **Condition Issues**

The mechanical equipment and building are both well within their design life.

#### Performance Issues

No performance issues were noted during site walk-throughs or in discussions with WPCF staff.

# Risk Assessment

Table 3-1 summaries the failure risks associated with the Administration Building.

**Table 3-1 Administration Building Risk Assessment** 

Component	Sub-Component	LoF	CoF	Risk Rating
Administration Building	Structure	2	2	Low
	Architectural	2	2	Low
	Heating, ventilation, air conditioning	3	2	Medium
	Electrical	3	2	Medium
	Instrumentation and controls	3	2	Medium

#### 3.1.2 Anoxic Tanks

The facility has two anoxic selector tanks. Flow enters each tank through a 24-inch ductile iron gravity pipe. Each tank has three floating mixers.

# **Condition Issues**

Both of the anoxic selector tanks and associated equipment were constructed during the 2005 upgrade. The mechanical equipment and tanks are well within their design life.

#### Performance Issues

During a site walk-through, it was noted that several of the spray nozzles around the perimeter of the tanks are broken.



# Risk Assessment

Table 3-2 summarizes the failure risks associated with the anoxic tanks.

**Table 3-2 Anoxic Tanks Risk Assessment** 

Component	Sub-Component	LoF	CoF	Risk Rating
Anoxic tanks	Process equipment	3	2	Medium
	Structures	2	2	Low
	Piping	2	2	Low
	Valves and gates	2	2	Low
	Stairs, handrail, grating, hatches	2	2	Low
	Electrical	3	2	Medium
	Instrumentation and controls	3	2	Medium

#### 3.1.3 Aeration Tanks

The facility has three aeration basins.

#### **Condition Issues**

Aeration Tank Nos. 1 and 2 were constructed in the 1970s and retrofitted during the 2005 upgrade project. Aeration Tank No. 3 was constructed during the 2005 upgrade. All of the aeration tank process equipment was installed during the 2005 upgrade.

## Performance Issues

The WPCF staff has noted the concrete of the two older tanks is pitted and in need of repair. The uncertainty of the structural integrity of the walkways in Aeration Tank Nos. 1 and 2 is also a concern. During a site visit, it was noted that the process piping aeration valves should be downsized for better process air control.



# Risk Assessment

Table 3-3 summarizes the failure risks associated with the aeration tanks.

**Table 3-3 Aeration Tanks Risk Assessment** 

Component	Sub-Component	LoF	CoF	Risk Rating
Aeration Tanks	Process equipment	3	2	Medium
	Piping	2	2	Low
	Valves and gates	4	2	High
	Stairs, handrail, grating, hatches	2	2	Low
	Electrical	3	2	Medium
	Instrumentation and controls	3	2	Medium
Aeration Tank Nos. 1 and 2	Structures	5	3	Very High
Aeration Tank No. 3	Structures	2	3	Medium

# 3.1.4 Sludge Dewatering Building

The Sludge Dewatering Building is a two-story building which houses a polymer system on the first floor, a single gravity belt thickener on the second floor, and a pump room in the basement. Air from the Sludge Dewatering Building is treated with a biofilter system.

#### **Condition Issues**

The Sludge Dewatering Building was originally constructed in the 1970s and modified during the 2005 upgrade project. The majority of the equipment in the building was installed during the 2005 upgrade project. The building's structural and architectural features have approximately 10%

remaining life until they reach their minimum design life of 50 years, resulting in a high LoF rating. Once the building is 50 years old, it is recommended a condition evaluation be conducted to determine its expected remaining life.

#### Performance Issues

No performance issues were noted during the site walkthrough or during discussions with the staff.

# Risk Assessment

Table 3-4 summarizes the failure risks associated with the Sludge Dewatering Building.



**Table 3-4 Sludge Dewatering Building Risk Assessment** 

Component	Sub-Component	LoF	CoF	Risk Rating
Dewatering Building	Architectural	5	2	High
	Structural	5	2	High
	HVAC	3	2	Medium
	Electrical	3	2	Medium
	Instrumentation and controls	3	2	Medium
	Gravity belt thickener	3	2	Medium
	Thickened sludge transfer pump	3	2	Medium
	Sludge storage transfer pump	3	2	Medium
	Filtrate transfer pump	3	2	Medium
	Inline grinder	3	2	Medium
	Natural gas burner	3	2	Medium
	Base-mounted pumps	3	2	Medium
	Biofilter	3	2	Medium

# 3.1.5 Filter/Blower Building

The Filter/Blower Building houses three effluent filters, a mudwell, filter backwash clearwell, and a pump room in the basement of the building. The building also contains a UV disinfection system, effluent Parshall flume, chemical feed system (alum and sodium hypochlorite), and a Blower Room where the filter backwash, aeration, and equalization blowers are located. A methanol bulk storage and feed system is located outside the building.

# **Condition Issues**

The Filter Building was constructed during the 2005 upgrade. The majority of the equipment in the building was also installed during the 2005 upgrade.

# Performance Issues

During a site walk-through, rust was observed on equipment. The operators noted several performance issues with equipment at the Filter/Blower Building:

- 1. The roof HVAC unit has failed and is need of replacement
- 2. Roof repairs are needed.
- 3. The denitrification filters plug frequently.
- The plant water system is potentially undersized for the needs of the facility and frequently experiences low water pressure.

Based on the operators' comments, the performance ranking was increased for the items noted above, resulting in an elevated LoF.



#### Risk Assessment

Table 3-5 summarizes the failure risks associated with the Filter/Blower Building.

Table 3-5 Filter/Blower Building Risk Assessment

Component	Sub-Component	LoF	CoF	Risk Rating
Filter/Blower	HVAC	5	3	High
Building	Electrical	3	2	Medium
	Instrumentation and controls	3	2	Medium
	Architectural	2	2	Low
	Structural	2	2	Low
	Denitrification filters	4	2	High
	Clearwell	2	2	Low
	Plant water system	4	2	High
	Internal recycle pump	3	2	Medium
	Flow equalization pump	3	2	Medium
	Aeration blowers	3	2	Medium
	Equalization blowers	3	2	Medium
	Filter backwash blowers	3	2	Medium
	Base-mounted pumps	3	2	Medium
	Alum bulk storage tanks	3	2	Medium
	Sodium hypochlorite storage feed system	3	2	Medium
	Electronic metering pumps	3	2	Medium
	Chemical feed system	3	2	Medium
	Methanol tank	3	2	Medium
	UV disinfection system	3	2	Medium

#### 3.1.6 Headworks

The Headworks Building contains a septage receiving station, vortex grit trap influent screen, and influent Parshall flume.

#### **Condition Issues**

The Headworks Building was constructed during the 2005 upgrade project. The majority of the process equipment in the building was installed during the same project. Air from the Headworks Building is treated with a biofilter system.

# **Performance Issues**

During the site walk-through, rust and peeling paint were observed on equipment. No other issues were noted by the WPCF staff.



# Risk Assessment

Table 3-6 summarizes the failure risks associated with the Headworks Building.

**Table 3-6 Headworks Building Risk Assessment** 

Component	Sub-Component	LoF	CoF	Risk Rating
Headworks Building	HVAC	3	2	Medium
	Electrical	3	2	Medium
	Instrumentation and controls	3	2	Medium
	Architectural	2	2	Low
	Structural	2	2	Low
	Fire alarm system	3	3	High
	Fire protection system sprinklers	3	3	High
	Manual bypass screen	3	2	Medium
	Headworks biofilter	3	2	Medium
	Influent fine screen	3	2	Medium
	Septage receiving station	3	2	Medium
	Vortex grit classifier	3	2	Medium
	Shaftless grit screw classifier	3	2	Medium
	Septage receiving station blower	3	2	Medium
	Biofilter humidification system	3	2	Medium

# 3.1.7 Influent Equalization Basins

The facility has two influent equalization basins. Aeration is provided to the basins through diffusers at the bottom of each basin. The equalization blowers are located in the Filter/Blower Building.

#### **Condition Issues**

Both influent equalizations basins and associated equipment, were installed during the 2005 upgrade.

# Performance Issues

No performance issues were noted during site walk-throughs or in discussions with WPCF staff.

#### Risk Assessment

Table 3-7 summarizes the failure risks associated with the influent equalization basins.

**Table 3-7 Influent Equalization Basins Risk Assessment** 

Component	Sub-Component	LoF	CoF	Risk Rating
Equalization basins	Instrumentation and controls	3	2	Medium
	Electrical	3	2	Medium
	Equalization pumps	3	2	Medium
	Equalization basins	3	2	Medium

# 3.1.8 Distribution Boxes and Flow Measurement

# **Condition Issues**

The majority of the distribution boxes, meter vaults, and Parshall flumes at the facility were constructed during the 2005 upgrade. The aeration basin flow distribution structure, originally constructed in the 1970s, was modified to distribute flow between the two original tanks and the tank constructed during the 2005 upgrade.

# **Performance Issues**

The WPCF operator noted that flow is evenly distributed through the aeration basin flow distribution structure to the three tanks.



# Risk Assessment

Table 3-8 summarizes the failure risks associated with the distribution boxes and meter vaults.

**Table 3-8 Distribution Boxes and Meter Vaults Risk Assessment** 

Component	Sub Component	LoF	CoF	Risk Rating
Distribution box	Equalization flow splitter box	2	2	Low
	Aeration basin flow distribution	3	3	High
	Secondary clarifier flow distribution	2	2	Low
	Influent distribution box	2	2	Low
Flow measurement	Flow meter vault	3	2	Medium
	Influent Parshall flume	3	2	Medium
	Effluent Parshall flume	3	2	Medium

# 3.1.9 Operations Building

The Operations Building contains a Lab Room on the first floor and a Pump Room in the basement.

#### **Condition Issues**

The Operations Building was originally constructed in the 1970s and retrofitted during the 2005 upgrade. The building's structural and architectural features have approximately 10% remaining life until they reaches their minimum design life of 50 years, resulting in a high LoF rating. Once the building is 50 years old, it is recommended a condition evaluation be conducted to determine its expected remaining life.

#### Performance Issues

WPCF staff noted that the Operations Building roof is in need of repair. It was also stated that the scum pumps were installed in the 1970s, are well past their useful design life, and are observed to be cracking and breaking.

# Risk Assessment

Table 3-9 summarizes the failure risks associated with the Operations Building.

**Table 3-9 Operations Building Risk Assessment** 

Component	Sub-Component	LoF	CoF	Risk Rating
Operations Building	Architectural	5	2	High
	Structural	5	2	High
	HVAC	3	2	Medium
	Electrical	3	2	Medium
	Instrumentation and controls	3	2	Medium
	Roof	5	3	Very High
	Scum pumps	5	2	High
	Return sludge pumps	3	2	Medium
	Waste sludge pumps	3	2	Medium
	Base mounted pumps	3	2	Medium
	Internal recycle pumps	3	2	Medium

# 3.1.10 Standby Generators

The facility has two standby generators; one is located in the Operations Building and the second is located outdoors.

#### **Condition Issues**

The outdoor emergency generator was installed during the 2005 upgrade. The standby generator located in the Operations Building was installed in the 1970s and is well past its design life.

# **Performance Issues**

No performance-related issues were noted during site walk-throughs or discussions with WPCF staff.

### Risk Assessment

Table 3-10 summarizes the failure risks associated with the standby generator.

**Table 3-10 Standby Generator Risk Assessment** 

Component	Sub-Component	LoF	CoF	Risk Rating
Generator	1000 kW outdoor generator	3	3	High
	350 kW generator in Operations Building	5	3	Very High

# 3.1.11 Septage Equalization Tanks and Pump and Blower Buildings

The facility has four septage equalization basins and two Pump and Blower Buildings.

#### **Condition Issues**

The majority of the equipment in the Pump and Blower Buildings was installed in the 1970s and is well past its useful life. The buildings' structural and architectural features have approximately 10% remaining life until they reach their minimum design life of 50 years, resulting in a high LoF rating. Once the buildings are 50 years old, it is recommended a condition evaluation be conducted to determine their expected remaining life.

#### Performance Issues

No performance issues were noted during the site walk-throughs or in discussion with WPCF staff.

#### Risk Assessment

Table 3-11 summarizes the failure risks associated with the Pump and Blower Buildings.

Table 3-11 Pump and Blower Buildings Risk Assessment

Component	Sub-Component	LoF	CoF	Risk Rating
Pump and Blower Buildings	Architectural	5	2	High
	Structural	5	2	High
	HVAC	5	2	High
	Electrical	5	2	High
	Instrumentation and controls	5	2	High
	Plunger pumps	5	2	High
	Mixers	5	2	High
	Blowers	5	2	High

# 3.1.12 Secondary Clarifiers

The facility has three circular secondary clarifiers. An alum feed point is located at the secondary clarifier distribution box prior to the clarifiers. Scum from the clarifiers is pumped to sludge storage.

# **Condition Issues**

Secondary Clarifier Nos. 1 and 2 were constructed in the 1970s. The equipment for these clarifiers dates to the original construction and is well past its useful design life. Secondary Clarifier No. 3 and its associated equipment was constructed during the 2005 upgrade.

### Performance Issues

No performance issues were noted during the site walk-through or through discussions with WPCF staff.

### Risk Assessment

Table 3-12 summarizes the failure risks associated with the secondary clarifiers.

**Table 3-12 Secondary Clarifiers Risk Assessment** 

Component	Sub Component	LoF	CoF	Risk Rating
Clarifiers Nos. 1 and 2	Structural	5	3	Very High
	Electrical	5	3	Very High
	Instrumentation	5	3	Very High
	Process equipment	5	3	Very High
Clarifier No. 3	Structural	2	3	Medium
	Electrical	3	3	High
	Instrumentation	3	3	High
	Process equipment	3	3	High

# 3.1.13 Site/Civil

#### **Condition Issues**

The majority of the roads, underground piping, and manholes at the facility were constructed in the 1970s and are approaching the end of their useful design life.

#### Performance Issues

No performance issues were noted in site walk-throughs or in conversations with WPCF staff.

#### Risk Assessment

Table 3-13 summarizes the failure risks associated with the site and civil aspects of the facility.

Table 3-13 Site/Civil Risk Assessment

Component	Sub-Component	LoF	CoF	Risk Rating
Site/civil	Roads	5	2	High
	Underground piping	5	2	High
	Manholes	5	2	High
	Paint	3	2	Medium
	Stormwater management and site landscaping	2	1	Low
	Fencing/site security	3	1	Low
	Site lighting	3	1	Low

# 3.1.14 Sludge Storage Tanks

The facility has two sludge storage tanks in one concrete structure.

# **Condition Issues**

The sludge storage tanks were originally constructed in the 1970s. The majority of the equipment was installed during the same time period and is well past its useful design life. The concrete structures structural and architectural features have approximately 10% remaining life until they have reached their minimum design life of 50 years, resulting in a high LoF rating. Once the concrete structure is 50 years old, it is recommended that a condition evaluation be conducted to determine its expected remaining life and whether it needs to be replaced or repaired.

# Performance Issues

No performance issues were noted during site walk-throughs or in discussions with WPCF staff.

# Risk Assessment

Table 3-14 summarizes the failure risks associated with the sludge storage tanks.

**Table 3-14 Sludge Storage Tanks Risk Assessment** 

Component	Sub-Component	LoF	CoF	Risk Rating
Sludge storage tanks	Architectural	5	2	High
	Structural	5	2	High
	HVAC	5	2	High
	Electrical	5	2	High
	Instrumentation and controls	5	2	High
	Sludge tank blowers	5	2	High
	Sludge tank mixers	5	2	High

#### 3.1.15 Soda Ash Tower

The facility has a 12-foot diameter chemical storage silo, which also contains a 200-gallon soda ash solution tank, mixer, feed pump, and emergency shower/eyewash.

#### **Condition Issues**

The soda ash tower was installed during the 2005 upgrade.

# **Performance Issues**

WPCF staff noted that the heating element in the tower is insufficient to adequately heat the tower, leading to chemical caking.

# Risk Assessment

Table 3-15 summarizes the failure risks associated with the soda ash tower.

Table 3-15 Soda Ash Tower Risk Assessment

Component	Sub-Component	LoF	CoF	Risk Rating
Soda ash tower	Structural	2	2	Low
	HVAC	4	2	High
	Instrumentation and controls	3	2	Medium
	Electrical	3	2	Medium
	Eyewash system	3	3	High
	Mix tank	3	2	Medium
	Mixer	3	2	Medium
	Pumps	3	2	Medium
	Piping 3	3	2	Medium
	Vibrators	3	2	Medium
	Gates and valves	2	2	Low

# 3.2 Pumping Stations and Collection System

There are currently 43 pumping stations within the Town's collection system. All of the stations are either owned or operated by the Town, with the exception of the Police Station Pumping Station, which is privately owned and operated and thus not included in this study.

Flow from the Town of Bourne is handled by the following four pumping stations; Cohasset Narrows, Dick's Pond, Depot Street and Saltworks Road. The Town of Bourne is responsible for 17.9% of the capital costs for these pump stations and associated force mains.

The stations' age of construction ranges from 1970 to 2012. The majority of equipment in each station was installed during its original construction. The equipment in over half of the stations is well past its useful design life. Once equipment has exceeded its design life, it is essentially operating on "borrowed time" and is no longer considered reliable. As the equipment continues to age, the cost of operating and maintaining it will increase. Some of the equipment, such as the mechanical equipment in the Town's five ejector stations, is obsolete and replacement parts are difficult and costly to obtain. Ejector stations are no longer considered a common pumping station technology and certain parts for these stations can no longer be readily ordered and must be specially fabricated when they fail. Therefore, a component failure could lead to long-term equipment outages and potentially costly temporary measures when equipment replacement is necessary. The condition of the collection system piping in each sewershed is unknown.

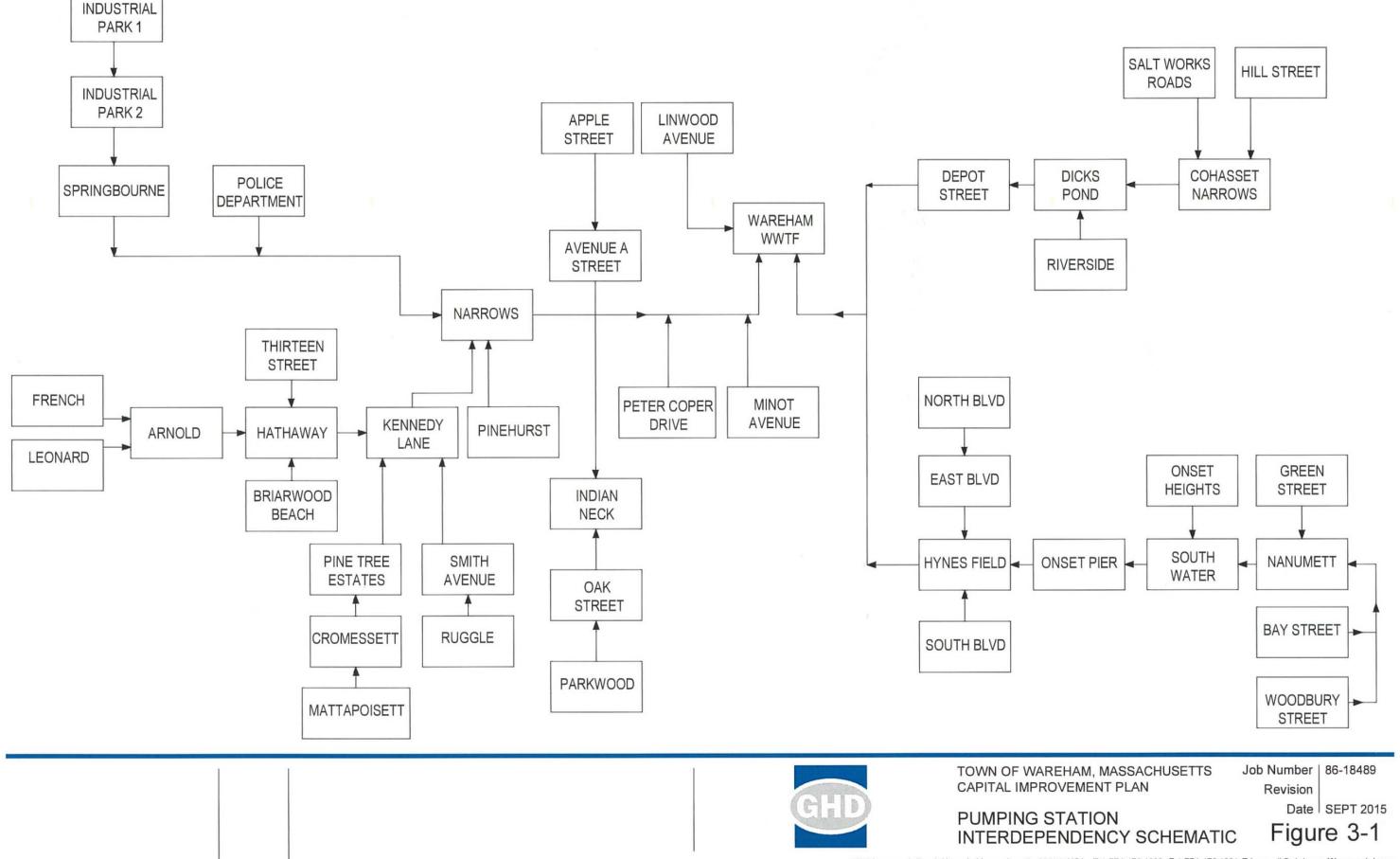
A schematic of the Town's collection system is shown in Figure 3-1. As illustrated, the system has several key stations which collect flow from many other stations. If any of these key stations were to fail, all of the upstream stations would be affected. The majority of these key stations are among the oldest in the collection system. The Narrows is the Town's oldest station and has the greatest number of dependent stations (17). Several key stations also serve vital infrastructure, such as the Town's hospital and Fire Department headquarters, increasing their criticality.

Since the age and criticality of the pumping station and piping in the same sewershed is similar, the risk analysis of the Town's pumping stations and collection system was conducted by sewershed. A sewershed is defined as the extent of the collection system that flows into a pumping station. A map of the Town's sewersheds is shown in Figure 3-2.

# 3.2.1 Condition Issues

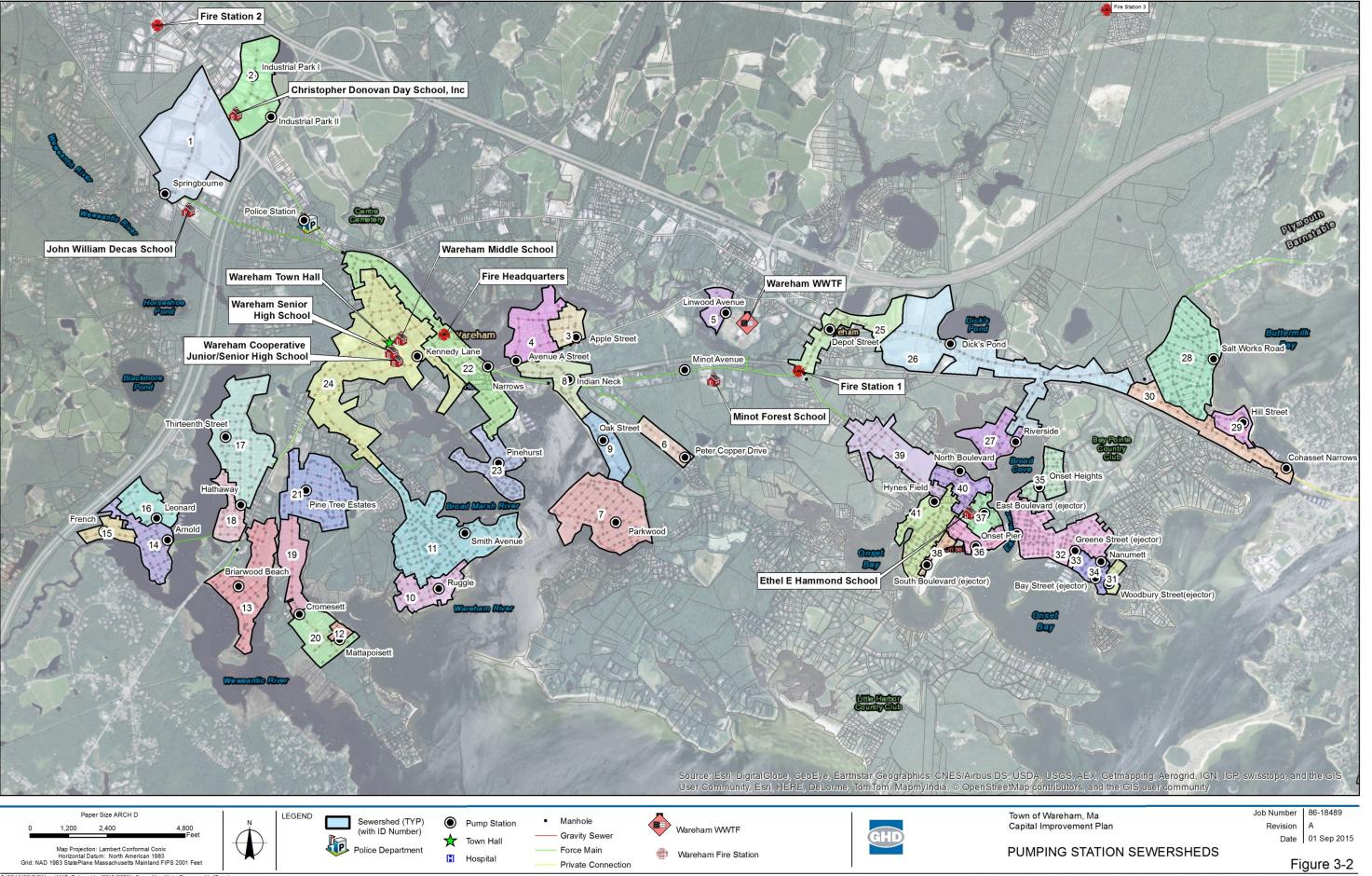
A rating was assigned based on the criteria outlined in Table 2-1. As previously stated, the design life of pumping station equipment is assumed to be 20 years, and for collection system piping and masonry buildings, a minimum of 50 years

The condition of each pumping station was assessed based on the expected remaining life of its equipment. The condition of each sewershed's collection system was assessed based on a minimum 50-year lifespan. Although the lifespan of collection system infrastructure may potentially extend beyond 50 years, it is recommended the infrastructure be investigated further once it has reached this age, to determine if replacement or repair is needed.



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1545 Iyannough Road, Hyannis Massachusetts 02601 USA T 1 774 470 1630 F 1 774 470 1631 E hyamail@ghd.com W www.ghd.com



G:36:18489[GISIMapsiMXD\_Deliverables]8618489F01\_Sewer Map Water Resource 11x17.mxd

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Data source: Data Custodian, Data Set Name/Title, Version/Date. Created by:jjobrien

#### 3.2.2 Performance Issues

Pumping station performance issues were noted in the condition assessments compiled for each station by WPCF staff. The condition assessments are included in Appendix A.

The Town has recently purchased a camera to conduct Closed Circuit Television (CCTV) inspections on portions of their collection system. They have also invested in equipment to clean the collection system piping.

An infiltration and inflow (I/I) study was completed by OSD Engineering Consultants on the Swifts Beach sewer collection system in 2014. The Swifts Beach sewer collection system is comprised of the Ruggles catchment area and the Smith Avenue catchment area. It was concluded that there is evidence of excessive I/I in the Ruggles catchment area and recommended that the area be investigated further through smoke testing, house-to-house surveys, flow monitoring, and CCTV inspections. While evidence of excessive I/I was not found in the Smith Avenue catchment area, it was recommended the collection area be subdivided into smaller study areas and investigated further. The Town plans to continue conducting I/I studies and performing CCTV inspections on portions of their system in order to assess whether performance issues exist within the system.

# 3.2.3 Consequence of Failure

CoF for each pumping station and its associated collection system was determined by the criteria outlined in Table 2-3. The following variables were used in prioritizing the severity of a pumping station failing:

- 1. Is any critical infrastructure served by the sewershed? Critical infrastructure includes hospitals, fire stations, police stations, schools, Town Hall, and emergency shelters.
- 2. Is the sewershed located in a Zone II water supply area?
- 3. Is the sewershed located in a Priority and Estimated Habitat Area, as defined by the Massachusetts Endangered Species Act (MESA)?
- 4. How many other pumping stations are dependent (flow into) the pumping station?

If a sewershed (pumping station and associated collection system) met any of the criteria detailed above, it was assigned a higher CoF.

#### 3.2.4 Risk Assessment

Table 3-16 summarizes the failure risks associated with the pumping stations. Table 3-17 summarizes the failure risks associated with the collection system. LoF is determined based on the age of infrastructure. As outlined in Table 2-1, infrastructure with less than 10% of its remaining life has the highest likelihood of failure. As discussed previously, it is recommended that masonry structures and collection system piping be inspected as it approaches 50 years, to determine if replacement or repairs are needed.

**Table 3-16 Pumping Stations Risk Assessment** 

Component         Commissioned Commissioned         LoF         CoF Rating Rating         Additional Comments           Narrows         1970         5         4         Very High 17 pumping stations flow into Narrows.           Depot Street         1989         5         4         Very Sewershed contains fire station. Flow pumping stations flow into Depot Street.           Dick's Pond         1989         5         4         Very High 1990         Sewershed in a Zone II water protection area. Three pumping stations flow into Dick's Pond.           Cohasset Narrows         1989         5         4         Very High 1990         Sewershed contains Bourne fire station and Bourne Police Department. Two pumping stations flow into Cohasset Narrows.           Springborne         1991         5         3         Very High 1990         Sewershed contains Shoune fire station and Bourne Police Department. Two pumping stations flow into Cohasset Narrows.           Springborne         1991         5         3         Very Sewershed contains Town's emergency shelter. Two pumping stations flow into Springborne.           East Boulevard         1971         5         3         Very Sewershed contains school. One pumping station flows into East Boulevard.           Minot         1980         5         3         Very Sewershed contains school. One pumping station flows into East Boulevard.           Minot         1980						
Narrows 1970 5 4 Very High and fire headquarters.  Depot Street 1989 5 4 Very High and fire headquarters.  Depot Street 1989 5 4 Very High Sewershed contains fire station. Five pumping stations flow into Narrows.  Dick's Pond 1989 5 4 Very High Protection area. Three pumping stations flow into Depot Street.  Cohasset Narrows 1989 5 4 Very High Protection area. Three pumping stations flow into Dick's Pond.  Cohasset Narrows 1989 5 4 Very High Protection area. Three pumping stations flow into Dick's Pond.  Springborne 1991 5 3 Very Sewershed contains Bourne fire station and Bourne Police Department. Two pumping stations flow into Cohasset Narrows.  Springborne 1991 5 3 Very Sewershed contains Town's emergency shelter. Two pumping stations flow into Springborne.  East Boulevard 1971 5 3 Very Sewershed contains school. One pumping station flows into East Boulevard.  Minot 1980 5 3 Very Sewershed contains school. High priority rare species area.  Kennedy Lane 2004 3 3 Very Sewershed contains school. High priority rare species area.  Kennedy Lane 2004 3 3 High Sewershed contains flow into Kennedy Lane.  Hynes Field 1971 5 2 High Nine pumping stations flow into Kennedy Lane.  Nanumette Air 1989 5 2 High Five pumping stations flow into Conset Pier. Pive pumping stations flow into South Water Street 1971 5 2 High Five pumping stations flow into South Water Street 1992 5 2 High Four pumping stations flow into Smith.  South Boulevard 1971 5 2 High One pumping stations flow into Smith 1978 5 2 High One pumping station flows into Smith.	Component		LoF	CoF		Additional Comments
High   Five pumping stations flow into Depot Street.	· ·	1970	5	4	Very	and fire headquarters.  17 pumping stations flow into
High   protection area. Three pumping stations flow into Dick's Pond.	Depot Street	1989	5	4		Five pumping stations flow into
High   Station and Bourne Police   Department. Two pumping stations flow into Cohasset Narrows.	Dick's Pond	1989	5	4		protection area. Three pumping stations flow into
East Boulevard 1971 5 3 Very Sewershed contains school. One pumping station flow into Springborne.  East Boulevard 1971 5 3 Very High Sewershed contains school. One pumping station flows into East Boulevard.  Minot 1980 5 3 Very Sewershed contains school.  Onset Heights 1996 5 3 Very High Priority rare species area.  Kennedy Lane 2004 3 3 High Sewershed contains three schools and Town Hall. 11 pumping stations flow into Kennedy Lane.  Hynes Field 1971 5 2 High Nine pumping stations flow into Hynes Field.  Onset Pier 1971 5 2 High Five pumping stations flow into Onset Pier.  Nanumette Air Station 1989 5 2 High Five pumping stations flow into Station South Water 1971 5 2 High Four pumping stations flow into South Water Street.  Pine Tree Estates 1992 5 2 High Two pumping stations flow into South Water Street.  Pine Tree Estates 1992 5 2 High One pumping station flows into Smith 1978 5 2 High One pumping station flows into Smith.  North Boulevard 1971 5 2 High South Boulevard 1972 5 2 High Pinehurst 1978 5 2 High Pinehurst 1989 5 2 High Pinehurst 1989 5 2 High	Cohasset Narrows	1989	5	4		station and Bourne Police Department. Two pumping stations flow into
Minot 1980 5 3 Very Sewershed contains school.  Minot 1996 5 3 Very High Sewershed contains school.  Onset Heights 1996 5 3 Very High Priority rare species area.  Kennedy Lane 2004 3 3 High Sewershed contains three schools and Town Hall. 11 pumping stations flow into Kennedy Lane.  Hynes Field 1971 5 2 High Nine pumping stations flow into Hynes Field.  Onset Pier 1971 5 2 High Five pumping stations flow into Onset Pier.  Nanumette Air 1989 5 2 High Five pumping stations rely on the Nanumette Air Station.  South Water 1971 5 2 High Four pumping stations flow into Street 1992 5 2 High Two pumping stations flow into Pine Tree Estates (Terry Lane) 5 2 High One pumping station flows into Smith.  North Boulevard 1971 5 2 High One pumping station flows into Smith.  North Boulevard 1972 5 2 High South Boulevard 1972 5 2 High Pinehurst 1978 5 2 High Bay Street 1989 5 2 High	Springborne	1991	5	3		emergency shelter. Two pumping stations flow into
Onset Heights  1996  5  3  Very High Priority rare species area.  Kennedy Lane  2004  3  3  High Sewershed contains estimated/ priority rare species area.  Kennedy Lane  2004  3  High Sewershed contains three schools and Town Hall. 11 pumping stations flow into Kennedy Lane.  Hynes Field  1971  5  2  High Nine pumping stations flow into Hynes Field.  Onset Pier  1971  5  2  High Five pumping stations flow into Onset Pier.  Nanumette Air Station  South Water Street  1971  5  2  High Five pumping stations rely on the Nanumette Air Station.  South Water Street  Pine Tree Estates (Terry Lane)  Smith  1978  5  2  High One pumping station flows into Smith.  North Boulevard  1972  5  2  High South Boulevard  1972  5  2  High Pinehurst  1978  5  2  High Bay Street	East Boulevard	1971	5	3		One pumping station flows into
Kennedy Lane  Zoo4  Zoo4  Kennedy Lane  Zoo4  Zoo4  Xous High  Zous High  Zous Sewershed contains three schools and Town Hall. 11 pumping stations flow into Kennedy Lane.  Hynes Field  In 1971  Zous High  Zous	Minot	1980	5	3		Sewershed contains school.
Schools and Town Hall.  11 pumping stations flow into Kennedy Lane.  Hynes Field  1971  5  2  High  Nine pumping stations flow into Hynes Field.  Onset Pier  1971  5  2  High  Five pumping stations flow into Onset Pier.  Nanumette Air  Station  1989  5  2  High  Five pumping stations rely on the Nanumette Air Station.  South Water  Street  1971  5  2  High  Four pumping stations flow into South Water Street.  Pine Tree Estates  1992  5  2  High  Two pumping stations flow into Pine Tree Estates.  Smith  1978  5  2  High  One pumping station flows into Smith.  North Boulevard  1971  5  2  High  South Boulevard  1972  5  2  High  South Boulevard  1972  5  2  High  Pinehurst  1978  5  2  High  Bay Street  1989  5  2  High  Bay Street	Onset Heights	1996	5	3		
Hynes Field.  Onset Pier 1971 5 2 High Five pumping stations flow into Onset Pier.  Nanumette Air 1989 5 2 High Five pumping stations rely on the Nanumette Air Station.  South Water 1971 5 2 High Four pumping stations flow into South Water Street.  Pine Tree Estates 1992 5 2 High Two pumping stations flow into Pine Tree Estates.  Smith 1978 5 2 High One pumping station flows into Smith.  North Boulevard 1971 5 2 High South Boulevard 1972 5 2 High Pinehurst 1978 5 2 High Bay Street 1989 5 2 High	Kennedy Lane	2004	3	3	High	schools and Town Hall. 11 pumping stations flow into
Nanumette Air Station 1989 5 2 High Five pumping stations rely on the Nanumette Air Station.  South Water Street 1971 5 2 High Four pumping stations flow into South Water Street.  Pine Tree Estates (Terry Lane) 5 2 High Two pumping stations flow into Pine Tree Estates.  Smith 1978 5 2 High One pumping station flows into Smith.  North Boulevard 1971 5 2 High South Boulevard 1972 5 2 High Pinehurst 1978 5 2 High Bay Street 1989 5 2 High	Hynes Field	1971	5	2	High	
Station  South Water Street  1971 5 2 High Four pumping stations flow into South Water Street.  Pine Tree Estates (Terry Lane)  Smith 1978 5 2 High One pumping station flows into Smith.  North Boulevard 1971 5 2 High South Boulevard 1972 5 2 High Pinehurst 1978 5 2 High Bay Street 1989 5 2 High	Onset Pier	1971	5	2	High	
Street  Pine Tree Estates (Terry Lane)  Smith  1978  5  2  High  Two pumping stations flow into Pine Tree Estates.  Smith  1978  5  2  High  One pumping station flows into Smith.  North Boulevard  1971  5  2  High  South Water Street.  Two pumping stations flow into Pine Tree Estates.  9  1978  5  1979  1970  1971  1970  1971  1972  1970  1		1989	5	2	High	
(Terry Lane)  Smith  1978  5  2  High  One pumping station flows into Smith.  North Boulevard  1971  5  2  High  South Boulevard  1972  5  2  High  Pinehurst  1978  5  2  High  Pinehurst  1989  5  2  High		1971	5	2	High	
North Boulevard       1971       5       2       High         South Boulevard       1972       5       2       High         Pinehurst       1978       5       2       High         Bay Street       1989       5       2       High		1992	5	2	High	
South Boulevard         1972         5         2         High           Pinehurst         1978         5         2         High           Bay Street         1989         5         2         High	Smith	1978	5	2	High	
Pinehurst         1978         5         2         High           Bay Street         1989         5         2         High	North Boulevard	1971	5	2	High	
Bay Street 1989 5 2 High	South Boulevard	1972	5	2	High	
	Pinehurst	1978	5	2	High	
Green Street 1989 5 2 High	Bay Street	1989	5	2	High	
	Green Street	1989	5	2	High	

Component	Year Commissioned	LoF	CoF	Risk Rating	Additional Comments
Peter Copper	1989	5	2	High	Additional Comments
Woodbury	1989	5	2	High	
Hill Street	1990	5	2	High	
Jefferson Shores	1000	O	_	riigii	
Saltworks Road	1990	5	2	High	
Riverside	1996	5	2	High	
Briarwood	2006	3	3	High	Sewershed contains estimated/ priority rare species area.
Hathaway	2006	3	2	Medium	Five pumping stations flow into Hathaway.
Arnold	2006	3	2	Medium	Two pumping stations flow into Arnold.
Cromsesset	2012	1	3	Medium	Sewershed contains estimated/priority rare species area. One pumping station flows into Cromsesset.
Thatcher (Industrial Park 2)	2012	1	3	Medium	Sewershed contains school. One pumping station flows into Thatcher.
Kendrick (Industrial Park 1)	2012	3	2	Medium	
Linwood	2005	3	2	Medium	
French Street	2006	3	2	Medium	
Leonard Street	2006	3	2	Medium	
Thirteenth Street	2006	3	2	Medium	
Indian Neck	2010	2	2	Low	One pumping station flows into Indian Neck.
Oak Street	2010	2	2	Low	One pumping station flows into Oak Street.
Avenue A	2011	2	2	Low	One pumping station flows into Avenue A.
Parkwood	2010	2	2	Low	
Apple Street	2012	1	2	Low	
Mattapoisett Road	2012	1	2	Low	
Ruggles	2012	1	2	Low	

**Table 3-17 Collection System Risk Assessment** 

Component	Year Commissioned	LoF	CoF	Risk Rating	Additional Comments
Narrows	1970	5	4	Very High	Sewershed contains hospital and fire headquarters. 17 pumping stations flow into Narrows.
Depot Street	1989	3	4	Very High	Sewershed contains fire station. Five pumping stations flow into Depot Street.

Component	Year Commissioned	LoF	CoF	Risk Rating	Additional Comments
Dick's Pond	1989	3	4	Very	Sewershed in a Zone II water
DICK 3 T OHG	1909	3	7	High	protection area.
				J	Three pumping stations flow into
		_			Dick's Pond.
Cohasset Narrows	1989	3	4	Very High	Sewershed contains Bourne fire station and Bourne Police
				riigii	Department.
					Two pumping stations flow into
0. 2. 1	4004	•	•	1.0.1	Cohasset Narrows.
Springborne	1991	3	3	High	Sewershed contains Town's emergency shelter
					Two pumping stations flow into
					Springborne
East Boulevard	1971	4	3	Very	Sewershed contains school.
				High	One pumping station flows into East Boulevard.
Minot	1980	3	3	High	Sewershed contains school.
Onset Heights	1996	2	3	Medium	Sewershed contains estimated/
, and the second					priority rare species area.
Kennedy Lane	2004	2	3	Medium	Sewershed contains three
					schools and Town Hall.  11 pumping stations flow into
					Kennedy Lane.
Hynes Field	1971	4	2	High	Nine pumping stations flow into
					Hynes Field.
Onset Pier	1971	4	2	High	Five pumping stations flow into Onset Pier.
Nanumette Air	1989	3	2	Medium	Five pumping stations rely on the
Station	1000		_	Modiani	Nanumette Air Station.
South Water	1971	4	2	High	Four pumping stations flow into
Street	4000				South Water Street.
Pine Tree Estates (Terry Lane)	1992	3	2	Medium	Two pumping stations flow into Pine Tree Estates.
Smith	1978	3	2	Medium	One pumping station flows into
					Smith.
North Boulevard	1971	4	2	High	
South Boulevard	1972	4	2	High	
Pinehurst	1978	3	2	Medium	
Bay Street	1989	3	2	Medium	
Green Street	1989	3	2	Medium	
Peter Copper Woodbury	1989 1989	3	2	Medium Medium	
Hill Street	1989	3	2	Medium	
Jefferson Shores	1000	J	_	Wicdiaiii	
Saltworks Road	1990	3	2	Medium	
Riverside	1996	2	2	Low	
Briarwood	2006	1	3	Medium	Sewershed contains estimated/ priority rare species area.
Hathaway	2006	1	2	Low	Five pumping stations flow into

	Year			Risk	
Component	Commissioned	LoF	CoF	Rating	Additional Comments
					Hathaway.
Arnold	2006	1	2	Low	Two pumping stations flow into Arnold.
Cromsesset	2012	1	3	Medium	Sewershed contains estimated/priority rare species area. One pumping station flows into Cromsesset.
Thatcher (Industrial Park 2)	2012	1	3	Medium	Sewershed contains school. One pumping station flows into Thatcher.
Kendrick (Industrial Park 1)	2012	2	2	Low	
Linwood	2005	2	2	Low	
French Street	2006	1	2	Low	
Leonard Street	2006	1	2	Low	
Thirteenth Street	2006	1	2	Low	
Indian Neck	2010	1	2	Low	One pumping station flows into Indian Neck.
Oak Street	2010	1	2	Low	One pumping station flows into Oak Street.
Avenue A	2011	1	2	Low	One pumping station flows into Avenue A.
Parkwood	2010	1	2	Low	
Apple Street	2012	1	2	Low	
Mattapoisett Road	2012	1	2	Low	
Ruggles	2012	1	2	Low	

# 4. CIP Project List

# 4.1 Overview and Determination of Project Costs

This 20-year Capital Improvement Plan includes the planning and design (if applicable) phases of several important capital projects, with the goal of timely replacement of existing aged infrastructure. Anticipated planning level project costs were determined using GHD cost estimating experience. Costs are presented as total capital cost in ENR index year of 2015.

# 4.1.1 New, Renewal, and Replacement Projects

This study was completed to estimate the anticipated costs necessary to maintain the existing level of service for the Town's existing wastewater infrastructure. No costs were carried for potential improvements at the WPCF which may be required to meet future, more stringent permits or for upgrading the capacity of existing equipment. Projects that do not involve existing infrastructure are not included in this evaluation.

Renewal and replacement projects are recommended when major portions of the infrastructure require rehabilitation or replacement, respectively. Tables 4-1, 4-2, and 4-3 outline renewal and replacement projects proposed between 2015 and 2035 for the collection system, pumping stations, and WPCF, respectively. The tables show the project, estimated project cost, and the timeframe in which the project may occur and includes a justification for each project. The projected year of investment for the projects is based on age, condition, and remaining life data provided for the Town's infrastructure. Total annual estimated capital costs for the 20-year period are shown in Figure 4-1 in 2015 dollars. The total annual estimated capital costs include anticipated projects for the WPCF, collection system, and pumping stations. The expenditure for each year is shown as the average of the timeframe.

**Table 4-1 Collection System Project List** 

							Time	eframe		Bucket			
Item No.	Location	Project	Justification	Price	Scope	0-3 Years	3-5 Years	6-10 Years	10+ Years	New Project	Renewal Project	Replacement Project	
1	Collection system	Investigation and rehabilitation	Infrastructure condition/age	\$1,000,000	Allowance for study, investigation and remediation	\$1,000,000	o o rears	o to rears	Tot rears	New 1 Toject	110,500	rrojest	
2	Collection system	Investigation and rehabilitation	Infrastructure condition/age	\$1,000,000	Allowance for study, investigation and remediation	\$1,000,000							
3	Collection system	Investigation and rehabilitation	Infrastructure condition/age	\$1,000,000	Allowance for study, investigation and remediation	\$1,000,000							
4	Collection system	Investigation and rehabilitation	Infrastructure condition/age	\$1,000,000	Allowance for study, investigation and remediation		\$1,000,000						
5	Collection system	Investigation and rehabilitation	Infrastructure condition/age	\$1,000,000	Allowance for study, investigation and remediation		\$1,000,000						
6	Collection system	Investigation and rehabilitation	Infrastructure condition/age	\$1,000,000	Allowance for study, investigation and remediation			\$1,000,000					
7	Collection system	Investigation and rehabilitation	Infrastructure condition/age	\$1,000,000	Allowance for study, investigation and remediation			\$1,000,000					
8	Collection system	Investigation and rehabilitation	Infrastructure condition/age	\$1,000,000	Allowance for study, investigation and remediation			\$1,000,000					
9	Collection system	Investigation and rehabilitation	Infrastructure condition/age	\$1,000,000	Allowance for study, investigation and remediation			\$1,000,000					
10	Collection system	Investigation and rehabilitation	Infrastructure condition/age	\$1,000,000	Allowance for study, investigation and remediation			\$1,000,000					
11	Collection system	Investigation and rehabilitation	Infrastructure condition/age	\$3,000,000	Allowance for study, investigation and remediation				\$3,000,000				
12	Collection system	Investigation and rehabilitation	Infrastructure condition/age	\$3,000,000	Allowance for study, investigation and remediation				\$3,000,000				
13	Collection system	Investigation and rehabilitation	Infrastructure condition/age	\$3,000,000	Allowance for study, investigation and remediation				\$3,000,000				
14	Collection system	Investigation and rehabilitation	Infrastructure condition/age	\$3,000,000	Allowance for study, investigation and remediation				\$3,000,000				
15	Collection system	Investigation and rehabilitation	Infrastructure condition/age	\$3,000,000	Allowance for study, investigation and remediation				\$3,000,000				
16	Collection system	Investigation and rehabilitation	Infrastructure condition/age	\$3,000,000	Allowance for study, investigation and remediation				\$3,000,000				
17	Collection system	Investigation and rehabilitation	Infrastructure condition/age	\$3,000,000	Allowance for study, investigation and remediation				\$3,000,000				
18	Collection system	Investigation and rehabilitation	Infrastructure condition/age	\$3,000,000	Allowance for study, investigation and remediation				\$3,000,000				
19	Collection system	Investigation and rehabilitation	Infrastructure condition/age	\$3,000,000	Allowance for study, investigation and remediation				\$3,000,000				
20	Collection system	Investigation and rehabilitation	Infrastructure condition/age	\$3,000,000	Allowance for study, investigation and remediation				\$3,000,000				
Т	OTAL			\$40,000,000		\$3,000,000	\$2,000,000	\$5,000,000	\$30,000,000				

**Table 4-2 Pumping Station Project List** 

							Timef			Bucket		
Item No.	Location	Project	Justification	Price	Scope	0-3 Years	3-5 Years	6-10 Years	10+ Years	New Project	Renewal Project	Replacement Project
	Narrows	Condition evaluation	Infrastructure condition/age			\$20,000						
2	Depot Street	Condition evaluation	Infrastructure condition/age			\$20,000						
	Dick's Pond	Condition evaluation	Infrastructure condition/age			\$20,000						
	Cohasset Narrows	Condition evaluation	Infrastructure condition/age			\$20,000						
	East Boulevard	Condition evaluation	Infrastructure condition/age			\$20,000						
5	Minot	Condition evaluation	Infrastructure condition/age			\$20,000						
	Oneset Heights	Condition evaluation	Infrastructure condition/age			\$20,000						
3	Springborne	Condition evaluation	Infrastructure condition/age			\$20,000						
)	Narrows	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment	\$2,600,000						
0	Depot Street	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment	\$2,100,000						
1	Dick's Pond	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment	\$2,100,000						
2	Cohasset Narrows	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment	\$2,100,000						
13	East Boulevard	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment	\$1,600,000						
14	Minot	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment	\$1,600,000						
15	Onset Heights	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment	\$2,100,000						
16		Pump station evaluation	Evaluate pump stations scheduled to be rehabilitated in years 5-10 in order to determine priority projects		Evaluation	\$50,000						
17	Springborne	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment	\$2,100,000						
18	Kennedy Lane	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment		\$2,100,000					
19	Hynes Field	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment		\$2,100,000					
20	Onset Pier	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment		\$2,100,000					
21	South Water Street	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment		\$2,100,000					
22	Pine Tree Estates	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment		\$2,100,000					

							Time	frame			Bucket	
Item No.	Location	Project	Justification	Price	Scope	0-3 Years	3-5 Years	6-10 Years	10+ Years	New Project	Renewal Project	Replacement Project
23	Smith	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment		\$2,600,000					
24	North Boulevard	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment			\$2,100,000				
25	South Boulevard	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment			\$1,600,000				
26	Pinehurst	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment			\$2,100,000				
27	Bay Street	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment			\$1,600,000				
28	Green Street	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment			\$1,600,000				
29	Peter Cooper	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment			\$1,600,000				
30	Woodbury	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment			\$1,600,000				
31	Hill Street Jefferson Shores	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment			\$1,600,000				
32	Saltworks Road	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment			\$2,100,000				
33	Riverside	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment			\$1,600,000				
34	Linwood	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment			\$1,600,000				
35	Briarwood	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment			\$2,100,000				
36		Pump station evaluation	Evaluate pump stations scheduled to be rehabilitated in years 10+ in order to determine priority projects		Evaluation			\$ 50,000				
37	Hathway	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment				\$1,600,000			
38	Arnold	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment				\$2,100,000			
39	Cromsesset Road	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment				\$1,600,000			
40	Thatcher PS	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment				\$1,600,000			
41	Kendrick PS	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment				\$2,100,000			
42	French Street	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment				\$2,100,000			
43	Leonard Street	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment				\$2,100,000			
44	Thirteenth Street	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment				\$1,600,000			

						Timeframe					Bucket	
Item No.	Location	Project	Justification	Price	Scope	0-3 Years	3-5 Years	6-10 Years	10+ Years	New Project	Renewal Project	Replacement Project
46	Indian Neck	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment				\$2,600,000			
47	Oak Street	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment				\$2,100,000			
48	Apple Street	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment				\$2,100,000			
49	Avenue A	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment				\$1,600,000			
50	Parkwood	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment				\$1,600,000			
51	Mattapoisett Road	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment				\$2,100,000			
52	Ruggles	Pump station rehabilitation	Infrastructure condition/age		Replace mechanical equipment				\$2,600,000			
1	OTAL					\$16,490,000	\$13,100,000	\$21,250,000	\$29,500,000			

Table 4-3 WPCF Project List

							Time	eframe		Bucket			
Item No.	Location	Project	Justification	Price	Scope	0-3 Years	3-5 Years	6-10 Years	10+ Years	New Project	Renewal Project	Replacement Project	
	Headworks	General painting	Rust and peeling paint observed during site walk-through	\$1,000	General painting, materials only			\$1,000					
2	Anoxic tanks	Replace broken spray nozzles	Broken nozzles observed during site walk-through	\$1,000	Nozzle replacement, materials only			\$1,000					
3	Aeration Tank Nos. 1 and 2	Epoxy inside of tank	WPCF staff have observed concrete pitting in tanks	\$416,200	Apply epoxy liner	\$420,000							
ļ	Aeration tanks	Downsize aeration control valves	Downsizing valves will provide improved process control and energy efficiency	\$100,000	Install new aeration valves	\$100,000							
5	Filter/Blower Building	General painting	Rust observed during site walk-through	\$1,000	General painting, materials only			\$1,000					
5	Sludge holding tanks	General painting	Rust observed during site walk-through	\$1,000	General painting, materials only			\$1,000					
7	Operations Building	Operations Building roof	WPCF staff noted roof needs replacement	\$60,000	Roof replacement	\$60,000							
3	Filter Building	Roof/HVAC-Blower Building	WPCF staff noted roof unit needs to be replaced and roof needs to be repaired	\$36,000	Roof unit replacement/roof repair	\$40,000							
)	WPCF	Blowers/motors	WPCF staff noted project required for process control at plant	\$200,000		\$200,000							
0	Denitrification filters	Replace filter media	WPCF staff noted filters plug constantly and overflow			\$200,000							
1	Plant water system	Replace plant water system	Plant water system undersized	\$105,000		\$110,000							
2	Aeration tanks	Flow distribution	WPCF staff noted uneven flow distribution between aeration tanks impacting treatment			\$500,000							
3	Operations Building	Generator replacement	Equipment past its useful life	\$190,000	Replace generator	\$190,000							
4	Secondary Clarifiers Nos. 1 and 2	Replace clarifier equipment	Equipment past its useful life	\$600,000		\$430,000							
5	Secondary Clarifiers Nos. 1 and 2	Resurfacing clarifiers	WPCF staff noted concrete pitting	\$150,000	Clarifier resurfacing	\$150,000							
6	Soda ash tower	Replace heating system	WPCF staff noted chemical caking occurring due to inadequate heat in the tower	\$40,000	Replace heating system		\$40,000						
7	Operations Building	Replace scum pumps	Equipment past useful life and failing	\$45,000	Replace scum pumps		\$45,000						
8	WPCF	Rehabilitate equipment approaching the end of useful life	Equipment approaching end of useful life	\$2,600,000					\$2,600,000				
9	WPCF	Replace outdated controls equipment	Equipment approaching end of useful life				\$150,000	\$500,000					
-	ΓΟΤΑL			\$4,546,200		\$2,400,000	\$235,000	\$504,000	\$2,600,000				

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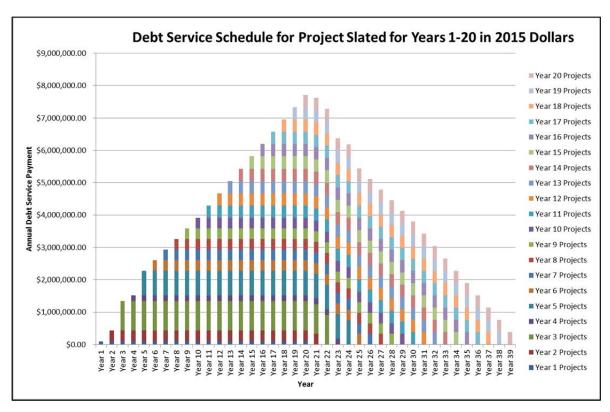


Figure 4-1 20-Year Annual Estimated Capital Cost Needs (2015 Dollars)

Figure 4-2 shows the anticipated annual debt service for these projects if the Town were to obtain SRF, or similar, funding (20-year, 2% loans) for the projects. (It should be noted that certain aspects of proposed projects, such as design, are not fundable through the SRF program. It was assumed for this study that a similar rate loan would be obtained for these portions of the project.)

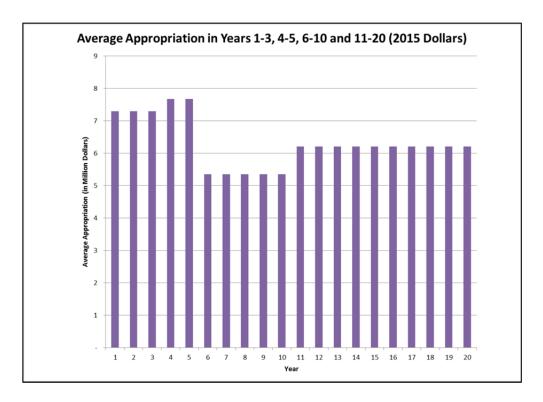


Figure 4-2 Debt Service Schedule for Projects Slated for Years 1 to 20 (2015 Dollars)

# 4.2 Financing Plan for Projects Slated for Years 1-5

A five-year plan has a short-term timeframe and focuses on the immediate needs of the infrastructure. The five-year expenditure analysis illustrates the need for replacement of numerous assets. A potential schedule for the projects slated for years 1 to 5 is described below and outlined in Figure 4-3.

Figure 4-3 Financing Plan for Projects Slated for Years 1 to 5

#### 4.2.1 Collections System Projects

The condition of much of the Town's collection system is unknown. It is recommended that the Town implement an annual investigation and rehabilitation program in order to assess the condition of the collection system.

#### 4.2.2 Pumping Station Projects

Approximately 20% of the Town's pumping stations have a Very High criticality rating and contain mechanical equipment well past its useful life. An additional 45% of the pumping stations received a High criticality rating. It is recommended an Engineering Report for all stations classified as Very High or High in order to prioritize replacement of mechanical equipment in the stations. An Engineering Report is used to identify remedies for long-standing problems in a particular area of infrastructure. The Engineering Report should consider the infrastructure's existing capacity and evaluate any additional flows that may be expected due to known developments or as identified as part of the Comprehensive Wastewater Management Planning (CWMP) process. The Engineering Report should also assess the integrity of the pumping stations' architectural and structural features.

**In Year 1**, conduct an Engineering Report for pumping stations with a Very High criticality rating. Prioritize stations with a High criticality for years 4 and 5, and 6 through 10. The Engineering Report should consider future pump station flows and necessary improvements due to capacity and/or condition.

**In Years 2 and 3**, design and construct improvements identified in the Engineering Report for the Very High criticality stations (listed below):

- Narrows
- Depot Street
- Dick's Pond
- Cohasset Narrows
- East Boulevard
- Minot
- Onset Heights
- Springborne

In Year 3, conduct an Engineering Report for the pumping stations which have a High criticality rating.

**In Years 4 and 5**, design and construct improvements identified in the Engineering Report for prioritized High criticality stations (all High criticality pumping stations are listed below):

- Kennedy Lane
- Hynes Field
- Onset Pier
- South Water Street
- Pine Tree Estates
- Smith

<sup>&</sup>lt;sup>1</sup> An Engineering Report is typically the most basic requirement that MassDEP requires be submitted with a State Revolving Fund (SRF) application for project funding.

- Nanumette Air Station
- North Boulevard
- · South Boulevard
- Pinehurst
- · Bay Street
- Green Street
- Peter Cooper
- Woodbury
- · Hill Street Jefferson Shores
- Saltworks Road
- Riverside
- Linwood
- Briarwood

#### 4.2.3 Water Pollution Control Facility Projects

Very High and High criticality projects were noted during site visits and in discussions with WPCF staff. The following schedule is recommended to address these projects:

Year 1 – Condition evaluation for projects identified as Very High criticality.

Years 2 and 3 – Design and construct improvements identified on the condition evaluation for Very High criticality projects.

Year 3 – Condition evaluation for projects identified as High criticality

Years 4 and 5 – Design and construct improvements identified during the condition evaluation for High criticality projects.

#### 4.2.4 Five-Year Capital Improvement Plan

The proposed project breakdown structure is outlined in Figure 4-4. All costs are shown in 2015 dollars. If these figures are used in any Town planning documents, an appropriate inflation figure should be applied.

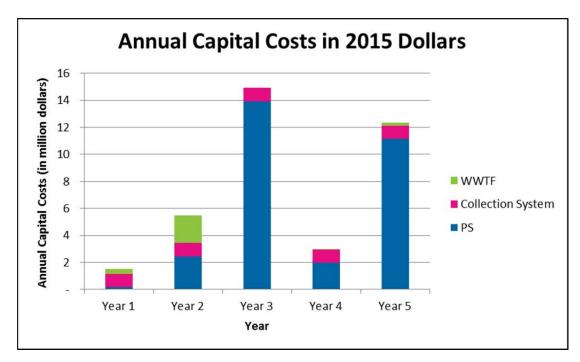


Figure 4-4 Capital Cost Needs for Projects Slated in Years 1 to 5 (2015 Dollars)

Figure 4-5 shows the anticipated annual debt service for the WPCF, collection system, and pumping station projects if the Town were to obtain SRF funding (20-year, 2% loans) for the projects. The figure only shows debt service for the project within Years 1 through 5. (It is noted that certain aspects of proposed projects, such as design, are not fundable through the SRF program. It was assumed for this study that a similar rate loan would be obtained for these portions of the project.)

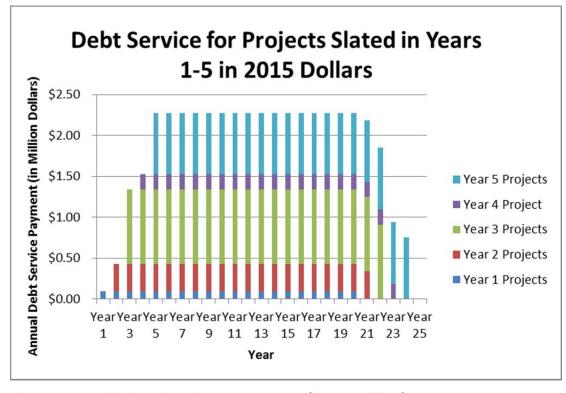


Figure 4-5 Debt Service for Years 1 to 5 (2015 Dollars)

# 5. Recommendations and Next Steps

This CIP identifies the capital costs anticipated to maintain the current level of service for the Town of Wareham's sewer infrastructure. As documented in the report, a sizeable portion of the Town's wastewater equipment is either well past or approaching the end of its useful life.

The projects recommended in the 20-year CIP are divided into four timeframes based on the criticality of the project. The 20-year CIP is a technical evaluation documenting the current state of the Town's infrastructure which will need to be updated at least every five years. The CIP should be coordinated with the rate study, currently being undertaken by the Town, for consistency.

A five-year CIP was also developed, with a short-term focus of addressing immediate infrastructure needs. It is recommended the following project schedule be implemented in Years 1 through 5:

#### 5.1 Year 1

- 1. Implement an annual budget for an investigation and rehabilitation program of the Town's collection system.
- 2. Conduct an Engineering Report for Very High criticality pumping stations (Narrows, Depot Street, Dick's Pond, Cohasset Narrows, East Boulevard, Minot, Onset Heights, and Springborne).
- Conduct an Engineering Report for High criticality pumping stations to prioritize for Years 4
  and 5 (Kennedy Lane, Hynes Field, Onset Pier, South Water Street, Pine Tree Estates,
  Smith, Nanumette Air Station, North Boulevard, South Boulevard, Pinehurst, Bay Street,
  Green Street, Peter Cooper, Woodbury, Hill Street Jefferson Shores, Saltworks Road,
  Riverside, Linwood, and Briarwood).
- 4. Conduct an Engineering Report for Very High criticality WPCF projects

#### 5.2 Year 2

- Continue annual investigation and rehabilitation program for the Town's collection system.
- 2. Begin design and construction of Very High criticality WPCF projects.
- 3. Begin design and construction of Very High criticality pumping station improvement projects.

#### 5.3 Year 3

- Continue annual investigation and rehabilitation program for the Town's collection system.
- 2. Continue construction of Very High criticality WPCF projects.
- 3. Continue construction of Very High criticality pumping station improvement projects.
- 4. Conduct an Engineering Report of High criticality WPCF projects.
- 5. Conduct an Engineering Report of High criticality pumping stations.

#### 5.4 Year 4

1. Continue annual investigation and rehabilitation program for the Town's collection system.

- 2. Begin design and construction of High criticality WPCF projects.
- 3. Begin design and construction of High criticality pumping station improvement projects

#### 5.5 Year 5

- 1. Continue annual investigation and rehabilitation program for the Town's collection system.
- 2. Continue construction of High criticality WPCF projects.
- 3. Continue construction of High criticality pumping station improvement projects.

To fund the projects outlined in the 20-year CIP, it is recommended the Town develop a financing plan that is incorporated into user rates. Appropriate inflation factors should be applied to all costs presented in this report when the financing and rate plan is developed.

This report: has been prepared by GHD for Town of Wareham, Massachusetts and may only be used and relied on by Town of Wareham, Massachusetts for the purpose agreed between GHD and the Town of Wareham, Massachusetts as set out the scope of work for this project.

GHD otherwise disclaims responsibility to any person other than Town of Wareham, Massachusetts arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Town of Wareham, Massachusetts and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

GHD has prepared the preliminary cost estimate set out in section 4 of this report ("Cost Estimate") using information reasonably available to the GHD employee(s) who prepared this report; and based on assumptions and judgments made by GHD.

The Cost Estimate has been prepared for the purpose of capital improvement planning and must not be used for any other purpose.

The Cost Estimate is a preliminary estimate only. Actual prices, costs and other variables may be different to those used to prepare the Cost Estimate and may change. Unless as otherwise specified in this report, no detailed quotation has been obtained for actions identified in this report. GHD does not represent, warrant or guarantee that the [works/project] can or will be undertaken at a cost which is the same or less than the Cost Estimate.

Where estimates of potential costs are provided with an indicated level of confidence, notwithstanding the conservatism of the level of confidence selected as the planning level, there remains a chance that the cost will be greater than the planning estimate, and any funding would not be adequate. The confidence level considered to be most appropriate for planning purposes will vary depending on the conservatism of the user and the nature of the project. The user should therefore select appropriate confidence levels to suit their particular risk profile.



**Appendix A** – Pumping Station Condition Assessments Compiled by Town of Wareham WPCF Staff

Pump Station: Address:	O-NE-SE7 OMESET HEIGHT OMSET MA	Inspection Date: Inspected By:	9-10-11 BW
GENERAL INFORMAT Year Facility Constructed Facility Description:	2 mctsl enclosures 1) to	Year Facility Modified: on Generator () for	EE Egippent
PUMP STATION EQUI Number of Pumps:	PMENT 2	Service Area:	NO
Pump #1: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	FLYST CP3102MT 3/N 3102.0909720010 Subnersible Theck valve By ISOLAN 30 Ay Breake	Type: Horsepower: Efficiency: Inverter duty:	
Pump #2: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH: Comments:	SAME A  SAME A  Breaker  Breaker  FT +Riverside Siste	Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	

Pump #3: Year Installed: Manufacturer: Model and No.: ype: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:	Motor #3: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:
Pump #4: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH: Comments:	Motor #4: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available
General Station Comments: Rep	
Previous Pump Tests:	Peplace motal casinets - 5000 - Electrical - 5000 - moltitrobe 10000

OTHER PIPING AND VALVES

Air relief valves:	MA	Excellent	Good	Fair	Poor
Isolation valves:	LUBE + EXCENCISE.	Excellent	Good	Fair	Poor
Piping:	4 "	Excellent	Good	Fair	Poor
Comments:		<u> </u>	0-104		1
	4" Piping tw. Ma	rttole - Lu	be tex	cercis-	e add
to s	chedule over 1/4				
ELECTRICAL SYSTEM Location Classification:	The same of the sa	Comments:		- A	
Standby Generator:	Mnfr: General/Olympian Model: 96A07032-S	Excellent	Good	Fair	Poor
3/N 2032466	Year Installed: 1999	Facility Load:			
	Rating:	Ample capacity (Y)	<i>ξ</i> ):		
Interior Lighting Type:	Fuel Type: N/GAS  Thendescett	Excellent	Good	Fair	Poor
Lighting Level:	- N - S	Excellent	Good	Fair	Poor
Exterior Lighting Type:	MA	Excellent	Good	Fair	Poor
Panel Boards:		Excellent	Good	Fair	Poor
violor Control Center:		Excellent	Good	Fair	Poor
Disconnect Switches:		Excellent	Good	Fair	Poor
Lightning Protection:		Excellent	Good	Fair	Poor
Fire Alarm System:		Excellent	Good	Fair	Poor
Security System:		Excellent	Good	Fair	Poor
Potential Code Issues:		<del></del>			
Totalital Godo Idados,					
Comments:	110055 t = 70	Rose		10	
	UPSTACE TO Amp	Brencer			
OTHER:		F			

"NSTRUMENTATION AND CONTROLS

Flow Meters/Transmitte	15: hourneter,	Excellent	Good	Fair	Poor	
Pressure Gauges:		Excellent	Good	Fair	Poor	
Other:		Excellent	Good	Fair	Poor	
CADA:	Mission	Excellent	Good	Fair	Poor	
Comments:			-			
MECHANICAL SYST. Fuel Source:	EMS INSPECTION	Fuel Storage Capacity:			#6 #1	
Heating Type:	STRIP ELECTRIC	Excellent	Good	Fair	Poor	_
Ventilation Type:		Excellent	Good	Fair	Poor	575
AC System Type:		Excellent	Good	Fair	Poor	
Dehumidification:		Excellent	Good	Fair	Poor	
Louvers:		Excellent	Good	Fair	Poor	
Comments:						
ECOMMENDATION	2			-		
CATEGORY A ITEMS Item/Recommendation 1. 2. 3. 4. 5.	(Immediate Action)  Upgrade to 50 App  Scener	Estimated Capital Proje \$ \( \lambda \circ \circ \circ \circ \) \$ \$ \$ \$	ct Cost			6.5
1.	(Implement within 5 years)	Estimated Capital Project \$ \$ \$ \$ \$ \$	et Cost		2	
CATEGORY C ITEMS ( Item/Recommendation 1. 2. 3. 4.	(Implement between 6 and 10 years)	. <b>\$</b>				

Pump Station:	Apple ST	Inspection Date: Inspected By:	9-1-13 Jim WALDON
Address:	1.		
GENERAL INFORMA Tear Facility Constructer Tacility Description:	ATION ed: 2012 Outside pump statio	Year Facility Modified.	
PUMP STATION EQU	UIPMENT	Service Area:	outside
Pump #1: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Dbserved flow: Dbserved TDH:	2012 FLYGT 3102,181 MT 34.20H@ 1276 Gpm 1755 4" Check	Motor #1: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	20/2 FLYGT 3102,181 MT 3.9 8278 CONSENT NEXTICUL 1755 See attached
Pump #2: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH:	Shame As Above	Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant:	SAME as Above
ump RPM: Yalve size and type: Observed flow: Observed TDH:		Vertical/Horizontal: Motor RPM: Pump curve available:	

Pump #3:	Motor #3:	
Year Installed:	Year Installed:	_
Manufacturer:	Manufacturer	
Model and No.:	Model and No.:	
Гуре:	Туре:	
NOM efficiency:	Horsepower:	
TO 11 IN APPORTS	Efficience	
Pump RPM:	Inverter duty:	
Volumeian and terrai	Variable/Constant:	
Observed flow:	Vertical/Horizontal:	
Observed TDH:	Motor RPM:	-
	Pump curve available:	
Comments:		
Pump #4:	Motor #4:	
Year Installed:	Year Installed:	
Manuracturer:	Mignifiacitizer.	
Model and No.:	Model and No.:	
Type:	Туре:	
NOM efficiency:	Horsepower	
Design capacity/TDH:	Efficiency:	
Pump RPM:	Inverter duty:	
Valve size and type:	Variable/Constant:	
Observed flow:	Vertical/Horizontal	
Observed TDH:	Motor RPM:	
)	Pump curve available	
Comments:		
General Station Comments:		
Provious Russa Torta		
Previous Pump Tests:		
	New	
	1/60	
	1	

OTHER PIPING AND VALVES

Aif relief valves:		Excellent	Good	Fair	Poor
Isolation valves:	4" GARC	Excellent	Good	Fair	Poor
Piping:		Excellent	Good	Fair	Poor
Comments:					
ELECTRICAL SYSTE Location Classification:	Dry Location em	Comments:		1	
	Wet or Damp Location Wet Corrosive Location	•		<u> </u>	
	7756 000.001.0 2000.001				
Standby Generator:	Mnfr: (severac Model:	Excellent	Good	Fair	Poor
	Year Installed: 20 U Rating: 35 KW	Facility Load: Ample capacity (Y/N):		····	<u></u>
	Fuel Type: Arthural GAS				
Interior Lighting Type:		Excellent	Good	Fair	Poor
Lighting Level:		Excellent	Good	Fair	Poor
Exterior Lighting Type:		Excellent	Good	Fair	Poor
Panel Boards:		Excellent	Good	Fair	Poor
Motor Control Center:		Excellent	Good	Faur	Poor
Disconnect Switches:		Excellent	Good	Fair	Poor
Lightning Protection:		Excellent	Good	Fair	Poor
Fire Alarm System:		Excellent	Good	Fair (	Poor
Security System:	NA	Excellent	Good	Fair	Poor
Potential Code Issues:	NA				
Comments:	· ·				
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OTHER:		- Wa			

NSTRUMENTATION AND CONTROLS

Flow Meters/Transmi	itters:		Excellent	Good	Fair	l'oor
Pressure Gauges:			Excellent	Good	Fair	Poor
Other:	Missions		Excellent	Good	Fair	Poor
SCADA:		70	Excellent	Good	Fair	Poor
Comments:						
MECHANICAL SYS	STEMS INSPECTION		Fuel Storage Capacity:	4-2-		
Heating Type:	Small unit Clearic is		Excellent	Good	Fuir	Poor
Ventilation Type;			Excellent (	Goổd	Fair	Poor
AC System Type:	<i>عرا</i> لہ		Excellent	Good	Fair	Poor
Dehumidification:	NA		Excellent	Good	Fair	Poor
Louvers:			Excellent	Good	Fair	Poor
Comments;						
RECOMMENDATION CATEGORY A ITEM	NS (Immediate Action)					
Item/Recommendation	(Miniculate Excitor)		Estimated Capital Project	t Cost		
1. 2.			\$			
3.			\$			
4.			2			
5.		_	\$ @			
		TOTAL	\$			
CATEGORY BITEM	IS (Implement within 5 years)	. 0 11111	*			
Item/Recommendation	-		Estimated Capital Projec	t Cost		
1. 2.		_	\$			
3.			\$			
4.			\$			
5.		<del></del>	2			
	IS (Implement between 6 and 10 year	TOTAL	\$			
2.		-				
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4.		_				

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FLYPS3.1.6.6 (20090313)

Pump Station: Address:	Arnold Pump Station	Inspection Date: Inspected By:	8-31-13 Jim WALDOO
Tuti 000.		<u></u>	
ENERAL INFORM ear Facility Construct acility Description:		Year Facility Modified:	
UMP STATION EQ	UIPMENT		
lumber of Pumps:		Service Area:	outside
Pump #1: Year Installed:	2006	Motor #1: Year Installed:	2006
Aanufacturer:	FLYGT	Manufacturer:	FLYGT
viodel and No.:	3102,090	Model and No.:	
Гуре:	MT	Type:	MT
NOM efficiency:		Horsepower:	3.9
Design capacity/TDH:	28.28TOH@ 333, 26pm	Efficiency:	
ump RPM:	17.55	Inverter duty: Variable/Constant:	C. Marie
/alve size and type:	6'3" Check	Variable/Constant:	CONSTANT VESTICA!
Observed flow:		Motor RPM:	1755
Observed TDH:		Pump curve available:	See Attachool.
) Comments:		1 dttip out to available.	Sec
zottunoitta.		III.	
ump #2:		Motor #2:	
ear Installed:	same as Above	Year Installed:	
fanufacturer:		Manufacturer:	<u>.                                    </u>
lodel and No.:		Model and No.:	
уре:		Type:	
OM efficiency:	- #	Horsepower:	·
esign capacity/TDH:		Efficiency:	
ump RPM:		Inverter duty: Variable/Constant:	
alve size and type:		Variable/Constant:	
bserved flow:		Motor RPM:	Ģ.
AL and a second second			
bserved TDH:		Pump curve available:	
Observed TDH:		Pump curve available:	

Pump #3: Year Installed: Manufacturer: Model and No.: ype: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:	Motor #3: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:
Pump #4: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH: Comments:	Motor #4: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available
HAS a Sewage Air release value 6	1000
	Sti Challes 8
	100
Previous Pump Tests:	PAINT CURING SOO

OTHER PIPING AND VALVES

Air relief valves:	Should be checked 6"	Excellent Good Fair Poor
Isolation valves:	6" GAJE VALUES	Excellent Good Fair Poor
Piping:		Excellent Good Fair Poor
Comments:		•
_		
		<u> </u>
ELECTRICAL SYSTE	MS INSPECTION	, ·
Location Classification:	Dry Location	Comments:
	Wet or Damp Location	
	Wet Corrosive Location	
Standby Generator:	Mnfr: Kohler Model: 20RE0258	Excellent Good Fair Poor
	Year Installed: 200(a	Facility Load:
	Rating: AS FW	Ample capacity (YAN):
	Fuel Type: Die Sc	_
Interior Lighting Type:	24	Excellent Good Fair Poor
Lighting Level:		Excellent Good Fair Poor
Exterior Lighting Type:	N/A	Excellent Good Fair Poor
Panel Boards:		Excellent Good Fair Poor
Motor Control Center:		Excellent Good Fair Poor
Disconnect Switches:		Excellent Good Fair Poor
Lightning Protection:		Excellent Good Fair Poor
Fire Alarm System:	N/A	Excellent Good Fair Poor
Security System:	NA	Excellent Good Fair Poor
Potential Code Issues:		
Comments 0		
Comments: Recomm	end clearing Fence Line	A W. S 181 C. P.
Putterny Lolly Co	dumers around wetwell	Area that is active of fence
		•.
OTHER:		<u> </u>

STRUMENTATION AND CONTROLS

Flow Meters/Transmitte	rs:			Excellent	Good	Fair	Poor	
Pressure Gauges:				Excellent	Good	Fair	Poor	
Other:	Mi Ssious			Excellent	Good	Fair	Poor	
CADA:				Excellent	Good	Fair	Poor	700
Comments: multi	trube Stick Sho e problems in futur		Repla	reed - his	tape	over	j+ - w	<u> </u>
MECHANICAL SYST. Fuel Source:	EMS INSPECTION		Fuel Sto	orage Capacity:			) in	
Heating Type:	Small ple. In cabine	<u> </u>		Excellent	Good	Fair	Poor	
Ventilation Type:				Excellent (	Good	Fair	Poor	W.J
AC System Type:	NA			Excellent	Good	Fair	Poor	
Dehumidification:	NA	<del></del>		Excellent	Good	Fair	Poor	
Louvers:				Excellent	Good	Fair	Poor	
ECOMMENDATIONS CATEGORY A ITEMS Item/Recommendation 1. Clear Fence Ga. 2. Paint Generation 4. 5. CATEGORY B ITEMS (	(Immediate Action)	TOTAL	Estimaled \$ \$ \$ \$ \$	l Capital Project	Cost			1
ttem/Recommendation 1. 2. 3. 4. 5.  CATEGORY C ITEMS ( Item/Recommendation 1. 2. 3.	Implement between 6 and 10 years)	TOTAL	Estimated \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	Capital Project	Cost			
4.								

#### IESI NEFUNI

# **PRODUCT**

Serial No.		Performance cu	ırve No.	Motor	module/type	Voltage (V)
3102.090	0620075	61- 434-00	61- 434-00-3003		130	230
Base module	Impeller No.	Gear type	Gear ratio		Imp.diam/Blade angle	Water temp°C
003	438 96 01				173	16.0

# **TEST RESULTS**

Pump total head	Volume rate of flow	Motor input power P (kW)	Voltage	Current	Overall efficiency
H (ft)	Q (USGpm)		U (V)	I (A)	\( \gamma(\%)
48.17	0.0	1.77	232	8.7	0.00
43.85	46.3	1.93		9.3	19.89
40.29	107.2	2.22		10.5	36.61
36.11	182.4	2.60		12.1	47.72
34.74	209.9	2.74		12.7	50.23
31.58	271.5	3.02		13.9	53.54
28.28	333.2	3.26		15.0	54.56
23.80	412.5	3.48		16.1	53.20
A country of the	Tank facility To	nt data LTime Ch	inf toctor		<i>p.</i>
Accepted after	1	6-03-01 11:24	ief tester 5325		

**ORDERNR 162066 POS 1** 

PLOTTED TEST RESULTS Measured point : += Q/H Duty point : ♦= Q/H

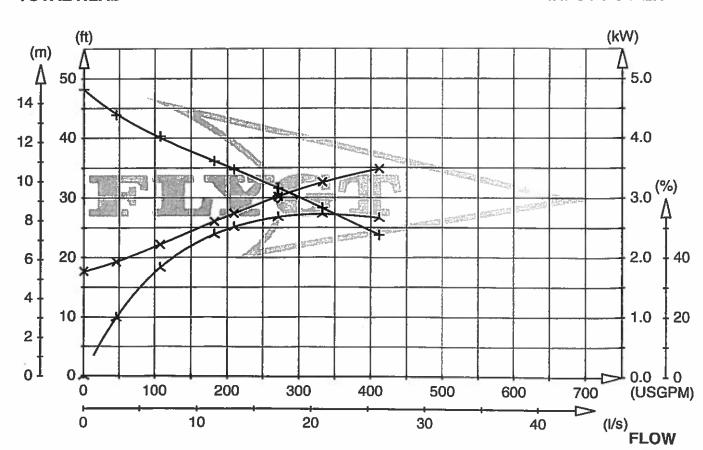
X = Q/P

□ = Q/P

 $\triangle = Q/ETA$  overall

# **TOTAL HEAD**

# **INPUT POWER**



#### **PRODUCT**

Serial No.	Performance cu	JIVE NO.	Motor module/type	Voltage (V)
3102.090 0620073	61- 434-00	-3003	130	230
Base module   Impeller No.	Gear type	Gear ratio	Imp.diam/Blade angle	Water temp °C
003 438 96 01			173	16.0

# **TEST RESULTS**

Pump total head H (ft)	Volume rate of flow Q (USGpm)	Motor input power P (kW)	Voltage U (V)	Current I (A)	Overall efficiency \(\partial\)(%)
47.87 44.16 40.59 36.54 34.44 31.98 28.69 24.77	0.0 45.7 105.5 180.4 220.7 270.1 331.8 403.7	1.79 1.95 2.25 2.64 2.84 3.05 3.29 3.49	233 234 233 233 233 233 234	8.8 9.4 10.6 12.2 13.1 14.0 15.1 16.0	0.00 19.53 35.93 47.16 50.51 53.41 54.64 53.99
Accepted after	Test facility Test d	late Time Chi	ef tester 5306		
HI	Lindas LC3 06-0 Sweden	03-01 12:34			

**ORDERNR 162066 POS 1** 

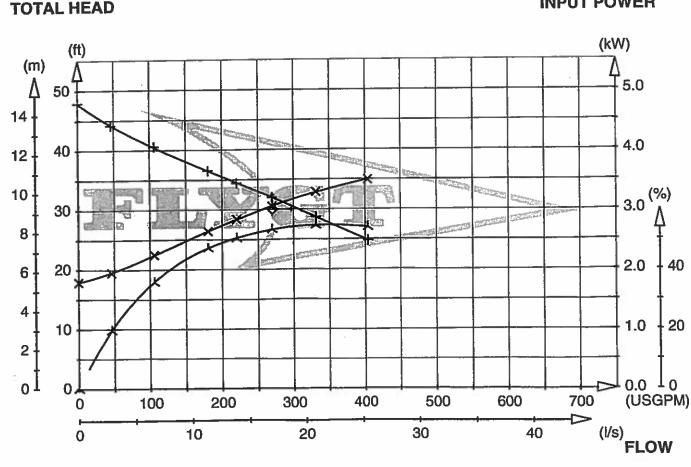
PLOTTED TEST RESULTS Measured point: += Q/H Duty point: >= Q/H

= Q/P

Calculated point: 人=Q/ETA overall

 $\Delta = Q/ETA$  overall

#### **INPUT POWER**



Pump Station:	Avenue A	Inspection Date: Inspected By:	August 20, 201
ldress:		inspected by.	11m WAGNES
_			
ENERAL INFORMA			
car Facility Constructed cility Description:		Year Facility Modified:	<del></del>
acting Description:	Pump Stertion Cope	(ب	
	·		
PUMP STATION EQU Jumber of Pumps:	IPMENT 2	Service Area:	
unioer of Funips:		Scivice Area:	
ump #1:		Motor #1:	
Year Installed:	2012	Year Installed:	2012
/lanufacturer:	FLYGT	Manufacturer:	FLYGT
Aodel and No.:	NP3/02. #8 D	Model and No.:	NP3102.09D
Гуре:	mT Submerssie	Type:	MT Submersible
VOM efficiency:		Horsepower:	3.9
Design capacity/TDH:	31	Efficiency:	82%
ump RPM:	1755	Inverter duty:	60.70
alve size and type:	4" Check VALVE	Variable/Constant:	VFI)
bserved flow:	The FAIL	Vertical/Horizontal:	Vertical
bserved TDH:		Motor RPM:	1755
observed 11571.		Pump curve available: S	
ump #2:		Motor #2:	
ear Installed:	SAME AS Above	Year Installed:	Same As Above
fanufacturer:		Manufacturer:	
fodel and No.:	<del></del>	Model and No.:	
ype:		Туре:	
IOM efficiency:		Horsepower:	30
esign capacity/TDH:		Efficiency:	•
ump RPM:		Inverter duty:	
alve size and type:		Variable/Constant:	<del></del>
bserved flow:		Vertical/Horizontal:	
bserved TDH:		Motor RPM:	
oserved IDH.			
omments: Brand N	24 Station	Pump curve available:	<del></del>
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		د ان کر کردرانوی	
'aint Lally	column yellow		
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Pump #3:	Motor #3;	
Year Installed:	Year Installed:	
Manufacturer:	Manufacturer:	
1 fodel and No.:	Model and No.:	
ype:	Туре:	
NOM efficiency:	Horsepower:	
Design capacity/TDH:	Efficiency:	
Pump RPM:	Inverter duty:	
Valve size and type:	Variable/Constant:	
Observed flow:	Vertical/Horizontal:	
Observed TDH:	Motor RPM:	
	Pump curve available:	
Comments:		
Collination		
Pump #4:	Motor #4:	
Year Installed:	Year Installed:	
Manufacturer:	Manufacturer:	
Model and No.:	Model and No.:	
Type:	Type:	
NOM efficiences	Horsepower:	
Design capacity/TDH:	Efficiency:	
Pump RPM:	Inverter duty:	
Valve size and type:	Variable/Constant:	
Observed flow:	Vertical/Horizontal:	
Observed TDH:	Motor RPM:	
	Pump curve available	
Comments:		
General Station Comments:		
	8.	
D 1 D 77		
Previous Pump Tests:		

OTHER PIPING AND VALVES

Air relief valves:	NIA	Excellent Good	Fair Poor
Isolation valves:	4" GALE	Excellent Good	Fair Poor
ping:	YIT DI	Excellent Good	Fair Poor
Comments:			
ELECTRICAL SYSTE		<u> </u>	
Location Classification:	Dry Location  Wet or Damp Location  Wet Corrosive Location	Comments:	10
Standby Generator:	Mnfr: General Model: 12973240100	Excellent Good	Fair Poor
	Year Installed: 2011 Rating: 35 KW	Facility Load: Ample capacity(YN):	
	Fuel Type: Nectoral GAS		<u> </u>
Interior Lighting Type:		Excellent Good	Fair Poor
Lighting Level:		Excellent Good	Fair Poor
Exterior Lighting Type:	NA	Excellent Good	Fair Poor
Panel Boards:		Excellent Good	Fair Poor
Motor Control Center:		Excellent Good	Fair Poor
Disconnect Switches:		Excellent Good	Fair Poor
Lightning Protection:		Excellent Good	Fair Poor
Fire Alarm System:	NA	Excellent Good	Fair Poor
Security System:	NA	Excellent Good	Fair Poor
Potential Code Issues:			
Comments:	¥3		
		CW	
		1	
OTHER:		78.	

**INSTRUMENTATION AND CONTROLS** 

Flow Meters/Transmit	lters:		Excellent	Good	Fair	Poor
Pressure Gauges:			Excellent	Good	Fair	Poor
Other:	Missions		Excellent	Good	Fair	Poor
SCADA:			Excellent	Good	Fair	Poor
Comments:	new station					
MECHANICAL SYS Fuel Source:	STEMS INSPECTION		Fuel Storage Capacity:			91
Heating Type:	Small Heater Inside		Excellent	Good	Fair	Poor
Ventilation Type:		_	Excellent	Good	Fair	Poor
AC System Type:	NA		Excellent	Good	Fair	
Dehumidification:	NA		Excellent	Good	Fair	Poor
Louvers:			Excellent	Good	Fair	Poor
Comments:						
ECOMMENDATIO	DMC			·		
CATEGORY A ITEM Item/Recommendation	AS (Immediate Action)		Estimated Capital Proje	ct Cost		
1. 2. 3.		-	\$			
4.		-	\$ \$			
5.			\$			
Item/Recommendation	IS (Implement within 5 years)	TOTAL	\$ Estimated Capital Proje	ct Cost		
1. 2.		-	\$ \$			
3.		-	\$			
		•	\$ \$			100
CATEGORY C ITEM Item/Recommendation 1.	IS (Implement between 6 and 10 years)	TOTAL	\$			
3.		•				
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DATE 2012-03	<b>L-</b> ∩1	PROJE	ect venue	a A - V	Nare	ham	MA					CURVE NO 61-465-00-3003				155
2012 00		1-LOAD		LOAD		LOAD	RATE	2	2.0			01-40	13-00-		PELLER	DIAME
POWER FAC	TOR	0.94	- 1	0.95		0.95	POW	TING	3.9		hp					52 mm
EFFICIENCY MOTOR DATA	i i	82.0	%	82.5 %		79.5 %	RATE		45		A	MOTOR 18-11			TATOR	RE 1
COMMENTS	51			INLE	T/OUT	 LET	RATE	RENT 2	16		Α	FREQ.	PHAS		DITAGE	
				_	4 inch			<b>IOM.OF</b>	17		rpm _	60 Hz		2	30 V	4
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	NPSH3% + mi			_	40 °C			F	G	UARA	NTEE E	BETWEEN	LIMITS	(G) AC	с. то	

Pump Station:	BAY ST DAY ST DASET MA	Inspection Date:  Inspected By:	- 16 -13 3. ML
GENERAL INFORMA Year Facility Constructed Facility Description:	i: <u>1987</u>	Year Facility Modified:	
PUMP STATION EQU. Number of Pumps:	IPMENT 2	Service Area:	Vo
Pump #1: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	1989 YEOMANS CHICAGO 150-157 PRIVEMATIC 150 gpm / 51 TOH 4" Fairbanes Flapport CHECO Wear Items Ledo	Motor #1: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	
	AIR Supplied from Nar	mette, LMTD elec co	mponents
Pump #2: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH: Comments:	SAME	Year Installed:  Manufacturer:  Model and No.:  Type:  Horsepower:  Efficiency: Inverter duty:  Variable/Constant:  Vertical/Horizontal:  Motor RPM:  Pump curve available:	

Pump #3: Year Installed: Manufacturer: Model and No.:	Motor #3: Year Installed: Manufacturer: Model and No.:
ype: NOM efficiency: Design capacity/TDH: Pump RPM:	Type: Horsepower: Efficiency: Inverter duty:
Valve size and type: Observed flow: Observed TDH:	Variable/Constant: Vertical/Horizontal: Motor RPM:
Comments:	Pump curve available:
Pump #4: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:  General Station Comments:  SIMPI  TANY  TO MAINTAIN	Motor #4: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available   Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available  Motor RPM: Pump curve available
Previous Pump Tests:	metal Elec. Cubi-el 2000 -
OTHER PIPING AND VALVES	

Air relief valves:		Excellent	Good	Fair	Poor
Isolation valves:		Excellent	Good	Fair	Poor
Piping:		Excellent	Good	Fair	Poor
Comments:	W.W. Pipins Should be	Painted +	Secled	4/400	it meets
Concrete.				-1744	
	AIR PIPING IN GOO	on sthape			· <del></del>
ELECTRICAL SYSTEM Location Classification:	MS INSPECTION  Dry Location  Wet or Damp Location  Wet Corrosive Location	Comments:			
Standby Generator:	Mnfr: Model:	Excellent	Good	Fair	Poor
	Year Installed:	Facility Load:			
	Rating:	Ample capacity (Y/N)	!		
Interior Lighting Type:	Fuel Type:	Excellent	Good	Fair	Poor
Lighting Level:		Excellent	Good	Fair	Poor
Exterior Lighting Type:	~/A	Excellent	Good	Fair	Poor
Panel Boards:	N/A	Excellent	Good	Fair	Poor
Motor Control Center:	N/A	Excellent	Good	Fair	Poor
Disconnect Switches:	DAND CONDITIONS	Excellent	Good	Fair	Poor
Lightning Protection:	<u> </u>	Excellent	Good	Fair	Poor
Fire Alarm System:	MA	Excellent	Good	Fair	Poor
Security System:	N/A	Excellent	Good	Fair	Poor
Potential Code Issues:					
Comments:					
				·	
OTHER:		,			
	······································	100			

NSTRUMENTATION AND CONTROLS

Flow Meters/Transmitters	s:N/A		Excellent	Good	Fair	Poor	
Pressure Gauges:	Older Lou Bio tu	ipe,	Excellent	Good	Fair )	Poor	
Other:			Excellent	Good	Fair	Poor	
SCADA:	MISSION		Y				
	AIMMS 0.	-1 -/	Excellent	Good	) Fair	Poor	
Comments:							
MECHANICAL SYSTE Fuel Source:	MS INSPECTION //	A	Fuel Storage Capacit	ty:			
Heating Type:	E/EC HEATEN	LS	Excellent	Good	Fair	Poor	· ·
Ventilation Type:			Excellent	Good	Fair	Poor	112
AC System Type:	~/A		Excellent	Good	Fair	Poor	
Dehumidification:			Excellent	Good	Fair	Poor	
Louvers:	~/A		Excellent	Good	Fair	Poor	
Comments:		<del> </del>					
PCOMMEND 1570					<del></del>		
ECOMMENDATIONS CATEGORY A ITEMS (	Immediate Action)						
Item/Recommendation			Estimated Capital Pro	iect Cost			3.
<u>1.</u> <u>2.</u>		_	\$	3-71 0-001			
3.		_	\$				
4.			\$				
5.		_	\$ e				
		TOTAL	\$ \$				
CATEGORY B ITEMS (I	implement within 5 years)	.01112	Ψ				
Item/Recommendation			Estimated Capital Proj	iect Cost			
1.		_	\$	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
2			\$				
4			\$				
-			2				
		TOTAL	\$				
CATEGORY C ITEMS (I	mplement between 6 and 10 year.	s)	Ψ				
Henrice commendation	•						
1.		_					
2. 3.		_					
4.		_					
5.		_					

Manufacturer:  Model and No.:  Type:  Type:  NOM efficiency:  Design capacity/TDH:  Pump RPM:  Valve size and type:  Observed flow:  Observed TDH:  Manufacturer:  Manufacturer:  Model and No.:  Type:  Horsepower:  Efficiency:  Inverter duty:  Variable/Constant:  Vertical/Horizontal:  Motor RPM:	Pump Station:	Briarwood Pun	Inspection Date: Inspected By:	8-20-13 J. WALDON
Number of Pumps:    Description   Pump   Pum	Year Facility Construct		Year Facility Modified:	
Year Installed:  Manufacturer:  Model and No.:  3137, 090  Model and No.:  Type:  NOM efficiency:  Design capacity/TDH:  Variable/Constant:  Observed TDH:  Pump #2:  Year Installed:  Manufacturer:  Model and No.:  Same As Alone  Motor #2:  Year Installed:  Manufacturer:  Model and No.:  Model and No.:  Type:  Motor #2:  Year Installed:  Model and No.:  Type:  Model and No.:  Type:  Model and No.:  Type:  Model and No.:  Type:  NoM efficiency:  Design capacity/TDH:  Pump RPM:  Valve size and type:  Observed flow:  Observed TDH:  Motor RPM:  Vertical/Horizontal:  Motor RPM:  Variable/Constant:  Vertical/Horizontal:  Motor RPM:  Variable/Constant:  Vertical/Horizontal:  Motor RPM:  Vertical/Horizontal:  Motor RPM:  Vertical/Horizontal:  Motor RPM:	_	UIPMENT 2	Service Area:	outside
Year Installed: Year Installed: Year Installed: Manufacturer: Model and No.:  Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Year Installed: Year Ins	Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	F146T 3127,090 HT 29,31 H@ 354,5 g	Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM:	FLYGT 3127.040 HT 7.5 Constant Vertical
Pump curve available:  Comments:	Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:		Year Installed:  Manufacturer:  Model and No.:  Type:  Horsepower:  Efficiency:  Inverter duty:  Variable/Constant:  Vertical/Horizontal:	Same As Above

Year Installed:  Manufacturer:  Manufacturer:  Model and No.:  /pe:  Type:  Type:  Type:  Type:  Posign capacity/TDH:  Efficiency:  Design capacity/TDH:  Pump RPM:  Variable/Constant:  Observed flow:  Observed flow:  Vertical/Horizontal:  District and No.:  Motor #4:  Year Installed:  Manufacturer:  Motor #4:  Year Installed:  Manufacturer:  Manufacturer:  Model and No.:  Type:  Type:  Nodel end No.:  Horsepower:  Efficiency:  Design capacity/TDH:  Efficiency:  Design capacity/TDH:  Design capacity/TDH:  Design capacity/TDH:  Design capacity/TDH:  District and ype:  Observed flow:  Variable/Constant:  Variable/Constant:  Variable/Constant:  Observed flow:  Variable/Constant:  Observed flow:  Variable/Constant:  Observed flow:  Variable/Constant:  Observed TDH:  District Comments:   Previous Pump Tests:	Pump #3:	Motor #3:
Model and No.:	•	Year Installed:
pe: Type: Horsepower. Posign capacity/TDH: Efficiency: Inverter duty: Valve size and type: Variable/Constant: Observed flow: Vertical/Horizontal: Observed TDH: Motor RPM: Pump pump #4: Year Installed: Year Installed: Manufacturer: Manufacturer: Model and No.: Type: NOM efficiency: Horsepower: Efficiency: Design capacity/TDH: Efficiency: Inverter duty: Vertical/Horizontal: Observed flow: Vertical/Horizontal: Observed flow: Vertical/Horizontal: Observed flow: Vertical/Horizontal: Observed TDH: Pump RPM: Vertical/Horizontal: Observed TDH: Pump curve available Comments:	Manufacturer:	Manufacturer:
NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Pump curve available:  Comments:  Motor #4: Year Installed: Manufacturer: Model and No.: Type: Type: Type: Design capacity/TDH: Pump RPM: Valve size and type: Observed TDH:  Pump #4:  Year Installed: Manufacturer: Model and No.: Type: Type: Type: Type: Variable/Constant: Vertical/Horizontal: Observed TDH: Design capacity/TDH: Pump RPM: Valve size and type: Variable/Constant: Observed flow: Vertical/Horizontal: Motor RPM: Pump curve available Comments:  General Station Comments:	Model and No.:	Model and No.:
NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Pump curve available:  Comments:  Motor #4: Year Installed: Manufacturer: Model and No.: Type: Type: Type: Design capacity/TDH: Pump RPM: Valve size and type: Observed TDH:  Pump #4:  Year Installed: Manufacturer: Model and No.: Type: Type: Type: Type: Variable/Constant: Vertical/Horizontal: Observed TDH: Design capacity/TDH: Pump RPM: Valve size and type: Variable/Constant: Observed flow: Vertical/Horizontal: Motor RPM: Pump curve available Comments:  General Station Comments:	ype:	Туре:
Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Pump durve available:  Comments:  Motor #4: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Efficiency: Pump RPM: Valve size and type: Observed TDH:  Motor #4: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Vertical/Horizontal: Observed TDH: Motor RPM: Pump curve available  Conuments:  General Station Comments:		
Pump RPM: Valve size and type: Variable/Constant: Valve size and type: Observed flow: Observed TDH:  Motor RPM: Pump curve available:  Comments:   Motor #4: Year Installed: Manufacture: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Variable/Constant: Valve size and type: Variable/Constant: Valve size and type: Variable/Constant: Observed flow: Variable/Constant: Observed TDH: Motor RPM: Pump curve available Conuments:  General Station Comments:		· · · · · · · · · · · · · · · · · · ·
Valve size and type: Observed flow: Observed flow: Observed TDH: Motor RPM: Pump curve available:  Comments:  Motor #4: Year Installed: Manufacturer: Manufacturer: Model and No.: Type: Type: NOM efficiency: Design capacity/TDH: Design capacity/TDH: Deserved flow: Variable/Constant: Observed flow: Variable/Constant: Observed flow: Variable/Constant: Observed TDH: Deserved TDH: Deserved TDH: Deserved TDH: Demandary To Manufacturer Manufacturer: Model and No.: Type: Type: Inverter duty: Variable/Constant: Observed flow: Variable/Constant: Observed TDH: Deserved TDH: Deserved TDH:  General Station Comments:		
Observed flow: Observed TDH: Motor RPM: Pump curve available:  Comments:  Motor #4: Year Installed: Manufacturer: Model and No.: Type: Type: Type: Type: Design capacity/TDH: Efficiency: Pump RPM: Valve size and type: Observed flow: Observed flow: Observed TDH: Motor RPM: Pump curve available  General Station Comments:		AV
Observed TDH:  Comments:  Motor RPM: Pump curve available:  Comments:  Motor #4: Year Installed: Year Installed: Manufacturer: Model and No.: Model and No.: Type: NOM efficiency: Pump RPM: Valve size and type: Observed flow: Observed TDH: Motor RPM:  Variable/Constant: Observed TDH: Motor RPM:  Comments:  General Station Comments:		Vertical/Horizontal:
Comments:  Pump #4: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Vertical/Horizontal: Deserved TDH: Comments:  Pump curve available:  Pump curve available:  Pump curve available:  Pump curve available:  General Station Comments:		Motor RPM:
Comments:  Pump #4: Year Installed: Manufacturer: Model and No.: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Inverter duty: Valve size and type: Observed flow: Vertical/Horizontal: Deserved TDH: Motor RPM: Pump curve available  General Station Comments:		Pump curve available:
Pump #4: Year Installed: Year Installed: Manufacturer: Model and No.: Model and No.: Type: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Vertical/Horizontal: Wotor RPM: Pump curve available Conuments:  Motor #4: Year Installed: Manufacturer: Model and No.: Type: Nodel and No.:  Horsepower: Efficiency: Variable/Constant: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available  Conuments:	Comments:	
Pump #4: Year Installed: Year Installed: Manufacturer: Model and No.: Model and No.: Type: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Vertical/Horizontal: Wotor RPM: Pump curve available Conuments:  Motor #4: Year Installed: Manufacturer: Model and No.: Type: Nodel and No.:  Horsepower: Efficiency: Variable/Constant: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available  Conuments:		
Pump #4: Year Installed: Year Installed: Manufacturer: Model and No.: Model and No.: Type: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Vertical/Horizontal: Wotor RPM: Pump curve available Conuments:  Motor #4: Year Installed: Manufacturer: Manufacturer: Model and No.: Type: Nodel and No.: Pupe: Nodel and No.:  Horsepower: Efficiency: Verical/Horizontal: Wotor RPM: Pump curve available Conuments:		
Year Installed:  Manufacturer:  Model and No.:  Model and No.:  Type:  Type:  NOM efficiency:  Design capacity/TDH:  Pump RPM:  Valve size and type:  Observed flow:  Deserved TDH:  Motor RPM:  Pump curve available  Conuments:		
Year Installed:  Manufacturer:  Model and No.:  Model and No.:  Type:  Type:  NOM efficiency:  Design capacity/TDH:  Pump RPM:  Valve size and type:  Observed flow:  Deserved TDH:  Motor RPM:  Pump curve available  Conuments:	Pum #4	Motor #4:
Manufacturer:  Model and No.:  Type:  Type:  NOM efficiency:  Design capacity/TDH:  Pump RPM:  Valve size and type:  Observed flow:  Observed TDH:  Motor RPM:  Pump curve available  General Station Comments:		
Model and No.:  Type: Type: NOM efficiency: Design capacity/TDH: Design		· · · · · · · · · · · · · · · · · · ·
Type:  NOM efficiency:  Design capacity/TDH:  Pump RPM:  Valve size and type:  Observed flow:  Observed TDH:  Motor RPM:  Pump curve available  General Station Comments:		
NOM efficiency: Design capacity/TDH: Efficiency: Pump RPM: Valve size and type: Observed flow: Vertical/Horizontal: Observed TDH: Motor RPM: Pump curve available  Comments:  General Station Comments:		
Design capacity/TDH:  Pump RPM:  Valve size and type:  Observed flow:  Observed TDH:  Motor RPM:  Pump curve available  General Station Comments:		
Pump RPM:  Valve size and type:  Observed flow:  Observed TDH:  Motor RPM:  Pump curve available  Comments:  General Station Comments:		
Valve size and type:  Observed flow:  Observed TDH:  Motor RPM:  Pump curve available  Conuments:  General Station Comments:		· · · · · · · · · · · · · · · · · · ·
Observed flow:  Observed TDH:  Motor RPM: Pump curve available  Comments:  General Station Comments:		Variable/Country
Comments:  Motor RPM: Pump curve available  General Station Comments:		
Comments:  General Station Comments:		
Comments:  General Station Comments:	OSEIVED IDA:	
General Station Comments:		rump curve avanable
General Station Comments:	Comments;	
General Station Comments:		
Previous Pump Tests:  Part Charles  Soo	General Station Comments:	
Previous Pump Tests:  Paint California  Soo		
Previous Pump Tests:  Paint Chinel  Soo		
Previous Pump Tests:  Raint Calainel  500		
Previous Pump Tests:  Raint Calairel  500		
Previous Pump Tests:  Rount Cabanel  500		
Previous Pump Tests:  Raint Calairell 500		
Previous Pump Tests:  Round Cabanel  Soo		
Previous Pump Tests:  Raint Cast  500		in cel
Paint 2500	Previous Pump Tests:	a de Carac
9500		() Civy
5		9,00
		5

OTHER PIPING AND VALVES

Air relief valves:	NA	Excellent Good Fair Poor
Isolation valves:	6" GALE VAINE	Excellent Good Fair Poor
Piping:		Excellent Good Fair Poor
comments:		1
		<i>ii</i>
ELECTRICAL SYSTE Location Classification:	MS INSPECTION Dry Location	Comments:
	Wet or Damp Location	
	Wet Corrosive Location	
Standby Generator:	Mnfr: (rensel	Excellent Good Fair Poor
	Model: DGBB-578/264 Year Installed: 2006	Facility Load:
	Rating: 35 KW	Ample capacity (YN):
	Fuel Type: Diese	
Interior Lighting Type:		Excellent Good Fair Poor
Lighting Level:	F 65	Excellent Good Fair Poor
Lighting Lovet.		Extendin doos Tan 100
Exterior Lighting Type:	Nove-outdoor station	Excellent Good Fair Poor
Devel Develo		
Panel Boards:		Excellent Good Fair Poor
Motor Control Center:		Excellent Good Fair Poor
MICHOL COMMON		Excellent Good Tall Tool
Disconnect Switches:		Excellen Good Fair Poor
Lightning Protection:		Excellent Good Fair Poor
Fire Alarm System:	A) (/A	Franklant Cond Frie Bon
rue Alaim System:	NA	Excellent Good Fair Poor
Security System:	N/A	Excellent Good Fair Poor
	_N/A	
Potential Code Issues:	14.4	
Comments:		
OTHER:		
O LILLIAN.	<u> </u>	<u></u>

STRUMENTATION AND CONTROLS

Flow Meters/Transmit	tters:	Excellent	Good	Fair	Poor	
Pressure Gauges:		Excellent	Good	Fair	Poor	
Other:	Missions	Excellent	Good	Fair	Poor	
CADA:	in .	Excellent	Good	Fair	Poor	
Comments:		<u> </u>	- 10e			
					<u>-</u>	
MECHANICAL SYS Fuel Source:	TEMS INSPECTION  Diesel HANK under generator	Fuel Storage Capacity			, v	
Heating Type:	SMAIL UNIT IN CABINET	Excellent	Gand	Fair	Poor	
Ventilation Type:		Excellent (	Good	Fair	Poor	109
AC System Type:	NA	Excellent	Good	Fair	Poor	
Dehumidification:	NA	Excellent	Good	Fair	Poor	
Louvers:		Excellent (	Good	Fair	Poor	
Comments:						
ECOMMENDATIO	NC					
CATEGORY A ITEM Item/Recommendation		Estimated Capital Proje	ct Cost			
2. Paint Cabine	Seel water very would	\$				
4. 5.		\$ \$				
5.	TOTAL	\$				
CATEGORY B ITEM: Item/Recommendation	S (Implement within 5 years)					
1. Replace Dumps		Estimated Capital Project \$	ct Cost			
2,		\$				
4.		\$ \$				
5.		\$			14	
1.	TOTAL (Implement between 6 and 10 years)	\$				
<u>2.</u> 3.						
4.						
5						



# **TEST REPORT**

### **PRODUCT**

Serial No.		Performance cu	rve No.	Motor module/type	Voltage (V)
3127.090	0640169	61- 463-00	-3006	130	230
Base module	Impeller No.	Gear type	Gear ratio	Imp.diam/Blade angle	Water temp °C
006	430 11 00			231	19.2

# **TEST RESULTS**

Pump total head H (ft)	Volume rate of flow Q (USGpm)	Motor input power P (kW)	Voltage U (V)	Current I (A)	Overall efficiency η (%)
67.93 64.08 61.56 55.94 48.40 42.32 29.31 13.24	0.0 39.1 94.2 165.5 227.8 271.2 354.5 448.5	3.57 3.98 4.49 4.98 5.15 5.22 5.03 4.65	233 233 233 233 233 233 233 233	15.6 17.4 19.7 21.9 22.7 23.0 22.2 20.4	0.00 11.90 24.37 35.09 40.39 41.51 38.99 24.12
Accepted after 1	est facility Test d	late Time Chie	ef tester 5307		
НІ	Lindas LC1 06-0 Sweden	06-07 14:00			

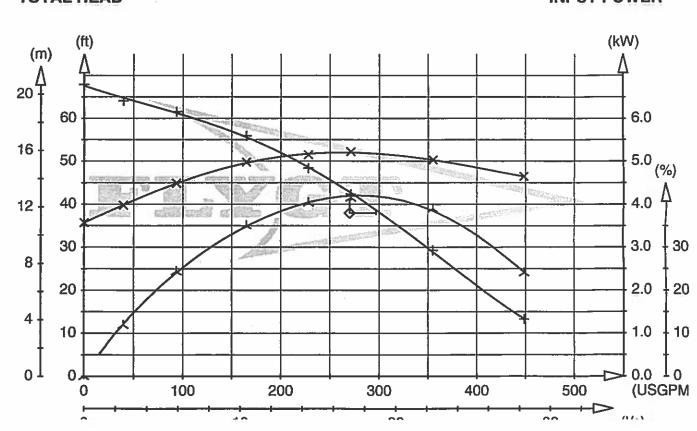
**ORDERNR 168877 POS 1** 

Calculated point : A = Q/ETA overall

☐=Q/P △=Q/ETA overall

**TOTAL HEAD** 

### INPUT POWER



Pump Station: Address:	Cohasset Nourrous  CRANBerry Huy  Buzzards BAY MA	Inspection Date: Inspected By:	P-17-13
GENERAL INFORMA' Year Facility Constructed Facility Description:	: 1701 Conside Block Structure	Year Facility Modified:  W/Asphalt Roof Shi	odes, Cedar Siding
PUMP STATION EQUIVATION  IPMENT 2	Service Area:	yes	
Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	MHV+FCO. VALVES, AMISTON AIA.  INSTAILED 2004 YAKASAWA	Motor #1: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	1989 MARATHON SIN K3+1-059965 40 VED CONTIONED Vent 1200 N 900D CONDITION
	Jehab Seals, Bearings.	Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	SAME 1
soth rumps Na wear iter		Sugtts exc 1	Abiaced <00 9/ 100,2

Pump #3: Year Installed:	Motor #3: Year Installed:
Manufacturer:	Manufacturer:
Model and No.:	Model and No.:
	Type:
ype:	
NOM efficiency:	Horsepower: Efficiency:
Design capacity/TDH:	<del>-</del>
Pump RPM:	Inverter duty:
Valve size and type:	Vertical/Horizontal:
Observed flow:	
Observed TDH:	
	Pump curve available:
Comments:	
Pump #4:	Motor #4:
Year Installed:	Year Installed:
Manufacturer:	Manufacturer:
Model and No.:	Model and No.:
Type:	Туре:
NOM efficiency:	Horsepower:
Design capacity/TDH:	Efficiency:
Pump RPM:	Inverter duty:
Valve size and type:	Variable/Constant:
Observed flow:	Vertical/Horizontal:
Observed TDH:	Motor RPM:
Observed IDA:	
2	Pump curve available
Comments:	
General Station Comments: EMENGENCY LIS	shtins should be replaced.
,	
ROOF SHOULD BE REDIACE	to, Thin BOARDS faint + replace
AS Necessary	
General Sono needs fifted	104-
NEWFLOAT SHOU	
to START HOT	of tonds to the Special Westing Addition
	CONSTANCE - (NOT)
Previous Pump Tests:	- Salar
	e mersen of 3000
	cishted 100 pm
· Me W	DE 400 16 1 2595
Or 400 M	SD COOM JONE JONE
, H	Generator 50000  emergency 3000  emergency 3000  TRITION PAINTED PAINTED PAINTED
OTHER PIPING AND VALVES CHOULD	E PAINTED PUNTO DO
3 ((0 ) )	
	E PAINTED PUNTED PUNTED

Air relief valves:	N/A		Excellent	Good	Fair	Poor
Isolation valves:	MHV+FCO.	1. <del>1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1</del>	Excellent	Good	Fair	Poor
Piping:	8"		Excellent	Good	Fair	Poor
Comments:						4
	PIPES +VALUE	s IVE	eo PA	NT A	Ilia	Good order
		48				pt
150	CATION VALVES 1- WET	Lall	HOZE	° 1 .		
ELECTRICAL SYSTEM Location Classification:		Comm	ents:		12	
Standby Generator:	Mnfr: Ford   LEROY   SOMER   Model: LSG-8751   LSA 42-44   Year Installed: 1989	Facility	Excellent	Good	Fair	Poor
	Rating:		capacity (Y/N)	):		
	Fuel Type: A) /6-	7 H H P 10	oupdoity (272)	·		
Interior Lighting Type:	Flourescent		Excellent	Good	Fair	Poor
Lighting Level:	25.	SE .	Excellent	Good	Fair	Poor
Exterior Lighting Type:	Sodiu- Type		Excellent	Good	Fair	Poor
Panel Boards:			Excellent	Good	Fair	Poor
Motor Control Center:		<u></u>	Excellent	Good	Fair	Poor
Disconnect Switches:			Excellent	Good	Fair	Poor
Lightning Protection:			Excellent	Good	Fair	Poor
Fire Alarm System:			Excellent	Good	Fair	Poor
Security System:	N/A	•	Excellent	Good	Fair	Poor
Potential Code Issues:						
Comments:	OUTSIDE ETEC I AKA SUPERIOR MOD # 7	BOX S 5R461	hoold	be prin	ted	
OTHER:			-			

ISTRUMENTATION AND CONTROLS

Flow Meters/Transmitters	Honey well	_	Excellent	Good	Fair	Poor	
Pressure Gauges:	AS BACKUP to New	_	Excellent	Good	Fair	Poor	_
Other:	mercoid Level course	<u>.</u>	Excellent	Good	Fair	Poor	_
SCADA:	MISSION A//A		Excellent	Good	Fair	Poor	_
Comments:	10//+	_			Tau		
Merco	sid Level control + Se System 15 Now	NSON		9013	Air	Bubbles	
MECHANICAL SYSTE Fuel Source:		_	Fuel Storage Capacity:		161	Y	
Heating Type:	Forced Hot Ain M	- //6-	Excellent	Good	Fair (	Poor	_
Ventilation Type:		_	Excellent	Good	Fair	Poor	
AC System Type:	N/A	_	Excellent	Good	Fair	Poor	_
Dehumidification:	2 units N/G	_	Excellent	Good	Fair	< Poor	_
Louvers:	CARBON		Excellent	Good	Fair	Poor	_
_	Guaracous for wit	mell	Ventilyion	MOV	261	NORK	_
	eds to be done	RX	MECHANICAL CO	ATAL-CTOR	,		_
RECOMMENDATIONS CATECORY A ITEMS							_
CATEGORY A ITEMS (I Item/Recommendation	200		Estimated Capital Proje	at Cart		9:	_
2	. Lishtins		\$ 2000.00	Ci Cusi			
2. Wet	well Vontilation		\$				
4.			\$ \$				
5.			\$				
CATEGORY B ITEMS (I	TO'	TAL	\$				
Item/Recommendation	A		Estimated Capital Project	rt Cost			
1. V(PPA	ce Asphalt Roof		\$ 4000.00	J. C031			
2.			\$				
4.			\$				
5.			\$			60	
item/Recommendation	TOT mplement between 6 and 10 years)	ΓAL	\$				
2. 3. 4.							
4. 5.							
· .							

Pump Station:	Crome sett Rd	Inspection Date: Inspected By:	8-20-13 1. WALLOW
GENERAL INFORMA Year Facility Constructe Facility Description:		Year Facility Modified:	
PUMP STATION EQUAL Number of Pumps:  Pump #1: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  omments:	FLYGT 2012 FLYGT 2012 FLYGT CP3127.181 HT  55' 1745 4" Check walve	Service Area:  Motor #1: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	OUTSIDE  2012 FLYGT CP3127,181 HT 7,5 83%  Cousent Verfical 1745 A Hached
Pump #2: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH: Comments: Grass	Needs to be cut by Fo	Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	Same As Above

Pg. 1 of 4 / Master Form

Pump #3: Year Installed: Manufacturer: Model and No.: /pe: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:	Motor #3: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	
Pump #4: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Damments:  General Station Comments:	Motor #4: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available	
Previous Pump Tests:		12

OTHER PIPING AND VALVES

Air relief valves:	NIB		Exc	ellent	Good	Fair	Poor
Isolation valves:	4" GAIR VALUES	. –	Exc	ellent	Good	Fair	Poor
Piping:			Exc	ellent	Good	> Fair	Poor
Comments: New	Station 2012	*******					+
				17			
ELECTRICAL SYSTEM Location Classification:	MS INSPECTION  Dry Location  Wet or Damp Location  Wet Corrosive Location	c	omments:			25	
Standby Generator:	Mnfr: General Model: SG0035AG034, 22	_ )18H <u>B</u>	SYA	cilent	Good	Fair	Poor
	Year Installed: 2011 Rating: 35 KW Fuel Type: Natural GAS	Fa	acility Load: mple capacit	(Y/N):			
Interior Lighting Type:			Exc	ellent	Good	Fair	Poor
Lighting Level:		· -	Exc	ellent	Good	Fair	Poor
Exterior Lighting Type:		_	Exc	ellent	Good	Fair	Poor
Panel Boards:			Exc	eilent	Good	Fair	Poor
otor Control Center:			Exc	client	Good	Fair	Poor
Disconnect Switches:			Exce	ellent	Good	Fair	Poor
Lightning Protection:		_	Exce	ellent	Good	Fair	Poor
Fire Alarm System:	NIA		Exce	ellent	Good	Fair	Poor
Security System:	NIA		Exce	ellent	Good	Fair	Poor
Potential Code Issues:							
Comments:							
				· · · · · · · · · · · · · · · · · · ·	Ç,		
OTHER:			ű.				

INSTRUMENTATION AND CONTROLS

Flow Meters/Transmit	ters:		Excellent	Good	Fair	Poor	
Pressure Gauges:	MA		Excellent	Good	Fair	Poor	
Other:	Missions		Excellent	Good	Fair	Poor	
SCADA:	Multi Smart		Excellent	Good	Fair	Poor	
Comments:	moter smar						
MECHANICAL SYS Fuel Source:	TEMS INSPECTION  Natural Gas for	generator	Fuel Storage Capacity:				
Heating Type:	SMAIL Electrical UNI+	<del></del>	Excellent	Good	Fair	Poor	
Ventilation Type:			Excellent	Good	Fair	Poor	
AC System Type:	NA		Excellent	Good	Fair	Poor	
Dehumidification:	N/A		Excellent	Good	Fair	Poor	
Louvers:			Excellent	Good	Fair	Poor	
Comments:			=				
ECOMMENDATIO							
Item/Recommendation	IS (Immediate Action)		Estimated Capital Project	Cost			
			\$	. 0031			
<u>1.</u> <u>2.</u>			\$				
3.			\$				
4.			S				
5.			\$				
Item/Recommendation 1.	IS (Implement within 5 years)	TOTAL	Estimated Capital Project \$	Cost			
2.			\$				
2			\$				
4.			\$				
			\$			22	
CATEGORY C ITEM Item/Recommendation 1.	IS (Implement between 6 and 10 year	TOTAL ars)	\$				
3.							
4.							
5.							

7						PRODUCT		
E AVCT	PERF	ORMANO	E CURI	/E			27 404	IΤΥ
PATE 2011-02-11	PROJECT					CURVENO	27.181	
2011-02-11	1/1-LOAD 3/4-1	Erm-Cromeset				61-485-(	00-3002	ISS 2
POWER FACTOR	1 1	0.99 1.00	POWED	7.5	hp			ELLER DIAME
EFFICIENCY MOTOR DATA		34.5 % 83.0		. 66		MOTOR#		200 mm
COMMENTS		INLET/OUTLET	CURRENT	. 30	Α	21-12-4/	\L   12	TOR RE
1		→ 4 inch	SPEED	1745	ıbıπ		HASES VOL	TAGE PO
		IMP. THROUGHU	NO. OF	0.098	kgm2	60 Hz	1 230	V 4
[hal		1 2.5 (I)CH	BLADES	1		_	^~	<del></del>
[µb]								~ ~
8		1				<u> </u>		INPUT POWER
1 1 1			<del>T-</del>				-	7 P.
POWER	- S-	*			_	+		SF SF
i ≥ °E			<del>   </del>					0 *
A 4		40		ξ.		1		
1			╁╾╼╁╌╌╏					H.
<u>}</u>	1 1 1		1 1 1	- 1				OVERALL EFF.
DUTY-POINT	FLOW[Usgpmi]	HEAD(R) POWE	R[hp] EFF.1					VER VER
B.E.P.	122.6 324.8	55.0 6.30 (i 36.25	5.30) 26.9	(31.9) 21	म्थाप ( 1.4	SUARANTEE		
[ft]			36.2 (	(43,3) 11	l.5 <sub>H</sub>	li level A		
In I								
111				<del></del>			NPSH	lre 🛓
							NPSH	re you
70							[f	lte Lier. Point
								f) FF
							[f	T BESTEFF. POINT
70						/	[f	1 BESTEFF, POIN
70							[f	EFF. POIN
70 60 50							[f	EFF. [%]
70 60 50							[f	EFF. POIN
70 60 50							30 30 25	ESTEFF. POIN
70 60 50							30 30 25	EFF. [%]
70 60 50							30 30 25	ESTEFF. POIN
70 60 50 HI 40							30 30 25 20	EFF. [%]
70 60 50 T 40 30							30 30 25 20	ESTEFF. POIN
70 60 50 HI 40							25 20	EFF. [%]
70 60 50 VIII 40 30 20							25 20	EFF. [%]
70 60 50 T 40 30							25 20 15	EFF. [%]
70 60 50 VIII 40 30 20							25 20 15	EFF. [%]
70 60 50 VIII 40 30 20							25 20 15	1) 5 - EFF. [%] - 40 - 30 - 20
70 60 50 40 30 20	200	300	400				25 20 15	NIO - 10
70 60 50 VIII 40 30 20				500	600	700	25 20 15	NIO - 10
70 60 50 VIII 40 30 20			400 FLC		600	700	25 20 15	NIO - 10
70 60 50 30 20 10 0 100 PSHre = NPSH3% + min.	200	300	FLC	)W			25 20 25 20 15 10	NIO - 10
70 60 50 VIII 40 30 20	200	300	FLC	)W	E BETWE	700	25 20 25 20 15 10	NIO - 10

	PUMP STATION CON	DITION ASSESSMENT	
Pump Station: Address:	Depot St Depot ST E. Warehan MA	Inspection Date: Inspected By:	8-13-13
GENERAL INFORMATY Year Facility Constructed Facility Description:	Concrete Block	Year Facility Modified: Structure w. Ass [well + 3 level	Pholt For Pur + E10
PUMP STATION EQUI Number of Pumps:	PMENT 2	Service Area:	
Pump #1: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	1989 Fairbanus Molse B5414 Centrifisel  1200 10" CHECK MHV+F CO	Motor #1: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	1989 MANATHON E/E 40STTES 739 4AN TES 75 924 VEO Vert 1200
	or Rings + Drive line	replaced / rebuilt	poor seal installation. 6-000 COND, NO Proble
Pump #2: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	SAME 1	Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	SAME 1
	ar rings Drive line, a	& Pump Boar.	nss replaced rebuilt
Bearing		_	than the orisind

Pump #3:	Motor #3:
Year Installed:	Year Installed:
Manufacturer:	Manufacturer:
Model and No.:	Model and No.:
ype:	Type:
NOM efficiency:	Horsepower:
Design capacity/TDH:	Efficiency:
Pump RPM:	Inverter duty:
Valve size and type:	Variable/Constant:
Observed flow:	Vertical/Horizontal:
Observed TDH:	Motor RPM:
Comments:	Pump curve available:
<u>-</u>	
Pump #4: Year Installed:	Motor #4: Year Installed:
Manufacturer:	Manufacturer:
Model and No.:	Model and No.:
Type:	Type:
NOM efficiency:	Horsepower:
Design capacity/TDH:	Efficiency:
Pump RPM:	Inverter duty:
Valve size and type:	Variable/Constant:
Observed flow:	Vertical/Horizontal:
Observed TDH:	Motor RPM:
	Pump curve available
Comments:	•
	V
D - '	
General Station Comments: ROGF 15	23 years ald probably Due for replacement
	Us frim Piping Pumps etc.
Paint EXTERIOR FIOC B	emiles to Cishing
	1/4 (17"
	2 miles of S
	Hour.
	Certain D
Previous Pump Tests:	
	of their poly
	Out vertical
	<del>(</del> <del>1</del> ) <del> </del> <del> </del> <del> </del> <del> </del> <del> </del> <del> </del>
OTHER PIPING AND VALVES	W/ P
	14 // (A) (->) /
///	Y// /741 12 1 /
· /	
<del>_</del>	1

Air relief valves:	N/A	Excellent	Good	Fair	Poor
Isolation valves:	Fruzenuf	Excellent	Good	Fair	Poor
iping:	SHOULD Palat AU	Excellent	Good	Fair	Poor
Comments:	10" +17"				1
ELECTRICAL SYSTE	MS INSPECTION				
Location Classification:	Dry Location Wet or Damp Location Wet Corrosive Location	Comments:		<u> </u>	
Standby Generator:	Mnfr: Superior Model: 140 R 461	Excellent	Good	Fair	Poor
	Year Installed: 1989 Rating:	Facility Load: Ample capacity(Y/)	n.		
	Fuel Type: $\nu/c$	Ample capacity(17)			
Interior Lighting Type:	Flowescent	Excellent	Good	Fair	Poor
Lighting Level:		Excellent	Good	Fair	Poor
Exterior Lighting Type:	Soisin- HALDSEL	Excellent	Good	Fair	Poor
Panel Boards:		Excellent	Good	Fair	Poor
Motor Control Center:		Excellent	Good	Fair	Роог
Disconnect Switches:		Excellent	Good	Fair	Poor
Lightning Protection:		Excellent	Good	Fair	Poor
Fire Alarm System:		Excellent	Good	Fair	Poor
Security System:	N/A	Excellent	Good	Fair	Poor
Potential Code Issues:					
Comments:	Emtilleacy	Lishting Ne	eds 1-	colac	145
	2. 25.00 M				1/4
OTHER.					
OTHER:					

4							
Flow Meters/Transmitters	: Honequell Touli	<u></u>		Excellent	Good	Fair	Poor
Pressure Gauges:				Excellent	Good	Fair	Poor
Other:				Excellent	Good	Fair	Poor
SCADA:	Mission			Excellent	Good	Fair	Poor
Comments:							
- L6 M368	UP Consider UP. Budgler system	Stad e	to	Merco	id Lil	ce Co	lanssel t
MECHANICAL SYSTER	MS INSPECTION N/G	_	Fuel Sto	orage Capacity:	UT	· · ·	<i>y</i>
Heating Type:	Forced Hot AIR M	1600 b		Excellent	Good	Fair	Poor
Ventilation Type:	Fans + Duct work	N/		Excellent	Good	Fair	Poor
AC System Type:	N/A	_		Excellent	Good	Fair	Poor
Dehumidification:	Notworning			Excellent	Good	Fair	Poor
Louvers:		<del></del>		Excellent	Good	Fair	Poor
Comments:  (CARRED NO  NECOMMENDATIONS  CATEGORY A ITEMS (I	for wetwall vents	Repair	of	Ventilati	o- 5y	'57em	
Item/Recommendation	place E. Lighting Vetwell Ventilation		Estimated \$ 200	d Capital Projec	et Cost		
5.		TOTAL	\$ \$ \$				
2. 3. 4.	THACT ROOF		Estimated \$ 400	l Capital Projec	t Cost		
1.	nplement between 6 and 10 years)	TOTAL	\$				
3. 4.							
5.							

Pump Station:	Dicks Pond CRANBerry Huy	Inspection Date: Inspected By:	8-13-13 Rmiller
GENERAL INFORMATY Year Facility Constructed Facility Description:		Year Facility Modified:	
PUMP STATION EQUINumber of Pumps:  S/N  Pump #1: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	3T1-059964  1989  TAIRBANKS MORSE 5' B5414  NON CLOG Centrifical  8" CHEEK VALVES	Service Area:  Motor #1: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	1989   MARATAON EJE 5/N K3T1-059964   40   VFD Driven   Vert   1200
Pump #2: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH: Comments: Pump **	SAME 1	Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available: Reactures . Seals in the	SAME 1

Pump #3: Year Installed: Manufacturer: Model and No.: ype: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH: Comments:		Motor #3: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	
Pump #4: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH: Comments:	A/A	Motor #4: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available	
General Station Comment    COOF Show   As NO COSSON   General Station Comment   Food State   Food State     Previous Pump Tests:	rusto 50000	TRIM BOMROS	Paint + replace
OTHER PIPING AND VA	IVES PU	PING 8" +10	"VALVES

Air relief valves:	MA		Excellent	Good	Fair	Poor
Isolation valves:			Excellent	Good	Fair	Poor
iping:			Excellent	Good	Fair	Poor
Comments:						5
	int-	SOLATIO,	- VAZVES	in Wet	nel	Flozen.
					•	
ELECTRICAL SYSTEM	MS INSPECTION					
Location Classification:	Dry Location		Comments:		92	
	Wet or Damp Location					
	Wet Corrosive Location		,			
Standby Generator:	0.00000	50 MER 14 4 2-44	Excellent	Good	Fair	Poor
	Year Installed: 19	89	Facility Load:			
	Rating:		Ample capacity (Y/N	):		
	Fuel Type:	<u> </u>				
Interior Lighting Type:	Flourescent		Excellent	Good	Fair	Poor
Lighting Level:		21	Excellent	Good	Fair	Poor
Exterior Lighting Type:	SODION		Excellent	Good	Fair	Poor
Panel Boards:			Excellent	Good	Fair	Poor
Motor Control Center:			Excellent	Good	Fair	Poor
Disconnect Switches:			Excellent	Good	Fair	Poor
Lightning Protection:			Excellent	Good	Fair	Poor
Fire Alarm System:			Excellent	Good	Fair	Poor
Security System:	N/A		Excellent	Good	Fair	Poor
Potential Code Issues:						
Comments: Genere	tor AKA SUP	erion n	100 # 75 R	161		
PAINT IN	Cania Blec Bo	X . 0 .	TSIDE			
		•		<del> </del>		
OTHER:			7.0			

Flow Meters/Transmitters	: Honeywell	Excellent	Good	\ Fair	Poor
Pressure Gauges:		Excellent	Good	Fair	Poor
Other:		Excellent	Good	Fair	Poor
SCADA:	2//2 02 22				
	Mission	Excellent	Good	) Fair	Poor
Comments:	Plan replace Bubbl	er tube Sy	ITEL W	/ Inac	
3-1-1-1	1. 74.2 30.00	1000 34	165 07	THE ST	Coip
MECHANICAL SYSTE Fuel Source:	MS INSPECTION N/G	Fuel Storage Capacity	: 4	147	v
Heating Type:	Forced Hot Air N/G	Excellent	Good	Fair	Poor
Ventilation Type:		Excellent	Good	Fair	Poor
AC System Type:	N/A	Excellent	Good	Fair	Poor
Dehumidification:	2 Units N/G	Excellent	Good	Fair	Poor
Louvers:		Excellent	Good	Fair	Poor
Comments:	NOW CARDON FOR	netwell	Ventle	ATIOL	
	LORK to be done by	Mechanical (	ONTRA	CTON	
CATECORY					
CATEGORY A ITEMS (I Item/Recommendation	·	Estimated Capital Proje	ant Cont		85
I Color		\$ 2000 po	cu Cusi		
2. Ke pai	. W. U. VENT	\$			
4.		\$ \$			
5.		\$			
CATEGORY B ITEMS (I	TOTAL	\$			
CATEGORY B ITEMS (I Item/Recommendation 1.	implement within 5 years)	Estimated Capital Proje	ot Cost		
<u>1.</u>	eplace Asphalt Roof	\$ 4000.00	Ct Cost		
2. 3.	The second secon	\$			
4.		2			
5.		\$			20
CATEGORY C ITEMS (In	TOTAL mplement between 6 and 10 years)	\$			
1.					
2.					
3.					
4.					

Pump Station: Address:	EAST BLVD		8-17-17 Baille		
GENERAL INFORMA Year Facility Constructed Facility Description:		Year Facility Modified:			
PUMP STATION EQUI Number of Pumps:	IPMENT 2	Service Area:	У		
Pump #1: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  comments:  O-15 651 1485		Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	1971 BALDOR CA+* M330-9T ETRC 5 CONSTANT HOR 1140		
Pump #2: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	SAME 1	Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	SAME 1		
Comments:  All Pipin  EXPRISON S	should be painted.	85 BEC AUS, O-15 ps	149.5 sec Avs, D-20 psi		

Pump #3: Year Installed: Manufacturer: Model and No.: ype: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:	Motor #3: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:
Pump #4: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:  Comment	Motor #4: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available  1 +e~S (eplaced)
General Station Comments: AIR STATION P	DWERRO BY 2 Quincy Compressors 12 130H COMPRESSORS SHOULD RERPBUILT
Previous Pump Tests:	44 
OTHER PIPING AND VALVES  (4) 5" Fair banges	Sate VALVES

Air relief valves:		Excellent	Good	Fair	Poor
Isolation valves:	INSTATION ONLY (4) SU EXTENAINES	Excellent	Good	Fair	Poor
Piping:	2 5" FLATTE VALUES 2 5" Check VALVES	Excellent	Good	Fair	Poor
Comments:					1
	KHECK VALVES HOWE BEE	on Rebuilt A	Sneede	· d . 41	nroush
the years				<del></del>	
<u> </u>					
ELECTRICAL SYSTE	MS INSPECTION				
Location Classification:	Dry Location	Comments:		X	
	Wet or Damp Location				
	Wet Corrosive Location				
Standby Generator:	Mnfr: W/A	Excellent	Good	Fair	Poor
	Year Installed:	Facility Load:			
	Rating:	Ample capacity (Y/N)	:		<del></del>
	Fuel Type:		-		
Interior Lighting Type:	INCADESCENT	Excellent	Good	Fair	Poor
Lighting Level:	upper + comer	Excellent	Good	Fair	Poor
Exterior Lighting Type:	N/A	Excellent	Good	Fair	Poor
Panel Boards:		Excellent	Good	Fair	Poor
Motor Control Center:		Excellent	Good	Fair	Poor
Disconnect Switches:		Excellent	Good	Fair	Poor
Lightning Protection:		Excellent	Good	Fair	Poor
Fire Alarm System:	N/A	Excellent	Good	Fair	Poor
Security System:	w/A	Excellent	Good	Fair	Poor
Potential Code Issues:			100		
Comments:					
	HAS AN INDUSTRIAL AIR COM	apresson, LERO	Brand,	for i	ise when
Utility pour	K = 1	rosson is shave		F	and is
quite old.	Thurs fine BUT MA	7			ers t/a
OTHER:		2			
~ A A A A A A A A A A A A A A A A A A A					

Flow Meters/Transmitters	:N/A		Ex	cellent	Good	Fair	Poor
Pressure Gauges:	Mercury Suitcites Schedule to replace		Ex	cellent	Good	Fair	Poor
Other:	Telegraph C		Ex	cellent	Good	Fair	Poor
SCADA:	MISSIG	2n	Ex	cellent	Good	Fair	Poor
Comments:		_					
MECHANICAL OVERNO							
MECHANICAL SYSTEM Fuel Source:	MS INSPECTION MA		Fuel Storage	Capacity:			
Heating Type:	2 Elec unit Heaters L compressors HEA BLO	16	Exc	cellent	Good	Fair	Poor
Ventilation Type:	EIRC FAW + Duct work FAILED /TRIPPEL @ = 10		Exc	cellent	Good	Fair	Poor
AC System Type:	N/A		Exc	ellent	Good	Fair	Poor
Dehumidification:	(1) portable N/G		Exc	ellent	Good	Fair	Poor
Louvers:	I Louver Not won	King	Exc	ellent	Good	Fair	Poor
Comments:							
				*	<u> </u>		
CATEGORY A ITEMS (I	Immediate Autory			_			11 11
Item/Recommendation	11 2 11 1		Estimated Cap	ital Projec	t Cost		12
1. Reboi	ld Both Compressor	<u>s</u>	\$ 2500	00			10
3.		-	\$ \$				110
4. 5.		_	\$			,	15/
		TOTAL	\$ \$		-F	s'	IM
CATEGORY B ITEMS (In Item/Recommendation	mplement within 5 years)		•		10	•	
_			Estimated Capi	ital Project	Cost \		
1, 2, 3,		•	\$	Cro	)'/		
1.		•	s C	, 5	10 C	/	
j			s los		S OD	D	/ _'
CATEGORY O MEN CO		TOTAL	\$	JUS>	, V , (	20,	, Q
tem/Recommendation	mplement between 6 and 10 years)		rou	. برالون	(/ )	7, 00	7 29
. 15			ζ,	out, o	Qs, ` 1	0. YO	20
3.			Υ.	اه، آه،		一 、	Ð
				of x	ica it o	<u>l</u> S [	,(
				e/a	Our X WI	` c8	50 S
				110	( OV ( VE)	1/2	<del>200</del>
				FXIC	Dill of	نهار الم	(A)
					1 1/2 1/6		南门
					~ Kong	' للا 'لآ	C
					139, 1	`	

Pg. 4 of 4 / Master Form

Pump Station:	French ST	Inspection Date:	8-24-13
)		Inspected By:	Jim WALDON
ddress:			<u>-</u>
			<del></del>
ENERAL INFORMA			
ear Facility Constructe	ed: 2006	Year Facility Modified:	· · · · · · · · · · · · · · · · · · ·
acility Description:	outside Pump Statio	<u> </u>	
PUMP STATION EQU	JIPMENT 2	G	0.15.40
Jumber of Pumps:		Service Area:	outside
		Mater #1:	
rump #1:	2006	Motor #1:	1/20/0
Cear Installed:	<u> 2006                                     </u>	Year Installed:	2006
vlanufacturer:	FLYGT	Manufacturer:	FIYGT
Model and No.:	3102,090	Model and No.:	3102.090
Гуре:	MT	Туре:	<u></u>
YOM efficiency:		Horsepower:	3.9
Design capacity/TDH:	25.09 TOH @ 398.4 6PM	Efficiency:	
ump RPM:	1755	Inverter duty:	**
alve size and type:	411 Check value	Variable/Constant:	CONSTANT
Observed flow:		Vertical/Horizontal:	vertical
Observed TDH:		Motor RPM:	1755
7030; VCG 11711;		Pump curve available:	See Attached
<b>\</b>		i dinp our to available.	SEC HTHOLES
omments:			
'ump #2:		Motor #2:	4016
Cear Installed:	_2012	Year Installed:	2012
/lanufacturer:	FLYGT	Manufacturer:	FLYGT
			7107 101
fodel and No.:	3102, 181	Model and No.:	3102.181
	3102, [8] MT	Model and No.: Type:	MT
ype:			
ype: IOM efficiency:	MT	Туре:	MT 3.9
ype: NOM efficiency: Design capacity/TDH:	MT	Type: Horsepower: Efficiency:	MT
Type:  NOM efficiency:  Design capacity/TDH:  Pump RPM:	1755	Type: Horsepower:	MT 3.9 82%
Type:  NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type:	MT	Type: Horsepower: Efficiency: Inverter duty: Variable/Constant:	MT 3.9 82% Constant
Type:  NOM efficiency: Design capacity/TDH: Tump RPM: Valve size and type: Observed flow:	1755	Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal:	MT 3.9 82% Constant Vertical
Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Deserved flow: Observed TDH:	1755	Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM;	MT 3.9 82% Constant vertical 1755
Type: NOM efficiency: Design capacity/TDH: Cump RPM: Valve size and type: Dbserved flow: Dbserved TDH:	1755 Y" Check	Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal:	MT 3.9 82% Constant Vertical
Type:  HOM efficiency: Design capacity/TDH: Tump RPM: Valve size and type: Deserved flow: Deserved TDH:	1755	Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM;	MT 3.9 82% Constant vertical 1755
ype: IOM efficiency: Design capacity/TDH: ump RPM: Valve size and type: Observed flow: Observed TDH:	1755 Y" Check	Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM;	MT 3.9 82% Constant vertical 1755

Pump #3: Year Installed: Manufacturer: Model and No.: ype: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type:	Motor #3: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant:	
Observed flow:	Vertical/Horizontal:  Motor RPM:	
Observed IDH:	Pump curve available:	
Comments:		
Pump #4: Year Installed:	Motor #4: Year Installed:	
Manufacturer:	Manufacturer:	
Model and No.:	Model and No.:	
Type: NOM efficiency:	Type:  Horsepower:	
Design capacity/TDH:	Efficiency:	
Pump RPM:	Inverter duty:	
Valve size and type:	Variable/Constant:	
Observed flow:	Vertical/Horizontal:	
Observed TDH:	Motor RPM:	
	Pump curve available	
onunents:		
General Station Comments: Sp	ed woodchips to give it more of a natural last	
<u> </u>		-33
700 10 10 10 10 10 10 10 10 10 10 10 10 1	27 Jet Class (1974) 20194 (2009-2017) 27 Jet Class (1974) 27 Jet C	
<del></del>		—
Previous Pump Tests:	PAINT 500 2000 Add cutter to Pl	
F	170°	

OTHER PIPING AND VALVES

Air relief valves:	should be checked	Excellent Good Fair Poor
Isolation valves:		Excellent Good Fair Poor
ping:		Excellent Good Fair Poor
Comments:		
ELECTRICAL SYSTE	MS INSPECTION	
Location Classification:	Dry Location	Comments:
	Wet or Damp Location	Portable generation
	Wet Corrosive Location	
	0 -1 1/0	
Standby Generator:	Mnfr: Partable	Excellent Good Fair Poor
	Model: Year Installed:	Facility Load:
	Rating:	Ample capacity (Y/N):
	Fuel Type:	Ample capacity (1714):
	a not a ppo-	
Interior Lighting Type:		Excellent Good Fair Poor
Lighting Level:	9	Excellent Good Fair Poor
Eighing Level.		Excellent Good Fair Tool
Exterior Lighting Type:		Excellent Good Fair Poor
Panel Boards:		Excellent Good Fair Poor
ranci Doalus.		Excendit Good Fall Fool
Motor Control Center:		Excellent Good Fair Poor
Disconnect Switches:		Excellent Good Fair Poor
Discomicet Switches.		Excellent Good Frail Foot
Lightning Protection:		Excellent Good Fair Poor
Fire Alarm System:	A)/A	Excellent Good Fair Poor
i no Amini byatem.	10/7-	Extenent Good Pan 1001
	NA	-
Security System:	NA	Excellent Good Fair Poor
Potential Code Issues:		
1 Otential Code Issues.	•	
Comments:		
OWNER		
OTHER:		(9)

INSTRUMENTATION AND CONTROLS

Flow Meters/Transmitt	ers:		Excellent	Good	Fair	Poor
Pressure Gauges:			Excellent	Good	Fair	Poor
ther:	MUSUNA		Excellent	Good	Fair	Poor
SCADA:			Excellent	Good	Fair	Poor
Comments:	· · · · · · · · · · · · · · · · · · ·			- W		
			····-	. <u>.</u>		
MECHANICAL SYS' Fuel Source:	TEMS INSPECTION		Fuel Storage Capacity	<i>r</i> :	·	
Heating Type:	Small electrical and +	IN CUBINET	Excellent	Good	Fair	Poor
Ventilation Type:			Excellent	Good	) Fair	Poor
AC System Type:	NA		Excellent	Good	Fair	Poor
Dehumidification:	NA		Excellent	Good	Fair	Poor
Louvers:			Excellent	Good	) Fair	Poor
Comments:						
ECOMMENDATIO				-		
CATEGORY A ITEM Item/Recommendation	IS (Immediate Action)		Estimated Control Dur	:+ C+		
1. Paint casin			Estimated Capital Pro	ject Cost		
2. word chip	Aren		\$			
2. weed chip 3. 4. 5.			\$			
<u>4.</u>			\$			
J		TOTAL	\$			
CATEGORY B ITEM	S (Implement within 5 years)	101115	•			
Item/Recommendation			Estimated Capital Pro	ject Cost		
1.			\$			
2.			\$			
2. 3. 4.		<del></del>	\$ \$			
5.			S			4.5
CATEGORY C ITEM Item/Recommendation	S (Implement between 6 and 10 ye	TOTAL	\$			
1.						
2. 3.						
4.		<del></del>				
5.						

PRODUCT	French	Performance curve No.	Motor module/type	Voltage (V)
Serial No. 3102.090 062  Base module Impeller N	20000	61- 434-00-3003  Gear type Gear ratio	130 Imp.diam/Blade angle 173	230 Water temp <sup>o</sup> C 16.0

Pump total head	Volume rate of flow	Motor input power P (kW)	Voltage U (V)	Current I (A)	Overall efficiency η(%)
H (ft)  47.99 44.93 42.05 39.64 35.58 32.33 28.92 24.84	Q (USGpm)  0.0 32.7 77.3 123.2 201.0 265.0 327.0 401.9	1.75 1.83 2.03 2.27 2.70 2.99 3.23 3.44	233 233 233 233 233 233 233 233	8.7 9.0 9.7 10.7 12.5 13.8 14.9 15.8	0.00 15.10 30.18 40.60 49.99 54.10 55.21 54.68
Accepted after	, cot taum,	date ( - min	hief tester 2293		
HI	Lindas LC3 06 Sweden	-03-01 13:33			

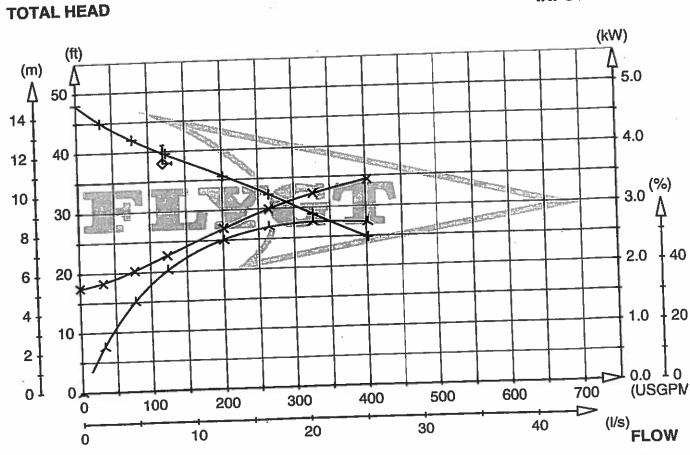
ORDERNR 162066 POS 3

PLOTTED TEST RESULTS Measured point: +=Q/H Duty point: \$\Delta = Q/H\$  $\dot{\mathbf{X}} = \mathbf{Q}/\mathbf{P}$ 

Calculated point: 人= Q/ETA overall

 $\Delta = Q/ETA$  overall

# INPUT POWER



<b>PRODUCT</b>	Fi	rench Pum	01			
Serial No.		Performance c	urve No.	Moto	r module/type	Voltage (V)
3102.090	0620079	61- 434-00	)-3003		130_	230
Base module	Impeller No.	Gear type	Gear ratio		Imp.diam/Blade angle	Water temp ° C
003	438 96 01				173	16.0

# **TEST RESULTS**

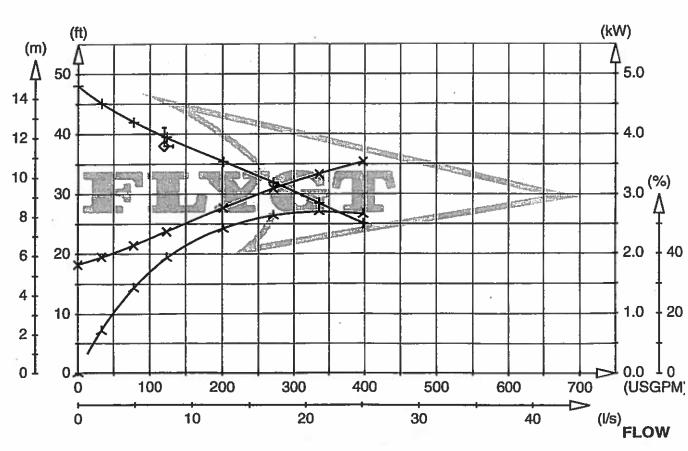
Pump total head H (ft)	Volume rate of flow Q (USGpm)	Motor input power P (kW)	Voltage U (V)	Current I (A)	Overall efficiency 17(%)
48.03 45.12 41.96 39.52 35.40 31.90 28.49 25.09	0.0 32.9 77.6 123:5 201.1 271.6 336.0 398.4	1.82 1.95 2.14 2.37 2.77 3.09 3.33 3.54	233 232 233 232 232 232 232 232 232	8.9 9.4 10.1 11.1 12.8 14.2 15.3 16.3	0.00 14.32 28.71 38.80 48.41 52.80 54.20 53.29
l HI I	Test facility Test d Lindas LC3 06-0 Sweden		of tester 5306		

### **ORDERNR 162066 POS 3**

PLOTTED TEST RESULTS Measured point: += Q/H Duty point:  $\diamondsuit = Q/H$ Calculated point: 人= Q/ETA overall □=Q/P

 $\Delta = Q/ETA$  overall

**TOTAL HEAD INPUT POWER** 



TOBEINSTAILED 8-2012

			French	L					
						PRODUCT	-		TYPE
FINGT	PERFO	DRMANCI	E CURV	E		NP3	102.1	181	M
2012-05-16	PROJECT				_	61-464		12	ISSUE 4
	1/1-LOAD 3/4-LO	AD 1/2-LOAD	RATED			01-404	-00-300	IMPELLER	
POWER FACTOR		0.95	POWER STARTING	3.9 45	hp				2 mm
EFFICIENCY MOTOR DATA	82.0 % 82	2.5 % 79.5 %	CURRENT RATED CURRENT	45 16	A A	MOTOR# 18-11-4	IΔI	STATOR 01-	REV 12
COMMENTS		INLET/OUTLET	RATED	1755	mm	FREQ.	PHASES	VOLTAGE	POLE
		-/ 4 inch	TOT.MOM.OF	0.027	kgm2	60 Hz	1	230 V RATIO	4
			NO. OF BLADES	2			•	—	
[hp] <del> </del>									0"
[Help]			.+		-		11	1	O INPUT POWER * SHAFT POWER
4			9		-		1 1		7 7 7
r	G		*				+		NP NF NF NF NF NF NF NF NF NF NF NF NF NF
3					<del> </del>				0 *
POWER									
<u>0</u> 2		<del>   </del>					-	_	H
Į									A FE
<u> </u>		HEAD[ft]							OVERALL EFF.
DUTY-POINT B.E.P.	FLOW[Usgpm] 398.2	23.49	EFF. 55.3	[%] NP: (66.8)	SH <b>re(18)</b> 9.4	GUARAN' HI Jevel A		IPSHre	0 *
								[ft]	N T N
									BEST EFF. POINT
40							<b>,</b>	20.0	51 51
					_		1	_	2
35					<del>                                     </del>	1		17.5 -	
					<del>                                     </del>	<del>/</del>	+		EFF
30 +			+ + +			/	+-+	<u>15.0</u> -	- [%]
	<del>                                     </del>		1			/		<del>-  </del>	
HEAD 525				_	/	_	╅═╅	<u>12.5</u> -	-
<b>出</b>				.   -			<del>  </del>	<del></del>	
20				<del>&gt; (</del>			+ +	10.0 -	-
	<del>                                     </del>		*	<del>\</del>			-		70
15							-	7.5	- 60
			9				-		- 50
10						<del>// ,</del>	+	5.0	- 40
			1 - 1 - 1			1		-G	- 30
5					-		<b>\</b>	2.5	- 20
					<u> </u>		1	_	- 10
0 /	15								- 0
0 1	00 200	300	400 500 F	LOW	600	700	801		pm]
NPSHre = NPSH3% +	min. operational m	argin		GUA	RANTEE	BETWEEN	LIMITS (G	) ACC. TO	
Performance with clear				HI	leve	A le			

Pump Station:	Green 8+	Inspection Date: Inspected By:	8-16-13
Address:	Green St ONSET, MA	nispected By.	D-1W0_
GENERAL INFORMA' Year Facility Constructed Facility Description:	:	Year Facility Modified:	OW TOP W/ Asph
	reterrithetat can w/ c	Siding	Ou (C. C) ASPA
PUMP STATION EQUI Number of Pumps:	IPMENT 2	Service Area:	NO
Pump #1:	10.00	Motor #1:	
Year Installed:	1989	Year Installed:	
Manufacturer:	YEOMANS CHICAGO	Manufacturer:	
Model and No.:	50 -578	Model and No.:	
Туре:	PAJEMATIC	Туре:	
NOM efficiency:	4	Horsepower:	
Design capacity/TDH:	50ga/49' TDH	Efficiency:	
Pump RPM:		Inverter duty:	-
Valve size and type:	4" Fairbanes Flapper + Chock	Variable/Constant:	
Observed flow:		Vertical/Horizontal:	
Observed TDH:		Motor RPM:	
Comments: Pu	mps in good condition	Pump curve available:	hnelleen replaced
A-S	roeded.		AT THE STATE OF TH
	Δ		
Pump #2:	SAME 1	Motor #2:	
Year Installed:		Year Installed:	
Manufacturer:		Manufacturer: Model and No.:	
Model and No.:		-	
Type:		Type:	
NOM efficiency:		Horsepower: Efficiency:	
Design capacity/TDH: Pump RPM:		Inverter duty:	
Valve size and type:		Variable/Constant:	
Observed flow:		Vertical/Horizontal:	
Observed How. Observed TDH:		Motor RPM:	<del></del>
		Pump curve available:	
Comments:			1
A	IR Supplied from 1	NANUMETTE L	inited ETRC
Componen			

Pump #3: Year Installed: Manufacturer: Model and No.: ype: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:	Motor #3: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:
Pump #4: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:	Motor #4: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available
General Station Comments: EXTERION S  replaced.  W.W. Pipins Should  Pipes Come Horse WALLS	
Previous Pump Tests:	Foot 4000 - HOOD
OTHER PIPING AND VALVES Ain Pipin	ns GOOD

Air relief valves:		Excellent	Good	) Fair	Poor
Isolation valves:	INTERIOR ONLY	Excellent	Good	Fair	Poor
Piping:		Excellent	Good	Fair	Poor
Comments:					4
			Like Section 1989—19	W.	
ELECTRICAL SYSTE Location Classification:	MS INSPECTION  Dry Location  Wet or Damp Location  Wet Corrosive Location	Comments:			
Standby Generator:	Mnfr:	Excellent	Good	Fair	Poor
	Year Installed: Rating:	Facility Load: Ample capacity (Y/N)	):		
Interior Lighting Type:	Fuel Type:	Excellent	Good	Fair	Poor
Lighting Level:		Excellent	Good	Fair	Poor
Exterior Lighting Type:		Excellent	Good	Fair	Poor
Panel Boards:	N/A	Excellent	Good	Fair	Poor
Motor Control Center:	N/A	Excellent	Good	Fair	Poor
Disconnect Switches:		Excellent	Good	Fair	Poor
Lightning Protection:	MA	Excellent	Good	Fair	Poor
Fire Alarm System:	n/A	Excellent	Good	Fair	Poor
Security System:	N/A	Excellent	Good	Fair	Poor
Potential Code Issues:					
Comments:					
				<u> </u>	
OTHER:	74	3			

ISTRUMENTATION AND CONTROLS

Flow Meters/Transmitters:		N/A	<del></del>	Excellent	Good	Fair	Poor	
Pressure Gauges:				Excellent	Good	Fair	Poor	
Other:				Excellent	Good	Fair	Poor	
SCADA:		SSIDN		Excellent	Good	) Fair	Poor	
Comments:		ALAMMS			0000		FOOI	
MECHANICAL SYSTEM Fuel Source:	AS INSPECTIO	ON N/A		Fuel Storage Capacity:			W	
Heating Type:	ELEC	WALL HEAT	ens	Excellent	Good	Fair	Poor	
Ventilation Type:	Doct	FAN MOTON		Excellent	Good	Fair	Poor	50,
AC System Type:		V/A		Excellent	Good	Fair	Poor	
Dehumidification:				Excellent	Good	Fair	Poor	
Louvers:				Excellent	Good	Fair	Poor	
Comments:								
ECOMMEND AMONG								
CATEGORY A ITEMS (I	mmediate Actio	n)						
Item/Recommendation		,		Estimated Capital Projec	t Cost			5.5
1.				\$				
3, =			_	\$ \$				
4.			_	\$				
5.				\$				
CATEGORY B ITEMS (In	ınlement withis	5 veere)	TOTAL	\$				
Item/Recommendation 1. Replace	F 1	J years)		Estimated Capital Projec	t Cost			
1. Repla	ace Koot +	Sidika	_	\$ 6000	C C031			
2.			_	\$				
4.			_	\$				
5.			-	\$			50	
CATEGORY C ITEMS (Im Item/Recommendation 1.	plement betwee	en 6 and 10 years	TOTAL )	\$				
2. 3. 4.			_					
4.	<u> </u>		-					
5.	<del></del>		-					

Pump Station:	Hill ST Juffernon Shores	Inspection Date:	8-24-13
ddress:	Hill ST	Inspected By:	- (3 A
	E. WANEHAM		
GENERAL INFORMA Year Facility Constructed Facility Description:	d: C 1770	Year Facility Modified:	t, w/ reivell Expend
PUMP STATION EQU Number of Pumps:	IPMENT 2	Service Area:	NO
Pump #1:		Motor #1:	
Year Installed:	2013	Year Installed:	
Manufacturer:	Fryst	Manufacturer:	
Model and No.:		Model and No.:	
Туре:	Sub	Туре:	
NOM efficiency:	-013	Horsepower:	
Design capacity/TDH:		Efficiency:	
Pump RPM:		Inverter duty:	
Valve size and type:		Variable/Constant:	
Observed flow:		Vertical/Horizontal:	
Observed TDH:		Motor RPM:	
Comments:	npeller code 216	Pump curve available:	
Pump #2:	3	Motor #2:	
Year Installed:	2010	Year Installed:	
Manufacturer:	FLYST	Manufacturer:	
Model and No.:	MP SIOT HT 5/N 302 170105000		
Type:	Submarrible	Type:	E.1.1
NOM efficiency:	<u> </u>	Horsepower:	5.4 hp
Design capacity/TDH:		Efficiency:	
ump RPM:	3600	Inverter duty:	
Valve size and type:	•	Variable/Constant:	CONSTANT
Observed flow:		Vertical/Horizontal:	Vert
Observed TDH:		Motor RPM:	
	1400	Pump curve available:	
Comments:	10/100	1611 2-11	5.1.000
Port 6	ours instilled w/ CAPACITO	n W.tr. Kate	in Sood mech.
Connition	STATION IS IN A LOWFLOW	AVEN	
1 2111111111111111111111111111111111111	- 11 100		

Pump #3:	Motor #3:
Year Installed:	Year Installed:
Manufacturer:	Manufacturer:
Model and No.:	Model and No.:
/pe:	Type:
NOM efficiency:	Horsepower:
Design capacity/TDH:	Efficiency:
Pump RPM:	Inverter duty:
Valve size and type:	Variable/Constant:
Observed flow:	Vertical/Horizontal:
Observed TDH:	Motor RPM:
Observed IDA:	Pump curve available:
Comments:	
Pump #4:	Motor #4:
Year Installed:	Year Installed:
Manufacturer:	Manufacturer:
Model and No.:	Model and No.:
Type:	Туре:
NOM efficiency:	Horsepower:
Design capacity/TDH:	Efficiency:
Pump RPM:	Inverter duty:
Valve size and type:	Variable/Constant:
Observed flow:	Vertical/Horizontal:
Observed TDH:	Motor RPM:
	Pump curve available
Comments:	
General Station Comments: EVTERIDA Rome R	Recorditioned (Cornetically) by reighborhood
group - not confleted but looking	C C C C C C C C C C C C C C C C C C C
D. S.	
CONSIDER ROOF REF	olgipment 45 years
	Port Replacement 5000
	a a gadue ment-5
	2,000
	1 Highlians
	man for moon
Previous Pump Tests: Ampdraus 2-17	P1 8.7, 14.3, 15.8 - P2(150, P.1, 15.
P2 Amp Draws @ INSTAUTTION .	STANT (101) 197 +77
I de la sulchion	- 11. 1, T 1. T
•	

Air relief valves:	N/A	Excellent	Good	Fair	Poor
Isolation valves:	COULD NOT MOVE 8-28-13	Excellent	Good	Fair	Poor
Piping:	4 11	Excellent	Good	Fair	Poor
omments: Pull My	4 cover their V VAIV	es			
Lube + FXCpACi	Se 4" Check VALVES	+ ISOLATION VI	42./05	a Char	
ELECTRICAL SYSTEM		+ I SOCHION VI	arves 11	1 MANT	oce
Location Classification:	Dry Location	Comments:			
	Wet or Damp Location Wet Corrosive Location				
Standby Generator:	Mnfr: SUPERIOR  Model: 30 R127	Excellent	Good	Fair	Poor
	Year Installed: 1990	Facility Load:		-	
	Rating: 30 Kw Fuel Type: Diesel	Ample capacity (Y/N):	<u> </u>		
Interior Lighting Type:	Flowescent	Excellent	Good	Fair	Poor
Lighting Level:	27 (4)	Excellent	Good	Fair	Poor
Exterior Lighting Type:	Wetwell Halosen	Excellent	Good	Fair	Poor
Panel Boards:		Excellent	Good	Fair	Poor
otor Control Center.	- u	Excellent	Good	Fair	Poor
Disconnect Switches:		Excellent	Good	Fair	Poor
Lightning Protection:		Excellent	Good	Fair	Poor
Fire Alarm System:	N/A	Excellent	Good	Fair	Poor
Security System:	MA	Excellent	Good	Fair	Poor
Potential Code Issues:					
Comments:	wetwell Venti	LATION P	OT WI	nkin	5
Vetwell	FIEC JUNCTION BOX S	should be so	rased t	Parto	d
OTHER:		,			

INSTRUMENTATION AND CONTROLS

Flow Meters/Transmitters:	Hourmete	25	Excellent	Good	) Fair	Poor	
Pressure Gauges:			Excellent	Good	Fair	Poor	
Other:			Excellent	Good	Fair	Poor	
CADA:	MISSION COM	1	Excellent	Good	Fair	Poor	
Comments:					/		
	Simple	240	V single 6	hase if	5		
MECHANICAL SYSTEM Fuel Source:	IS INSPECTION NA		Fuel Storage Capacity			10 0 0	
Heating Type:	HAVSins Elec		Excellent	Good	Fair	Poor	
Ventilation Type:	WALL FAW +		Excellent	Good	Fair	Poor	100
AC System Type:	/A		Excellent	Good	Fair	Poor	
Dehumidification:	~/n		Excellent	Good	Fair	Poor	· · · · · · · · · · · · · · · · · · ·
Louvers:			Excellent	Good	Fair	Poor	
Comments:							
2. 3. 4. 5.	well Ventilation	TOTAL	Estimated Capital Projes \$ 2000	ect Cost			**
3. 4. 5.  CATEGORY C ITEMS (Implementation 1, 2, 3, 4)	plement within 5 years)  of Replacement  plement between 6 and 10 years		Estimated Capital Proje \$ 3000 \$ \$ \$ \$ \$	ct Cost		**	
4.							

ONSET AUE ONSET MA	Inspection Date: Inspected By:	8-14-13 Bhill
Brick + Concrete Fla Wet well + 2 level	Year Facility Modified:	2004
DIPMENT Q	Service Area:	Y
2004  CORNELL  BUHTA-VC 18DR  Centrifigal  Check 10" CLOW Kennedy  Roth Pumps + Motors is	Motor #1: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	2004  Reliance Flee, LOOZEG  EIRC CO 94.5  ABB VFD  Vert 1185  Condition
HAS A TO LEA LCO SCIE	en Paint	Purs
SAME 1	Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	SAME 1
	DNSET MA  STION  d: 1971  Brick + Concrete Fla  Wet well + 2 level  DIPMENT  Q  QOO 4  Cornwell  SUHTA-VC 18DR  Centvifigal  Check 10" CIDW Kennedy  HAS A Toiled 400 Screen  SAME  SAME  SAME	Inspected By:  ONSET AUE  ONSET MA  ONSET AUE  ONSET MA  OF MA  O

Year Installed:  Manufacturer:  Model and No.:  Mype:  Ty  NOM efficiency:  Design capacity/TDH:  Pump RPM:  Valve size and type:  Observed flow:  Year  Installed:  Year  Manufacturer:  My  Mype:  Ty  Ty  Ty  Valve size and type:   otor #3: car Installed: canufacturer: codel and No.: cpe: crisepower: ficiency: crier duty: criable/Constant: crtical/Horizontal: cotor RPM:		
Comments:	mp curve available:	
10		
Year Installed:         Ye           Manufacturer:         Ma           Model and No.:         Mo           Type:         Ty           NOM efficiency:         Ho           Design capacity/TDH:         Eff           Pump RPM:         Inv           Valve size and type:         Va           Observed flow:         Ve           Observed TDH:         Mo	rsepower: iciency: erter duty: riable/Constant: rtical/Horizontal: otor RPM: np curve available	
Previous Pump Tests:	Ventilation - Paint ALL - 1. moyno muncher -	5000 - 5060 - 12000 -
OTHER PIPING AND VALVES		
3) 14" MHV +F CO Knife VAIVES	1972 1972	(1) 4" MHV+FCO sate
(2) 12" CLOW Kennedy gate VAI 1 J:WW1946 Wareham 2012 1-1/CIP docs for guyl		Pg. 2 of 4 / Master Form

Air relief valves:			Excellent	Good	Fair	Poor
Isolation valves:	(D) *1 North Norward	5	Excellent	Good	) Fair	Poor
Piping:	South ON		Excellent	Good	Fair	Poor
Comments:	Ghodd Frencise Both	1	Fluent ISOC	-71-1/1	1-10	7
	Should Evencise Work		Propert 7500	0(11000)	1700	<u> </u>
ELECTRICAL SYSTEM		-	iria	10		
Location Classification:	Dry Location Wet or Damp Location Wet Corrosive Location	_	Comments:			
Standby Generator:	Mnfr: CATERPILLAN Model: D125-4		Excellent	Good	Fair	Poor
	Year Installed: 2008 Rating: 125K		Facility Load: Ample capacity (YXN)	)·		
	Fuel Type: Diesel		Ample capacity (17)	<i>)</i> ·		
Interior Lighting Type:	Flourescent		Excellent	Good	Fair	Poor
Lighting Level:		91	Excellent	Good	Fair	Poor
Exterior Lighting Type:	INCANDESCOS		Excellent	Good (	Fair	Poor
Panel Boards:			Excellent	Good	Fair	Poor
Motor Control Center:			Excellent	Good	Fair	Poor
Disconnect Switches:			Excellent	Good	Fair	Poor
Lightning Protection:			Excellent	Good	Fair	Poor
Fire Alarm System:	N/A		Excellent	Good	Fair	Poor
Security System:	~/A		Excellent	Good	Fair	Poor
Potential Code Issues:						
Comments:						
	ethell 1+5 6001)					
				III III		
OTHER:						

STRUMENTATION AND CONTROLS

Flow Meters/Transmitters	E Hourneters		Excellent	Good	) Fair	Poor	
Pressure Gauges:			Excellent	Good	Fair	Poor	
_ Other:	120						
			Excellent	Good	Fair	Poor	
SCADA:	MISSION		Excellent	Good	Fair	Poor	
Comments:	,			. 10	_		
ress s		0 0-16	er STATIONS	nove h	sd 1	elisti!	XX
MECHANICAL SYSTE Fuel Source:	MS INSPECTION N/A		Fuel Storage Capacity	·:			ÿ)
Heating Type:	ElEC WALL He	den	Excellent	Good	Fair	Poor	
Ventilation Type:	LOUVEUS + EXHAUST	Faus ON K	Excellent	Good	Fair	Poor	
AC System Type:	MA		Excellent	Good	Fair	Poor	
Dehumidification:	N/A		Excellent	Good	Fair	Poor	
Louvers:			Excellent	Good	Fair	Poor	
Comments:							
Wetuch Vent	ILATION MOTOR/FAN N	012/					
CATTOON							
CATEGORY A ITEMS (I	Immediate Action)						72
1. reprin Wetu	vell Ventilation		Estimated Capital Proje	ect Cost			
3.		_	\$				
4.		_	\$ \$				
5.		_	\$				
CATECODY D PERSON OF		TOTAL	\$				
CATEGORY B ITEMS (In Item/Recommendation	mplement within 5 years)		Estimated Contribution				
1.			Estimated Capital Proje	ct Cost			
2.		<del>-</del>	\$				
3.		_	\$				
1		<del>-</del>	\$				
89		TOTAL	\$				
CATEGORY CITEMS (Ir Item/Recommendation	mplement between 6 and 10 years	)					
1.							
2. 3.		-					
4.		-					
5.							

-Pump Station:	India Neck	Inspection Date:	8-17-13
unip Station.	INCLIAN NOCE	Inspected By:	Jim WALDER
Address:		•	
		<u> </u>	591
GENERAL INFORMA	TION		
Year Facility Constructe		Year Facility Modified:	
Facility Description:		4h weather tight	Control Pewel
,			
74			
PUMP STATION EQU	IIPMENT		
Number of Pumps:	2	Service Area:	outside
raminet of Lamps.		2011100111001	1.615.00
Pump #1:		Motor #1:	
Year Installed:	2010	Year Installed:	2010
Manufacturer:	ABS	Manufacturer:	ABS
Model and No.:	AFPK 1547, 263	Model and No.:	AFPK 1547, 263
	Cuclosed Submersible	Туре:	Enclosed Submersible
Type: NOM efficiency:	A De Maria South State	Horsepower:	48
•	90	Efficiency:	79.7 @ 10070
Design capacity/TDH:	1750	Inverter duty:	AIII CAMPA
Pump RPM:		Variable/Constant:	Continuous duta
Valve size and type:	DIA A" Check value	Vertical/Horizontal:	Vertical - Submersible
Observed flow:	HO TOH		1750
Observed TDH:	NO - MANUEL Suys 90 TOH	Pump curve available:	ues - Attacho.
) 	1 10 11 1	•	Arning System
Comments: Mystors	we Thermal Protection and se	1 Failure Carly W	Alwing System
Pump #2:		Motor #2:	. 1
Year Installed:	Same as Above	Year Installed:	SAME AS Above
√anufacturer:		Manufacturer:	
Model and No.:		Model and No.:	
Type:		Type:	
NOM efficiency:	• <u>• • • • • • • • • • • • • • • • • • </u>	Horsepower:	
Design capacity/TDH:		Efficiency:	
ump RPM:		Inverter duty:	
Valve size and type:	<u></u>	Variable/Constant:	
Observed flow:		Vertical/Horizontal:	
Observed TDH:		Motor RPM:	
Joseffed 1 LJII.		Pump curve available:	
Comments:		T MISSE AMI LA PLEISHESMI	
Cumilling.			
lear Bruk	Fence Line		

Pump #3:	41/4	Motor #3:	
Year Installed:	10/A	Year Installed:	
Manufacturer:		Manufacturer:	
_Model and No.:		Model and No.:	
ype:		Туре;	
NOM efficiency:		Horsepower:	
Design capacity/TDH:		Efficiency:	
Pump RPM:		Inverter duty:	
Valve size and type:		Variable/Constant:	
Observed flow:	•8	Vertical/Horizontal:	
Observed TDH:		Motor RPM:	
		Pump curve available:	
Comments:			
COMMITTEELES.			
Pump #4:		Motor #4:	
Year Installed:	N/A	Year Installed:	
Manufacturer:		Manufacturer:	
			G
Model and No.:	<del></del>	Model and No.:	
Type:			
NOM efficiency:		Horsepower:	
Design capacity/TDH:		Efficiency:	
Pump RPM:		Inverter duty:	
Valve size and type:			
Observed flow:		Vertical/Horizontal:	
bserved TDH:		Motor RPM:	
		Pump curve available	
Comments:			
			_ <del></del>
8			
General Station Comme	ents: Newer Pump S	station (2010)	
		500	
		/ <0°/	
	V	. 219	
		Dai a)	-
		Sú	8.
		adoisi	
ÿ			
			101
Previous Pump Tests:			

OTHER PIPING AND VALVES

Air relief valves:		Excellent	Good	Fair	Poor
Isolation valves:	8" Gale volles	Excellent	Good	Fair	Poor
Piping:	New - 2010	Excellent	Good	Fair	Poor
Comments:					1
				111	
ELECTRICAL SYSTE Location Classification:	MS INSPECTION  Dry Location  Wet or Damp Location  Wet Corrosive Location	Comments:	Weat	ther ti	glot Cabinet
Standby Generator:	Mnfr: (-energe Model: 11573540/00 Year Installed: 2011)	Excellent Facility Load:	Good	Fair	Poor
	Rating: Fuel Type: Natura 6AS	Ample capacity (Y/N):			
Interior Lighting Type:	Weather tight Fixture	Excellent	Good	Fair	Poor
Lighting Level:	No outside Lighting	Excellent	Good	Fair	Poor
Exterior Lighting Type:	None	Excellent	Good	Fair (	Poor
Panel Boards:	NEW-2010	Excellent	Good	Fair	Poor
Motor Control Center:	New 2010	Excellent	Good	Fair	Poor
Disconnect Switches:		Excellent	Good	Fair	Poor
Lightning Protection:		Excellent	Good	Fair	Poor
Fire Alarm System:	None	Excellent	Good	Fair (	Poor
Security System:	NONE	Excellent	Good	Fair (	Poor
Potential Code Issues:					
Comments:					
OTHER:		*.			

ISTRUMENTATION AND CONTROLS

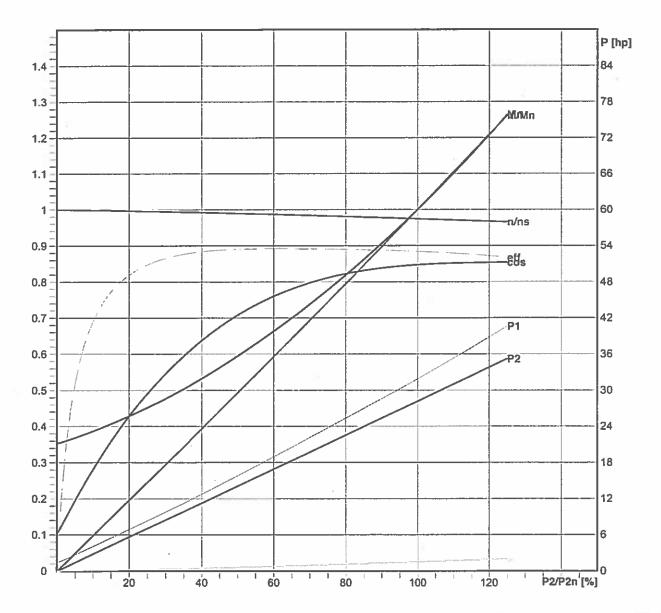
				-			
	itters: molfi SmarT		Excellent G	ood	Fair	Poor	
Pressure Gauges:			Excellent G	pod	Fair	Poor	
Other:	Missions		Excellent G	ood	Fair	Poor	
SCADA:		774	Excellent Go	ood	Fair	Poor	
Comments:				-		·	
MECHANICAL SYS	STEMS INSPECTION		Fuel Storage Capacity:			30 55	
Heating Type:	Electric Heater insid	<u> </u>	Excellent Go	od	Fair	Poor	
Ventilation Type:	SMAIL FAN inside Lucuther tight		Excellent Go	od	Fair	Poor	484
AC System Type:	NONE		Excellent Go	od	Fair	Poor	<b>-</b>
Dehumidification:	NONE		Excellent Go	od	Fair	Poor	
Louvers:	DO NOT CLUSE	s that	Excellent Go	od	Fair	Poor	
Comments:				-			
ECOMMENDATIO	NA.						
CATEGORY A ITEM	AS (Immediate Action)						
Item/Recommendation	,		Estimated Capital Project Cos				*
<u>I.</u>			\$				
2.			\$				
4.		_	\$				
5.		_	\$				
		TOTAL	\$				
Item/Recommendation	IS (Implement within 5 years)						
1,			Estimated Capital Project Cost				
2,		_	\$				
3.			\$				
4.			\$				
5.			\$			Q2	
Item/Recommendation  1.	(S (Implement between 6 and 10 year	TOTAL s)	\$				
2. 3. 4.		_					
رد.		_					
4.		_					



# Motor performance curve ME210/4D 60HZ

Frequency 60 Hz

590GPM @ 90'TDH					
Rated power	Service factor	Nominal speed	Number of poles	Rated voltage	Date
28.2 hp		1755 rpm	4	460 V	2009-05-08



Loading	No load	25 %	50 %	75 %	100 %	125 %
P1 [hp]	1.337	8.312	15.82	23.73	31.88	40.61
P2 [hp]	0	7.04	14.08	21.12	28.16	35.2
I [A]	12.4	15.89	20.92	27.38	35.21	44.5
eff [%]	0	84.7	88.99	89.01	88.34	86.69
cos	0.1009	0.4896	0.7077	0.8113	0.8474	0.8541
n [rpm]	1800	1792	1781	1768	1754	1738
M [lbf ft]	0	20.63	41.53	62.74	84.33	106.4
s [%]	0.0004409	0.4422	1.06	1.773	2.558	3.444

Tolerance according to VDE 0530 T1 12.84 for rated power

Starting current Starting torque Moment of inertia
195 A 235 lbf ft 2.5 lb ft²

Kendrick Pumo Startion	Inspection Date:	9.1-13
THEORY (CH. FORM)	Inspected By:	Jim WALDON
TION		1003
:	Year Pacifity Modified.	
IPMENT	Danita a America	
	Service Area:	
	Motor #1:	
2003	Year Installed:	2003
	Manufacturer:	FLY6T
3085	Model and No.:	3085
mT	Туре:	pnT
	Horsepower:	3HP
23	Efficiency:	77%
1(091)	Inverter duty:	- 8
415 1 416	Variable/Constant:	CONSTRUT
- V-lecz	Vertical/Horizontal:	Vertical
		1690
		see attacked.
	I map various various	
	Motor #2:	. 11.
SAME AS Above	Year Installed:	SIAME AS Above
	Model and No.:	
	Type:	
7/1	Horsepower.	
	Efficiency:	
	Inverter duty:	
	Variable/Constant:	
	Vertical/Horizontal:	
	Motor RPM:	
	Pump curve available:	
	Pump curve available:	
	Pump curve available:	
l	2003 FLY6T 3085 mT  22 1690 4" check	Inspected By:  Year Facility Modified:  Service Area:  Motor #1: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:  Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower. Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:

Pump #3: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM:	Motor #3: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty:
Valve size and type: Observed flow: Observed TDH:  Comments:	Variable/Constant: Vertical/Horizontal: Motor RPM: Punip curve available:
Pump #4: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:	Motor #4: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available
General Station Comments: Station needs New Fence Line needs minur Trimming of Transfer Switch is outside - Should	trim, Point, Possibly wew Rect f trees runsider muring to inside the building
Previous Pump Tests:	Possible opgrede By trailer PAPIR!

OTHER PIPING AND VALVES

Air relief valves:	45	Excellent Good Pair Poor	
Isolation valves:		Excellent Good Fair Poor	
Piping:		Excellent Good Fair Poor	
Comments:		4	
ELECTRICAL SYSTE Location Classification:	MS INSPECTION  Dry Location  Wet or Damp Location  Wet Corrosive Location	Comments:	
Standby Generator:	Most: General Model: 98A-02710-5	Excellent Good Fair Poor	
	Year Installed:	Facility Load: Ample capacity (Y/N):	
	Rating: KW 20 Fuel Type: Natural GAS	Ample capacity (1/1x).	
Interior Lighting Type:		Excellent Good Fair Poor	
Lighting Level:		Excellent Good Fair Poor	
Exterior Lighting Type:	N/A	Excellent Good Fair Poor	
Panel Boards:		Excellent Good Fair Poor	
Motor Control Center:		Excellent Good Fair Poor	
Disconnect Switches:	outside of building	Excellent Good Fair Poor	
Lightning Protection:		Excellent Good Fair Poor	
Fire Alarm System:	NIA	Excellent Good Fair Poor	
Security System:	NA	Excellent Good Fair Poor	
Potential Code Issues:	•		
Comments:			
-			
OTHER:		2	

INSTRUMENTATION AND CONTROLS

Flow Meters/Transmi	tlers:		Excellent	Good	Fair	Poor	
Pressure Gauges:			Excellent	Good	Fair	Poor	
Other:	missions		Excellent	Good	Fair	Poor	
SCADA:			Excellent	Good	Fair	Poor	-
Comments:							
MECHANICAL SYS Fuel Source:	STEMS INSPECTION		Fuel Storage Capaci	ly:		e #	
Heating Type:			Excellent	Good	Fair	Poor	
Ventilation Type;		<del></del>	Excellent	Good	) Fair	Poor	
AC System Type:	NA		Excellent	Good	Fair	Poor	
Dehumidification:	NA		Excellent	Good	l <sup>2</sup> air	Poor	
Louvers:			Excellent	Good	Fair	Poor	
Comments:							_
RECOMMENDATIO	NG.						
CATEGORY A ITEM Item/Recommendation 1. 2. 3. 4. 5.	IS (Immediate Action)	_	Estimated Capital Pro \$ \$ \$ \$	oject Cost		· 10-4-31-	ř.
	IS (Implement within 5 years)	TOTAL	\$				
1. 2. 3. 4.		-	Estimated Capital Pro \$ \$ \$ \$	ject Cost			
5.  CATEGORY C ITEM Item/Recommendation 1. 2. 3.	(S (Implement between 6 and 10 years)	TOTAL	\$ \$				
4.							

Attn: Brian Miller

			$\longrightarrow I$	)/	r + 041	_ '   ' '	TYPE
r						PRODUCT	
ļ	WE WOLF	DEREC	RMANCE	CURVE		NP3085.18	33 MT
		1000	110			C JRVE NO	ISSUE
	DATE OF CO	PROJECT	K RD / INDU	STRIAL PAR	RK	(i3-462-00-5306	
	2009-05-20	/1-LOAD 3/4-LOA	D 1/2-LOAD	RATED POWER	3 hp	NPELLER DIANETER 151 mm	1
	1	0.85 0.8	0.70	BTARTING	50 A		STATOR REV
	POWER FACTOR EFFICENCY		0 % 78.0 %	CURRENT	9,9 A	15-10-4AL	68Y 10
	MOTOR DATA		NLET/OUTLET	CURRENT		1.10.00	VOLTAGE POLES
	COMMENTS	1	- / 3,0 inch	SPEED	•	70 110 -	200 V 4
		Ţ	MP. THROUGHLET	NO. OF	170	GEARTYPE	
				BLADES	2		
	61 1						NOUT POWER SHAFT POWER
	[hp]						5 8
	3.5		L			T	INDUT POWER
	3.0	G				<del>  -   -   -   -   -   -   -   -   -   -</del>	
	K 3.0			×			0 *
	2.5						1 1 1
	2.5 Od 2.0			<del>  </del> -	-		# 00
	D	1 1				1 2	
	1.5			T t		1 1 1_	OVERALL EFF.
	1 3				[%] NPBHeijk	GUARANTEE	0 *
	TAIGH-YTUD	FLDW(USgpm) 348	HEAD[ft]	46.2	(59.0) 13.3		NPSHre
	B.E.P.					<del>_</del>	<del></del>
	[ft]						(ft]   ĝ
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	35			<del></del>		<del>-</del>	[ft] 17.5 - 17.5 - 1882
		`~\  _ _				<del></del>	<del></del>
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	30	-					EFF.
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	10 -			<del></del>		<del>-</del>	
	10	7					<u> </u>
	<del>-//</del>				T 1		2.5 + 10
	g 5 -//		<del></del>	<del></del>			2.5 7 10
Fig. 12							
	8						
	FLYP83.1.6.3 (20060531)	100	200	300	400	50 600	l_o.o <del>_l</del> o [USgpm]
	6	144			FLOW		
65	PS						
1: 14	五				GUARA	WITE E BETWEEN LIMIT:	S (G) ACC. TO
	NPSHre = NPSH3	3% + min. operaton clear water and ami		/ED	· ·	evel A	
	Performance with	clear water and ami	du tamp (Q.°C		111	<u> </u>	
	<del></del>						

MAY 20 2009

Pump Station: Address:	Kennedy LN WARRELON /UN	Inspection Date: Inspected By:	8-14-13 @M
GENERAL INFORMA' Year Facility Constructed Facility Description:	l:	Year Facility Modified:  T Prof P/S  10 Prof Pron	2004 + Elec Roon
PUMP STATION EQUINumber of Pumps:  Pump #1: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH: Comments:	2004 Cornwell BNNT-VC1808 Centrical	Service Area:  Motor #1: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	2004 Reliance Elec LOO2 EG EIECTRIC 40 9072 VED BY ABB Vect 1180
Pump #2: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH: Comments:	S'AME 1	Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	Sane

Pump #3: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:	Motor #3: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:
Pump #4: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:	Motor #4: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available
General Station Comments: Venture	L- P/8-15840
tixtures Seam OK.	DA COSSER DEFIRE DILS + SUTTEH
2 multin Monsters in	wetwell from TWC With work of
	Have Cutters replaced.
Previous Pump Tests:	Ventilation - 5000 - Level sensor - 5000 - Eleverical - 10000 - Peplace cutless - 10000 - muffin monothers 10000 -
OTHER PIPING AND VALVES  (2) 12" MHV+F CO Gote VI  (2) 10" AWWA 250 Sote	HIVES (Knite) - 1972

Air relief valves:	~/A	Excellent	Good	Fair	Poor
Isolation valves:	1NSTHUED 1972	Excellent	-G-9500)-	Fair	Poor
iping:	ADD NEW PAINT	Excellent	Good')	Fair	Poor
Comments:	<i>P</i>				4
76	CATION VALVES in Wet	11 Mean	/ 100	27 Pm	
	CHION VILLES IN WEL	nell HEICAL	/ <b>/ / / / / /</b>	o con	
ELECTRICAL SYSTEI Location Classification:	MS INSPECTION  Dry Location  Wet or Damp Location  Wet Corrosive Location	Comments:  STRIKES MAIN	P/S DISCONN	Prone	to Lishtnas
Standby Generator:	Mnfr: CATERPILLAR Model: D100-6	Excellent	Good	Fair	Poor
	Year Installed: 2008	Facility Load:			
	Rating: 100 KW	Ample capacity (Y/N):	<u> </u>		
Interior Lighting Type:	Fuel Type: DIESEL  Flourescent  T SODIU- PUMP ROOM	Excellent	Good	Fair	Poor
Lighting Level:		Excellent	Good	Fair	Poor
Exterior Lighting Type:	I vear descent	Excellent	Good	Fair	Poor
Panel Boards:	Some Equip replaced	Excellent	Good (	Fair	Poor
Motor Control Center:	Original Equipment	Excellent	Good (	Fair	Poor
Disconnect Switches:		Excellent	Good	Fair	Poor
Lightning Protection:	N/A	Excellent	Good	Fair	Poor
Fire Alarm System:	A	Excellent	Good	Fair	Poor
Security System:	N/A	Excellent	Good	Fair	Poor
Potential Code Issues:					
Comments:	Ventual Lighting	Good (lucado	Scent Daric	(1 <	
heturll Su	-ITCHES FAIR				
					~ ~
OTHER: Pum	ROOM VENTILATION NOT WA	rking today			

Flow Meters/Transmitters	: Hour Meters			Excellent	Good	) Fair	Poor	
Pressure Gauges:	HAVE had reliability 1			Excellent	Good	(Fair )	Роог	
Other:	Scitched Press	<u> </u>	<del></del> -	Excellent	Good	Fair	Poor	
SCADA:	Mission			Excellent	Good	Fair	Poor	
Comments:		<del></del>		· · · · · · · · · · · · · · · · · · ·	-			
and remo	CONSIDER CHANGE	hs L	eve(	Control	to A	18500	id ty	مده
MECHANICAL SYSTEM Fuel Source:	MS INSPECTION	_	Fuel St	orage Capacity:			- 12	
Heating Type:	ELEC WALL MOUNT			Excellent	Good	Fair	Poor	
Ventilation Type:	Pung. Poom FAN + DUC	<u> </u>		Excellent	Good	Fair	Poor	35
AC System Type:	N/A			Excellent	Good	Fair	Poor	
Dehumidification:	N/A			Excellent	Good	Fair	Poor	
Louvers:				Excellent	Good	Fair (	Poor	)
Comments:								
Pump ROC	on Switches, FAMS, L	15kts	NEED	replacius				
RECOMMENDATIONS			· · · · · · · · · · · · · · · · · · ·					
CATEGORY A ITEMS (I	Immediate Action)							
Item/Recommendation	01011			d Capital Projec	ct Cost			.55
1. Ventilation 2. 3.	Syst Kehab			5000,00				
3			\$					
4			Ф					
5			\$					
		TOTAL	Þ e					
CATEGORY B ITEMS (I	mnlement within 5 years)	IOIAL	<b>3</b>					
Item/Recommendation	mprement within 5 years)		Entimenta	d Combal Books				
1.			Estimate	d Capital Projec	t Cost			
2.			\$					
3.			φ Φ					
4			6					
5.			\$					
CATEGORY C ITEMS (In Item/Recommendation 1.	nplement between 6 and 10 years)	TATO	\$					
3.								
4.								
5								

Leoward ST	Inspection Date: Inspected By:	8-24-13 Jim WALDON
TION d: 2006 Out Door Pump Station	Year Facility Modified:	
IPMENT 2	Service Area:	outside
2000	Motor #1: Year Installed:	2012 2006
FLYGT 3102.090	Manufacturer: Model and No.:	FLYGT 3102.09D MT
	Horsepower: Efficiency:	3.9 52.60
1755 4" Check	Inverter duty: Variable/Constant: Vertical/Horizontal:	CONSTANT vertical
	Motor RPM: Pump curve available:	See Attached.
n a cutter on white.		
	Motor #2:	2010
2012		20/2 FL46T
3102 191	23	3102.181
		mT
1989	**	3.9
25.86 TDH@ 360.9 GPA	Efficiency:	82%
1755	Inverter duty:	
4" check	Variable/Constant:	Constant
		ve/tical
		1755
s A cutter on Volute	Pump curve available:	See Attachel
	<del></del>	
	2006 2006 DUTDOOF PUMP STATION  IPMENT  2006 FLYGT 3102.090 MT  2923@ 3261 gpm 1755 4"Check  2012 FLYGT 3102.181 MT  25.86TDH@ 360.9 gpm 1755 4" check	Inspected By:  Year Facility Modified:  Year Installed:  Manufacturer:  Horsepower:  Efficiency: Inverter duty:  Yariable/Constant:  Yertical/Horizontal: Model and No.:  Type: Horsepower:  #### Additional Constant:  ###################################

Previous Pump Tests:	Add cutter as soo
	40 1
	1,000
STEATURE STEATURE	
General Station Comments: Needs Weels Weels Station	odchips for Natural Surrounding at station
omments:	Pump curve available
Observed flow: Observed TDH:	Vertical/Horizontal:  Motor RPM:
Valve size and type:	Variable/Constant:
Design capacity/TDH: Pump RPM:	Efficiency:  Inverter duty:
NOM efficiency:	Horsepower:
Model and No.: Type:	Model and No.:  Type:
Manufacturer:	Manufacturer:  Model and No.:
Pump #4: Year Installed:	Motor #4: Year Installed:
Comments:	
Observed TDH:	Motor RPM: Pump curve available:
Observed flow:	Vertical/Horizontal:
Valve size and type:	Variable/Constant:
Design capacity/TDH: Pump RPM:	Efficiency:  Inverter duty:
NOM efficiency:	Horsepower:
уре:	Туре:
Model and No.:	Model and No.:
Year Installed:  Manufacturer:	Manufacturer:
Pump #3:	Motor #3: Year Installed:

Air relief valves:	None	Excellent Good Fair Poor
Isolation valves:	4" GALE	Excellent Good Fair Poor
Piping:	DI.	Excellent Good Fair Poor
Comments:		
ELECTRICAL SYSTEM Location Classification:		Community
Location Classification:	Dry Location Wet or Damp Location	Comments:
	Wet Corrosive Location	
	11/2 D 11/2	
Standby Generator:	Mnfr: N/A Portable	Excellent Good Fair Poor
	Model: Year Installed:	Facility Load:
	Rating:	Ample capacity (Y/N):
	Fuel Type:	
Interior Lighting Type:		Excellent Good Fair Poor
microi Lighting Type:		Excellent Good Pair 1001
Lighting Level:		Excellent Good Fair Poor
X		
Exterior Lighting Type:		Excellent Good Fair Poor
Panel Boards:		Excellent Good Fair Poor
Lotor Control Center:		Excellent Good Fair Poor
notor Confroi Center:		Excellent Cool Fair 1001
Disconnect Switches:	<del></del>	Excellent Good Fair Poor
	<del></del>	
Lightning Protection:		Excellent Good Fair Poor
Fire Alarm System:	NIA	Excellent Good Fair Poor
•		
Conveite Contame	NA	Excellent Good Fair Poor
Security System:	10/17	Excellent Good Fall Foot
Potential Code Issues:		
Comments:		
-		
OTHER:		9

INSTRUMENTATION AND CONTROLS

Flow Meters/Transmit	ters:		Excellent	Good	Fair	Poor
Pressure Gauges:			Excellent	Good	Fair	Poor
Other:	2voiss im		Excellent	Good	Fair	Poor
SCADA:			Excellent	Good	Fair	Poor
Comments:						
14707137011						
Fuel Source:	TEMS INSPECTION  A		Fuel Storage Capacity:	-		
Heating Type:	Small unit inside cubin	<u>vet</u>	Excellent	Good	) Fair	Poor
Ventilation Type:			Excellent	Good	Fair	Poor
AC System Type:	N/A		Excellent	Good	Fair	Poor
Dehumidification:	N/A W/A	_	Excellent	Good	Fair	Poor
Louvers:			Excellent	Good	Fair	Poor
Comments:						
ECOMMENDATIO CATEGORY A ITEM	NS ÍS (Immediate Action)					
Item/Recommendation 1. いっという	around Area		Estimated Capital Project  \$	Cost		
	to cutter?	-	\$			
4.		-	\$			
5.	· · · · · · · · · · · · · · · · · · ·	TOTAL	\$ \$			
Item/Recommendation  1. 2.	IS (Implement within 5 years)	-	Estimated Capital Project \$ \$	Cost		
A		•	\$			
5		-	\$			§:
Item/Recommendation 1. 2. 3.	IS (Implement between 6 and 10 years)	TOTAL )	\$			
4.	··	-				

**PRODUCT** 

Pump 1 Leonard ST.

		·			<del></del>	
Serial No.		Performance cu	irve No.	Moto	or module/type	Voltage (V)
3102.090	0620077	61- 434-00	-3003		130	230
Base module	Impeller No.	Gear type	Gear ratio		Imp.diam/Blade angle	Water temp ° C
003	438 96 01				173	16.0

# **TEST RESULTS**

Pump total head H (ft)	Volume rate of flow Q (USGpm)	Motor input power P (kW)	Voltage U (V)	Current I (A)	Overall efficiency $\eta(\%)$
48.61	0.0	1.80	232	8.8	0.00
45.56	32.4	1.93	231	9.3	14.41
42.36	76.7	2.10	231	10.0	29.20
39.49	134.8	2.41	231	11.3	41.72
35.97	199.4	2.75	231	12.8	49.20
32.76	263.7	3.08	231	14.2	53.00
29.38	326.3	3.32	231	15.3	54.53
24.04	419.5	3.62	231	16.8	52.60

Accepted after	Test facility	Test date	Time	Chief tester	2138	1
н	Lindas LC3 Sweden	06-03-01	13:02			

**ORDERNR 162066 POS 2** 

PLOTTED TEST RESULTS Measured point: += Q/H Duty point: ♦= Q/H

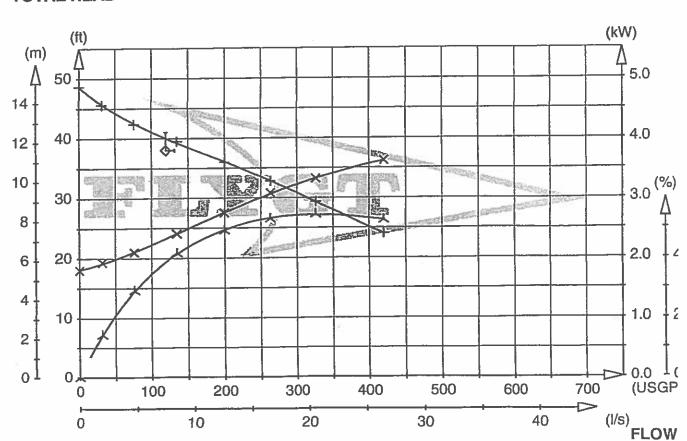
X = Q/P

Calculated point: 人= Q/ETA overa

= Q/P △ = Q/ETA overall

**TOTAL HEAD** 

**INPUT POWER** 



Leonard ST.
Pump 2

PRODUCT TYPE PERFORMANCE CURVE CP3102.181 FERRET MT **CURVE NO** ISSUE DATE PROJECT 61-434-00-3003 2 2012-05-16 3/4-LOAD IMPELLER DIAMETER 1/1-LOAD 1/2-LOAD RATED 3.9 hp POWER 173 mm 0.94 0.95 0.95 STARTING POWER FACTOR 45 CURRENT ... Α MOTOR # STATOR REV 79.5 % 82.0 % 82.5 % **EFFICIENCY** RATED 18-11-4AL 01-12 CURRENT ... MOTOR DATA 16 Α RATED VOLTAGE FREQ. PHASES POLES COMMENTS INLET/OUTLET 1755 mm SPEED **NEVACLOG** 230 V 60 Hz 4 -/ 4 inch TOT.MOM.OF INERTIA ... IMP. THROUGHLET **GEARTYPE** RATIO NO. OF BLADES 2.9 inch 1 [hp] SHAFT POWER INPUT POWER 5 0 POWER 4 Ō 3 OVERALL EFF. 2 EFF PUMP E **DUTY-POINT** FLOW[USgpm] HEAD[ft] EFF. [%] NPSHro[ft] **GUARANTEE** 0 \* 360.9 25.86 51.4 (62.3) 27.2 HI level A B.E.P. **NPSHre** [ft] BEST EFF. POINT [ft] POWER LIMIT 45 90 40 80 μ Δ. EFF. 35 [%] 30 60 + 60 HEAD 25 50 十50 20 40 + 40 30 + 3015 10 20 + 20FLYPS3,1.6.6 (20090313) 10 + 105 0 500 [USgpm] 100 200 300 400 600 700 **FLOW** GUARANTEE BETWEEN LIMITS (G) ACC. TO NPSHre = NPSH3% + min. operational margin HI level A Performance with clear water and ambient temp 40 °C

Pump Station:	Mattapnisett Road	Inspection Date: Inspected By:	2 m 41260y
GENERAL INFORMA Year Facility Constructed Facility Description:		Year Facility Modified:	
PUMP STATION EQU	IPMENT		
Number of Pumps:		Service Area:	outside
Pump #1:		Motor #1:	
Year Installed:	2012	Year Installed:	2012
√anufacturer:	FLYGT	Manufacturer:	FLYGT
Model and No.:	CP3085.183	Model and No.:	CP3085, 183
Гуре:	MT	Туре:	MT
NOM efficiency:		Horsepower:	2.4
Design capacity/TDH:	19.70	Efficiency:	80.5%
Pump RPM:	1710	Inverter duty:	•
Valve size and type:	4"	Variable/Constant:	COUSTANT
Observed flow:		Vertical/Horizontal:	Vertical
Observed TDH:		Motor RPM:	1710
		Pump curve available:	Sec Attached
omments:			- 11
/-			
Pump #2:		Motor #2:	
Year Installed:	SAME AS Above	Year Installed:	SAME AS Above
Manufacturer:		Manufacturer:	
Model and No.:		Model and No.:	
Гуре:		Type:	
VOM efficiency:		Horsepower:	
Design capacity/TDH:		Efficiency:	
ump RPM:	(c) #	Inverter duty:	
alve size and type:	No.	Variable/Constant:	
Observed flow:		Vertical/Horizontal:	
Observed TDH:		Motor RPM:	
		Pump curve available:	
Comments:			
			<u></u>
<del></del>	J 2012		

New Station 2012 Trin Fence Line

Pump #3:	Motor #3:
Year Installed:	Year Installed:
Manufacturer:	Manufacturer:
Model and No.:	Model and No.:
уре:	Туре:
NOM efficiency:	Horsepower:
Design capacity/TDH:	Efficiency:
Pump RPM:	Inverter duty:
Valve size and type:	Variable/Constant:
Observed flow:	Vertical/Horizontal:
Observed TDH:	Motor RPM:
	Pump curve available:
Comments:	
The translation with the second secon	
Pump #4:	Motor #4:
Year Installed:	Year Installed:
Manufacturer:	Manufacturer:
Model and No.:	Model and No.:
Type:	Type:
NOM efficiency:	Horsepower:
	Efficiency:
Design capacity/TDH:	Inverter duty:
Pump RPM:	Variable/Constant:
Valve size and type:	Variable Constant:  Vertical/Horizontal:
Observed flow:	Motor RPM:
Observed TDH:	
	Pump curve available
omments:	
1/1 -	
General Station Comments:	
Previous Pump Tests:	
	( / )
	/
OTHER PIPING AND VALVES	

Air relief valves:			Excellent	Good	Fair	Poor
Isolation valves:			Excellent	Good	Fair	Poor
Piping:			Excellent	Good	Fair	Poor
Comments:		<del></del>				1
		<u> </u>				
					<u> </u>	
ELECTRICAL SYSTE Location Classification:	Dry Location Wet or Damp Location	H	Comments:		333	
201 13 - 3	Wet Corrosive Location					<u> </u>
Standby Generator:	Mnfr: General Model: 56-0035/A6034.21	V18HBSYA	Excellent 2	Good	Fair	Poor
	Year Installed: 20// Rating: 35 KW		Facility Load: Ample capacity (Y/V):	G - W		
	Fuel Type: Natural GAS	<del></del>				
Interior Lighting Type:		<del></del>	Excellent	Good	Fair	Poor
Lighting Level:	····	9	Excellent	Good	Fair	Poor
Exterior Lighting Type:			Excellent	Good	Fair	Poor
Panel Boards:			Excellent	Good	Fair	Poor
otor Control Center:			Excellent	Good	Fair	Poor
Disconnect Switches:			Excellent	Good	Fair	Poor
Lightning Protection:			Excellent	Good	Fair	Poor
Fire Alarm System:	NA		Excellent	Good	Fair	Poor
Security System:	N/A		Excellent	Good	Fair	Poor
Potential Code Issues:		4			<u> </u>	
Comments:						
						<u></u>
OTHER:			9			

INSTRUMENTATION AND CONTROLS

Flow Meters/Transmitters				Excellent	Good	Fair	Poor
Pressure Gauges:	N/A			Excellent	Good	Fair	Poor
Other:	missions			Excellent	Good	Fair	Poor
SCADA:				Excellent	Good	Fair	Poor
Comments:					160 100 110		
MECHANICAL SYSTE Fuel Source:	MS INSPECTION  Natural Grange G	<u>#5</u>	Fuel Stor	age Capacity:			2
Heating Type:	SMAIL Clectric Heater in	<u>CGb</u> ineT		Excellent	Good	Fair	Poor
Ventilation Type:				Excellent	Good	Fair	Poor
AC System Type:	NA			Excellent	Good	Fair	Poor
Dehumidification:	NA	_		Excellent	Good	Fair	Poor
Louvers:	•		$\subset$	Excellent	Good	Fair	Poor
Comments:							
ECOMMENDATIONS			33 33				
CATEGORY A ITEMS Item/Recommendation			Potionata	I Garata I Province			11
1. 2.		_	\$	l Capital Project	Cost		
2.		_	\$				
3. 4.		-	\$ \$				
5.		<del>-</del>	\$				
CATEGORY R ITEMS	(Implement within 5 years)	TOTAL	\$				
Item/Recommendation	dinpiement within 3 years)		Estimated	l Capital Project	Cost		
1.		_	\$	-			
2.		-	\$				
		-	\$				
5.		-	\$				9
Item/Recommendation	(Implement between 6 and 10 years)	TOTAL )	\$				
3.		-					
4.		•					

1							PRODUC	T		TYPE
FLEGT			MANCE	CUR	VE			085.	183	ГМ
DATE 2012-03-01		tapoisett	- Warehai			- ··	61-436		503	ISSUE 4
	1/1-LOAD	3/4-LOAD	1/2-LOAD	RATED POWER	. 2.4	hp				R DIAMETER
POWER FACTOR EFFICIENCY	0.94 80.5 %	0.96 82.0 %	0.95 79.5 %	STARTING CURRENT		. A	MOTOR #		STATO	146 mm REV
MOTOR DATA				RATED	10	A	15-10-		12-	111
COMMENTS			OUTLET	RATED	_	• •	FREQ.	PHASES	VOLTAG	E POLE
			.0 inch HROUGHLET	TOT.MOM.	OF .	- 1	60 Hz	1	230 V	
	\$1		.9 inch	NO. OF BLADES	1	o kgiiiz	GEARTYP	E	RATIO	1
[hp] —			3	9			1			
fubl							F-+-	7		INPUT POWER
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<u> </u>			'							OVERALL EFF.
DUTY-POINT	FI Olateur	115450						1		
1	FLOW <sub>(USg)</sub> 159.9	19.70	fi) POWEF 2.21 (1.	₹ [hp]	F. [%] 1 .6 (43.7)	NPSHre(ft) 13.9	GUARAN	TEE		0 *
8.E.P.	252.0	15.23			.1 (46.8)	16,6	HI level A		10011	
[ft] ————								<u> </u>	<b>IPSH</b> r	e <u>F</u>
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30					K				30	
30 25			*		*				30	EFF.
30 25			*		*				30	EFF.
30 25					*				30	EFF. [%]
30 25 Q 20					*				30	EFF.
30 25					*				25	EFF. [%]
30 25 Q 20					*				25	EFF. [%]
30 25 Q 20 H 15					*				25 - 20 - 15 -	EFF. [%]
30 25 Q 20					*				25	EFF. [%]
30 25 Q 20 H 15					*				25 - 20 - 15 -	EFF. [%] 40
30 25 Q 20 H 15			*		*				25 - 20 - 15 - G- 10 -	FFF. [%] 40 - 30 - 20
30 25 Q 20 H 15			*		*				25 - 20 - 15 - G- 10 -	EFF. [%] 40
30 25 Q 20 H 15			*		*				25 - 20 - 15 - G- 10 -	EFF. [%] 40 - 30 - 20
30 25 20 20 15 10					*				25 - 20 - 15 - 5 - 0	EFF. [%] 40 - 30 - 20 - 10
30 25 QV 20 15 10	0 100	150	200	25	*	300	350	400	25 - 20 - 15 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 -	EFF. [%] 40 - 30 - 20 - 10
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30 25 20 10 5 0 0 5			200		LOW	1			30 - 25 - 20 - 15 - 5 - [USg	EFF. [%] -40 -30 -20
30 25 20 20 15 10	nin. operationa	al margin			FLOW	1	TWEEN LIN		30 - 25 - 20 - 15 - 5 - [USg	EFF. [%] -40 -30 -20

FLYPS3.1,8.6 (20090313)

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CERTIFIED PUMP PERF JANCE CURVE

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Pump & Electric Division Colt Industries Pump & Electric Di

Office Pier#

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1/6 Certified Curve 1/2 -Name Plate Rating Inches Curve Approval REMARKS Serial No. Pump #2191 - 0627 8.7 Test Report mpliance with reights are not all trades and 10.000 K= 400 CE, INC. n required. 760104 ig letter. Bn-0 JEFORD & THORNDI Submissi Ompany ination of plac safe AMP5. theral Rating Chart. Sates Motor No. Impeller Symbol \_\_\_ Material\_ ., 5/4 \_ Diam. \_ Day Log No. S chry VOLTS EAR INEER quar los coord WATTMETER READING C= cation, construction, and other ents. Dimen Joseph drawing. 4/4\_ H. P. DATA ract docur Approved AY, SP CULINAL BIN 1275 Approved CVANI K. W. 3/4 J Disch. Gouge No. Hg + 1420 То Римр 117 App fah. all P= Size of Piezometer EFF. ORIVER  $\mathcal{N}$ Motor Eff. at 1/2\_ Suction Gage\_ Pump Driven By. Misc. Note \_\_ 14.67 -18.2 16 S. S. S. 31.2 TOROUE POUNDS 50 8.80 6 67.4 61.0 0 EQUIPMENT Direct. Conn. Test Log No. Released By. 19 8.48 5/2 Sie SPEED R. P. M. 1165 7 1 ` н. Р. ₽% EH. -(AC-DC) - 460 G. P. M. R P. M - 283 Ft. Tot. Hd. PUMP PUMP 14. 14,02 0 19.35 4.05 9.15 6.16 80.6 1775 P. S. I. 76.5 12.55 0 Inches \_ Inches 6.8 Motor 29 500 OPERATIVE CONDITIONS 72.6 77.7 1.08 21.5 73,4 24.4 500 Ī Discharge. SIZE WATER OF H.P. NOZZLE OUTPUT (Suction -12-Serial No. 1651 13.70 Hydrostatic Press. Test\_ i : . Max. Pipe Size tv. 0.7 PRESSURE MEAD ON NOZZLE 0 6.35 ---00 5443 6.32- Pump 12.7 1 D-50 12 4 Ş'n ō-: No 1 13 Sp. Gr. GALLONS PER. MIN. .0 1354 8 1750 3 1500 000 2000 11/1/1 950 750 5 ciro 0.0 1 VEL HEAD TOTAL HEAD, 0 Ø, Ø 0 \_ Inches 12 ر 0/1 Ft. "D" Inches 60 7.0 60 7 mg (mg) 0 0 Order € 70 mg rc, 0 Date -Fig. 8 10 C 65 ٨, P 3.0 -50) Discharge\_ 1200 Նյ 1 ASS C Pipe Inside Diam. Suction Poms SUCTION. 577 Distance Between Gages (Minus\_ 0.5 2 41.7 ij 77 E. 4. 35, FEET Plus 20 1 Liquid to be Pumped. --50) Proceeding. GAGE HEAD FEET DISCHARGE HEAD "A" 11331 アク CUSTOMER ACTUAL GAGE HEAD FEET **Fested By** 13.27 17 Oc. 33,6 47.8 C 2.3 38.2 61.3 100 43.7 05.1 Size Branch

KCSBBY

		0
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# MG1-4.34 Report of Test Form for Induction Motors

CONTINENTAL ELECTRIC CO., Inc.

Newark, N. J.

Rockford, Ill. ONSET PIER

# REPORT OF TESTS

INDUCTION MOTOR

Purchaser-Purcell Pump Engineering Corp. Date of Test 1/24/7/
Continental 63988

Serial No. G3988/

Order No. 3947A

w.s. 18438

#### NAMEPLATE RATING

Hp Output	Syn. Speed Rpm	Full-Load Speed—Rpm	Phase	Cycles	Volts	Amperes Full Load	Тура	Frame Number
20/11	1200/	1165/	3	60	460	27/17	WY	3640P

#### TEMPERATURE RISE

Conditions of Test	Temperature Rise—Dog C				
Hours Line Line Air Deg Cooling Air Amperes Deg Cooling Air De	(Cross Out One) By Core Resistance Core By Method by	Rotor  Windings (Cross Out One) By Resistancs Method By Ther- mometer Method  Commuta- tor Bars  Collector Rings			

#### CHARACTERISTICS

. Slip—Per Cent	Amperes	Secondary Volta	Secondary Amperes per	Resistance at 25 C
	Running Light	at Standatili	Ring at Full Load	(between lines) Ohms
2.9/2.2	15/10			.458/946

#### TORQUE AND STARTING CURRENT

Break-Down Torque Lbe at 1 ft radius	Locked-Rotor Torque Lbe at 1 ft radius with-% volta applied	Starting Current Amperes (locked rotor) with—% volts applied
185/Cdc	33/30 @	73/45 @
150	5/90V	5190V

#### HIGH-POTENTIAL TESTS

Volts A-c for 6 Gec.				
Stator	Rotor			
2000				

#### Efficiencies and Power Factor

Efficiency, Per Cent				Power Factor, Per Cent			
88/66	855/84	F2/80	78.5/20	71/61.5	58.5/49		

Notes:

Approved by Jevan of Bellis Date !! /2 4/7/

Recommended Standard 6-11-1946, NEMA Standard 11-12-1958.

		# H €

Pump Station: Address:	ONSET PIER  ONSET AVE  ONSET MA	Inspection Date:	8-14-13 B-MIL
GENERAL INFORMA' Year Facility Constructed Facility Description:	16 11	Year Facility Modified:  WI FIAT ROOF 21eve  FECECROON	1 Wetail
PUMP STATION EQUI	IPMENT 2	Service Area:	у
Pump #1: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	Fair banes Morse See Attsched Centrifisch  10" MHV + F CO e  'Sinal pumps tonor  will need rebuilt	Vertical/Horizontal:  Motor RPM: Pump curve available:	1971 AC INDUCTOR MOTOR See affached  2 speed Vert  Should Be Painted
Pump #2: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH: Comments:	SAME 1	Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	Single Speed

)
)

Pump #3: Year Installed: Manufacturer: Model and No.: 'ype: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM:
Comments:	Pump curve available:
Pump #4: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:  General Station Comments:  Roof	Inverter duty:  Variable/Constant:  Vertical/Horizontal:  Motor RPM:  Pump curve available  Origins  No Leass @ fluis fine
All exterior Doors sh	- BAD
Well woll Cooker	
	2-pumps 30000 - electrical - 30000
Previous Pump Tests:	- ROOP - 7000
	2 Dools - 2000 - 6/00000) generalor - 50000 - 6/00000)
OTHER PIPING AND VALVES	ventilation - 10,000

	7 .

Air relief valves:	MA	Excellent	Good	Fair	Poor
Isolation valves:	Rasically N/G	Excellent	Good	Fair	Poor
Piping:	NERD PAINT	Excellent	Good	Fair	Poor
Comments:					1
ELECTRICAL SYSTE	MS INSPECTION				
Location Classification:	Dry Location	Comments:	B	ir. 00	
	Wet or Damp Location Wet Corrosive Location	Causes Co	110510	LT AT	A HUS
Standby Generator:	Mnfr: TH. / Denco Model: 6050	Excellent	Good	Fair	Poor
	Year Installed: 1971	Facility Load:			
	Rating: 40 KW Fuel Type: Dress	Ample capacity (Y/N):			
Interior Lighting Type:	inconfecent / Flowescent	Excellent	Good	Fair	Poor
Lighting Level:		Excellent	Good	Fair	Poor
Exterior Lighting Type:	incondescent	Excellent	Good	Fair (	Poor
Panel Boards:		Excellent	Good	Fair (	Poor
Motor Control Center:		Excellent	Good	Fair	Poor
Disconnect Switches:		Excellent	Good	Fair (	Poor
Lightning Protection:		Excellent	Good	Fair	Poor
Fire Alarm System:	N/A	Excellent	Good	Fair	Poor
Security System:	N/A	Excellent	Good	Fair	Poor
Potential Code Issues:					
Conunents:	A Au P/s this Gen	1. 54	1.100		
0070	A Au Pls this Gen	erator is 5th	MOR	2 (	
				-	
OTHER:		19			

**NSTRUMENTATION AND CONTROLS** 

		*!		

Flow Meters/Transmitter	s: Fischer 1971	Excellent	Good	Fair	Poor
Pressure Gauges:		Excellent	Good	Fair	Poor
Other:	MULTISMANT CONTROL	Excellent	Good )	Fair	Poor
SCADA:	MISSION	Excellent	260d)	Fair	Poor
Comments:					1001
	ELEC Components NEGr	SAIT AIR			
MECHANICAL SYSTE Fuel Source:	EMS INSPECTION ~/A	Fuel Storage Capacity:			8
Heating Type:	ELEC WALL Hect	Excellent	Good (	Fair	Poor
Ventilation Type:	FANT Duct work	Excellent	Good	Fair	Poor
AC System Type:	N/n	Excellent	Good	Fair	Poor
Dehumidification:	~/^	Excellent	Good	Fair	Poor
Louvers:		Excellent	Good	Fair (	Poor
Comments:					
				<del></del> -	
RECOMMENDATIONS CATEGORY A ITEMS ( Item/Recommendation 1.		Estimated Capital Project \$ \$ \$ \$ \$	t Cost		i;
1. Replace (2. Rebuild	Implement within 5 years)  Sen erator  Pum 1 motor 1  Cof  Poors + (vindows  TOTAL	Estimated Capital Project  \$ \$\langle 20,000 \$ \$\langle 5000 \$\langle 3000 \$ \$	Cost		
CATEGORY C ITEMS (I Item/Recommendation 1. 2. 3. 4.	(mplement between 6 and 10 years)	φ			

		**
		0
	×	

CUMBERLAND CONSTRUCTION CO.
TOWN OF WAREHAM, MASS.
FUMPING STATIONS, CONTRACT NO. 6 SECTION A

DATE 11/24/70
B-3947-3
KZRI-062770

LOCATION: SOUTH WATER ST

MANUFACTURER: FAIRBANKS MOR MODEL: FIG. 5443B-32-BF TYPE: VERTICAL CLOSE COUPLE DESIGN CARACTTY, GPM DESIGN T.O.H. FEET OF WATER: RATED SPEED, RPM: ROTATION:	
MATERIALS OF CONSTRUCTION: +	
CASHES  IMPELLER  CATHER WICH MINE  REPELLER WICH MINE  SHAFT HULLIVE  STUFFING BOX	
MOUNTING BASE	CAST IPON METAL-FLEX
MOTOR:	CONTINENTAL 15 P [160 RPM - VSS 3/60/4604 40°C RISE

# MG1-4.34 Report of Test Form for Induction Motors

CONTINENTAL ELECTRIC CO., Inc.

Newark, N. J.

Rockford, Ill. SO. WATER ST. "1

### REPORT OF TESTS

INDUCTION MOTOR

' Purchaser -	
PURCELL	PUMP
Lngineer	ring Corp.
•	

Date of Test //-4/-7/
Continental G-3990'
F. O. No. G-3990'

Serial No. G-39901

Order No. B 3947-2A

w.s. 15834

#### NAMEPLATE RATING

Hp Output	Syn. Speed Rpm	Full-Load Speed—Rpm	Phase	Cycles	Volta	Amperes Full Load	Тура	Frame Number
15/8.4	1200/	1175	3	60	760	20,5/	wr	316UP

#### TEMPERATURE RISE

	Condit	ions of Tes	t e	Temperature Rise—Deg C					
Hours Run	Line	Line Amperes	Cooling Air Deg C	Core By Theremometer method	Windings (Cross Out One) By Resistance Method By There	F -	otor  Windings (Cross Out One) By Resistance Method By Thermometer Method	Commuta- tor Bars	Collector Rings
14	460	_//3.5	/3/	1/36	37				

#### CHARACTERISTICS

Slip—Per Cent	Amperes	Secondary Volta	Secondary Amperes per	Resistance at 25 C
	Running Light	at Standatili	Ring at Full Load	(between lines) Ohms
2.1/2.2	12.5/9			760/

#### TORQUE AND STARTING CURRENT

HIGH-POTENTIAL	<b>TESTS</b>
----------------	--------------

Break-Down Torque Lbs at 1 ft radius	Locked-Rotor Torque Lbs at 1 ft radius with—% volts applied	Starting Current Amperes (locked rotor) with—% volts applied
140/110 Calc	18.5/19 @ 48 90 V	51/32 @ 4890V

Volts A-c for 60 Sec.						
Stator	Rotor					
2000						

#### Efficiencies and Power Factor

	Efficiency, Per Cen	t C	P	ower Factor, Per Ce	nt
Full Load 87/84.5	% Load 85/82	51.5/78	Pull Load 79.5/67.5	3.5/60.5	63-5/48

Notes:

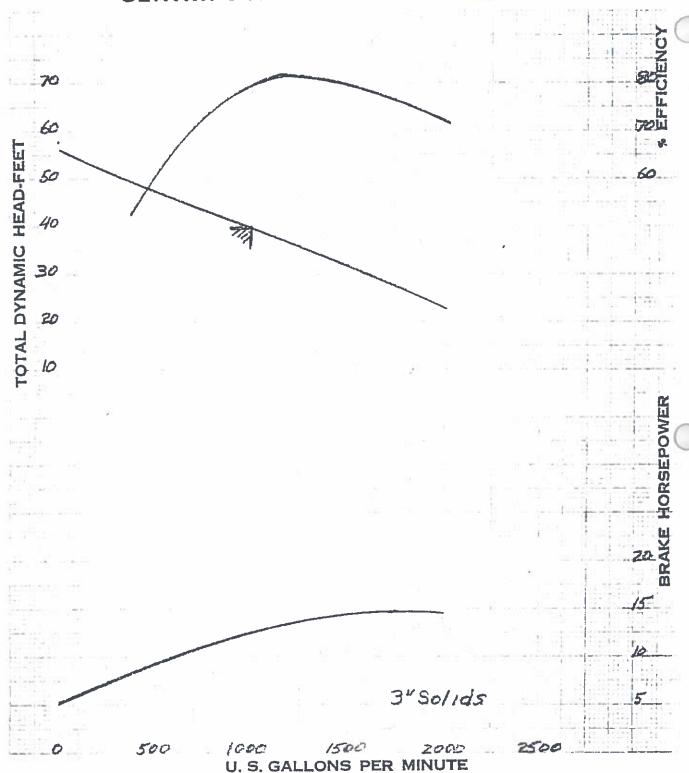
Data from test on £ 615 .... motor.
(this or duplicate)

S. Water No. 2 CEKTIFIED CORTE Pump Division Colt industries ( 5443 6 CIOM PUMP NO. 2 DRIVER T-MTR 1/60 ENGR. EFFICIENC) A control of piet opinion in the property of the piet Đ. CERTIFIED PUMP PERF MANCE CURVE TOTAL HEAD IN FEET TP-S-L)

U. S. GALLONS PER MINUTEX/O

Pump & Hydraulic Division





The pump is guaranteed for the set of conditions specified; other points are approximate. Capacity, head and efficiency guarantees are contingent an furnishing the pump with the specified amount of clear, fresh non-aerated water at a temperature of not to exceed 85 degrees F.

CUSTOMER: CUMBERIAND CONST S. WATER ST. NO 2 - K2RI-062770 6" FIGURE 5443 OPERATED AT 1160 RPM IMPELLER T6C1C DIAMETER 113/8" DRAWN BY: HE DATE: 3/29/71

# MG1-4.34 Report of Test Form for Induction Motors

CONTINENTAL ELECTRIC CO., Inc. Newark, N. J.

Rockford, Ill. 30. WATER ST.

# REPORT OF TESTS

INDUCTION MOTOR

Purchaser -	
D. D. D. C. I. I.	PUMP
PORCELL	Carp
Emanneel	ing Corp.
Erigin	

Date of Test 1/4/7/ Continental G3991 Serial No. *G* 39911

Order No. B 3947-3A

w.s. 13679

# NAMEPLATE RATING

1412222				
Hp Output Syn. Speed Full-Load Speed—Rpm Phase 75 1200 1160 3	Cycles Volts 60 460	Amperes Full Load	Type W V	Prame Number 3240F

# TEMPERATURE RISE

- CTast		Temperature Riss—Deg	С	
Hours Line Line Amperes Air Deg C	Stator  Windings (Cross Out One) By Core By Ther- mometer method  39  39  Stator	Core by Thermometer Method Method	Commuta- tor Bars	Collector Ringe

# CHARACTERISTICS

			CHARACTERIS		
	Slip-Per Cent	Amperes Running Light	Secondary Volta at Standatill	Ring at Fuli Load	Resistance at 25 C (between lines). Ohms
1	<i>3.</i> 3	10			Thoms

# TORQUE AND STARTING CURRENT

10120		
Break-Down Torque Libe at 1 (t radius  /40  Calc	Locked-Rotor Torque Lbe at 1 ft radius with—% volts applied 22 Q4890V	Starting Current Amperes (locked rotor) with—% voits applied  47 @ 4890 V

# HIGH-POTENTIAL TESTS

Volts A-c fo	60 Sec.
Stator	Rotor
2000	

# EFFICIENCIES AND POWER FACTOR

	Efficiencies an	D I OWER THE		
<u> </u>		P	ower Pactor, Per C	ent
Full Load % Load  FF. 5 F8	34 Load	Full Load	% Load 77	14 Load

Notes:	

Data from test on this or duplicate) motor.

Approved by

was of Waller. Date. (1/24/71)
Designing Engineer

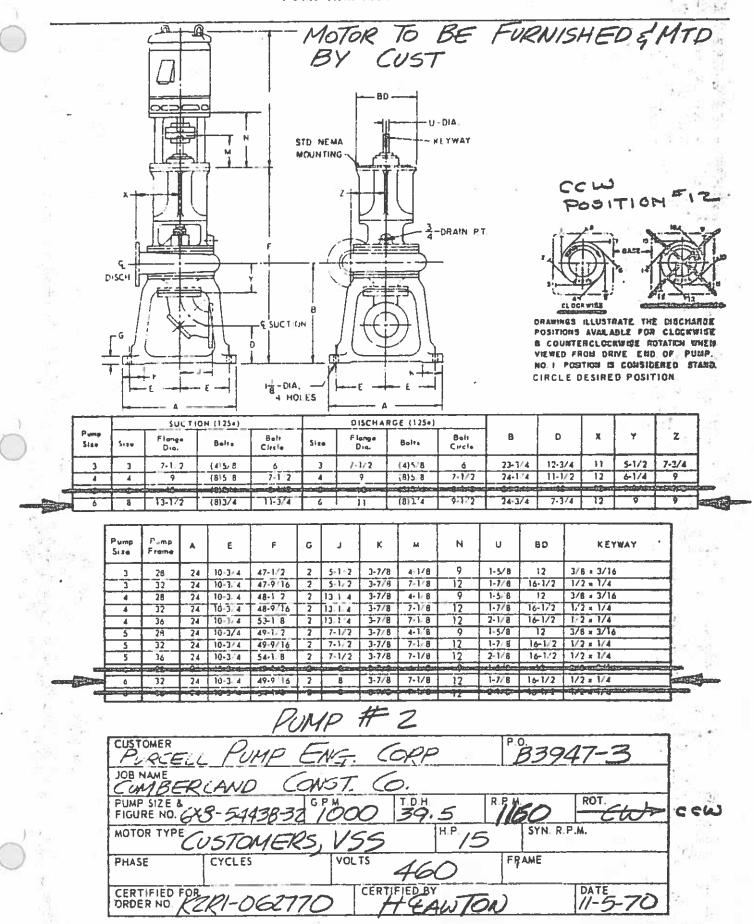
Recommended Standard 6-11-1946, NEMA Standard 11-12-1958.

Colt industries Pump & Electric Division

So WATER S+ No 2

Curve Approval YE 765 Certified Curve Name Plate Rating Serial No. Pump K2R1-062770 Inches K=4000 REMARKS 111111655 Test Report TUCION 812 AMPS. H. P. (Seles Motor. Rating Chart Impeller | Symbol -Material VOLTS Diam. WATTMETER READING C= DATA Size of Piezometer 7,75 Gouge No. 1/6. 4/2 0 MAAID K. W. 0 10 7 1.Q. To Pump EFF. DRIVER Motor Eff, at 1/2 -Pump Driven By Suction Gage -Direct. Conn. 242 11:00 37.0 78.8 14.3 1160 49.3 82713.43 1160 46.4 12.15/1/60 41.9 70915.08/140 52.0 Misc. Note. TOROUE EQUIPMENT 75, 114.84 1160 51. 1100 SPEED R. P. M. % Eff. (AC-DC) R. P. M. 15 H.P. Ft. Tot. Hd. G. P. M. 10.7 7.03 Inches Inches P. S. I. PUMP PUMP PUMP ß OPERATIVE CONDITIONS Motor Max. Pipe Size { Discharge. 1000 39.5 -1160 SIZE WATER OF H.P. H.P. | Suction | Serial No. Hydrostatic Press. Test. (NZ) 3 4 7 5 5 Σ 631 107 PRESSURE HEAD ON NOZZLE in Fig. 54438 -32Pump } 0 Date 2 . 22 - 72 GALLONS PER.MIN. CORP 44 2281855 29.71500 35.7/250 39.51000 439 250 2.9 25.21750 Discharge 6 Inches 56 0 DISCHARGE HEAD "A" SUCTION, 1500 FTOTAL HEAD.
ACTUAL CORRECTED FEET FEET"C" ABC & D (Suction 9 Inches Ft. "D" Punto a ENG. Order 0.7 3 2.9 0 NOO MOO Tested By AVECL, & Tin DO Distance Between Gages (Minus (Plus\_ 00 0 5,0 43 LOVELACE (II) 3 Pip-inside Diam. ACTUAL CORRECTED GAGE HEAD GAGE HEAD FEET PURCELL 6x8 147 21.2 28.2 0 CUSTOMER 23 33. 39 Size 0

# FIGURE 5443B VERTICAL CLOSE-COUPLES NON-CLOG PUMPS PUMP AND MOTOR DIMENSIONS



* * * *

Colt Ind les Pump & Electric Division

7500

SA. WATER ST #1

Str.   Str.	CUSTOMER		7 (g)				OPERAT	IVE CO	OPERATIVE CONDITIONS		103	JIPMENT	EQUIPMENT	17	DATA			
100   Fig.	7	S.1012	-		2.0	2				о О		e of JPie	Tometer		Sector No	Pigo	KUK	K2R1-062769
Act   Act		5 5		le.	4	Pump			4 S	Ft. Tat. H R. P.		ch.		2 Marie	Impeller		7600	Me Inches
	NEE	ر ا			ξį	9	ı I _	12	lotor ngine	7-8-74. L(AC-D		tion Gag	16.7			Material	Chart	
### PET FEEC, ASCAD PREMIUM MOZILE MOZILE GOTON POUND FOR SERVICE GOTON POUND FOR SERVICE GOTON POUND FOR SERVICE GOTON POUND FOR SERVICE GOTON POUND FOR SERVICE GOTON POUND FOR SERVICE GOTON POUND FOR SERVICE GOTON POUND FOR SERVICE	CORRECTED	SUCTION.	L. HEAD TOT	TAL HEAD, FEET				WATER H. P.		B. H. P. NPUT TO	SPECO	TOROUE	SFF.	N. W	WATTMETER		AMPS.	REMARKS
6. 2 3. 2 2 9 9 17 5 6 1 3 7 5 6 1 3 7 1 1 6 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	GAGE HEAD	FEET	2.07	80.00				TUTPUT		AMA !	- 1				5	100		
75. 4 20 36 41500 1.5 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		20 07	20	10	1900				23.5	w 00	-	5000						Curve Approval
4.6 3.0 40,24300 411 11 810 15.7 111.5 68.4 5.7 141.14  3.5 6.6 448.8 703 12.5 3.4 71, 122.1 1735 48.5  3.7 6.6 72.4 3800 18 4 3 78.4 6.25 680 22.2  3.7 6.8 24 3800 18 4 3 78.4 6.25 680 23.5  3.7 6.8 24 3800 18 4 3 78.4 6.25 680 23.5  3.1 - 34.4 -				11.5.46	1 13	1. 5	1	Ì	0.37	170	1175	0.85						
4.0 3 444.6 1600 2.1 t 71.1 12.1 11.75 41.5 1.5 48.5 3.1 H14.14  3.5 c.6 48.8 700 12.5 24 7 71.1 12.1 11.75 41.5  3.7 c.6 48.8 700 12.5 24 7 70.8 6.80 22.2  4.3 1.5 20.1 1000 2.8 5" 78.4 6.25 6.80 22.2  3.7 0.8 24 3800 184 3 78.4 6.25 6.80 28.2  3.7 0.8 24 3800 184 3 78.4 6.25 6.80 28.2  3.1 24 4 24 4 2.54 8.0 5.1 880 2.35  3.1 24 4 2.54 8.0 5.1	, 0	9	o	-	1	11.14	E		0/8	1.	19:01	68.4						Musey of the
3.5 C.6 48.8 700 12.5 24 711 12.1 1775 41.1  3.7 - 67.7 - 1.8 - 1.8 - 1.8 5.8 5.8 5.8 5.8 5.8 5.8  4.3 1.5 20.1 1100 2.8 5" 789 708 880 22.2  3.7 0.8 24.3800 184 3 784 6.2 88.4  3.3 0.3 24.3800 184 3 78.4 6.2 88.4  3.3 0.3 24.3800 184 3 78.4 6.2 88.4  3.1 - 24.4 500 5.9 " × 270 5.1 880 23.5  3.1 - 24.4 " No. 25.1 880 23.5  3.1 - 24.4 " No. 25.1 880 23.5  Suction Inches Max. Pipe Size Suction Inches Motor Eff. of 1/2 ., 4/  Suction Inches Mox. Pipe Size Suction Inches Motor Eff. of 1/2 ., 4/  Released By Released By	3	4.0	50)		U	2.1	4			14.15	1175	48.2	5,	) H 1	+/1			1
3.,   - 6/7 - 11   11   11   11   12   13   13   13	7	ro to	-0	00	Cul	-			71.1	121	1175	11.17						End Himush
4.3 1.5 20.1 1100 2.8 5" 789 708 580 22.2 3.3 0.3 274 500 184 3 784 6.25 640 28:3 3.1 - 244 - 100 5.9 4 2 784 6.25 640 28:3 3.1 - 244 - 100 5.9 4 2 784 6.25 640 28:3 3.1 - 244 - 100 5.9 4 2 78 6.25 6.25 3.1 - 244 - 100 5.9 6.9 6.9 6.9 6.9 6.9 6.9 6.9 6.9 6.9 6	20	3.	1	1	1	1	2,		1		1175	28.5						
4.3 1.5 20.1 1100 2.8 5" 78.9 208 520 22.2.2 3.7 0.8 24 3 800 184 3 78.4 6.2. 6.0 28.2 3.1 - 34 4														(V)				
3.7 0.8 24 3800 184 3 284 6.25 650 28:4 3.9 0.3 27 4500 5.9 4 270 5.17850 235 3.1 - 24 4 -	m	4	1		100	00	3		6.8%		083	00						
3, 2 0, 3 27, 4500 5, 9 17		7	a	24.3	800	1	m		18.4	-	088	1.80						
3.1 — 244 — 19   19   19   19   19   19   19   19	22	0)	w	27.4	500	100	1,	×	5	5.17	880	23.5						
Hydrostatic Press. Test P. S. I. Pump Driven By 30 H. P. Suction Inches Max. Pipe Size (Discharge Inches Motor Eff. at 1/2 , 4/ Released By Released By		3.1	Ī	44			2			154	220	16.1						
finus Fr. "D".  Suction Inches Max. Pipe Size (Discharge Inches Released By 30 H. P. Released By 3/4 . 4/								T	$\top$									
Suction Inches Max. Pipe Size Suction Inches Direct. Conn. To Pump Motor Eff. at 1/2 , 3/4 , 4/		1		ءِ ا		Hydr	ostotic s. Test				Pump	Driven By			H. P. \$5	(Dynamometer Sefes Motor (Test-Motor No.,		Ke Young
Released By	Inside Dian at Gage		u <sub>1</sub> 7 • B	ches	Маж	Pipe Si	S. S.	tion		nches	Motor		To Pump		-, 4/4	. 5/4	1	.Name Plate Rating
1			-								Roleas	ed By	1		Pay —	Day Log No.	2	98
Liquid to be Pumped HT C Sp. Gr. 1.C	d to be Pun	- Pedi	#	0	- Sp. Gr.	1					Test L	og No.	t t					

Certified Correct by

TOTAL HEAD IN FEET (8, 5, L)

Pump Station:	NANUMETTE AIR STN  NANUMETTE AVE  ONSET MA	Inspection Date: Inspected By:	8-16-13 R WI
GENERAL INFORMAT Year Facility Constructed Facility Description:	Concrete Wlock STRUCT	Year Facility Modified:	ASPNALT roof
PUMP STATION EQUI Number of Pumps:	PMENT 2	Service Area:	
	APFOX 1997  Incersol RAND  U20H-5P  COMPRESSOR PACKAGE ROTAY SON  77CFM / 20HP  SUPPLY STATION ONLY  OMANS KOTTLE PUMPS	Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	MARATHON ELEC.
Pump #2: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:  MANTENGE  NOY T	APROX 2002 QUINCY QMB 10 ACA 32C COMPRESSON PACKAGE  OHL COMPLESSON PACKAGE  Bearing replacement 5+ years per		will wood routine aceneat ets in praint contractor.

Pump #3: Year Installed: Manufacturer: Model and No.: jype: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:	Motor #3: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:
Pump #4: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:	Motor #4: Year Installed: Manufacturer: Model and No.; Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available
General Station Comments: Extración  replaced AS Necessary.  WE SHOUD CONSIDER ADDI  Create a Lot of H  Down.  Previous Pump Tests:	ns Allotary Roof Vent As Gensets

OTHER PIPING AND VALVES

Air relief valves:		Excellent	Good	Fair	Poor
Isolation valves:		Excellent	Good	Fair	Poor
Piping:		Excellent	Good	Fair	Poor
Comments:				-	1
		<del></del>			
ELECTRICAL SYSTE			75	-	
Location Classification:	Dry Location	Comments:		39	<u> </u>
	Wet or Damp Location				
	Wet Corrosive Location		· · · - · · · · · · · · · · · · · · · ·		
					_
Standby Generator:	Mnfr:	Excellent	Good	Fair	Poor
	Model:				
	Year Installed:	Facility Load:			
	Rating:	Ample capacity (Y/N	1):		
	Fuel Type:				
Intonian I inhtina Tanan	Flourescet	Excellent	Cond	Fair	Dane
Interior Lighting Type:	[ ] DV rescect	Excellent	Good	rair	Poor
		· · · · · · · · · · · · · · · · · · ·			
Lighting Level:	2	Excellent	Good	Fair	Poor
	<del></del>	DAOGITOLI	(3000)	1 4441	200.
		·			
Exterior Lighting Type:	Incandescert	Excellent	Good	Fair	Poor
Panel Boards:		Excellent	Good	Fair	(Poor
Motor Control Center:		Excellent	Good	Fair	Poor
Motor Conitor Center;		Excenent	(0000	rair	FOOI
Disconnect Switches:		Excellent	Good	Fair	Poor
		Zaorioa	0000	4 6111	
Lightning Protection:		Excellent	Good	Fair	Poor
		· · · · · · · · · · · · · · · · ·			
Fire Alarm System:		Excellent	Good	Fair	Poor
Consider Contains	A //IA	T (1)	0 1	Б.	D.
Security System:		Excellent	Good	Fair	Роог
					<del></del>
Potential Code Issues:					
		. 4			
Comments:	Panal has been	upstaded.	+ chars	-01	MAJOY
times by	Several CONTRACTORS			lect	
d rawings			e 5777		MOSTLY
Pre forms	W/OVT Problem	(120,120,120,120,120,120,120,120,120,120,			
	7				
· · · · · · · · · · · · · · · · · · ·					
OTHER:		E			

ISTRUMENTATION AND CONTROLS

	1//							
Flow Meters/Transmitters:	N/A			Excellent	Good	Fair	Poor	
Pressure Gauges:				Excellent	Good	) Fair	Poor	
Other:				Excellent	Good	Fair	Poor	
SCADA:	M . 2 2 . M							
	MISSION			Excellent	Good	) Fair	Poor	
Comments:								
MECHANICAL SYSTEMS I Fuel Source:	NSPECTION N/A		Fuel Sto	rage Capacity:				
Heating Type:	LEC HEAT			Excellent	Good	Fair	Poor	
Ventilation Type:	avers + Fans			Excellent	Good	Fair	Poor	
AC System Type:	N/A	·		Excellent	Good	Fair	Poor	
Dehumidification:	MA			Excellent	Good	Fair	Poor	
Louvers:				Excellent	Good	Fair	Poor	
Comments: Heat	NOT Needed	2	P/s	Com	DIESSDA	s Ke	ee	Bud s
CATEGORY A ITEMS (Imme	diate Action)	<u> </u>						85
- P - 500			Estimated \$	Capital Proje	ct Cost			
2.		_	\$					
4.		_	\$ \$					
5.		<del>-</del> -	\$					
CATEGORY B ITEMS (Imple) Item/Recommendation 1.	ment within 5 years) Replacement	TOTAL	\$ Estimated \$ 40	Capital Projec	et Cost			
2. Compressor	Kehab	-	\$					
3. 4. 5.		-	\$ \$					
5.			\$				27	
CATEGORY C ITEMS (Impler Item/Recommendation 1.	nent between 6 and 10 years)	TOTAL	\$					
2.		•						
3. 4.		•						
5.								

Pump Station:	Narrows	Inspection Date:	8-14-13 BMVer
Address:	Merchants WAY	Inspected By:	13 /4 (0)
GENERAL INFORMA Year Facility Constructe Facility Description:	ed: 1970	Year Facility Modified:	2004 + 3 Levels on
PUMP STATION EQU Number of Pumps:	DIPMENT	Service Area:	Yes
Pump #1: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH: Comments:	Cornell 8N7A-VC180B Centrified  CHECKVALVE 10" CLOWKENNE  VEHAD PUNY IMPRILERS +	Motor #1: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	2004 Reliance Elec LOOSEG Elec MOTOR GO 91.5  ABB. V.FO. 2004 Vert 1185
	Mow	MOTORS GOOD	
Pump #2: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	SAME 1	Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	SAMET

Pump #3: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	AS 1+2	Manufacturer:  Model and No.:  Type:  Horsepower:  Efficiency: Inverter duty:  Variable/Constant:  Vertical/Horizontal:  Motor RPM:	Sane AS	1+2
Comments:		Pump curve available:		
				<del></del>
Pumpella: Grinder Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:  Muncher  Munch	KT-Ension in	Motor #4: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available	2012, Co	nthors
General Station Comments: Nec	U 2612	In compression	on 2nd	level
		•		
tor Suge tank and Bub	bler Syrter			
			<del></del>	
Previous Pump Tests:		Level Control - C Roof - 5000- lectrical - 100	5000 - 7000 - 00 - 1500	$ \mathcal{D} $
OTHER PIPING AND VALVES				•
10" Mueller Chat Tw.	for Surse T	THE NEW 2012		
(3) MH++FCO 12 +	(nife VALVES	1972		
(3) Clow Kennedy (C J:\WW1946 Wareham 2012 I-1\CIP docs for guy	" sate VAI	ves ner 2004	-{ Pg. 2 of 4 / Master	Form

56	1	
Air relief valves:	N/A	Excellent Good Fair Poor
Isolation valves:	hetwell sive	Excellent Good Fair Poor
Piping:		Excellent Good Fair Poor
Comments:	New COAT OF PAIN	/t
ELECTRICAL SYSTE	MS INSPECTION	
Location Classification:	Dry Location Wet or Damp Location	Comments:
	Wet Corrosive Location	
Standby Generator:	Mnfr: Oater Pillan, Model: CG, G/D125-6	Excellent Good Fair Poor
	Year Installed: 2008 Rating: 125 KW Fuel Type: Dieset	Facility Load: Ample capacity (Y/N):
Interior Lighting Type:	Flourescent	Excellent Good Fair Poor
Lighting Level:	,	Excellent Good Fair Poor
Exterior Lighting Type:	incardescent	Excellent Good Fair Poor
Panel Boards:		Excellent Good Fair Poor
Motor Control Center:		Excellent Good Fair Poor
Disconnect Switches:		Excellent Good Fair Poor
Lightning Protection:		Excellent Good Fair Poor
Fire Alarm System:	N/A	Excellent Good Fair Poor
Security System:	a/A	Excellent Good Fair Poor
Potential Code Issues:		
Comments:	- 100 H	
OTHER:	ű.	3
VSTRUMENTATION A	AND CONTROLS LANCE had	Some issues w/ Pressure
Switcher use	ed for 14/12 +1=11=	Some 135 ves u pressure ntrol. Debis + moisture Nave caused issu
in Ain Lin.	es to Press Switches, nam 2012 1-1NCIP docs for guyl	
J:\W\W1946 Wareh	nam 2012 I-I\CIP docs for guy\	Pg. 3 of 4 / Master Form

Flow Meters/Transmitters	s: Hour m	eters			Excellent	Good	Fair	Poor	
Pressure Gauges:		<u> </u>			Excellent	Good	Fair	Poor	
Other:					Excellent	Good	Fair	Poor	
SCADA:	100	ISSIDN		<u> </u>	Excellent	Good	) Fair	Poor	
Comments:		7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7				0000		roor	
MECHANICAL SYSTE Fuel Source:	MS INSPECTIO	N/A		Fuel Sto	rage Capacit	y:	51		
Heating Type:	EIEC L	van Hecter	<u>s</u>		Excellent	Good	Fair	Poor	
Ventilation Type:	Consers +	Fans W/Duc	THOIL		Excellent	Good	Fair	Poor	Æ
AC System Type:		V/A			Excellent	Good	Fair	Poor	
Dehumidification:	/	VA	<del></del>		Excellent	Good	Fair	Poor	
Louvers:					Excellent	Good	Fair	Poor	
Comments:									
RECOMMENDATIONS									
CATEGORY A ITEMS (	Immediate Actio	n)							
Item/Recommendation					l Capital Proj	ect Cost			38
1. 2.			_	\$ \$					
3.			_	\$					
<u>4.</u> 5.			_	\$					
J		<del></del>	TOTAL	\$					
CATEGORY B ITEMS (I	implement within	ı 5 years)	IOIAL	Φ					
Item/Recommendation 1.				Estimated	Capital Proj	ect Cost			
2			_	\$ \$					
3.			-	\$					
			<del>-</del>	\$					
J			TOTAL	\$				37	
CATEGORY C ITEMS (I Item/Recommendation 1.	mplement betwe	en 6 and 10 years	i)	\$					
2.			_						
3. 4.			-						
5.			-						

Pump Station:	North BLVD	Inspection Date: Inspected By:	8-16-13 Brille
Address:	North CLVD ONSET MA		
GENERAL INFORMA  Year Facility Constructed Facility Description:	1: 1971 Rick + Concrete Stru	IS CONCRETO VAULT UN	2009 +FIER ROOM OU DRYSPOUND, OCC PSSIBLES ES METHL CAN
PUMP STATION EQUI		Service Area:	Y
Cump #1:  Year Installed:  Manufacturer:  Model and No.:  Type:  JOM efficiency:  Design capacity/TDH:  Cump RPM:  Valve size and type:  Observed flow:  Observed TDH:  Comments:  Sump RPM:  Comments:	Motor #1: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available: s-check By Pump	2009 US MOTOR 98697374-100 EIEC 7.5 9173 CONSTANS VERT 1175	
rump #2: Year Installed: Manufacturer: Model and No.: Yype: MOM efficiency: Design capacity/TDH: ump RPM: Yalve size and type: Poserved flow: Deserved TDH: Comments:	SAME	Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	SAME 1

Pump #3: Year Installed: Manufacturer: Model and No.: ype: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:	Motor #3: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:
Pump #4: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	Motor #4: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available
LAGT ENTRY ATTEMPT found	cont before any one is Albard to enter.  States + Hand railings in very food Compition are unsafe for use of this fine  5 + Pu-ps
Previous Pump Tests:	exterise - 5000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 10000 - 10000 - 10000 - 10000 - 10000 - 10000 - 10000 - 10000 - 10000 - 10000 - 10000 - 10000 - 10000 - 10000 - 10000 - 10000 - 100000 - 10000 - 10000 - 10000 - 10000 - 10000 - 10000 - 10000 - 100000 - 100000 - 100000 - 100000 - 100000 - 100000 - 100000 - 100000 - 100000 - 100000 - 100000 - 100000 - 100000 - 100000 - 1000000 - 100000 - 1000000 - 1000000 - 1000000 - 1000000 - 1000000 - 10000000 - 10000000 - 10000000 - 100000000
OTHER PIPING AND VALVES (3) 8'	GATE VAZVES Fairbanks } PAINTAIL

Air relief valves:	~/A	Excellent	Good	Fair Poor
Isolation valves:	FRozen	Excellent	Good	Fair Poor
Piping:	PAINT AU	Excellent	Good	Fair Poor
Comments:				
ELECTRICAL SYSTEM Location Classification:	MS INSPECTION  Dry Location  Wet or Damp Location  Wet Corrosive Location	Comments:		14
Standby Generator:	Mnfr: DEMCO  Model: 30 SX 90 E	Excellent	Good	Fair Poor
	Year Installed: /57/ Rating:	Facility Load: Ample capacity (Y(N))	1501	US I PUMP ONLY
	Fuel Type: DieseL	, (-10)	10.	
Interior Lighting Type:	Incandercent Housescen	Excellent	Good	Fair Poor
Lighting Level:		Excellent	Good	Fair Poor
Exterior Lighting Type:	1 N Cardescert	Excellent	Good	Fair Poor
Panel Boards:		Excellent	Good	Fair Poor
Motor Control Center:		Excellent	Good	Fair Poor
Disconnect Switches:		Excellent	Good	Fair Poor
Lightning Protection:		Excellent	Good	Fair Poor
Fire Alarm System:	MA	Excellent	Good	Fair Poor
Security System:	~/n	Excellent	Good	Fair Poor
Potential Code Issues:				
Comments:				
Near SHIT LAT equipment al	YER HAVE HAD 755UPS +1	have sepleced us	Beto.	re any others. switcher, Mcontra
OTHER:		<i>a</i>		

STRUMENTATION AND CONTROLS

Flow Meters/Transmitters	10	Excellent	Good	Fair	Poor
Pressure Gauges:		Excellent	Good	Fair	Poor
Other:		Excellent	Good	Fair	Poor
SCADA:	Mission	Excellent	Good	Fair	Poor
Comments:	Ocoen Bubbles tube		6		
should pla.	n to suplace of Multi		pe Denie		along
MECHANICAL SYSTE	MS INSPECTION/A	Fuel Storage Capacity:	4/	1	W
Heating Type:	Flec who Heaten	Excellent	Good	Fair	Foor
Ventilation Type:	Fans + Duct horn	Excellent	Good	Fair	Poor
AC System Type:	w/n	Excellent	Good	Fair	Poor
Dehumidification:	NA	Excellent	Good	Fair	Poor
Louvers:	workins	Excellent	Good	Fair	Poor
Comments:					
ECOMATEND ATTONS					
CATEGORY A ITEMS (I	mmediate Action)				
Item/Recommendation	1 D 1	Estimated Capital Projec  \$ 500 ASNET	t Cost		92
2.	rater Replacement	\$ See ASNER	raposki		
3.		\$			
<u>4.</u> 5.		\$			
	TOTA	AL \$			
CATEGORY B ITEMS (In Item/Recommendation	mplement within 5 years)				
I. Wotwell	interisty should be	Estimated Capital Project	Cost		
2. checked	- See notes.	\$ 5000,			
3. 4. 5.		\$			
5.		\$ \$			
1. Level C 2. 3.	mplement between 6 and 10 years)	AL \$			
5.					

Pump Station: Address:	Oak ST	Inspection Date: Inspected By:	2-17-13 Sim WALLOW
GENERAL INFORMA Year Facility Constructed Facility Description:	t: 2010	Year Facility Modified: ગેમિં Weather tો્	ght control Panel
PUMP STATION EQU. Number of Pumps:  Pump #1: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:	2010  ABS  AFPK 1049.5 M75/4FM  Submersite Rump  6370  44  1750  W Check VAlue	Service Area:  Motor #1: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	2010 ABS AFPK1049, SM75/4F1 Submerible Pump 10  Gentlant VFD Vertical 1750 Pump + Muter Attachal.
Pump #2: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH: Comments:	Same As Above	Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	SAME as Abore

Pump #3:	Motor #3:
Year Installed:	Year Installed:
Manufacturer:	Manufacturer:
Model and No.:	Model and No.:
уре:	Type:
NOM efficiency:	Horsepower:
Design capacity/TDH:	Efficiency:
Pump RPM:	Inverter duty:
Valve size and type:	Variable/Constant:
Observed flow:	Vertical/Horizontal:
Observed TDH:	Motor RPM:
	Pump curve available:
Comments:	
	¥
Pump #4:	Motor #4:
Year Installed:	Year Installed:
Manufacturer:	Manufacturer:
Model and No.:	Model and No.:
Type:	Type:
NOM efficiency:	
	Horsepower:
Design capacity/TDH:	Efficiency:
Pump RPM:	Inverter duty:
Valve size and type:	Variable/Constant:
Observed flow:	Vertical/Horizontal:
Observed TDH:	Motor RPM:
	Pump curve available
Comments:	
General Station Comments: Och side	Station and shape
	<u> </u>
	id Xd
	Paint Soo Dr. G
	POLIN FOU
	5 (1)
	00 11
Previous Pump Tests:	

Air relief valves:	NIA	Excellent	Good	Fair	Poor
Isolation valves:	6" GAP.	Excellent	Good	Fair	Poor
Piping:		Excellent	Good	Fair	Poor
Comments:	· · · · · · · · · · · · · · · · · · ·	<del></del>			ě.
					· · · · · · · · · · · · · · · · · · ·
		<u>::::</u>	ş)		
ELECTRICAL SYSTEM Location Classification:		G			
Location Classification:	Dry Location Wet or Damp Location	Comments:		¥	
	Wet Corrosive Location				
Standby Generator:	Mnfr: Generac	Excellent	Good	Fair	Poor
	Model: 11573580100				
	Year Installed: 2010	Facility Load:			
	Rating: 35 KW	Ample capacity (Y)	₹):		
	Fuel Type: Natural GAS				
Interior Lighting Type:	**	Excellent	Good	Fair	Poor
0 0 7.					
****					
Lighting Level:		Excellent	Good	Fair	Poor
Exterior Lighting Type:	Nove	Excellent	Good	Fair	Poor
Devel Deserted					
Panel Boards:		Excellent	Good	Fair	Poor
Motor Control Center:		Excellent	Good	Fair	Poor
				_	
Discourse Could-be as	-				-
Disconnect Switches:		Excellent	Good	Fair	Poor
Lightning Protection:		Excellent	Good	Fair	Poor
-					
Fire Alema Contains	A)// a				
Fire Alarm System:	N/A	Excellent	Good	Fair	Poor
Security System:	NA	Excellent	Good	Fair	Poor
Potential Cada tancas				·· · · · · ·	
Potential Code Issues:					
Comments:					
		<del> </del>			
OTHER:		- 7			<u> </u>

ISTRUMENTATION AND CONTROLS

Flow Meters/Transmit	ters: Multi SMATT	<del></del>	Excellent	Good	Fair	Poor
Pressure Gauges:	None		Excellent	Good	Fair	Poor
Other:	Multi SMART		Excellent	Good	Fair	Poor
CADA:	Mission Communication		Excellent	Good	Fair	Poor
Comments:				- 21		
MECHANICAL SYST	TEMS INSPECTION	<del></del>	Fuel Storage Capaci	ty:	·····	A ii
Heating Type:			Excellent	Good	Fair	Poor
Ventilation Type:			Excellent	Good	Fair	Poor
AC System Type:	N/A		Excellent	Good	Fair	Poor
Dehumidification:	N/A	<del></del>	Excellent	Good	Fair	Poor
Louvers:		<del></del>	Excellent	Good	Fair	Poor
The wall, US		WAI.	SAW that a Ru	K 145 fg/	len du	UN From
		envices.				
ECOMMENDATION CATEGORY A ITEM	NS S (Immediate Action)					
Item/Recommendation	o (minediate Action)		Estimated Capital Pro	niect Cost		12
1. Acinting Cabin			\$	9001 0031		
2. Painting gener	rto-	_	\$			
4.		_	\$			
5.			\$			
J			\$			
CATEGORY R ITEMS	S (Implement within 5 years)	TOTAL	2			
Item/Recommendation	(triplement within 5 years)		Pedicard I O. de I D.			
1,			Estimated Capital Pro	ject Cost		
2		_	ŷ °			
3		_	P.			
1		_	Ф <b>С</b>			
5		_	S			527
CATEGORY C ITEMS Item/Recommendation 1.	6 (Implement between 6 and 10 years	TOTAL	\$			
2. 3.		_				
4.		_				
F		_				

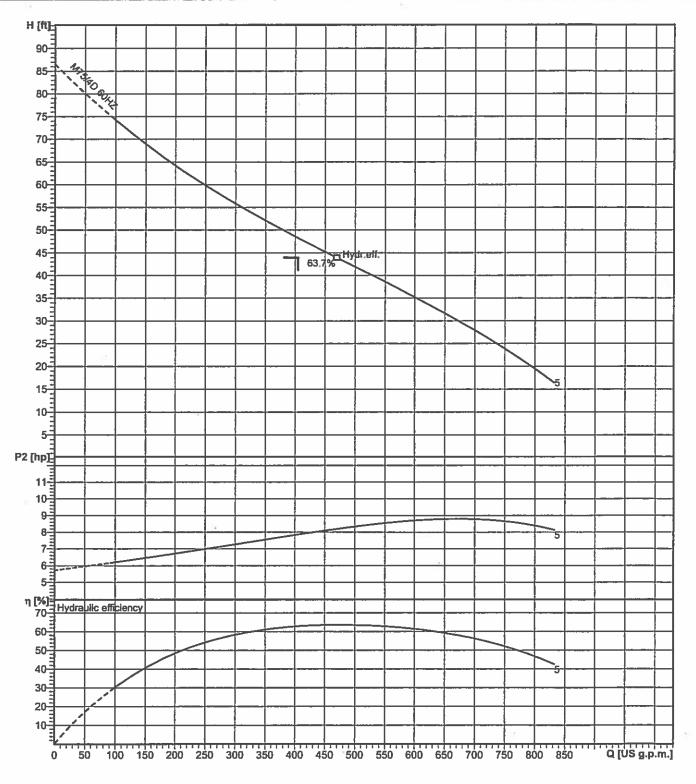


# **Pump performance curves** AFP 1049 60 HZ

Curve number

Reference curve **AFP 1049** 

405GPM @ 44'TDH			Discharge DN100	Frequency 60 Hz
Density	Viscosity	Testnorm	Rated speed	Date
62.43 lb/ft <sup>3</sup>	0.0000169 ft²/s	Hydraulic Institute	1700 rpm	2009-05-07
Flow	Head	Rated power	Hydraulic efficiency	NPSH
420 US g.p.m.	47.3 ft	7.93 hp	63.2 %	4.6 ft





contained in this software.

Impeller

ABS reserves the right to change any data and dimensions without prior notice and can not be held responsible for the use of information

ContraBlock impeller, 1 vane

Solid size 3 1/8"

Revision

2007-04-20

ABSEL PRO 1.7.2 / 2007-02-08

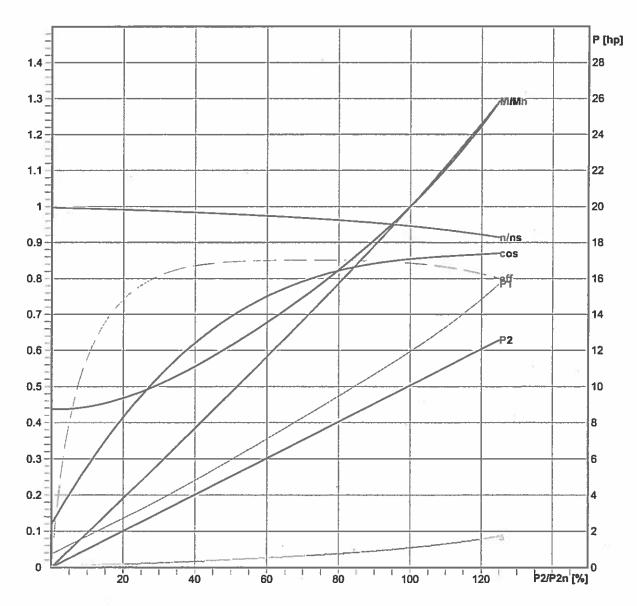


# Motor performance curve M75/4D 60HZ

Frequency 60 Hz

405GPM @ 44'TDH

Rated power 10.1 hp Service factor Nominal speed 1700 rpm Number of poles 230 V Date 2009-05-07



Loading	No load	25 %	50 %	75 %	100 %	125 %
P1 [hp]	0.7305	3.217	5.945	8.871	11.94	15.71
P2 [hp]	0	2.514	5.029	7.543	10.06	12.57
[A]	11.44	12.7	16.04	20.54	26.16	33.8
eff [%]	0	78.15	84.59	85.03	84.26	80.02
cos	0.1195	0.4743	0.6938	0.8087	0.854	0.8701
n [rpm]	1794	1781	1762	1738	1702	1646
M [lbf ft]	0	7.416	14.99	22.8	31.04	40.12
s [%]	0.3318	1.063	2.096	3.46	5.437	8.557
				<b>4</b>		

Tolerance according to VDE 0530 T1 12.84 for rated power

Starting current Starting torque Moment of inertia 141 A 51.6 lbf ft 0.247 lb ft²

PUMP STATION EQUIPMENT Number of Pumps:  Pump #1: Year Installed: Manufacturer: Model and No.:  AFPKIO493 MIO5/4FM Model and No.: Type:  Horsepow Befficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Pump #2: Year Installed: Manufacturer: Model and No.:  Pump #2: Year Installed: Manufacturer: Model and No.:  Motor #2 Year Installed: Manufacturer: Model and No.: Type: Type: Type:	lity Modified:
Year Facility Constructed:  Facility Description:  Weather tight Control  PANEL  PUMP STATION EQUIPMENT  Number of Pumps:  Service A  Pump #1:  Year Installed:  Manufacturer:  Model and No.:  AFPKINA 3 MIOS 4FM  Model and No.:  AFPKINA 3 MIOS 4FM  Model and Type:  NOM efficiency:  Design capacity/TDH:  Pump RPM:  Valve size and type:  Observed flow:  Observed TDH:  Pump #2:  Year Installed:  Motor #2  Year Installed:  Motor #2  Year Installed:  Motor #3  Year Installed:  Motor #4  Year Installed:  Motor #4  Year Installed:  Model and No.:  Model and No.:  Type:  Type:  Type:  Type:  Type:  Model and No.:  Type:  Year Installed:  Model and No.:  Type:  Type:  Type:  Year Installed:  Model and No.:  Type:  Type:  Year Installed:  Model and No.:  Type:  Type:  Type:  Year Installed:  Model and No.:  Type:  Type:  Year Installed:  Model and No.:  Type:  Type:  Type:  Year Installed:  Model and No.:  Type:  Type:  Type:  Year Installed:  Model and No.:  Type:  Type:	
Pump #1: Year Installed:  Manufacturer:  Manufacturer:  Model and No.:  Type:  NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Pump #2: Year Installed: Manufacturer: Manufacturer: Model and No.:  Pump #2: Year Installed: Manufacturer: Model and No.: Type:  Motor #2 Year Installed: Manufacturer: Model and No.: Type:  Motor #2 Year Installed: Manufacturer: Model and No.: Type:  Type:	
Pump #1: Year Installed:  Manufacturer:  Model and No.:  AFPKIO493 MIO5/4FM  Model and Type:  NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Pump #2: Year Installed: Manufacturer: Manufacturer: Model and No.:  Pump #2: Year Installed: Manufacturer: Model and No.: Type:  Motor #2 Year Installed: Manufacturer: Model and No.: Type:  Motor #2 Year Installed: Model and No.: Type:	rea: Outside
Year Installed:  Manufacturer:  Model and No.:  Type:  Year Installed:  Year Installed:  Model and Model and Type:	alled: $April 20/0$ $ABS$ arer: $ABS$ $AFPK1049.3 MINS/4FF$ $AF$
Observed TDH: Motor RF	alled: SAME AS PAGOVE  urer: d No.:  ver: v: luty: Constant: Horizontal: PM:
Comments:	ve available:

Pump #3:	Motor #3:
Year Installed: N/A	Year Installed:
Manufacturer:	Manufacturer:
Model and No.:	Model and No.:
	Type:
/pe:	Horsepower:
NOM efficiency:	Efficiency:
Design capacity/TDH:	Inverter duty:
Pump RPM:	Variable/Constant:
Valve size and type:	Vertical/Horizontal:
Observed flow:	Motor RPM:
Observed TDH:	
	Pump curve available:
Comments:	
Pump #4:	Motor #4:
Year Installed: N/A	Year Installed:
Manufacturer:	Manufacturer:
Model and No.:	Model and No.:
Туре:	Туре:
NOM efficiency:	Horsepower:
	Efficiency:
Design capacity/TDH:	Inverter duty:
Pump RPM:	Variable/Constant:
Valve size and type:	Vertical/Horizontal:
Observed flow:	
Observed TDH:	Motor RPM:
	Pump curve available
omments:	
W	
General Station Comments:	
<u></u>	
Previous Pump Tests:	0.1
A revious 1 minh 1 cars.	Paint 500
	1-

OTHER PIPING AND VALVES

Air relief valves:	<i>D</i> /A	Excellent (	Good	Fair	Poor
Isolation valves:	New 2010 G"GAR	Excellent (	Good	Fair	Poor
"iping:	New 2010	Excellent (	Good	Fair	Poor
Comments:					
· · · · · · · · · · · · · · · · · · ·					
ELECTRICAL SYSTE					0 11
Location Classification:	Dry Location	Comments:	WeAther	+194+	- Control
	Wet or Damp Location Wet Corrosive Location	Panel	<u></u>		
	Wet Cortosive Location				
Standby Generator:	Mnfr: Generac	Excellent	Good	Fair	Poor
•	Model: 11.575480100				
	Year Installed: 2010	Facility Load:			
	Rating: 35 KW	Ample capacity (Y/N):			
	Fuel Type: Alatural GAS				
Interior Lighting Type:	upather tight lighting	Excellent	Good	Fair	Poor
Lighting Level:	1	Excellent	Good	Fair	Poor
Digiting Dotel.		Davonout			
				7	
Exterior Lighting Type:	outside us lights	Excellent	Good	Fair (	Poor
Panel Boards:	New JOID WISH	Excellent (	Good	Fair	Poor
Jotor Control Center:	2010	Excellent (	Good	Fair	Poor
motor Confidencement.	nem goin	Exconcili		1 411	1001
					_
Disconnect Switches:		-Excellent (	Good	Fair	Poor
Lightning Protection:		Excellent (	Good	Fair	Poor
Fire Alarm System:	N/A	Excellent C	Good	Fair (	Poor
rite Alatin System:	10 / A	Excellent	Jood	ran (	1001
		<del></del>			
Security System:	NIA	Excellent C	Good	Fair (	Poor )
Potential Code Issues:					
Comments:					
		<del></del>			
				-	
OTHER:		- 2			
		· · · · · · · · · · · · · · · · · · ·			

Flow Meters/Transmit	ters:		Excellent	Good	Fair	Poor
Pressure Gauges:			Excellent	Good	Fair	Poor
Other:			Excellent	Good	Fair	Poor
CADA:			Excellent	Good	Fair	Poor
Comments:				(3)		
MECHANICAL SYS Fuei Source:	TEMS INSPECTION  NOTURAL GAS FOR GE	erator	Fuel Storage Capacity:	2/1	A	
Heating Type:	Small Heater in what I	Pane 1	Excellent	Good	Fair	Poor
Ventilation Type:	N/A		Excellent	Good	Fair	Poor
AC System Type:			Excellent	Good	Fair	Poor
Dehumidification:	NA		Excellent	Good	Fair	Poor
Louvers:			Excellent	Good	Fair	Poor
Comments:						
Item/Recommendation  1.	IS (Immediate Action)	TOTAL	Estimated Capital Project \$ \$ \$ \$ \$ \$ \$	t Cost		š.
tem/Recommendation	IS (Implement within 5 years)	-	Estimated Capital Project \$ \$ \$ \$	: Cost		(Sp)
CATEGORY C ITEM tem/Recommendation	IS (Implement between 6 and 10 years)	TOTAL )	\$			
3		- -				

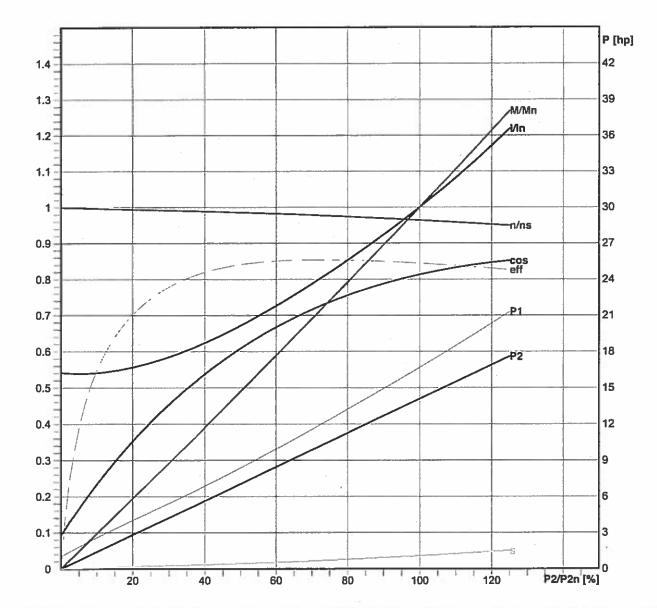


# Motor performance curve M105/4D 60HZ

Frequency 60 Hz

330GPM @ 69'TDH





Loading	No load	25 %	50 %	75 %	100 %	125 %
P1 [hp]	1.023	4.719	8.373	12.37	16.67	21.3
P2 [hp]	0	3.52	7.04	10.56	14.08	17.6
I [A]	23	24.13	28.48	34.77	42.44	51.75
eff [%]	0	74.6	84.09	85.36	84.45	82.62
cos	0.09204	0.4048	0.6084	0.7366	0.8132	0.852
n [rpm]	1799	1786	1774	1757	1735	1709
M [lbf ft]	0	10.35	20.85	31.57	42.63	54.09
s [%]	0.05666	0.7723	1.455	2.378	3.617	5.054

Tolerance according to VDE 0530 T1 12.84 for rated power

Starting torque Moment of inertia Starting current 243 A 95.9 lbf ft

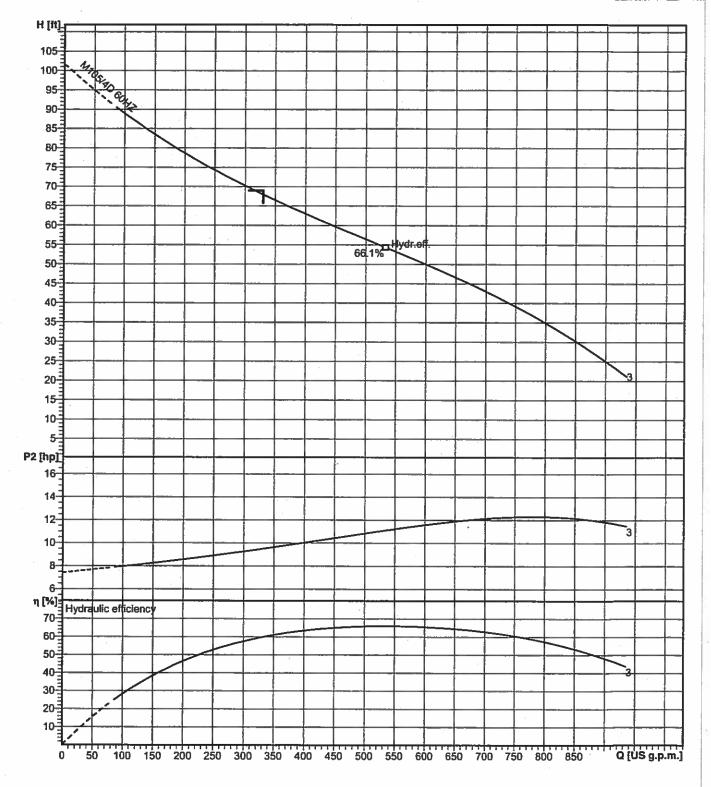


# Pump performance curves AFP 1049 60 HZ

Curve number

Reference curve AFP 1049

330GPM @ 69'TDH			Discharge DN100	Frequency 60 Hz
Density 62.43 lb/ft³	Viscosity 0.0000169 ft²/s	Testnorm Hydraulic Institute	Rated speed 1735 rpm	Date 2009-05-08
Flow 328 US g.p.m.	Head 68.1 ft	Rated power 9.46 hp	Hydraulic efficiency 59.6 %	NPSH 3.9 ft



Impeller size 9.33 inch

N° of vanes

Impeller

ContraBlock impeller, 1 vane

Solid size 3 1/8"

2007-04-20

ABS reserves the right to change any data and dimensions without prior notice and can not be held responsible for the use of information contained in this software.

ABSEL PRO 1.7.2 / 2007-02-08

Pump Station:	Peter Cooper	Inspection Date: Inspected By:	8-16-13 2 WL
Address: P. Cooper Drive WAN ETHAM			
GENERAL INFORMA Year Facility Constructed	1010-02	Year Facility Modified:	2012
Facility Description:	Submersible pumps:	in METAL Can . F	er standing Electrical
PUMP STATION EQU	IPMENT	Service Area:	W
Number of Pumps:		Scivice Alea.	
Submersible Pump #1:	2012	Motor #1:	0
Year Installed:	2012	Year Installed:	2012
Manufacturer:	ABS	Manufacturer:	
Model and No.:	Piranha S18/2W	Model and No.:	
Туре:	Subnersible	Туре:	
NOM efficiency:		Horsepower:	2.4 Hp
Design capacity/TDH:	MAX 421-00 /105' TOH	Efficiency:	
Pump RPM:	3420	Inverter duty:	4
Valve size and type:		Variable/Constant:	CON STAT
Observed flow:		Vertical/Horizontal:	
Observed TDH:	32.8'	Motor RPM:	
		Pump curve available:	
comments: Low	trological purps + Flority	s upgraded 201	2
	by Williamson FIEC	PUMPS INCL	voe MOTORS
		POMPS   NCC	304 7-C3 7B/C3
Pump #2:	<b>A</b>	Motor #2:	<b>A</b>
Year Installed:	SAME 1	Year Installed:	SAME
Manufacturer:	271	Manufacturer:	
Model and No.:		Model and No.:	
Гуре:		Туре:	
NOM efficiency:	0.	Horsepower:	
Design capacity/TDH:		Efficiency:	
Pump RPM:	7:-	Inverter duty:	
Valve size and type:		Variable/Constant:	
Observed flow:		Vertical/Horizontal:	
Observed TDH:		Motor RPM:	
		Dumm aumia augilahlar	
		Pump curve available:	
Comments:	Single ph 230V	Pump curve available:	

Pump #3: Year Installed: Manufacturer: Model and No.:  ype: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:	Motor #3: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:
Pump #4: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	Motor #4: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available
General Station Comments: Medanical  F/m could use Atta  Remove old Genset A	notor + Box.
Previous Pump Tests:	Phot Force MARN IN VAIN Chambels
OTHER PIPING AND VALVES 2" DISCHARGE	Piping in Concrete VAULT
10/02	hould be painted POOR DESISN unasie to Cemare VALVES W/O Draining F/m

Air relief valves:			Excellent	Good	Fair	Poor
Isolation valves:			Excellent	Good	Fair	Poor
Piping:			Excellent	Good	Fair	Poor
Somments:		či.				1
<del></del>	They Show son	e rost	From DANP	LDCO	TION	SHOULD BY
	Painted					
ELECTRICAL SYSTEM Location Classification:	MS INSPECTION  Dry Location  Wet or Damp Location	B	Comments:	in	NE	MA BOXES
	Wet Corrosive Location		· · · · · · · · · · · · · · · · · · ·			<del></del> -
Standby Generator:	Mnfr: SEE		Excellent	Good	Fair	Poor
also used	Year Installed:		Facility Load:			
<b>a</b>	Rating: Fuel Type:		Ample capacity (Y/N):			
Interior Lighting Type:	N/A		Excellent	Good	Fair	Poor
Lighting Level:	N/A	107	Excellent	Good	Fair	Poor
Exterior Lighting Type:	N/A		Excellent	Good	Fair	Poor
Panel Boards:			Excellent	Good	Fair	Poor
viotor Control Center:			Excellent	Good	Fair	Poor
Disconnect Switches:			Excellent	Good	Fair	Роог
Lightning Protection:			Excellent	Good	Fair	Poor
Fire Aların System:	N/A		Excellent	Good	Fair	Poor
Security System:	MA		Excellent	Good	Fair	Poor
Potential Code Issues:						
Comments:	to skilled 2002	Switc	4 Dr	Ben Ar	316	DOTABLE
OTHER:						

Flow Meters/Transmitters:	N/A		Excellent	Good	Fair	Poor	
Pressure Gauges:	MA	<u> </u>	Excellent	Good	Fair	Poor	
Other:	N/A	_	Excellent	Good	Fair	Poor	
CADA:	Mission	_	Excellent	Good	Fair	Poor	
Comments:							
MECHANICAL SYSTEMS INS	PECTION NA	_	Fuel Storage Capacity	•		<u>(()</u>	
Heating Type:		_	Excellent	Good	Fair	Poor	
Ventilation Type:		_	Excellent	Good	Fair	Poor	
AC System Type:		_	Excellent	Good	Fair	Poor	
Dehumidification:		<del>-</del>	Excellent	Good	Fair	Poor	
Louvers:			Excellent	Good	Fair	Poor	
Comments:		-					
ECOMMENDATIONS							
CATEGORY A ITEMS (Immedi Item/Recommendation	ate Action)		Estimated Capital Proje	ect Cost			31
<u>1.</u> <u>2.</u>			\$ \$				
3,			\$				
<u>4.</u> <u>5.</u>			\$				
CATEGORY B ITEMS (Implementation 1. F/M VAZ	ent within 5 years)	TAL	\$ Estimated Capital Proje \$	ect Cost			
3. 4. 5.			s \$				
5.		T 4 T	\$			8.	
CATEGORY C ITEMS (Implementation 1.	nt between 6 and 10 years)	TAL	\$				
2. 3. 4.							
5.							

Pump Station: Address:	Pinehurst	Inspection Date: Inspected By:	8-16-2013 Jim WALDON
GENERAL INFORMA Year Facility Constructe Facility Description:	16.70.56	Year Facility Modified:	2011
UMP STATION EQU	DIPMENT 2	Service Area:	No
Observed flow: Observed TDH:	JOII  J. TT FIY G.T  OI 0860 76503B  Centrifugal Propo  90.2  II60  OF B" Dischage side Knife  54"  Wumber F7-1/3	Motor #1: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	U.S. Motor/201 U.S. Motor 9869 9295-100 the AVE 15 90-2 88.5 VFD Vertical 1175
Pump #2: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Dbserved flow: Dbserved TDH:	SAME A Above	Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	SAME HE Above
Clear Back	. Fence Cive		

Pump #3:	Motor #3:
Year Installed:	Year Installed:
Manufacturer:	Manufacturer:
fodel and No.:	Model and No.:
ype:	Type:
NOM efficiency:	Horsepower:
Design approxity/TDW:	Efficiency:
D DD14.	Inverter duty:
** 1! 4 <del>4</del>	Variable/Constant:
Observed flow:	Vertical/Horizontal:
Observed TDH:	Motor RPM:
	Pump curve available:
Comments:	
Comments.	
	10 0
Duma #d.	Motor #4:
Pump #4: Year Installed:	Year Installed:
Manufacturer:	Manufacturer:
Model and No.:	Model and No.:
T	Tyne:
Type:	Horsepower:
NOM efficiency:	Efficiency:
Design capacity/TDH:	Inverter duty:
Pump RPM:	XI 1.1.1 (Company)
Valve size and type:	Variabl/Haringutals
Observed flow:	Marin DDM.
Observed TDH:	
	Pump curve available
Comments:	
	- 37
General Station Comments: Gutter Dou	w sports missing
Needs to be reshingled a	and New trim
Asphat shingles OKAY - May	WANTER to replace soon - Lank word
Lights outside should be fixe	od or Redage
New Dors or At least Repa	int
<u> </u>	
	7 5 5000 -
Previous Pump Tests:	Kaon 3
	trim > som
	wood trim 5000 - 70000
	Wood stor 3 200
	Roof 5000  Wood trim 5000  Wood shinger 5000  Generator real 10000
	0 /00
OTHER PIPING AND VALVES	the state of the s

Air relief valves:		Excellent	Good	Fair —	Poor
Isolation valves:	Isolation influent VALLE DOES NOT WOCK	Excellent	Good	Fair	Poor
iping:	Steffen was rehabled.	Excellent	Good	Fair	Poor
Comments: 416 Chec					T.
ELECTRICAL SYSTEM	MS INSPECTION		ě.		
Location Classification:	Dry Location Wet or Damp Location Wet Corrosive Location	Comments:		8	
	wet Corrosive Location	<del></del>			
Standby Generator:	Mnfr: Superlor Model: (00 R13)	Excellent  C ( )  Facility Load:	Good	Fair	Poor
	Year Installed: 1978 Rating: (a) kw 1800 RPM	Ample capacity (Y/N	n: Yes		
	Fuel Type: Diese				
Interior Lighting Type:	Flourexent	Excellent	Good	Fair	Poor
Lighting Level:		Excellent	Good	Fair	Poor
Exterior Lighting Type:	needs leplacing	Excellent	Good	Fair	Poor
Panel Boards:	Sylvania	Excellent	Good	Fair	Poor
Motor Control Center:		Excellent	Good	Fair	Poor
Disconnect Switches:		Excellent	Good	Fair	Poor
Lightning Protection:		Excellent	Good	Fair	Poor
Fire Alarm System:	None	Excellent	Good	Fair	Poor
Security System:	NONE	Excellent	Good	Fair	Poor
Potential Code Issues:					
Comments: 6-events	(-010)	<del> </del>			
Communia, O Corrello,					
<del></del>					
OTHER:		- 37			

Flow Meters/Transmitters:			Excellent	Good	rair	Poor
Pressure Gauges:			Excellent	Good	Fair	Poor
Other:	Missious MT2PC		Excellent (	Good	Fair	Poor
SCADA:			Excellent	Good	Fair	Poor
Comments:				5.0 (4)		
MECHANICAL SYSTE Fuel Source:	MS INSPECTION	Fuel Sto	orage Capacity:			45
Heating Type:	[lectric		Excellent	Good	Fair	Poor
Ventilation Type:			Excellent	Good	Fair	Poor
AC System Type:	Nove		Excellent	Good	Fair	Poor
Dehumidification:	Installed 8-12		Excellent C	Good	Fair	Poor
Louvers:			Excellent	Good	Fair	Poor
	want to Replace thermostals	For	Heaters.	Work	hot	vez old.
ECOMMENDATIONS CATEGORY A ITEMS (						
Item/Recommendation  1. Shiws/ec (Side)	Thin Boards	\$ \$	ed Capital Proje	ct Cost		
Gutter Down S		\$ \$ \$				
	TOTAL Implement within 5 years)		10 % IB %			
tem/Recommendation		\$ \$	ed Capital Projec	er Cost		
,		\$				
		\$				070
tem/Recommendation	TOTAL Implement between 6 and 10 years)	, \$				
<u>.                                    </u>						
5.	<del></del>					

Pump Station:	Riverside	Inspection Date: Inspected By:	9-10-11
Address:	DIVERSIDE DA	A Commence of the Commence of	- S-WA
GENERAL INFORMA. Year Facility Constructed		Year Facility Modified:	
Facility Description:	Rendy Prefib Wetu	ell - Metal encuruses	1) for Genet, 1) for
PUMP STATION EQUI	PMENT 2	Service Area:	NO State
D #1.		Motor #1:	
Pomp #1: Year Installed:	P96	Year Installed:	
r ear msianeu: Manufacturer:	FLYST	Manufacturer:	
Model and No.:	CP 3102 MT	Model and No.:	
Vroder and ING Type:	Subnerible	Туре:	2 700 - 3700
NOM efficiency:	20 17(812 0) 6	Horsepower:	3
Design capacity/TDH:		Efficiency:	
oesign capacity 1011.  Oump RPM:		Inverter duty:	7
Valve size and type:	(o" VALVE	Variable/Constant:	
Observed flow:	0 71.1550	Vertical/Horizontal:	10
Observed TDH:		Motor RPM:	
)		Pump curve available:	
Comments: 5	DAMP GREAKER		
Pump #2:	1996 SAME	Motor #2:	
Year Installed:	196 SAME	Year Installed: Manufacturer:	
Aanufacturer:		Manufacturer: Model and No.:	
Iodel and No.:			
ype:		Type:	
OM efficiency:	• 50	Horsepower: Efficiency:	
Design capacity/TDH:		Inverter duty:	
ump RPM:		Variable/Constant:	
Valve size and type:		Variable/Constant	
Observed flow:		Motor RPM:	
Observed TDH:		Pump curve available:	
`		t mich out to atminute.	
Comments:	Breaker		
30 119	DI TUTEL		
	3		

Pump #3:	Motor #3:
Year Installed:	Year Installed:
Manufacturer:	Manufacturer:
Model and No.:	Model and No.:
ype:	Туре:
NOM efficiency:	Horsepower:
Design capacity/TDH:	Efficiency:
Pump RPM:	Inverter duty:
Valve size and type:	Variable/Constant:
Observed flow:	Vertical/Horizontal:
Observed TDH:	Motor RPM:
	Pump curve available:
Comments:	
	RII
Pump #4:	Motor #4:
Year Installed:	Year Installed:
Manufacturer:	Manufacturer:
Model and No.:	Model and No.:
Type:	Type:
NOM efficiency:	Horsepower:
Design capacity/TDH:	Efficiency:
Pump RPM:	Inverter duty:
Valve size and type:	Variable/Constant:
Observed flow:	Vertical/Horizontal:
Observed TDH:	Motor RPM:
	Pump curve available
Comments:	•
	N .
General Station Comments: Brush could	he to I for
	be trimmed from around
enclosures, Clean electore	a Near/AT MASTER SWITCH
	Replace Cabint 500-
<del></del>	Eltical Space
	(1000)
	(10000)
	لي، تر
Previous Pump Tests:	0 000
4. (0) 6 . 11 4	ACALINE OPS 121 CV
Orisinal pump test report	Available eP/s 13, spourd
	27 TDH

OTHER PIPING AND VALVES

Air relief valves:	NA	Excellent	Good	Fair	Poor
Isolation valves:	Con Lube	Excellent	Good	Fair	Poor
Piping:	t excercise	Excellent	Good	Fair	Poor
Somments:	(o" PIPIN + VAZVES in	Mahole	-Luße	+ (	xcercise
	PURCY 14				
ELECTRICAL SYSTEI Location Classification:		Comments:		(60)	
Standby Generator:	Mnfr: Generac Model: 96A07032 -5	Excellent	Good	Fair	Poor
	Year Installed: 1996 Rating: Fuel Type: NAT GAS	Facility Load: Ample capacity O/N	):		
Interior Lighting Type:	I he An Descent	Excellent	Good	Fair	Poor
Lighting Level:		Excellent	Good	Fair	Poor
Exterior Lighting Type:	- N/A	Excellent	Good	Fair	Poor
Panel Boards:		Excellent	Good	Fair	Poor
dotor Control Center		Excellent	Good	Fair	Poor
Disconnect Switches:		Excellent	Good	Fair	Poor
Lightning Protection:		Excellent	Good	Fair	Poor
Fire Alarm System:		Excellent	Good	Fair	Poor
Security System:	900 W.	Excellent	Good	Fair	Poor
Potential Code Issues:					
Comments:	Ly AFTENDRIGHED instalation	Breaker hour	d Break	er up	dited
OTHER:		33			

Flow Meters/Transmitters:	Hourmeters		Excellent	Good	Fair	Poor
Pressure Gauges:	Ma		Excellent	Good	Fair	Poor
Other:	n-/1				- 25	1 001
Other:	71		Excellent	Good	Fair	Poor
CADA:	MISSION		Excellent	Øood)	Fair	Poor
Comments:						
MECHANICAL SYSTEMS Fuel Source:	INSPECTION VA		Fuel Storage Capacity:			54 35. See
Heating Type:	Elec BARRIER Heaters		Excellent	Good	Fair	Poor
Ventilation Type:	N/A		Excellent	Good	Fair	Poor
AC System Type:	n/r		Excellent	Good	Fair	Poor
Dehumidification:	MA		Excellent	Good	Fair	Poor
Louvers:	MOTOR in Genan	de	Excellent	Good	Fair	Poor
Comments:	COUNTY DATE					
ECOMMENDATIONS	Ш					
CATEGORY A ITEMS (Imm Item/Recommendation	ediate Action)					Š.
1. Upgrabe	+ 50 Ap Brancer		Estimated Capital Projec	t Cost		
2.	FJOHY GIAGO	-	\$ 10W,			
3.		-	\$			
5.		_	\$			
i.		-	\$			
I AMB CORTAIN THE STATE OF		TOTAL	\$			
CATEGORY BITEMS (Imple tent/Recommendation	ement within 5 years)					
· · · · · · · · · · · · · · · · · · ·			Estimated Capital Project	Cost		
			\$			
			\$			
			2			
			2			
1		TOTAL	\$			
CATEGORY C ITEMS (Imple ten/Recommendation	ment between 6 and 10 years)	TOTAL	\$			
<u>.                                    </u>			X			
•						

<u></u>
15W130
13 10 1 JC

Pump #3:	Motor #3:
Year Installed:	Year Installed:
Manufacturer:	Manufacturer:
fodel and No.:	Model and No.:
ype:	Type:
NOM efficiency:	Horsepower:
Design capacity/TDH:	Efficiency:
	Inverter duty:
Pump RPM:	Variable/Constant:
Valve size and type:	Vertical/Horizontal:
Observed flow:	Motor RPM:
Observed TDH:	
	Pump curve available:
Comments:	
- "	Motor #4:
Pump #4:	
Year Installed:	Year Installed:
Manufacturer:	Manufacturer:
Model and No.:	Model and No.:
Туре:	
NOM efficiency:	Horsepower:
Design capacity/TDH:	Efficiency:
Pump RPM:	Inverter duty:
Valve size and type:	Variable/Constant:
Observed flow:	Vertical/Horizontal:
Observed TDH:	Motor RPM:
Observed TDII.	Pump curve available
Commente	
Comments:	
710	
General Station Comments: Roof SUST [	eplaced in 2013
needs exterior Lights, word shin	V CONTRACTOR OF THE CONTRACTOR
Peplace DONE OF REPOINT	
	23
Mercaid Level /Pump Controller	INStalled 2013
THE COLOR SECULIARIES CONTINUE	CNOD = (0 0
Previous Pump Tests:	trine 7 3000
2 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	- Courseles (100)
	5000 5000 1000
	John Jak & D
	2-th tation light
	64.
	Usood trim 7 5000 - 5000 - 5000 - 5000 - 5000 - 5000 - 5000 - 5000 - 5000 - 5000 - 5000 - 5000 - 5000 - 5000 - 5000 - 5000 - 500000 - 50000 - 50000 - 50000 - 50000 - 50000 - 50000 - 50000 - 50000 -
OTHER PIPING AND VALVES	General 3
	1 110000
	lactrical l
	100

Air relief valves:	W <sub>k</sub>	Excellent	Good	Fair	Poor
Isolation valves:	Repaint- 10 " GARE	Excellent	Good	Fair	Poor
iping:	Reprinted where motors	Excellent	Good	Fair	Poor
Comments: 4r6 CV	neck vialue				
ELECTRICAL SYSTEM	AS INSPECTION	· · · · · · · · · · · · · · · · · · ·			
Location Classification:	Dry Location Wet or Damp Location	Comments:		***	
	Wet Corrosive Location				<u> </u>
Standby Generator:	Mnfr: Superior 1978  Model: 458/31	Excellent	Good (	Fair	Poor
	Year Installed: 1978	Facility Load: Ample capacity (Y/N	D.		
	Rating: 45 KW Fuel Type: Diese	Ample capacity (17N	1):		
Interior Lighting Type:	Flourescont	Excellent	Good	Fair	Poor
Lighting Level:	i,	Excellent (	Good	Fair	Poor
Exterior Lighting Type:	NOODS Replaying	Excellent	Good	Fair	Poor
Panel Boards:	Sylvania	Excellent	Good	Fair	Poor
Motor Control Center:		Excellent	Good	Fair	Poor
Disconnect Switches:	н	Excellent	Good	) Fair	Poor
Lightning Protection:		Excellent (	Good	Fair	Poor
Fire Alarm System:	N/A	Excellent	Good	Fair	Poor
Security System:	NA	Excellent	Good	Fair	Poor
Potential Code Issues:					
Comments: General	or Needs Redacement - OIT	<u> </u>			
*	· · · · · · · · · · · · · · · · · · ·				14
OTHER:					

Flow Meters/Transmit	tters:	Excellent	Good	Fair	Poor
Pressure Gauges:		Excellent	Good	Fair	Poor
Other:	missions Mercoid Pump Controller	Excellent	Good	Fair	Poor
SCADA:	mercelo romp consulter	Excellent	Good	Fair	Poor
Comments:					
MECHANICAL SYS	STEMS INSPECTION		<del> </del>		
Fuei Source:		Fuel Storage Capacity:			(2)
Heating Type:	elatric	Excellent	Good	Fair	Poor
Ventilation Type:		Excellent	Good	Fair	Poor
AC System Type:	None	Excellent	Good	Fair	Poor
Dehumidification:		Excellent	Good	) Fair	Poor
Louvers:		Excellent	Good	> Fair	Poor
Comments: ONLy	I heuter works in Building	5			
Influent WA	lue to wetwell Due No	of work		· · ·	
ECOMMENDATIO	ONS				
	MS (Immediate Action)				100
Item/Recommendation		Estimated Capital Project	t Cost		
1. Replace AP	nerotes	\$			
2. Re Stinuale (	sides)	\$			
3. IKIM.		\$			
4. CXTEND GUHA	rs to Inound Possible rainbo	way.			
5. Replace Con	tral PANEL DUE to age TOTA	J L \$			
CATEGORY B ITEN	AS (Implement within 5 years)	L 4			
Item/Recommendation		Estimated Capital Project	t Cost		
1.		\$			
2		S			
3.		\$			
4.		\$			
5.		\$			1
CATEGORY C ITEN Item/Recommendation	AS (Implement between 6 and 10 years)	L \$			
1.					
2					
3.	<del></del>				
4.	<del></del>				
5.					

# **Parts Quotation**

ABBA						
	ABBA PUMP PARTS &	SERVICE		Quote Number:	W-ACNA-19	999-1
	www.abbaparts.com			ABBA Job#		
			Custome	er Order#		
ustomer:	WAREHAM WATER PO	LLUTION CONTROL	FACILITY	Order Date:		
ontact:	Brian		<del></del>	Phone:	-	
Mail:		vareham.ma.us		Fax:	-	
eference:						
316161166.		Convinc AD	BA Performance <sup>TM</sup>	+ Parts to Fit:		
		Сепине АБ		791-29935-1-1		
ake:	Allis Chalmers		Serial #/Year:	F7-M1		
ize/Model:	4x4x10SC NSWV 300		Power Frame #:			
apacity:	300	GPM	Rotation:	Whe	n Viewed From Driver End	
ead:	26	Feet	Wear Rings	Option***		
peed:	1150	RPM	Stuffing Box	Packed***		
np Dia.:	(8.63)	Inches	Motor: HP:	5 Fran	ne:	
		*** Pleaso	e Confirm When Pla	cing Order		
				1		New Ports
				0511.4	i	Net Pric
YTC	Part #/Name	<u>Material</u>	ABBA#	OEM#		(EdGii)
cou mai TO	ising, bearings, lip seals, defi pling, and miscellaneous ite terials and construction. Wo FAL NET PRICE (EACH REPLA FION FOR WEAR RINGS AND	ms to complete the uld be a drop in rep CEMENT PUMP)  MECHANICAL SEAL	replacement pump. Al placement. Does not inc	Il components in standa clude 5 hp motor.	ra	\$9,022.0
cou mai TOT OP 1 1 1	pling, and miscellaneous ite terials and construction. Wo FAL NET PRICE (EACH REPLA FION FOR WEAR RINGS AND Wear ring (impeller) Wear ring (suction cover) Mechanical seal (double)	ms to complete the uld be a drop in rep CEMENT PUMP)  MECHANICAL SEAL 410 St. St	replacement pump. Al lacement. Does not inc 	ll components in standa clude 5 hp motor.	ra	\$9,022.0 # 5092
cou mai TOT OP 1 1 1	pling, and miscellaneous iterials and construction. Wo FAL NET PRICE (EACH REPLATION FOR WEAR RINGS AND Wear ring (impeller) Wear ring (suction cover) Mechanical seal (double)	ms to complete the uld be a drop in rep CEMENT PUMP)  MECHANICAL SEAL 410 St. St	replacement pump. Al placement. Does not inc (NET ADDER):	components in standa clude 5 hp motor. 	P/0°	
cou mai TOT 1 1 1 Net Freight: Faxes:	pling, and miscellaneous iterials and construction. Wo FAL NET PRICE (EACH REPLATION FOR WEAR RINGS AND Wear ring (impeller) Wear ring (suction cover) Mechanical seal (double)	ms to complete the uld be a drop in rep CEMENT PUMP)  MECHANICAL SEAL 410 St. St	Shipment: Terms: FOB:	8 to 10 weeks  Per APS-Scheduk Burlington, Ont., C	P/o	\$9,022.0 # 5092

Allis Chalmers & Fairbanks Morse

Aliis Chairners & Fairbanks Morse

American Weltwork • Aurora • Chicago • Clow/Yeomans • Cornell • Crane Deming • De Laval • Gorman Rupp • Goulds • Marlow • Mather & Pratt • Morris
• Paco • Patterson • Smart Turner • Smith & Loveless • Wemco • Worthington (Flowserve IDP)

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\$ W/S.S. wear silver \$ 9,84100 delivered

#### Parts Quotation

Customer: Contact:		Miller		Order Date:Phone:	-
E-Mail:		wareham.ma.us		Fax:	•
Reference:		Genuine ABB	A Performance <sup>M</sup>	+ Parts to Fit:	
Make:	Allis Chalmers		Serial #/Year:	791-29935-1-1	
Size/Mode			Power Frame #:	F7-M1	
Capacity:	300	GPM	Rotation:	When View	wed From Driver End
Head:	26	Feet	Wear Rings	+	
Speed:	1150 (8.63)	RPM	Stuffing Box Motor: HP:	5 Frame:	
Imp Dia.:	(8.63)	Inches			
		*** Please	Confirm When Plac	ang Orger	
					Net Price
QTY 2 5 h	Part #/Name  IP ELECTRIC MOTOR 11	<b>Material</b> 50 RPM, 230/460V/3	ABBA # 8/60	OEM#	(Each) \$800.00
			•		(Each)
			•		(Each) \$800.00
			•		(Each) \$800.00
			•		(Each) \$800.00

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Anis Chamers & Parroanks Mortes

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Pump Station:	SALTHORKS RO BUZZAROS BAY AN	Inspection Date: Inspected By:	71-3-13
GENERAL INFORMATION Year Facility Constructer Facility Description:	:d:	Year Facility Modified:  BRICK Phalf Roof, Gedan	
PUMP STATION EQUINUMENT OF Pumps:	DIPMENT 2	Service Area:	N
Pump #1: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	1990 FLYST CP 3127 9/n 180,9020 694 Submersible  Impeller code 437	Motor #1: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	Const Vert Vert Should be rebuilt laced
Pump #2: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	1990 FLYST 3127 5/~ 180.9020693 Submersible	Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	
Comments: Rehi		19/03 @3403.87	hours, now cable wear

Pump #3: Year Installed: Manufacturer: Model and No.:  ype: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:	Motor #3: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:
Pump #4: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow:	Motor #4: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal:
Observed TDH:	Motor RPM:  Pump curve available
General Station Comments: DODRS + TRIM  Rescrooks in Centing Sheit is tiles	MED PRINT. History of Missins
Previous Pump Tests:	Roof - 5000 www. ventilation 2000 Ass. wood suingles 2000 Level Sensor 5000
OTHER PIPING AND VALVES	Level sensor soon 1900
	generator_ 50000 que
J:\W\W1946 Wareham 2012 I-I\CIP docs for guy\	Pg. For Master Form

Air relief valves:		Excellent	Good	Fair	Poor
Isolation valves:	FROZEN - Leed to be freed up	Excellent	Good	Fair	Poor
Piping:	411	Excellent	Good	Fair	Poor
omments:		<i>(</i> )			1,
in M	lan hole (2) 4" Check VA	wes + (2)	4" Sate	VALUE	S TO ISCLAT
F/m	MAINTOLE Should Be pumped out	(Sumpup) VALV	es Lubel	TEXCOL	cised /4lo
ELECTRICAL SYSTEM Location Classification:		Comments:			
	Wet Corrosive Location				
Standby Generator:	Mnfr: Sperier Model: 40 R 163	Excellent	Good	Fair	Poor
	Year Installed: 990	Facility Load:			
	Rating: JOKW Fuel Type: DIESEL	Ample capacity (Y/N)	· (Y)		
Interior Lighting Type:	Fuel Type: DIESEL HOUIESCEAT	Excellent	Good	Fair	Poor
Lighting Level:		Excellent	Good	Fair	Poor
Exterior Lighting Type:	N/A	Excellent	Good	Fair	Poor
Panel Boards:		Excellent	Good	Fair	Poor
lotor Control Center:		Excellent	Good	Fair	Poor
Disconnect Switches:		Excellent	Good	Fair	Poor
Lightning Protection:		Excellent	Good	Fair	Poor
Fire Alarm System:		Excellent	Good	Fair	Poor
Security System:	84 M	Excellent	Good	Fair	Poor
Potential Code Issues:					
Comments:	222	(T. 3			
	waturall Lighting good	r 'nethell	exhaist	fan	NG
hetaell E14	= C Sunction Box weed	s paint		2.40	
OTHER:			7		es 23

Flow Meters/Transmitte		Excellent	Good	Fair	Poor	
Pressure Gauges:	Harneters only	Excellent (	Good	Fair	Poor	
Other:		Excellent	Good	Fair	Poor	
CADA:		J-2 3 - 35 - 37 - 77	Good			
CADA.	11.5510~	Excellent	Good)	Fair	Poor	
Comments:						
MECHANICAL SYST Fuel Source:	TEMS INSPECTION MA	Fuel Storage Capacity:				
Heating Type:	EJEC WAG MOUNT	Excellent	Good	Fair	Poor	
Ventilation Type:	wetwell Duct	Excellent	Good	Fair	Poor	
AC System Type:	- N/A	Excellent	Good	Fair	Poor	
Dehumidification:	MA	Excellent	Good	Fair	Poor	
Louvers:		Excellent	Good	Fair	Poor	
Comments:			(			
ECOMMENDATION CATEGORY A ITEMS	S (Immediate Antique)					
Item/Recommendation		Estimated Capital Projec	t Cost			
1. wetw. 2. 3.	ell exhaust fen	\$ 2000 \$				
		\$				
<u>4.</u> <u>5.</u>		\$				
CATECODY B PERC	TOTAL	\$				
Item/Recommendation 1. Re(	(Implement within 5 years)	Estimated Capital Project	Cost			
3,		\$				
<u>4.</u> 5.		\$				
9	TOTAL	\$ \$				
CATEGORY CITEMS ( Item/Recommendation 1.	Implement between 6 and 10 years)	a.				
2.						
3. 4.						
5.						

Address:			
ddress:		Inspected By:	Jim Waldrow
			<del> </del>
ENERAL INFORMA		Year Facility Modified:	
ear Facility Constructe			
acility Description:	Worlen Shingle Build	109	
	31		
UMP STATION EQU	IPMENT		
Number of Pumps:	2	Service Area:	No.
Pump #1:		Motor #1:	
rear Installed:	1978 Rebuilt 2006	Year Installed:	1978 Rebuilt 20010
∕anufacturer:	Worthington Pump	Manufacturer:	Reliance
Aodel and No.:	4MF- 15	Model and No.:	1MA 483667-G1-Y
Type:	Centrifugal Pump	Туре:	PM
NOM efficiency:	CCOILL COLLE	Horsepower:	50/28.10
Design capacity/TDH:	1200 GPM@ 75' TDH	Efficiency:	
Pump RPM:		Inverter duty:	9
umb rcrivi:	1200 8" GATE /8" Check viole		VFD
•	$\Lambda$ $\Lambda$ $\Lambda$ $\Lambda$ $\Lambda$ $\Lambda$ $\Lambda$ $\Lambda$ $\Lambda$ $\Lambda$	Variable/Constant.	
alve size and type:	D VAIC / B C C C	Vertical/Horizontals	
Valve size and type: Observed flow:	o var / b o o o o o o o o o o o o o o o o o o	Vertical/Horizontal:	Vertical
Valve size and type: Observed flow: Observed TDH:		Motor RPM: Pump curve available:	1190 / 395
/alve size and type: Observed flow: Observed TDH:		Motor RPM: Pump curve available:	1190/295
Valve size and type: Observed flow: Observed TDH: Comments: Rebuilt		Motor RPM: Pump curve available: (metucs 1+2)	1190/395
Valve size and type: Observed flow: Observed TDH: Comments: Rebuilt	by Drita Clectic 2006	Motor RPM: Pump curve available: (motocs 1+2)  Motor #2:	1190/895
valve size and type: Observed flow: Observed TDH: Comments: Reboil+ ump #2: Vear Installed:		Motor RPM: Pump curve available:  (motors 1+2)  Motor #2: Year Installed:	Same As Above
valve size and type: Observed flow: Observed TDH: Comments: Reboult  ump #2: Cear Installed: flanufacturer:	by Drita Clectic 2006	Motor RPM: Pump curve available:  (motors 1+2)  Motor #2: Year Installed: Manufacturer:	1190/895
Valve size and type: Observed flow: Observed TDH: Comments: Rebuilt  Tump #2: Tear Installed: Manufacturer: Model and No.:	by Drita Clectic 2006	Motor RPM: Pump curve available:  (motors 1+2)  Motor #2: Year Installed: Manufacturer: Model and No.:	1190/895
valve size and type: Observed flow: Observed TDH: Comments: Rebuilt  ump #2: Vear Installed: Instal	by Drita Clectic 2006	Motor RPM: Pump curve available:  (motocs 1+2)  Motor #2: Year Installed: Manufacturer: Model and No.: Type:	1190/895
valve size and type: Observed flow: Observed TDH: Comments: Rebuilt  ump #2: Vear Installed: Indel and No.: Vype: IOM efficiency:	by Drita Clectic 2006	Motor RPM: Pump curve available:  (motocs 1+2)  Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower:	1190/895
valve size and type: Observed flow: Observed TDH: Comments: Rebuilt Comments: Rebuil	by Drita Clectic 2006	Motor RPM: Pump curve available:  (motors 1+2)  Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency:	1190/895
valve size and type: Observed flow: Observed TDH: Omments: Rebuilt  comments: Rebuilt  co	by Drita Clectic 2006	Motor RPM: Pump curve available:  (motors 1+2)  Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty:	1190/895
Valve size and type: Observed flow: Observed TDH: Comments: Rebuilt  Fump #2: Vear Installed: Manufacturer: Model and No.: Cype: MOM efficiency: Design capacity/TDH: ump RPM:	by Drita Clectic 2006	Motor RPM: Pump curve available:  (motors 1+2)  Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant:	1190/895
valve size and type: Observed flow: Observed TDH: Comments: Rebuilt  ump #2: Fear Installed: fanufacturer: fodel and No.: ype: OM efficiency: Design capacity/TDH: ump RPM: Valve size and type:	by Drita Clectic 2006	Motor RPM: Pump curve available:  (motors. 1+2)  Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal:	1190/895
valve size and type: Observed flow: Observed TDH: Omments: Rebuilt  comments: Rebuilt  ump #2: Fear Installed: flanufacturer: flodel and No.: type: OM efficiency: Design capacity/TDH: ump RPM: falve size and type: Observed flow:	by Drita Clectic 2006	Motor RPM: Pump curve available:  (motors 1+2)  Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant:	1190/895
Valve size and type: Observed flow: Observed TDH: Comments: Rebuilt	by Drita Clectic 2006	Motor RPM: Pump curve available:  (motors. 1+2)  Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal:	1190/895

Pump #3:	Motor #3:
Year Installed:	Year Installed:
Manufacturer:	Manufacturer:
Model and No.:	Model and No.:
уре:	Type:
NOM efficiency:	Horsepower:
Design capacity/TDH:	Efficiency:
Pump RPM:	Inverter duty:
Valve size and type:	Variable/Constant:
Observed flow:	Vertical/Horizontal:
Observed TDH:	Motor RPM:
•	Pump curve available:
Comments:	
	Motor #4:
Pump #4:	Year Installed:
Year Installed:	Manufacturer:
Manufacturer:	Model and No.:
Model and No.:	
Type:	Туре:
NOM efficiency:	Horsepower:
Design capacity/TDH:	Efficiency:
Pump RPM:	Inverter duty:
Valve size and type:	Variable/Constant:
Observed flow:	Vertical/Horizontal:
Observed TDH:	Motor RPM:
	Pump curve available
omments:	
5 15 1 5 1	the second of the second out
General Station Comments: Pumps, 1	notors and Piping need to be scrapped and
requirted.	
Replace trim + word suingles (	Status )
outside Lighting for replace	
Doors - Agent	
	2000 trimules 5000 7000 000 000 000
Duculana Duran Tentes	Generator 55000 - 7000
Previous Pump Tests:	- Tellin 5000
	W000 - Skilling 1000
	+ mano 1 10 x00 x10
	Medinal 2000
	Clectrical 2000 Heaters 3000
OWNERS BEREIO	
OTHER PIPING AND VALVES	
2-8" Check valves	
Or O Check Aures	

Sluice Gates - Do Not work (wet well side)

Air relief valves:		Excellent	Good	Fair	Poor
Isolation valves:	Need paint 8" Gare valle	Excellent	Good	Fair	Poor
Piping:	Needs Repainting	Excellent	Good	Fair	Poor
Comments:					1
18					
				<del></del>	
ELECTRICAL SYSTE Location Classification:	MS INSPECTION  Dry Location  Wet or Damp Location  Wet Corrosive Location	Comments:	Generation Facts	if at	- hart to
Standby Generator:	Mnfr: Superior  Model: 1008131	Excellent	(Bold )	Fair	Poor
	Year Installed: 1978-79 Rating: 100 kW Fuel Type: Diese	Facility Load: Ample capacity (Y/N)	: 130gs i	ביים ל	when pump tome
Interior Lighting Type:		Excellent	Good	Fair	Poor
Lighting Level:	- II	Excellent	Good	Fair	Poor
Exterior Lighting Type:	Needs Repair or replacement	Excellent	Good	Fair (	Poor
Panel Boards:	Original 1978	Excellent	Good C	Fair	Poor
otor Control Center:	Original 1978	Excellent	Good (	Fair	Poor
Disconnect Switches:		Excellent	Good	Fair	Poor
Lightning Protection:		Excellent	Good (	Fair	Poor
Fire Alarm System:	NIA	Excellent	Good	Fair (	Poor
Security System:	NJA	Excellent	Good	Fair (	Poor
Potential Code Issues:	=				
Comments: Generato	or is in need of Replac	enest			
			70		
OTHER:		28			

Flow Meters/Transmi	tters:		Excellent	Good	Fair	Poor
Pressure Gauges:		<del></del>	Excellent	Good	Fair	Poor
Other:		_	Excellent	Good	Fair	Poor
_CADA:			Excellent	Good	Fair	Poor
Comments:				100		87
MEGHANICAL ON	CHENO PROPERTIES					
Fuel Source:	STEMS INSPECTION	_	Fuel Storage Capacity:			4
Heating Type:			Excellent	Good	Fair	Poor
Ventilation Type:	Dres Not work - Pumpside (	(DG)	Excellent	Good	Fair	Poor
AC System Type:	NIA		Excellent	Good	Fair	Poor
Dehumidification:	Me not work		Excellent	Good	Fair	Poor
Louvers:	Newl New motor for		Excellent	Good	Fair	Poor
Comments:		<del></del>				
Item/Recommendation  1. Generator -  2. Yeutilation  3. Whool Shing  4. Autilde Liefe	MS (Immediate Action)  Mercoid Pump Controller  les + trim  try  Pumps, motor, Pipes		Estimated Capital Projects \$ \$ \$ \$	t Cost		
CATEGORY B ITEM Item/Recommendation 1. 2. 3.	AS (Implement within 5 years)	TOTAL	Estimated Capital Projec  \$ \$ \$ \$ \$ \$ \$	t Cost		Š.
Item/Recommendation 1. 2. 3.	AS (Implement between 6 and 10 years)	TOTAL	\$			
5.	(0)					

# **Delta Electric Motor & Generator Co Inc**

379 Alden Road Fairhaven, Ma 02719

Phone 508 997-0582 FAX 508 997-0980

Invoice #: 259159 Date: 12/21/2005

PO#: 2279

Reference #:

Due Date: 1/20/2006 Job #: 51459

**Invoice** 

Terms: 2% 10 NET 30 Discount Date: 12/31/2005

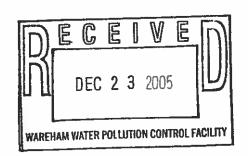
BILL TO:

WAREHAM WATER POLLUTION CONTROL 1499 6 TONY'S LANE WAREHAM, MA 02571 USA

Make:RELIANCE Item:VERTICAL MOTOR Model:1MA483667-G1-YD HP:50/28.10 Type:PM Frame;445TSC Volts;460 RPM:1190/895 Encl:DP Cycles:60 Ph:3 Amps/67.2/47/

Quantity	Description	Disc.	Unit Price	Extended
	DISASSEMBLE, CLEAN & INSPECT ALL MACHINE FITS			
	PERFORM CORE LOSS TEST, REWIND STATOR DIP & BAKE			
	FURNISH & INSTALL BEARINGS			
	ASSEMBLE LOAD TEST & PAINT			
	RUSH REPAIR			
1	REWIND & RECONDITION		\$3,586.00	\$3,586.00
			Total	\$3,586.00

Smith Ave - Pump #1



379 Alden Road Fairhaven, Ma 02719

Phone 508 997-0582 FAX 508 997-0980

Date: 1/4/2000 PO#: 2298

Reference #:

Due Date: 2/3/2006

Job #: 51476

# **Invoice**

Terms: 2% 10 NET 30 Discount Date: 1/14/2006

BILL TO:

WAREHAM WATER POLLUTION CONTROL 1499

**6 TONY'S LANE** 

WAREHAM, MA 02571 USA

Make: RELIANCE Item: MOTOR Model: 1MA83668-G1-YD HP:50 Type: P Frame: 405TSC Volts: 460 RPM: 1185 Encl; DP Cycles: 60 Ph:3

Quantity	Description	. 1	Disc.	Unit Price	Extended
	TEST		2		
	DISASSEMBLE				
	CLEAN & INSPECT ALL MACHINE FITS				
	STEAM CLEAN & BAKE ALL COMPONENTS				
	PERFORM CORE LOSS TEST				
	REWIND, DIP, BAKE& PORE EPOXY STATOR				
	CHECK ROTOR VIBRATION LEVEL				
	DYNAMICALLY BALANCE ROTOR ASSEMBLY				
	METALIZE & MACHINE BEARING HOUSING(S)				
	FURNISH & INSTALL REPLACEMENT BEARINGS				
	ASSEMBLE TEST & PAINT				

**TOTAL REPAIRS AS STATED ABOVE** 

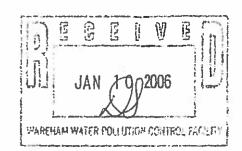
\$2,978.30

\$2,978.30

Total

\$2,978.30

Smith Ave Pump #2, Smith Ave



Pump Station:	South BLVD  S.BLVD  ONSET MA	Inspection Date: Inspected By:	8-13-13 D. Muler
GENERAL INFORMATION Year Facility Constructed Facility Description:	:14112	Year Facility Modified: STREL TUBE/dessel MeTal HATCH CO	
PUMP STATION EQUI Number of Pumps:	IPMENT 2	Service Area:	
Pump #1: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	. 1 - 3	Motor #1: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	BALDOR CAT #36801-107 FIEC  CONST  FOR 1150  THE BEEN SEPISCES
Pump #2: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH: Comments:	SAME 1200	Manufacturer:  Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	AProx 2004  BALDOR CAT # EM 36 LIT  Elec 5  Const Hor Hor

Pump #3: Year Installed: Manufacturer: Model and No.: ype: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	1972 COUINCY 240-103 7 psi 1'57" 3/197	Motor #3: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	
Compressor	SHOULD Be Reb	wilt	
Year Installed:  Manufacturer:  Model and No.:  Type:  NOM efficiency:  Design capacity/TDH:  Pump RPM:  Valve size and type:  Observed flow:  Observed TDH:	2011 DDIWCY 240-104 PS: 1'45" 3/1972	Motor #4: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available	
	11 1 1 0		
General Station Comments:	Hatch Door	rs in poor	Condition
PAINT 1 go Murais	V /	- Carik whose p	ipe most concrete.
Previous Pump Tests:	4	Hatch operation 50th action operation 1000 50th action operation 1000 50th action operation 1000 50th action operation 1000 50th action operation 1000 50th action operation 1000 50th action operation 1000 50th action 1000 50th	3000
OTHER PIPING AND VAL		(2) 5" Ch	FECH VALVES LAPPER VALVES ate VAIVES
		(4) 5ª Q	ate VAIVES

Air relief valves:			Excellent	Good	Fair	Poor
Isolation valves:	INTERIOR DNLY	_	Excellent	Good	Fair	Poor
Piping:			Excellent	Good	Fair	Poor
Comments:						4
PAI	nt Pipins + Vesse	. \				
e		<u>-</u>				
ELECTRICAL SYSTEM			<b>a</b>			
Location Classification:	Dry Location Wet or Damp Location	4	Comments:	-	- 24	
	Wet Corrosive Location	_				
Standby Generator:	Mnfr:		Excellent	Good	Fair	Poor
	Model:					
	Year Installed:		Facility Load:			<u></u>
	Rating:	<del></del> .	Ample capacity (Y/N)	):		
	Fuel Type:					
Interior Lighting Type:	INCA-DESCENT		Excellent	Good '	) Fair	Poor
					'	
Liebtine Tausti		1/2	T111		E-i-	Dane
Lighting Level:			Excellent	Good	Fair	Poor
Exterior Lighting Type:	X) /A		Excellent	Good	Fair	Poor
Panel Boards:			T 11	01	Fair	n
Panel Boards:		_	Excellent	Good	Pair	Poor
)			·			<del></del>
Motor Control Center:			Excellent	Good	Fair	Poor
Disconnect Switches:			Excellent	Cood	Fair	Poor
Disconnect Switches.		_	Excellent	Good	Tail	roor
Lightning Protection:			Excellent	Good	Fair	Poor
Fire Alarm System:	1/1		Excellent	Good	Fair	Poor
The Alaim System.	10/1	<b>→</b>	Excellent	0000	ran	1 001
Security System:	N/A		Excellent	Good	Fair	Poor
Potential Code Issues:						
1 010111111 0000 133003.			<del></del>			
Comments:						
	P/S Shaces a	Compr	essor for u	ISP W	hen of	ility fone
tails - 51					· · · · · · · · · · · · · · · · · · ·	
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			<u></u>			
	n t					
OTHER:						
O A HERO			<u></u>			

INSTRUMENTATION AND CONTROLS

Flow Meters/Transmitte	rs:	Excellent	Good	Fair	Poor
Pressure Gauges:	Replace Mercoid	Excellent	Good	(Fair)	Poor
Other:	Moreory Suittues	Excellent	Good	Fair	Poor
SCADA:	Mission	Excellent	Good	Fair	Poor
Comments:			100		
MECHANICAL SYST	EMS INSPECTION WA	Fuel Storage Capacity:	N/A		N
Heating Type:	ELEC WALL HEATER W/G.	Excellent	Good	Fair	Poor
Ventilation Type:	DUCT WORK NO FAN	Excellent	Good	Fair	Poor
AC System Type:	N/A	Excellent	Good	Fair	Poor
Dehumidification:	N/A	Excellent	Good	Fair	Poor
Louvers:		Excellent	Good	Fair	Poor
Comments:					
ECOMMENDATION	\$				
CATEGORY A ITEMS	(Immediate Action)				
Item/Recommendation 1.		Estimated Capital Project \$	t Cost		
2.		\$			
3,		\$			
<u>4.</u> 5.		\$ \$			
	TOTAL	\$			
1. Replace Por 2. INSTAUL		Estimated Capital Project \$ \$\( 0,000,000 \) \$	Cost		
3. 1 B/U VHI	ity Powen?	\$			
5. 2) Replace	Hatch Cover	\$ 2000.00			20
Renv Recommendation	TOTAL (Implement between 6 and 10 years)	\$			
<u>1.</u>					
2. 3. 4.					
4. 5.					
w •					

Pump Station:	S. WATER ST S.WATER ST ONSET MA	Inspection Date: Inspected By:	8-15-13 12 VIL
GENERAL INFORMA' Year Facility Constructed Facility Description:	: 1971	Year Facility Modified:	WRT Well Slevel Aug
PUMP STATION EQUINUMBER of Pumps:	IPMENT 2	Service Area:	yes
Pump #1: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	FAIRBANKS MORSE  SEE ATTACHED  8" CHECK MHV + F CO  Sebuilt 5/08  Pump + MOTOR SOUND	Motor #1: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:  New Impelies	SEE ATTACHEN  SHAFT, BRUINSS
Pump #2: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH: Comments:	SAME 1 See AMACHED	Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	SAME 1 SEE ATTACHED
	a speed + 10an	pump for Dec	than # 1 which

Pump #4: Year Installed: Year Installed: Manufacturer: Model and No.:  Type: NOM efficiency: Design capacity/TDH: Pump RPM:  Motor #4: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Inverted uty:	
Year Installed:  Manufacturer:  Model and No.:  Type:  NOM efficiency:  Design capacity/TDH:  Year Installed:  Manufacturer:  Manufacturer:  Model and No.:  Type:  Type:  Horsepower:  Efficiency:	
Pump RPM:  Valve size and type:  Observed flow:  Observed TDH:  Motor RPM:  Pump curve available  Comments:  General Station Comments:  Comments:  General Station Comments:  Co	
Previous Pump Tests:    Delivery   Delivery   Prof - 5000   General     Thin - 2000   Prof - 2000   Prof - 2000     Exterior Delivery   Prof - 2000   Prof - 2000     Exterior Delivery   Prof - 2000   Prof - 2000     Oumps 30000   Prof - 5000   Prof - 5000     Previous Pump Tests:	storo 5000 FD ob
OTHER PIPING AND VALVES  (5) 8" MHV+F CO gate/Kn.fe VALVES  (1) 4"  (1) 4"  (1) 4"	(60%

Air relief valves:	MA	Excellent	Good	Fair	Poor
Isolation valves:	Frozen	Excellent	Good	Fair	Poor
Piping:		Excellent	Good	Fair	Poor
Comments:	fiping Shoulds	se painted			1
ELECTRICAL SYSTE Location Classification:	MS INSPECTION  Dry Location  Wet or Damp Location  Wet Corrosive Location	Comments: SALT AIR HA			salt water
Standby Generator:	Mnfr: Model:	Excellent	Good	Fair	Poor
	Year Installed: Rating: Fuel Type:	Facility Load: Ample capacity (Y/N):		100	
Interior Lighting Type:	Flourescet Incandescet	Excellent	Good	Fair	Poor
Lighting Level:		Excellent	Good	Fair	Poor
Exterior Lighting Type:	th CAMBESCENT	Excellent	Good	Fair	Poor
Panel Boards:	<u>₩</u> ₽	Excellent	Good	Fair	Poor
Motor Control Center:		Excellent	Good	Fair	Poor
Disconnect Switches:		Excellent	Good	Fair	Poor
Lightning Protection:		Excellent	Good	Fair	Poor
Fire Alarm System:	N/A	Excellent	Good	Fair	Poor
Security System:	N/A	Excellent	Good	Fair	Poor
Potential Code Issues:					
Comments: 5 ENGratu	or System	worst + mos	TU	nrelia	ble
OTHER:		9			

NSTRUMENTATION AND CONTROLS

Flow Meters/Transmitters	Fischen	1972	Excellent	Good	Fair	Poor
Pressure Gauges:	N/A		Excellent	Good	Fair	Poor
Other:	Level Control w/ MPT20	is Multitrade	Excellent	Good	Fair	Poor
SCADA:		Sion	Excellent	Good	Fair	Poor
Comments:						
MECHANICAL SYSTEM Fuel Source:	MS INSPECTION	N/A	Fuel Storage Capacity	у:		
Heating Type:	Elec WAL	n Hecters	Excellent	Good	Fair	Poor
Ventilation Type:	Fan + Ovet	MOLKINS	Excellent	Good	Fair	Poor
AC System Type:		A	Excellent	Good	Fair	Poor
Dehumidification:		<u>A</u>	Excellent	Good	Fair	Poor
Louvers:			Excellent	Good	Fair	Poor
Comments:	e wall heat					
	e wall heat	er to be	replaced.			
CATEGORY A ITEMS (I	mmediate Action)					
Item/Recommendation			Estimated Capital Proj	ect Cost		
1. Replace 2. 3.	Generator		\$ See ASNE		\$	
3,		<del></del>	\$ \$			
<u>4.</u> 5.			\$ \$			
5.			\$			
CATEGORY B ITEMS (I	malamout within 5	TOTAL	\$			
Item/Recommendation	10000	11'5)	Estimated Capital Proje	ant Cont		
1. Replace	e Roof		\$ 5000	ect Cost		
2. Replace	e DOORS +V	Vindows	\$ 3000			
4.			\$			
5.			\$			8
CATEGORY C ITEMS (In Item/Recommendation	nplement between 6 a	TOTAL nd 10 years)	\$			
1.						
2. 3.						
3.		<del></del>				
4. 5.						

Pump Station:	Spring borne	Inspection Date: Inspected By:	8-17-13 Jim Waldow
GENERAL INFORMA			
Year Facility Constructe Facility Description:	d: 1991 Concrete Building	Year Facility Modified:	2007 - 2012
PUMP STATION EQU	DIPMENT	Service Area:	
Pump #1: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type:	6" r.heck value	Motor #1: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant:	
Observed flow: Observed TDH: Comments:		Vertical/Horizontal: Motor RPM: Pump curve available:	
Pump #2: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency:	SAME AS Above	Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower:	SAME AS Above
Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH: Comments:		WHS	
	φ		
)			

Pump #3:	Motor #3:
Year Installed:	Year Installed:
Manufacturer:	Manufacturer:
Model and No.:	Model and No.:
уре:	Type:
NOM efficiency:	Horsepower:
Design capacity/TDH:	Efficiency:
Pump RPM:	Inverter duty:
Valve size and type:	Variable/Constant:
Observed flow:	Vertical/Horizontal:
Observed TDH:	Motor RPM:
Observed IDH.	Pump curve available:
Comments:	
Continuents.	
Pump #4:	Motor #4:
Year Installed:	Year Installed:
Manufacturer:	Manufacturer:
Model and No.:	Model and No.:
• · · · · · · · · · · · · · · · · · · ·	Type:
Type:	
NOM efficiency:	Horsepower:
Design capacity/TDH:	Efficiency:
Pump RPM:	Inverter duty:
Valve size and type:	Variable/Constant:
Observed flow:	Vertical/Horizontal:
Observed TDH:	Motor RPM:
	Pump curve available
omments:	
General Station Comments: Building Good Shape	may be Just paint.
X	
<u> </u>	// - //
Previous Pump Tests:	PAS DY /
	PAINT 500
	100/
	_

OTHER PIPING AND VALVES

Air relief valves:		Excellent	Good	Fair	Poor
Isolation valves:	6" GATE	Excellent	Good	Fair	Poor
Piping:	6 to #	Excellent	Good	Fair	Poor
Comments:					
ELECTRICAL SYSTE					
Location Classification:	Dry Location Wet or Damp Location	Comments:		20	
	Wet Corrosive Location				
Standby Generator:	Mnfr: Kahler Model: GORZG	Excellent	Good	Fair	Poor
	Year Installed: 2007 Rating: 60KW	Facility Load: Ample capacity(Y)	n.		
	Fuel Type: Proprie	Ample capacity(1)	···		
Interior Lighting Type:	Flourescent	Excellent	Good	Fair	Poor
Lighting Level:		Excellent	Good	Fair	Poor
Exterior Lighting Type:	Halogen	Excellent	Good	Fair	Poor
Panel Boards:		Excellent	Good	Fair	Poor
lotor Control Center:		Excellent	Good	Fair	Poor
Disconnect Switches:		Excellent	Good	Fair	Poor
Lightning Protection:		Excellent	Good	Fair	Poor
Fire Alarm System:	NA	Excellent	Good	Fair	Poor
Security System:	NA	Excellent	Good	Fair	Poor
Potential Code Issues:					
Comments:		7 D	-		· · · · · · · · · · · · · · · · · · ·
		· · · · · · ·			
OTHER:		(8)			<u>.</u>

INSTRUMENTATION AND CONTROLS

Flow Meters/Transmitters:	Multi SMATT		Excellent	Good	Fair	Poor
Pressure Gauges:	N/A		Excellent	Good	Fair	Poor
Other:	MUHI SMART		Excellent	Good	Fair	Poor
SCADA:	missions		Excellent	Good	Fair	Poor
Comments:						
MECHANICAL SYSTEM Fuel Source:	AS INSPECTION		Fuel Storage Capacit	у:		<u> </u>
Heating Type:		_	Excellent	Good	) Fair	Poor
Ventilation Type:		<del></del>	Excellent	Good	Fair	Poor
AC System Type:			Excellent	Good	Fair	Poor
Dehumidification:	P/A		Excellent	Good	Fair	Poor
Louvers:		<del></del>	Excellent	Good	Fair	Poor
Comments: STATION	JUST up Graded by L	DESTON.	+ Sampson			
ECOMMENDATIONS ATEGORY A ITEMS (I Item/Recommendation 1.	Immediate Action)		Estimated Capital Pre	oject Cost		52
1. 2. 3.		-	\$ \$			
<b>4. 5.</b>		-	\$			
		TOTAL	\$			
CATEGORY B ITEMS (I Item/Recommendation 1. 2. 3.	mplement within 5 years)	•	Estimated Capital Pro	oject Cost		
3.		•	\$			
			\$			25
CATEGORY C ITEMS (I Item/Recommendation 1. 2.	mplement between 6 and 10 years)	TOTAL	\$			
5.						

Pump Station:	Terry Lane	Inspection Date: Inspected By:	8-20-13 Sim 4) Alcho
ddress:		• •	
GENERAL INFORMA Year Facility Constructe Facility Description:	d: 1986 1992	Year Facility Modified:	2002 Pumps rebuil
PUMP STATION EQU	DIPMENT 2	Service Area:	
Pump #1: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	1991 rebuilt 2002 FlygT 3129, 180-9070186 Submersible 54' 1750 4" Check unive 4"Gate v	Vertical/Horizontal:  Motor RPM:  Pump curve available:	1991 rebuilt 2002 Flygt 3127/80-9070180 Submersible 7,5 Constant 1750 See Attached.
Pump #2: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	SAME AS Above	Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	SAME AS Above
New siding	needed needed n wet well side doe Paint	s work.	

Pump #3:	Motor #3:
Year Installed:	Year Installed:
Manufacturer:	Manufacturer:
Model and No.:	Model and No.:
ype:	Type:
NOM efficiency:	Horsepower:
Design capacity/TDH:	Efficiency:
Pump RPM:	Inverter duty:
Valve size and type:	Variable/Constant:
Observed flow:	Vertical/Horizontal:
Observed TDH:	Motor RPM:
00301704 1011.	Pump curve available:
Comments:	
Conditions.	
Pump #4:	Motor #4:
Year Installed:	Year Installed:
Manufacturer:	Manufacturer:
Model and No.:	Model and No.:
	Type:
Type:	
NOM efficiency:	Horsepower:
Design capacity/TDH:	Efficiency:
Pump RPM:	Inverter duty:
Valve size and type:	Variable/Constant:
Observed flow:	Vertical/Horizontal:
Observed TDH:	Motor RPM:
	Pump curve available
omments:	
<sup>5</sup> 8	
General Station Comments: Chark W	plus / CATE & Prping Should be painted -
<u> </u>	
<u> </u>	
	1 2000
Previous Pump Tests:	PAIN
	- Wion 1000
	1) 11 gw ti lian
	Du ventilition 2000
OTHER PIPING AND VALVES	

Air relief valves:		Excellent	Good	Fair	Poor
Isolation valves:	Y GATE NAINE	Excellent	Good	Fair	Poor
Piping:	y"	Excellent	Good	Fair	Poor
Comments: 5604	PaiNT				1
			_	<del></del>	·
ELECTRICAL SYSTEM Location Classification:	MS INSPECTION  Dry Location	Comments:		*	
٠.	Wet or Damp Location Wet Corrosive Location	11)			
Standby Generator:	Mnfr: Kohler	Excellent	Good	Fair	Poor
	Model: 40 RO 21 Year Installed: 1991	<u>ΙΦ (ω Αιτυλ</u> Facility Load:	TANK		
	Rating: 40 KW	Ample capacity (Y/N	):		
	Fuel Type: DieSe/				
Interior Lighting Type:		Excellent	Good	Fair	Poor
Lighting Level:		Excellent	Good	Fair	Poor
Exterior Lighting Type:		Excellent	Good	Fair	Poor
Panel Boards:		Excellent	Good	Fair	Poor
Iotor Control Center:		Excellent	Good	Fair	Poor
Disconnect Switches:		Excellent	Good	Fair	Poor
Lightning Protection:		Excellent	Good C	Fair	Poor
Fire Alarm System:	NA	Excellent	Good	Fair	Poor
Security System:	NA	Excellent	Good	Fair	Poor
Potential Code Issues:					
Comments:					<u></u>
			-		<del></del>
OTHER:		,			

INSTRUMENTATION AND CONTROLS

Flow Meters/Transmitter	rs:	<del></del>	Excellent	Good	Fair	Poor
Pressure Gauges:			Excellent	Good	Fair	Poor
Other:	Mission		Excellent	Good	Fair	Poor
SCADA:			Excellent	Good	Fair	Poor
Comments:				4		
					<del>-</del>	
MECHANICAL SYST	EMS INSPECTION		Fuel Storage Capacit	y:		34
Heating Type:	plectric Heater wa	III Mouri	Excellent Excellent	Good	Fair	Poor
Ventilation Type:	Wetwell Does NOT U	our/C	Excellent	Good	Fair (	Poor
AC System Type:	NIA		Excellent	Good	Fair	Poor
Dehumidification:	NA		Excellent	Good	Fair	Poor
Louvers:		<del></del>	Excellent	Good	Fair	Poor
Comments:						
4. Replace Rome 5. POTAT  CATEGORY B ITEMS Item/Recommendation 1.	(Immediate Action)	TOTAL	Estimated Capital Pro \$ \$ \$ \$ \$ \$ \$ Estimated Capital Pro \$			fo.
2. 3. 4. 5.		TOTAL	\$ \$ \$ \$ \$			ē.
1. 2.		es.	(8			

FLYB	<u> </u>	3127.		9070186	7943	PINETHEE ESTATES
7.5	460	190 1:		2078.Len 0008 483	FLYST REP HS C-90031	
3	7750	20401 (0) 8.7	etra 4	TA MANDER	980073	PUMPING SYSTEMS INC.
DATE 12/18/9	0 11: 18	G. PEC	AIN	ACCOMPTANCE CODE		

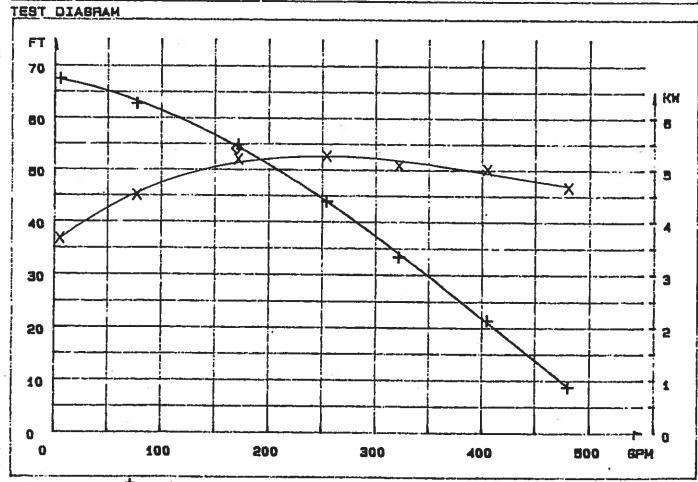
#### TEST DATA

Q GPM	H FT	P KW	VOLT	AMP -	
4.8	67.5	3.67	461	6.26	
77.2	62.7	4.50	462	7.20	
171.5	54.8	5.19	462	B.07	1. 6
253.8	43.9	5.26	461	B. 11	
321.9	33.4	5.08	462	7.88	
404.B	21.4	5.01	463	7.76	
480.3	8.7	4.66	462	7.34	

#### DUTY POINTS

	Q GPM	H	FT	CENTIFICATION : THIS T
ļ	169	54	1.0	FACILITY USING CLEAR FLOW, HEAD AND POWER R
İ				METERING EQUIPMENT. A

CERTIFICATION: THIS TEST WAS CONDUCTED AT A FLYST TEST FACILITY USING CLEAR WATER AT AMBIENT TEMP. (60-80F). FLOW, HEAD AND POWER READINGS WERE TAKEN FROM ELECTRONIC METERING EQUIPMENT. ACCURACY OF THE TEST EQUIPMENT IS CONFIRMED BY PERIODIC CALIBRATIONS.



HEASURED - - Q/H POINT \_ = Q/P DUTY  $\Rightarrow = Q/H$ POINT  $\Box = Q/P$ 

Pump Station: Address:	Thatcher Pump Station	Inspection Date: Inspected By:	Sim waldow
GENERAL INFORMA Year Facility Constructed Facility Description:		Year Facility Modified:	ju
TO STATE OF LINES.	IIDA KENTE		
PUMP STATION EQU Number of Pumps:	2	Service Area:	outside
Pump #1:	3/1/2	Motor #1: Year Installed:	2012
Year Installed:	- 20/2 FIYGT	Manufacturer:	FLYGT
Manufacturer: Model and No.:	3127,090	Model and No.:	3127.090
Type:	MI MT	Туре:	mT
NOM efficiency:		Horsepower:	7.5
Design capacity/TDH:	30.80	Efficiency:	82,570
ump RPM:	1740	Inverter duty:	\$\langle
/alve size and type:	4" check	Variable/Constant:	CONSTANT
Observed flow:		Vertical/Horizontal:	wertical
Observed TDH:		Motor RPM:	1740
		Pump curve available:	See attached.
Comments:			
Pump #2:	A 01	Motor #2:	Same 14 Above
Cear Installed:	SAME AS Above	Year Installed:	Syme 14 HOVE
fanufacturer:		Manufacturer: Model and No.:	<del></del>
fodel and No.:			
ype:		Type:	
OM efficiency:	•	Horsepower: Efficiency:	
esign capacity/TDH:		Inverter duty:	
ump RPM: 'alve size and type:	4	Variable/Constant:	
bserved flow:		Vertical/Horizontal:	
bserved TDH:	58	Motor RPM:	
/0301 YOU 1 1 1/11.		Pump curve available:	
Comments:			
		<u> </u>	<u>''</u>

Pump #3:	Motor #3:	
Year Installed:	Year Installed:	
Manufacturer:	Manufacturer:	
Model and No.:	Model and No.:	
/pe:	Туре:	
NOM efficiency:	Horsepower:	
Design capacity/TDH:	Efficiency:	
Prima PDM.	Inverter duty:	
Valve size and type:	Variable/Constant:	
Observed flow:	Vertical/Horizontal:	
Observed TDH:	Motor RPM:	
	Pump curve available:	
Comments:	•	
	C C	
Pump #4:	Motor #4:	
Year Installed:	Year Installed:	
Manufacturer:	Manufacturer:	
Model and No.:	Model and No.:	
Type:	Туре:	
NOM efficiency:	Horsepower:	
Design capacity/TDH:	Efficiency	
Pump RPM:	Inverter duty:	
Valve size and type:	Variable/Constant:	
Observed flow	Vertical/Horizontal:	
Observed TDH:	Motor RPM:	
	Pump curve available	
Comments;		
General Station Comments: Tom Leve Li	ve	
Print GAS LINE GOING to generate		
Paint olectrical boxes (discurred	switch motor + generous)	
Previous Pump Tests:	1 500	
	Paist 500	
	1 a	
	÷ .	

OTHER PIPING AND VALVES

Air relief valves:		Excellent	Good	Fair	Poor
Isolation valves:	1011 GATE VALUE	Excellent	Good	Fair	Poor
Piping:		Excellent	Good	Fair	Poor
_omments:					1
ELECTRICAL SYSTE	MS INSPECTION		(0)		
Location Classification:	Dry Location Wet or Damp Location Wet Corrosive Location	Comments:			
Standby Generator:	Mnfr: Generac Model: 97A-07469-5	Excellent	Good	Fair	Poor
	Year Installed: Rating: KW 45	Facility Load: Ample capacity(CVA)	<i>D</i> ∙		
	Fuel Type: Natural 6-AS	Ampie capacity 241	·/·		·
Interior Lighting Type:	,	Excellent	Good	Fair	Poor
Lighting Level:		Excellent	Good	Fair	Poor
Exterior Lighting Type:	2 exterior Lighting over	Excellent	Good (	Fair	Poor
Panel Boards:		Excellent	Good	Fair	Poor
viotor Control Center:		Excellent	Good	Fair	Poor
Disconnect Switches:		Excellent	Good	Fair	Poor
Lightning Protection:		Excellent	Good	Fair	Poor
Fire Alarm System:	NA	Excellent	Good	Fair	Poor
Security System:	N/A	Excellent	Good	Fair	Poor
Potential Code Issues:					
Comments:					<u> </u>
			··-		
			<del> </del>		
OTHER:		(7)	<u>.</u>		

"NSTRUMENTATION AND CONTROLS

Flow Meters/Transmi	itters:		Excellent	Good	Fair	Poor	
Pressure Gauges:			Excellent	Good	Fair	Poor	
Other:	Missiums		Excellent	Good	Fair	Poor	
CADA:		0	Excellent	Good	Fair	Poor	12
Comments:				202			
MECHANICAL SYS Fuel Source:	STEMS INSPECTION		Fuel Storage Capacity	<i>γ</i> :	-	\$ 6 \$ 6	
Heating Type:	small Hader Incide Pane	/	Excellent	Good	Fair	Poor	
Ventilation Type:			Excellent	Good	Fair	Poor	~27 TV
AC System Type:	NA		Excellent	Good	Fair	Poor	
Dehumidification:	NA		Excellent	Good	Fair	Poor	
Louvers:			Excellent	Good	Fair	Poor	
Comments:							
				<u> </u>	<u> </u>		
ECOMMENDATION CATEGORY A ITEM	NS (Immediate Action)						
Item/Recommendation	,		Estimated Capital Proj	ect Cost			
<i>l</i>		_	\$				
3.		_	\$ \$				
4. 5.		_	\$				
5.		_	\$				
CATECODY D PERM		TOTAL	\$				
Item/Recommendation	(S (Implement within 5 years)		F / 10 5 5 5				
1,			Estimated Capital Proje	ect Cost			
2.		-	\$				
3.		_	\$				
<u>4.</u> 5.		<del>-</del>	\$				
J.			\$			*	
reminice commendation	S (Implement between 6 and 10 years	TOTAL	\$				
<u>1.</u>		_					
<i>3</i> .		-					
4.		-					
5.		-					

Teveric - Tim Wa 12-14-17 PRODUCT TYPE PERFORMANCE CURVE NP3127.090 MT DATE CURVE NO ISSUE Thatche 2012-12-14 63-439-00-2204 7 1/1-LOAD 3/4-LOAD 1/2-LOAD RATED POWER. IMPELLER DIAMETER 7.5 hρ 188 mm **POWER FACTOR** 0.88 0.85 0.78 STARTING 128 CURRENT ... **EFFICIENCY** Α MOTOR # 82.5 % STATOR 84.0 % 83.0 % REV MOTOR DATA 21-10-4AL 28D 12 CURRENT ... 22 Α COMMENTS INLET/OUTLET RATED PHASES FREQ. VOLTAGE **POLES** 1740 rpm SPEED -/ 4 inch 3 60 Hz 200 V TOT.MOM.OF 4 0.044 kgm2 INERTIA ... NO. OF IMP. THROUGHLET GEARTYPE RATIO BLADES [hp] SHAFT POWER 8 POWER 0 \* OVERALL EFF. PUMP EFF. **DUTY-POINT** FLOW(USgpm) HEAD[ff] EFF. [%] 57.7 (68.6) NPSHre(ft) **GUARANTEE** 0 B.E.P. 630 30.80 128 HI level A **NPSHre** ft BEST EFF. POINT [ft] 60 30 50 25 + EFF. [%] HEAD 40 20 70 30 15 - 60 50 20 10 + 40 30 10 FLYPS3.1.6.6 (20090313) 5 + 20 10 0 200 400 600 800 [USgpm] 1000 1200 **FLOW** GUARANTEE BETWEEN LIMITS (G) ACC. TO NPSHre = NPSH3% + min. operational margin Performance with clear water and amblent temp 40 °C HI level A

Pump Station:	Woodbury INDODINRY ONSET MA	Inspection Date: Inspected By:	8-16-13 R. Mill
GENERAL INFORMA Year Facility Constructe Facility Description:	d: 1787	Year Facility Modified: AULT U/CONCRETE F Shingles and	e Alock Allove 90000 Cedar Shinsles
PUMP STATION EQU Number of Pumps:	DIPMENT 2	Service Area:	NO
Pump #1: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:	1989  YPOMANS CHICAGO  S/O = 265-066  POJEMATIC  509PM / 44 TOH  4" FAIRBANKS FLAPART+CHECK  MPS 1 GODD CO-dition A  AS ARODOL A	Motor #1: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	s have been I Nanumette
Pump #2: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH: Comments:	SAME	Motor #2: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:	

Pump #3: Year Installed: Manufacturer: Model and No.: ype: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:	Motor #3: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available:
Pump #4: Year Installed: Manufacturer: Model and No.: Type: NOM efficiency: Design capacity/TDH: Pump RPM: Valve size and type: Observed flow: Observed TDH:  Comments:	Motor #4: Year Installed: Manufacturer: Model and No.: Type: Horsepower: Efficiency: Inverter duty: Variable/Constant: Vertical/Horizontal: Motor RPM: Pump curve available
General Station Comments:  Shinsles replanded as	EXTERIOR SHOULD BE PRINTED + Roof  Ced.  All ENASTEMPTEN PIPM + Pages should  Coulked where they meet concrete walls
Previous Pump Tests:	unand trim 2000 - Shingles 2000 - 5000 exterior Door+faint 1000 -
OTHER PIPING AND VALVES	Air Pipins in good condition 4) 4" Fairbanns Sate VALVES

Air relief valves:		Excellent	Good	Fair	Poor
Isolation valves:	INTERIOR ONLY	Excellent	Good	Fair	Poor
piping:		Excellent	Good	Fair	Poor
Comments:					+
		·			
ELECTRICAL SYSTE					
Location Classification:	Dry Location Wet or Damp Location	Comments:	····		
	Wet Corrosive Location				<del></del>
			····		
Standby Generator:	Mnfr:	Excellent	Good	Fair	Poor
	Model:				
	Year Installed:	Facility Load:	3.		
	Rating: (	Ample capacity (Y/N	);		
	NA THOU A SPORT				
Interior Lighting Type:		Excellent	Good	Fair	Poor
		<del></del>			
Lighting Level:		Excellent	Good	Fair	Poor
		<u> </u>			
Exterior Lighting Type:		Excellent	Good	Fair	Poor
		Disconditi	0000		, 1001
Panel Boards:	6//n	17114	01	E-!-	D
ranci Boards:	70/14	Excellent	Good	Fair	Poor
Motor Control Center:		Excellent	Good	Fair	Poor
Disconnect Switches:	$\sim /_{\Delta}$	Excellent	Good	Fair	Poor
Lightning Protection:	N/A	Excellent	Cool	Fain	Dane
Lighting Protection.		Excenent	Good	Fair	Poor
	Ma			*	
Fire Alarm System:	/A	Excellent	Good	Fair	Poor
Security System:	M/A	Excellent	Good	Fair	Poor
Potential Code Issues:					
1 01011041 0040 133403.	* ::				
Comments:	+	173	Λ		/
	SISTER ST	Willow to 1	ricene	2-	ţ.
OTHER:					

NSTRUMENTATION AND CONTROLS

Flow Meters/Transmitters	=N/A		Excellent	Good Fair	Poor
Pressure Gauges:			Excellent	(Good ) Fair	Poor
Other:			Excellent	Good Fair	Poor
SCADA:	MUSSION				
Comments:	A(A		Excellent	Good Fair	Poor
Conditions.					
MECHANICAL SYSTE	MC INCRECTION	/			
Fuel Source:	MS INSPECTION /	V/A	Fuel Storage Capacity	· N/A	
Heating Type:	E/ec WAU	Heatens	Excellent	Good Fair	) Poor
Ventilation Type:	FAns + Ducta	o/h	Excellent	Good Fair	Poor
AC System Type:	N/A		Excellent	Good Fair	Poor
Dehumidification:			Excellent	Good Fair	Poor
Louvers:			Excellent (	Good Fair	Poor
Comments:					
RECOMMENDATIONS CATEGORY A ITEMS (I					
Item/Recommendation	immediate Action)		Estimated Capital Proje	est Cost	85
1.			S S	ct Cost	
2. 3.			\$		
			\$		
<u>4.</u> 5.			\$		
	<u> </u>	TOTAL	2		
CATEGORY B ITEMS (I	mplement within 5 years)	TOTAL	v		
Item/Recommendation	_		Estimated Capital Proje	ct Cost	
1.			\$	V. 005.	
2. 3.			\$		
Δ			\$		
5		<del></del>	\$		
2		TOTAL	\$		83
CATEGORY C ITEMS (In Item/Recommendation	nplement between 6 and 10	years)			
I.					
1					
,					

**GHD** Inc

1545 Iyannough Road

Hyannis, MA 02601

T: 774-470-1630 F: 774-470-1631 E: hyamail@ghd.com

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