



# Making Work Management Systems Work for You: The City of Bend Water Reclamation Facility Expansion Story

Presentation at: INFRA 2015



# Agenda

- Overview Project
- Highlights
  - Preliminary activities
  - Design activities
  - Construction period activities
- Making Work Management System Work for you
  - Objectives
  - Steps
  - Success factors
  - Lessons learned
  - Benefits

# Overview

- City of Bend: 81,236 pop; Metro area 165,954 (2013)
- Median household income: \$48,014 (2013)
- Median age: 36.6 yrs (2013)
- Post-recession growth



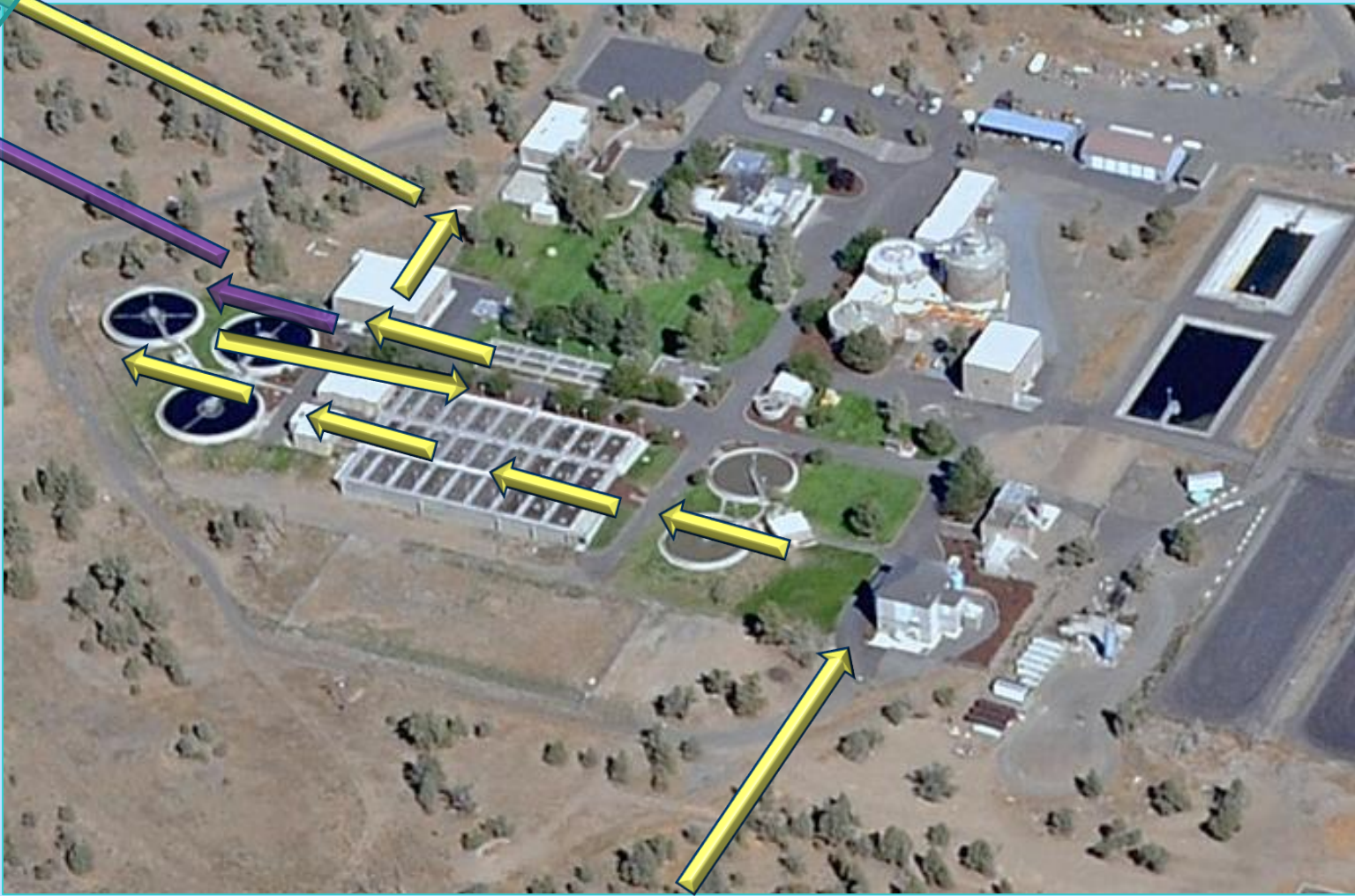
Home of the Bend Ale Trail too!



# Existing Facilities Operation

Evaporation/  
Infiltration  
Basins

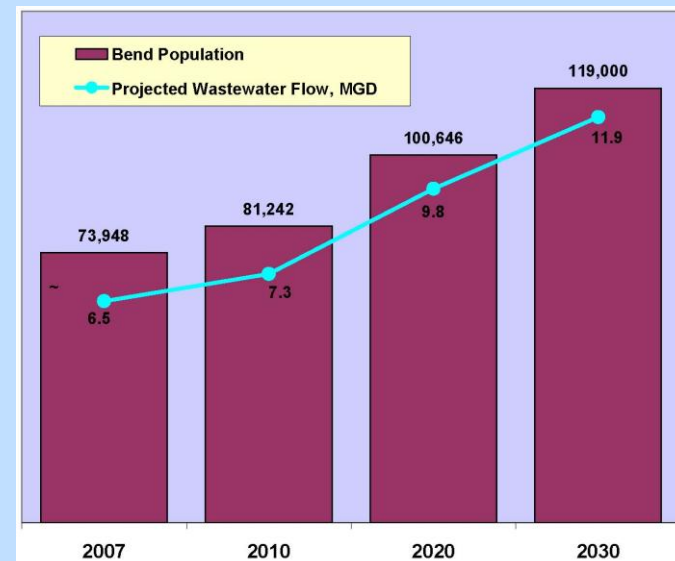
Pronghorn



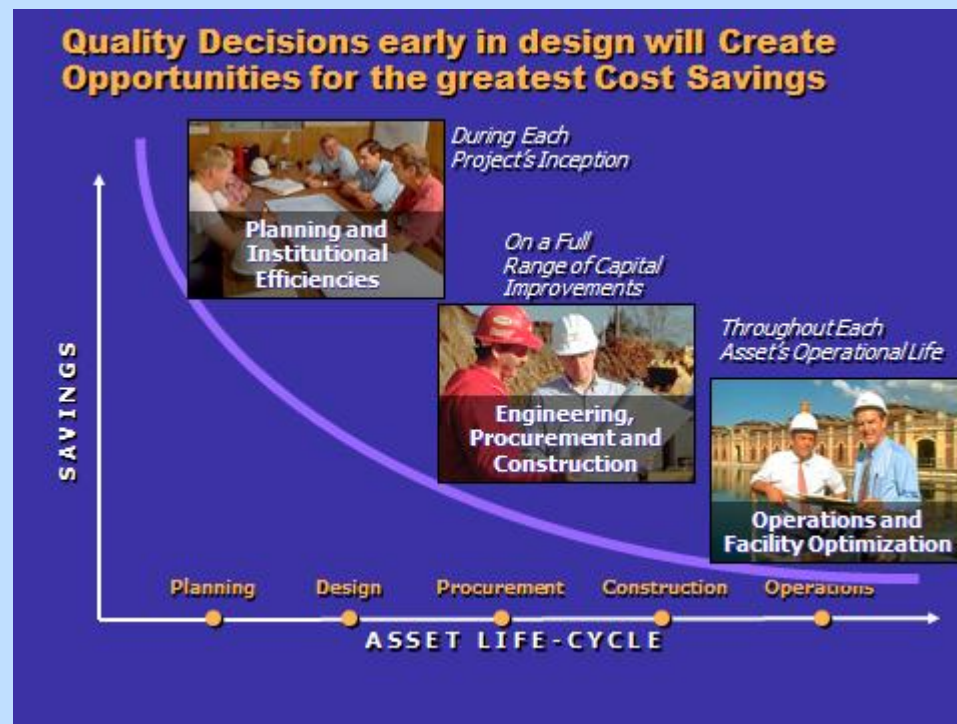
Treatment Process Flow Path

## WRF: Facilities Plan to Construction

- Plan completed in June 2008 by Carollo Engineers
- Plan developed to provide a guidance document to year 2030
- Anticipated Bend population of 119,000 in 2030
- Current secondary treatment system deemed “insufficient to meet future flows and loads”
  - Current flows near 6.0 MGD
  - Design 2010-2012
  - Construction 2013 - current



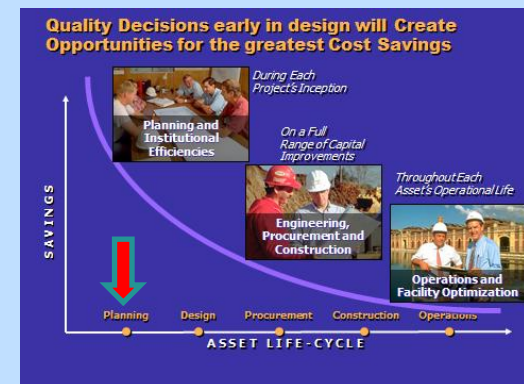
# Asset Management: Opportunities to optimize asset value for your customers occurs throughout the entire life cycle





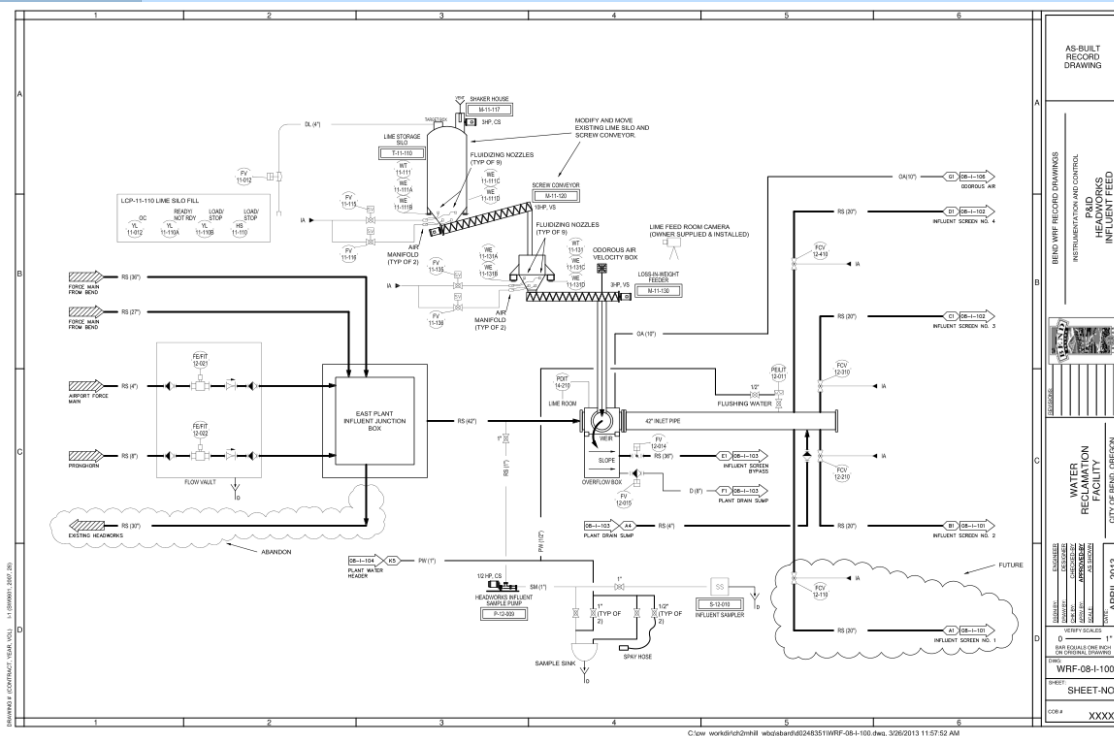
# At the WRF, opportunities started early

- At the onset, the City of Bend performed:
  - Plant Upgrade pre-design activities
  - SCADA Project (Ongoing)
  - INFOR Work Management System deployment



# Plant Upgrade pre-design activities

- Record Drawings and Plant O&M Data Consolidation



E	F	G	H	I	J	K	L	M	N
EQUIPMENT ITEM	TAG	MANUFACTURER	MODEL	SERIAL NUMBER	HP	VOLTS/AMPS	FRAME	RPM / SF	
Lime Silo		Diversified Storage Systems	350-10NT	489	10				
Lime Silo Motor	M-11-120	Lincoln Electric	AF4P10TC61	U3990306414	10	230 / 460 V 28 / 14 Amps		1750 RPM 1.25 SF	
Gear Drive		Baldor	Catalog: G1F0972D						
Vibrator		Invicta Vibrators	Unr-BL15-3/4	206096		230 / 460 V 1.1 / 64 Amps		1728 RPM	
Fluidizing Nozzle Air Valve No. 1	FV-11-115	Asco	Catalog: 8210G004	T 381947		24 VDC			
Fluidizing Nozzle Air Valve No. 2	FV-11-116	Asco	Catalog: 8210G004	T 742164		24 VDC			
WRF	Headworks	Lime Silo Loading Valve	Valve	FV-11-012					
				ZS-11-012O					
				ZS-11-012C					
				FI-11-012					
WRF	Headworks	Lime Silo Weight	Load Cell (4 Each))	11WE111A	Sartorius	PR6201/34 D1	280606886		
				11WE111B		NC: 940526201341			
				11WE111C		9.40526E+11			
				11WE111D					
			Junction		Sartorius	Type: PR6001/015	0907 0408 0406		

APRIL 2013

WATER RECLAMATION FACILITY

CITY OF BEND, OREGON

WRF-08-I-100

SHEET-NO XXXXX



# Plant Upgrade pre-design activities

LD-1 CONSTANT SPEED (SINGLE SPEED)  
CB-2 CONSTANT SPEED (TWO SPEED)

UNIT PROCESS DESIGNATIONS			
PROCESS	NUMBER	PROCESS	NUMBER
<b>PRELIMINARY TREATMENT (10)</b>		<b>NON-PROCESS SYSTEMS (90)</b>	
HEADWORK/LAKE FEED SYSTEM	11	CONTROL BUILDING	91
SCREENING	12	MAINTENANCE BUILDING	92
GREAT REMOVAL	13	IRRIGATION SYSTEM	93
ODOROUS AIR SYSTEM	14	FUEL SYSTEM	94
PLANT DRAIN	15	FIRE AND SECURITY SYSTEMS	95
CHEMICAL HANDLING	16	CONTROL SYSTEM	96
		TRAINING BUILDING	97
		ELECTRICAL	98
		SCHEDULES AND DETAILS	99
<b>PRIMARY TREATMENT (20)</b>			
PRIMARY CLARIFICATION	21		
PRIMARY SLUDGE PUMPING	22		
PRIMARY SCUM HANDLING	23		
<b>SECONDARY TREATMENT (30)</b>			
AERATION BASINS	31		
AERATION BLOWERS	32		
SECONDARY CLARIFICATION	33		
RAS PUMPING	34		
WAS PUMPING	35		
SECONDARY SCUM HANDLING	37		
<b>DISINFECTION (40)</b>			
HYPOCHLORITE	42		
PLANT EFFLUENT DISINFECTION	43		
<b>EFFLUENT DISPOSAL (50)</b>			
EVAPORATION/PERCOLATION PONDS	51		
REUSE WATER (W3)	52		
REUSE WATER FILTRATION	53		
ALUM ADDITION	54		
<b>BIOLOGICAL HANDLING (60)</b>			
DISSOLVED AIR FLOTATION THICKENING	61		
GRAVITY BELT THICKENING	62		
ANAEROBIC DIGESTION SYSTEM	63		
GAS HANDLING	64		
HOT WATER BOILERS	65		
DIGESTER FEED SYSTEM	66		
DEWATERING	67		
POLYMER SYSTEM	68		
<b>SLUDGE DISPOSAL (70)</b>			
DEGASIFICATION BASINS	71		
DRYING BEDS	72		
BIOLOGS LOADING FACILITY	73		
<b>MISCELLANEOUS SUPPORT SYSTEMS (80)</b>			
PLANT WATER SYSTEM (W4)	81		
WELL PUMP SYSTEM (POTABLE WATER - W2)	82		
POWER DISTRIBUTION	83		
MISCELLANEOUS CHEMICALS	84		
HWAC	85		
PLANT DRAIN SYSTEM	86		
HOT WATER SYSTEMS	87		
PLANT AIR SYSTEM	88		
POTABLE WATER (W1)	89		

WRF 01  
INSTRUMENT

REVISIONS

**CH2MHILL**  
WATER RECLAMATION FACILITY  
CITY OF BEND, OREGON

DATE: DEC 2012

CONFORMED DOCUMENTS FOR CONSTRUCTION

CONVERT: N. UNCHANGED, D. PARTIAL, J. MODIFIED, K. DELETED, L. CORRECTED, M. AS SHOWN  
SCALE: AS SHOWN

VERIFY SCALES  
0 = 1" = 30' EQUALS ONE INCH ON ORIGINAL DRAWING

DATE: DEC 2012

CONTRACT: WRF-01-G-012

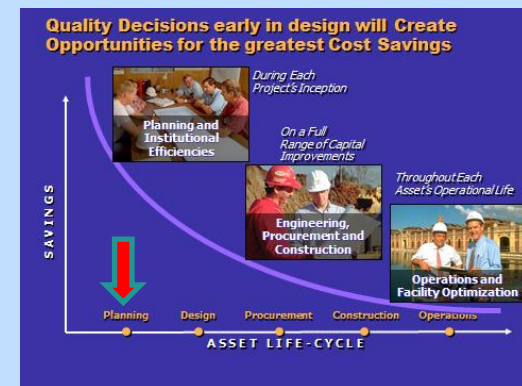
SHEET: 10

JOB # SW0802

5 6

FILE NAME: WRF-01-G-012\_301857.dgn PLOT DATE: 3/11/2013 PLOT TIME: 10:15:28 AM

- Organize and define system processes



# Plant Upgrade pre-design activities

- Plant Inventory of all existing systems (process, HVAC, electrical, etc.)

Process	Equipment Name	Location	Tag#
AERATION	Aeration Blower #1	Blower Bldg	B-032-1001
AERATION	Aeration Blower #2	Blower Bldg	B-032-1002
AERATION	Aeration Blower #3	Blower Bldg	B-032-1003
AERATION	Aeration Mixed Liquor Pump #1		M-31-010
AERATION	Aeration Mixed Liquor Pump #2		M-31-020
AERATION	Aeration Mixed Liquor Pump #3		P-31-341
AERATION	Aeration 12" Primary Flow Meter #1	Pipe Gallery	FIT-31-102
AERATION	Aeration 12" Primary Flow Meter #2	Pipe Gallery	FIT-31-202
AERATION	Aeration 12" Primary Flow Meter #3	Pipe Gallery	FIT-31-302
AERATION	Aeration 18" Primary Flow Meter #1	Pipe Gallery	FIT-31-304
AERATION	Aeration 18" Primary Flow Meter #2	Pipe Gallery	FIT-31-204
AERATION	Aeration 18" Primary Flow Meter #3	Pipe Gallery	FIT-31-302
AERATION	Aeration 10" RAS Flow Meter #1	Pipe Gallery	FIT-31-104
AERATION	Aeration 10" RAS Flow Meter #2	Pipe Gallery	FIT-31-204
AERATION	Aeration 10" RAS Flow Meter #3	Pipe Gallery	FIT-31-304
AERATION	Control Valves		
AERATION	Flow Meters		
AERATION	Aeration Blower #4	Blower Bldg	B-032-1004
AERATION	Sump Pump to Drain Pit		P-031-0031

# SCADA Project provides more

- Developed a SCADA Users Group team
- Define and status the existing SCADA system
- Develop and implement SCADA Standards, prioritize and implement projects



streamlineAM

## SCADA TAGS

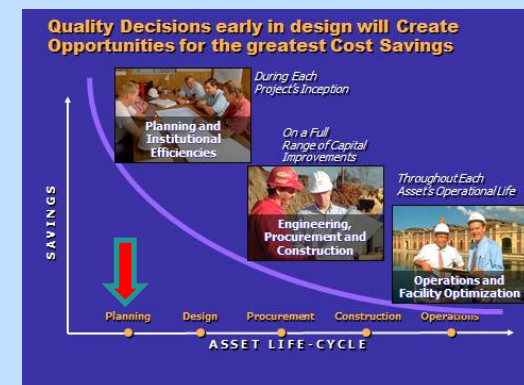
WRF\_011\_WIT\_0111

Loop 011  
011 = Headworks Lime Feed System

0111  
Indicates Equipment Number in that Specific Loop

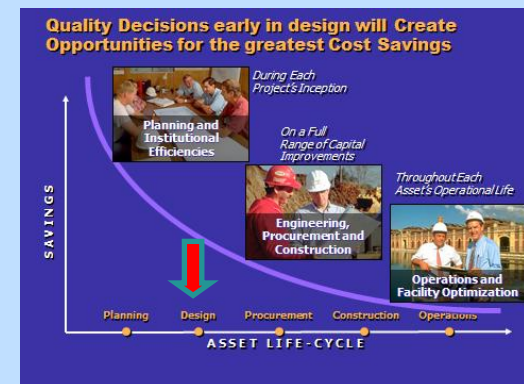
0111 = Equipment Number in Loop 011

But what is the Equipment here???




# Other Project Design activities served as further building blocks

- Set up site for ease of documents storage and retrieval - Sharepoint, EADOC
- Process Control Narratives and P&ID's
- Develop Design documents






# Project Document Management and Collaboration



**Secondary Expansion and SCADA Improvements** [switch project](#)

CIP

**Announcement**  
 Project Archive Request Deadline: 12:00 PM (PDT) on September 3



9/2/2015 12:55:56 AM Pacific

StreamlineAM Kurt Vause [logout](#)

Drawing
Specification
Schedule
Picture
Misc
Environmental
Details
Ref Docs

Start

Work

Documents

Report

Finance

Profile

Help

[summary](#) [history](#) [links](#) [print](#)

**Drawing 002\_WRF-01-G-002\_CONFORMED**

**Subject:**

**Folder:** 01 - General

**Details:**

**Files**

File	Size	Thumbnail	Description
<a href="#">002_WRF-01-G-002_CONFORMED.pdf</a>	1.9 MB		

[Published](#) [Draft](#)

[top](#) - 01 - General

- 001\_WRF-01-G-001\_CONFORMED
- 002\_WRF-01-G-002\_CONFORMED
- 003\_WRF-01-G-003\_CONFORMED
- 004\_WRF-01-G-004\_CONFORMED
- 005\_WRF-01-G-007\_CONFORMED
- 006\_WRF-01-G-008\_CONFORMED
- 007\_WRF-01-G-009\_CONFORMED
- 008\_WRF-01-G-010\_CONFORMED
- 009\_WRF-01-G-011\_CONFORMED
- 010\_WRF-01-G-012\_CONFORMED
- 011\_WRF-01-G-014\_CONFORMED
- 012\_WRF-01-G-016\_CONFORMED
- 013\_WRF-01-G-017\_CONFORMED
- 014\_WRF-01-G-020\_CONFORMED
- 015\_WRF-01-G-021\_CONFORMED
- 016\_WRF-01-G-022\_CONFORMED
- 017\_WRF-01-G-023\_CONFORMED
- 018\_WRF-01-G-024\_CONFORMED
- 019\_WRF-01-G-025\_CONFORMED
- 020\_WRF-01-G-028\_CONFORMED
- 021\_WRF-01-G-029\_CONFORMED
- 022\_WRF-01-G-030\_CONFORMED
- 023\_WRF-01-G-031\_CONFORMED
- 024\_WRF-01-G-032\_CONFORMED
- 025\_WRF-01-G-033\_CONFORMED
- 025\_WRF-01-G-033\_CONFORMED.1
- 026\_WRF-01-G-034\_CONFORMED
- 027\_WRF-01-G-035\_CONFORMED
- 028\_WRF-01-G-037\_CONFORMED
- 029\_WRF-01-G-038\_CONFORMED
- 030\_WRF-01-G-039\_CONFORMED
- 031\_WRF-01-G-040\_CONFORMED
- 032\_WRF-01-G-044\_CONFORMED
- 033\_WRF-01-G-045\_CONFORMED
- 034\_WRF-01-G-046\_CONFORMED
- 035\_WRF-01-G-047\_CONFORMED

Do you want to open or save 002\_WRF-01-G-002\_CONFORMED.pdf from bend.eadocsoftware.com? Open Save Cancel

# Develop Process Control Narratives

BEND SECONDARY EXPANSION

## PROCESS CONTROL NARRATIVES

### 1.1 Introduction

This control narrative describes the overall general control philosophy for the plant for each of the unit process areas. Specific loop descriptions, alarms, interlocks, and other special software control will be outlined at the Draft Construction Phase of the design.

#### 1.1.1 General Control Definition

Described below, most equipment will be operated in two modes; LOCAL or REMOTE:

- In LOCAL mode, control of equipment is done in the field via field panels, instruments, sensors, hand switches, control valves, and local controls. The programmable logic controller (PLC) has no supervisory control over the equipment.
- In REMOTE mode (same as AUTO position on a JOG/OFF/AUTO or JOA switch) the equipment is controlled by the PLC and SCADA system with two main functions:
  - MANUAL: These functions are performed by PLCs via direct operator input via the Human Machine Interface (HMI).
  - AUTOMATIC: These functions are performed by PLCs via programmed control algorithms and changing process conditions. Operator has indirect control via the setpoints and parameters entered at the HMI.

PW/WBG/391657B  
DECEMBER 2012

INSTRUMENTATION AND CONTROL  
FOR PROCESS SYSTEMS  
40 90 00 SUPPLEMENT - 1

BEND SECONDARY EXPANSION

### 10 Preliminary Treatment

*Not part of project scope.*

### 20 Primary Treatment

Primary Influent is gravity fed to the Primary Clarifiers after undergoing preliminary treatment at the Headworks. The Primary Clarifiers remove organic material from the primary influent flowstream in order to reduce loading at the secondary treatment processes. Primary Sludge (PSD) is removed by the Primary Sludge Pumps and pumped to the Anaerobic Digesters; the process flowstream exits the Primary Clarifiers as primary effluent that flows by gravity to the Aeration Basins. Scum and other floatable material is removed by the scum pumps and pumped to the Gravity Belt Thickener.

#### 20.21 Primary Clarification

Reference P&IDs: 08-I-200, 08-I-202.

There are three Primary Clarifiers. Primary Influent flow is directed to a Primary Clarifier by manually opening or closing isolation gates immediately upstream of the Primary Clarifier at the Primary Influent Splitter Structure. For Primary Clarifier 3 (PC3) only, energy dissipating inlets and flocculation wells centered in the clarifier enhance flocculation. Each Primary Clarifier mechanism rotates around the column shaft to rake sludge to the center collection hopper at the base of the clarifier, and to skim accumulated scum to the scum beach. As the rake arm mechanism rotates past the walkway, a proximity sensor is triggered which opens the actuated foam spray valve inline to the spray bar along the clarifier walkway. These sprays and the rake arm skimmer push the scum onto the scum beach.

LOCAL Mode:

- There is only PLC monitoring of the Primary Clarifier rotating mechanism. A local control station is used for START and STOP control. An "E-Stop" button will be provided on PC3.

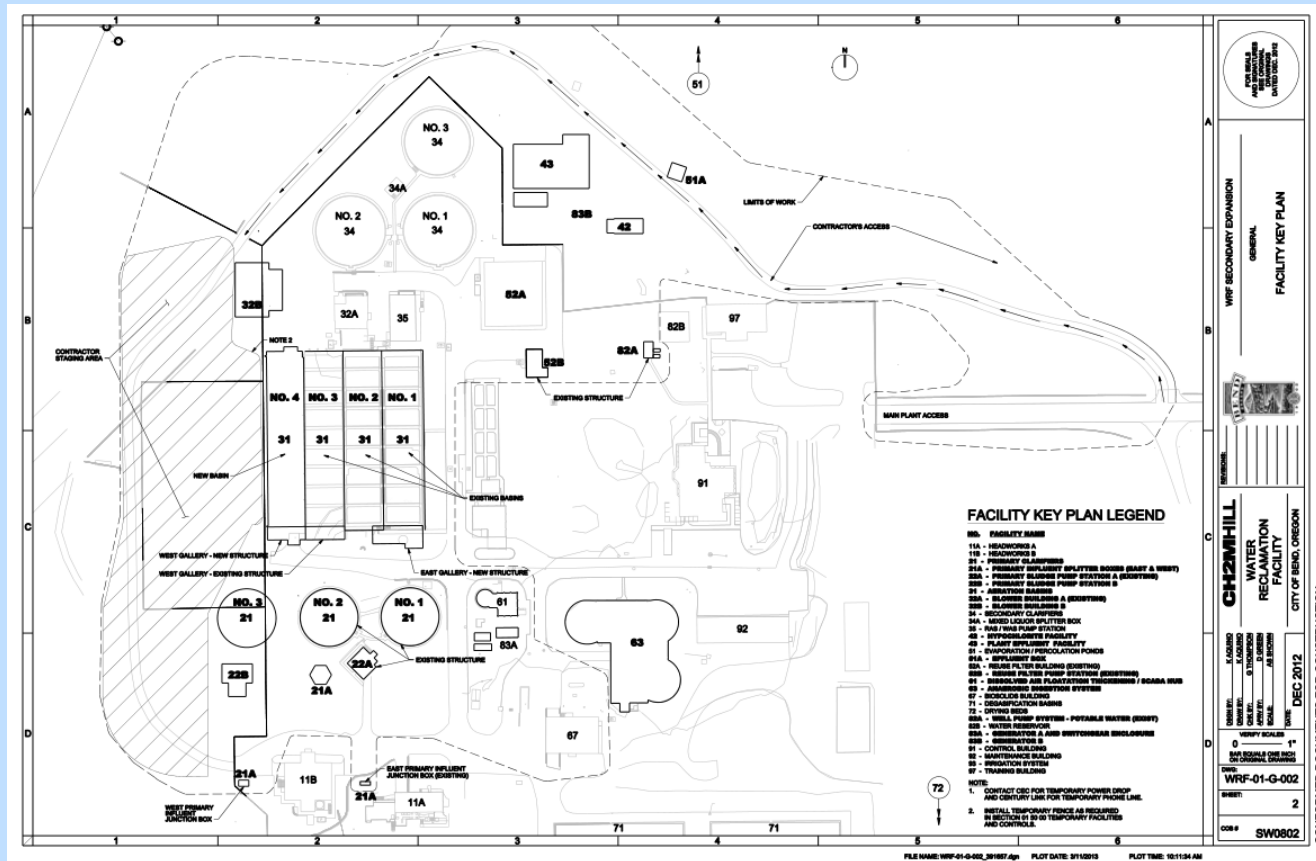
On PC3, if the rotating mechanism becomes jammed or overloaded a HIGH torque alarm will be generated at the local control station and at the HMI. The PC3 mechanism will continue to operate in this condition. If the torque continues to increase to a HIGH-HIGH torque state a second alarm will be generated at the HMI and the mechanism will be automatically shut down by the motor drive requiring a local reset.



Typically overflow weirs control water levels in the clarifiers. High level switches monitor for a high water surface level in each Primary Clarifier Launder. In the event that valves on the primary effluent lines are CLOSED the water surface level will rise and trigger a high water surface level alarm at the HMI.

INSTRUMENTATION AND CONTROL  
FOR PROCESS SYSTEMS  
40 90 00 SUPPLEMENT - 2

PW/WBG/391657B  
DECEMBER 2012

# Develop the plans - Process Driven



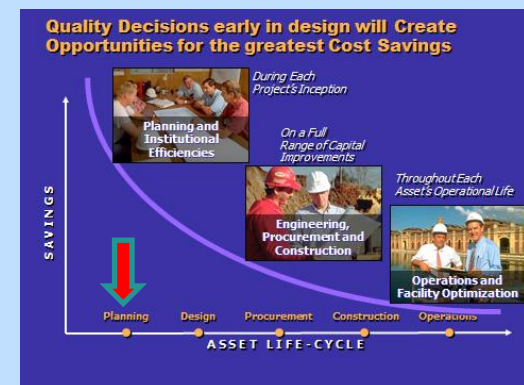

  
 WRF SECONDARY EXPANSION
   
 GENERAL
   
 FACILITY KEY PLAN
   

  
 CH2M HILL
   
 WATER RECLAMATION FACILITY
   
 CITY OF BEND, OREGON
   
 DATE: DEC 2012
   
 SHEET: 2
   
 SW0602

CONFORMED DOCUMENTS FOR CONSTRUCTION

# INFOR Work Management System had been stood up

- Early stages of development
- Develop the team
- Develop the culture

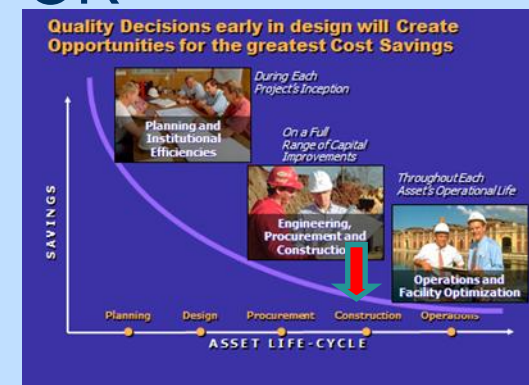
But needed to address: Too much or too little information? What remained was to define the system and workflow needs





# So, in making Work Management System work, the City:

- Established Overall objectives - Vertical Plant Hierarchy
  - A new plant inventory structure for new and existing plant assets
  - Living documentation processes for new and existing plant inventory
  - Compile, load & validate data in INFOR
  - Work Management System integration with existing systems and data

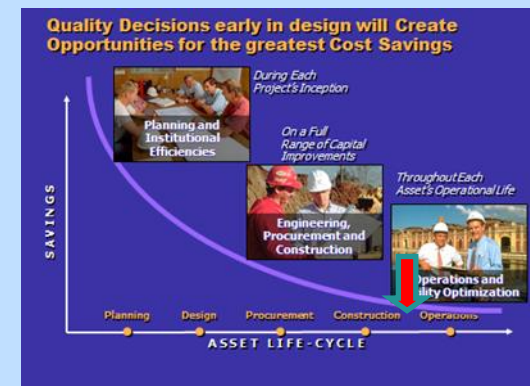


# Steps in Project

- Initial Workshops
- Data aggregation
- Hierarchy Development
- Hierarchy Validation
- Develop Data for new Hierarchy
- Test
- Load to production
- Living processes post go-live
- Check and verify
- Work through anomalies with existing systems

# Critical success factors for creating added value from work management systems

- Staff engagement –Teamwork , respect, common goals, results, fun
- Data structure and organization understanding key
- Understanding business purposes of data
- Ability to integrate SCADA iHistorian to INFOR and with COB EFIMS



# Staff consultation and engagement

And more:

- Review processes
- Importance of getting systems organized properly
- Key issues to resolve

The screenshot shows a 'Project Charter' document. The title is 'Project Charter' in large white letters on a dark blue background. The document itself is white with a 'streamlineAM' logo at the top. It contains the following information:

**Project Information**

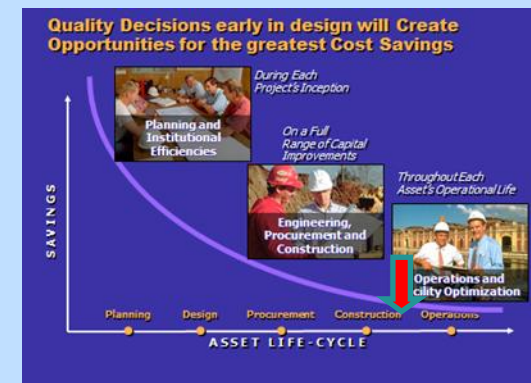
DATE PREPARED: August 18, 2014  
 DATE MODIFIED: \_\_\_\_\_  
 PROJECT NAME: Vertical Plant Hierarchy - WRF  
 PROJECT SPONSOR: Shannon Olsendorf PHONE: 322-6334  
 PROJECT MANAGER: Jim Weirich PHONE: 728-8823  
 CONTRACTOR: StreamlineAM  
 SCHEDULED START DATE: August 20, 2014 SCHEDULED COMPLETION DATE: June 30, 2016

**PROJECT OBJECTIVE**

The City of Bend is undertaking major capital construction efforts, including the Water Reclamation Facility Expansion. This project will create assets which are to be tracked and become part of the ITP-CM work management system. This work is required to complete requirements of the Oregon Department of Environmental Quality and in conjunction with the Electronic Management Information System (EMIS) being done.

The purpose of the Vertical Plant Hierarchy project is:

- Verify applicable business objectives with Plant WATCOD Utility Usage
- Develop and review business practices and workflow for Work Order processing
- Develop and review business practices and workflow for site maintenance & inventory
- Create a new structure - new and existing plant inventory incorporated into Plant Equipment Project
- Produce documentation - new and existing plant inventory
- Verify structure with client
- Complete task and verify data from the furnished by COG staff or consultants

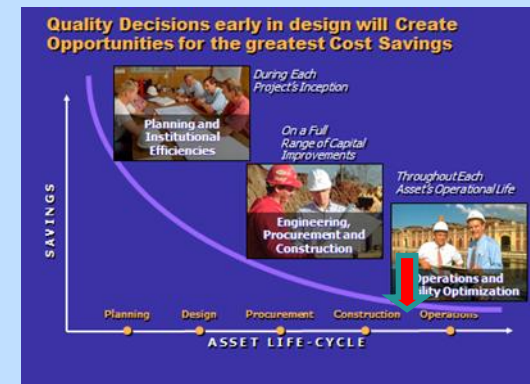




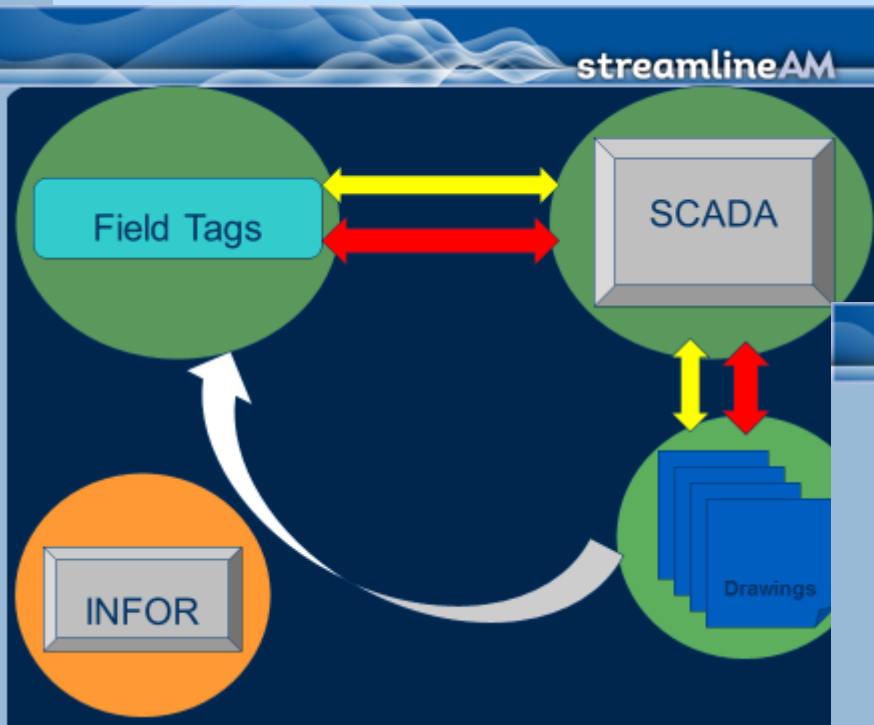
# You say Potato, I say Potato...and we need to work the whole thing out !

## INFOR – Software A Brief Introduction to Terminology

- Location – Actual Building, Room etc
- System – Collection of Positions and/or Assets that are Part of a Process
- Position – Function Done by An Asset (Pump Location versus Physical Pump)
- Asset – Physical Object
- Child Asset
- Logical Meter



# Creating and training on Data Structure led to improved understanding

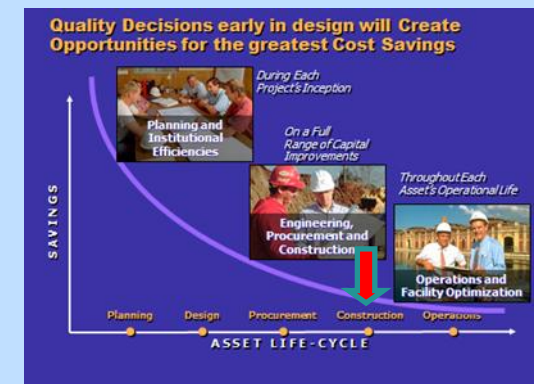


## Why do this?

- Set it up for success
- Make your job more easier, more efficient, more effective
- Set groundwork for maintenance activities
  - Maintenance planning, scheduling
  - Life cycle costing and analysis

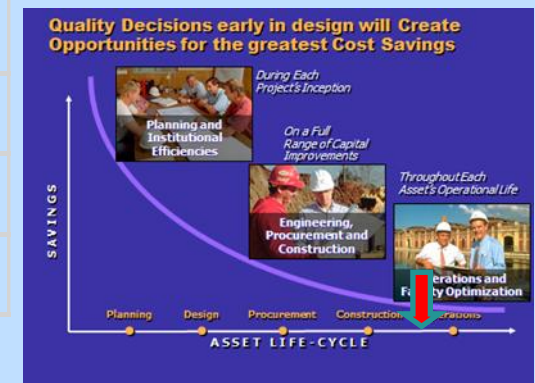
# Other Important Construction Period activities included:

- Conformed Construction Documents
- EADOC tracking of RFI's, Submittals, Changes, OEM materials
- Plant SCADA and City IT System –Servers, Software, hardware, and teamwork was created
- Updated system hierarchy development



# Systems design and work management system hierarchy development

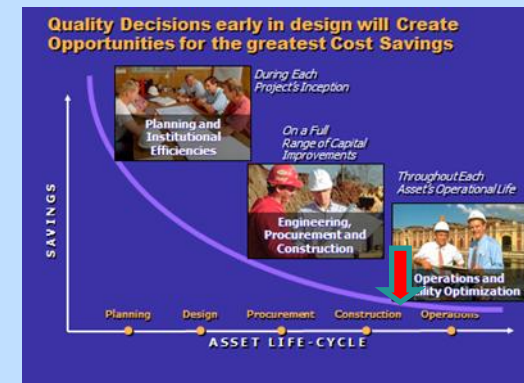
HIGH SYSTEM	High System Description	
10	Preliminary Treatment	
20	Primary Treatment	
30	Secondary Treatment	
40	Disinfection	
50	Effluent Disposal	
60	Biosolids Handling	
70	Sludge Disposal	
80	Miscellaneous Support Systems	
90	Miscellaneous Non-Support Systems	





## Field Guides help inform and ensure consistency

 <b>CITY OF BEND</b> <b>WATER RECLAMATION FACILITY</b>		<b>MASTER PROCESS LIST</b>	
<b>10</b> Preliminary Treatment	11 Headworks Lime Feed System	15 Plant Drain	* Out of Service or Retired Decimal numbering only used in plant process narratives
	12 Screening	16 Chemical Handling	
	13 Grit Removal *	17 Septage Handling	
	14 Odorous Air System		
<b>20</b> Primary Treatment	21 Primary Clarifiers & Scum Handling		
	22 Primary Sludge Pumping		
<b>30</b> Secondary Treatment	31 Aeration Basins	31.1 Primary Effluent Distribution	
	32 Aeration Blowers	31.2 Aeration Basin	
	34 Secondary Clarification & Scum Handling	31.3 Aeration Control	
	35 Return Activated Sludge (RAS) Pumping	31.4 Mixed Liquor Pumps	
	36 Waste Activated Sludge (WAS) Pumping	31.5 Mixers	
		31.6 Plant Drain Pump Station	
<b>40</b> Disinfection	41 Chlorine Contact Basins *	42.1 Hypochlorite Storage	
	42 Chlorination System	42.2 Hypochlorite Feed	43.1 UV Disinfection
	43 Plant Effluent Disinfection	42.3 Gas Chlorination	43.2 Plant Effluent
<b>50</b> Effluent Disposal	51 Evaporation & Percolation Ponds	54 Alum Addition	
	52 Reuse Water (W3)	55 Reuse Water (W3) - Duplicate *	
	53 Reuse Water Filtration		
<b>60</b> Biosolids Handling	61 Dissolved Air Flotation Thickening *	65 Hot Water Boilers	
	62 Gravity Belt Thickening (GBT)	66 Digester Feed System	
	63 Anaerobic Digestion System	67 Dewatering	
	64 Gas Handling *	68 Polymer System	
<b>70</b> Sludge Disposal	71 Degasification Basins	73 Sludge Loading	
	72 Drying Beds		
<b>80</b> Support Systems	81 Plant Water (W4)	85.1 HVAC Existing Primary Sludge Pump Station	
	82 Potable Water (W2) Well Pump System	85.2 HVAC New Primary Sludge Pump Station Electrical and Pump Rooms	
	83 Power Distribution	85.3 HVAC New Blower Building Electrical and Blower Rooms	
	84 Miscellaneous Chemicals	85.4 HVAC Plant Effluent Facility Electrical Room, Plant Water Pump Station, and Plant Effluent Metering Vault	
	85 HVAC	85.5 HVAC Hypochlorite Facility	
	86 Plant Drain	85.6 HVAC Aeration Galleries East & West	
	87 Hot Water System	86.1 Drain System	
	88 Plant Air System		
	89 Potable Water (W1) Avion Water Supply		
<b>90</b> Non-process Systems	91 Control Building	95 Fire & Security System	
	92 Maintenance Building	96 SCADA	
	93 Irrigation System	97 Training Building	
	94 Fuel System	98 Electrical	





## CITY OF BEND WATER RECLAMATION FACILITY SITE MAP



- Preliminary Treatment
- Primary Treatment
- Secondary Treatment
- Disinfection
- Effluent Disposal
- Biosolids Handling
- Sludge Disposal
- Support Systems
- Non-process Systems

■ ELECTRICITY

11-A1	Headworks A Main
11-A2	Headworks A Influent Channel
11-A3	Headworks A Grit
11-B1	Headworks B Main
11-B2	Headworks B Lime Silo
11-B3	Headworks B Valve Box
11-B4	Headworks B Influent Channel
21-A1	Primary Influent Splitter Boxes East
21-A2	Primary Influent Splitter Boxes West
21-A3	Primary Influent Splitter Junction
21-B1	Primary Clarifier 1
21-B2	Primary Clarifier 2
21-B3	Primary Clarifier 3
22-A	Primary Sludge Pump Station A
22-B	Primary Sludge Pump Station B
31-A1	Aeration Basin East Gallery
31-A2	Aeration Basin West Gallery
31-B1	Aeration Basin 1
31-B2	Aeration Basin 2
31-B3	Aeration Basin 3
31-B4	Aeration Basin 4
32-A	Blower Building A
32-B	Blower Building B
34-A	Mixed Liquor Splitter Box
34-B1	Secondary Clarifier 1
34-B2	Secondary Clarifier 2
34-B3	Secondary Clarifier 3
35	RAS/WAS Pump Station
41-A	Chlorine Contact Basins (Not In Use)
41-B	Gas Chlorine Facility (Not In Use)
42	Hypochlorite Facility
43	Plant Effluent Facility
51-A	Effluent Box
51-B	Evaporation/Percolation Ponds
52-A	Reuse Filter Building
52-B	Filter Pump Station
61	SCADA Hub
63-A	Anaerobic Digestion Building
63-B1	Anaerobic Digester 1
63-B2	Anaerobic Digester 2
63-B3	Anaerobic Digester 3
67	Biosolids Building
71-A	Degasification Basin East
71-B	Degasification Basin West
72	Drying Beds
82-A	Well Pump System (Potable Water)
82-B	Water Reservoir
83-A	Generator A & Switchgear Enclosure
83-B	Generator B
91	Control Building
92-A	Maintenance Building
92-B	Pole Barn North
92-C	Pole Barn South
93	Irrigation System
97	Training Building

# Lessons Learned

- Data management-
  - Record Drawings , SCADA Standards (how to keep current for both utility internal projects and external CIP projects.
- Planning and Design
- Staff engagement – Ownership
- Setting business objectives up front
- Living Process to sustain over long-term
- Implementing in steps
- Nobody said this was going to be easy 😊

# Benefits from Effort

- more effective manner for work order creation, tracking and analysis
- improve scheduling of maintenance tasks.
- position the facility for the future through records management, training, and knowledge creation



# Questions ?

[kurtvause@streamlineam.com](mailto:kurtvause@streamlineam.com)  
907/317-7363

[tinamiller@streamlineam.com](mailto:tinamiller@streamlineam.com)  
907/717-9531

