

T2001-MH20
4/6/2011

TO
ROOT PROBLEMS

T2001-MH20
14:01

Asset Management

It's Not Just a
"Pipe Dream"

Garry Lee

Dublin San Ramon Services District

FT 212.7

DSRSD

Dublin San Ramon Services District

Special District

**Alameda & Contra Costa County
(Dublin Pleasanton San Ramon)**

Water Distribution

300 miles

Waste Water Collection Treatment

17 MGD WWTP

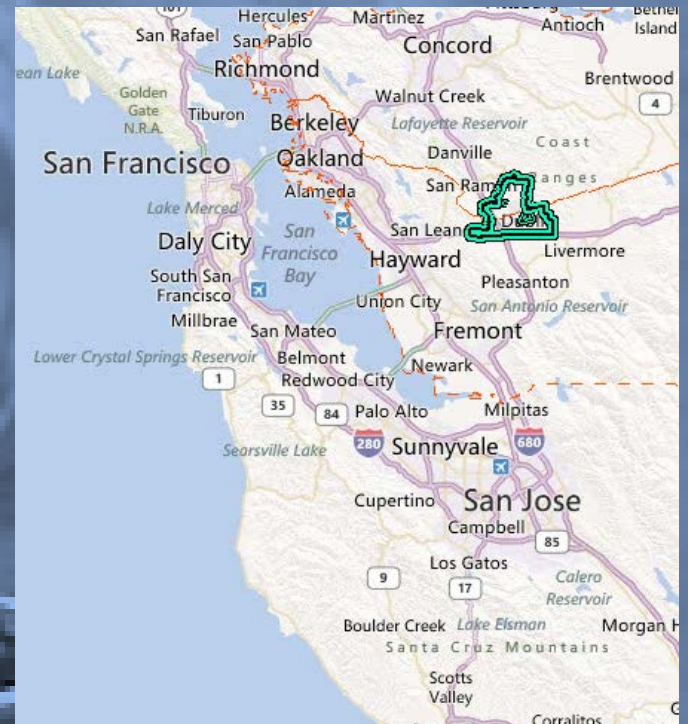
188 miles of collection system

Recycled Water Distribution & Treatment

10.95MG Storage,

13.1 MG treatment

72 miles Distribution



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14:01

Asset Management

To plan, create, acquire, maintain, operate, repair, rehabilitate, replace and dispose of assets in the most cost-effective manner at the desired level of service for present and future generations.

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TO
ROOT PROBLEMS

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14:01

- What assets do you have?
- What condition are they?
- What happens if they fail?
- How can we?
 - gather information
 - prioritize work to minimize risk
 - minimize costs over the life of the assets
 - identify funding needed & when

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Collections System

Asset Management Project

DSRSD Goals: Institutionalize 3 Functions

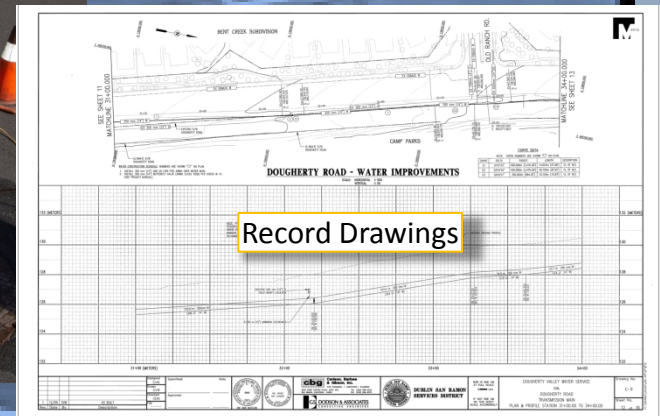
- Provide Operations with Maintenance Management tools
- Provide Engineering with Project Identification
- Provide Finance with Replacement Funding Estimates

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T2001-MH20
4/6/2011

INFORMATION Sources

T2001-MH20
14:01



T2001-MH20

4/6/2001

INPUT

Manhole
Inspection

CCTV
Inspection

Pipe Age &
Specifications

SSO
Reporting

Pipeline
Hydro cleaning

T2001-MH20

14:01

STORAGE

CMMS

GIS

SQL

OUTPUT

Hydro
Cleaning
Schedule

CCTV
Inspection
Schedule

Data Integrity
Pipe
Specifications

Preventative
& Corrective
Work Orders

Replacement

CIP Projects

Performance
Metrics

Web Based
CMMS
Application

Web Based
GIS
Application

Crystal
Reports

Critical
Assets

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Operations Support

Prioritized Cleaning
and CCTV Scheduling

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Hydro Cleaning / CCTV Schedule Weighted Factors

CCTV Observations (PACP)

Grease Observations (From hydro-cleaning work)

Risk

Probability of Failure

Overflow Occurrence

Date of Last Cleaning or CCTV

Pipe Age

OUTPUT

**Hydro
Cleaning
Schedule**

**CCTV
Inspection
Schedule**

**Data Integrity
For pipe
specifications**

**Preventative
& Corrective
Work Orders**

**Replacement
Costs**

CIP Projects

**Performance
Metrics**

**Web Based
CMMS
Application**

**Web Based
GIS
Application**

**Crystal
Reports**

**Critical
Assets**

Year: 2012

7/6/2011 11:08:08AM

Hydro Cleaning Schedule Dublin San Ramon Services District

Page: 3

Hydro Freq Yrs: 2		Tot Len:		188.12				
ID:	350	BASIN:T16D3	US: T16D3-3	DS: T16D3-2	RISK: 9	DIA: 8	MAT: VCP-Vetrified Clay Pipe	HYDRO YR: 2012
ID:	344	BASIN:T16D3	US: T16D3-13	DS: T16D3-7	RISK: 8	DIA: 8	MAT: VCP-Vetrified Clay Pipe	HYDRO YR: 2012
ID:	1690	BASIN:T16D3	US: T16D3-2	DS: T16D3-1	RISK: 15	DIA: 15	MAT: VCP-Vetrified Clay Pipe	HYDRO YR: 2012
ID:	1694	BASIN:T16D3	US: T16D3-15	DS: T16D3-14	RISK: 8	DIA: 8	MAT: VCP-Vetrified Clay Pipe	HYDRO YR: 2012
ID:	2927	BASIN:T16D3	US: T16D4-1	DS: T16D3-9	RISK: 11	DIA: 10	MAT: VCP-Vetrified Clay Pipe	HYDRO YR: 2012

Hydro Freq Yrs: 3 Tot Len: 1,174.40

Basin: T16D3 Tot Len: 1,878.28

ID:	1699	BASIN:T16D4	US: T16D4-8	Hydro Cleaning Schedule				HYDRO YR: 2012
ID:	1595	BASIN:T16D4	US: T16D4-14					HYDRO YR: 2012

Hydro Freq Yrs: 1 Tot Len: 218.53

ID:	1701	BASIN:T16D4	US: T16D4-15	DS: T16D4-2	RISK: 13	DIA: 8	MAT: VCP	HYDRO YR: 2012
ID:	1697	BASIN:T16D4	US: T16D4-2	DS: T16D4-1	RISK: 13	DIA: 8	MAT: VCP-Vetrified Clay Pipe	HYDRO YR: 2012
ID:	1698	BASIN:T16D4	US: T16D4-4	DS: T16D4-3	RISK: 13	DIA: 8	MAT: VCP	HYDRO YR: 2012
ID:	590	BASIN:T16D4	US: T16D4-21	DS: T16D4-20	RISK: 13	DIA: 8	MAT: VCP-Vetrified Clay Pipe	HYDRO YR: 2012

Hydro Freq Yrs: 2 Tot Len: 1,327.27

ID:	594	BASIN:T16D4	US: T16D4-3	DS: T16D4-2	RISK: 10	DIA: 8	MAT: VCP	HYDRO YR: 2012
ID:	1684	BASIN:T16D4	US: T16D1-1	DS: T16D4-23	RISK: 8	DIA: 8	MAT: VCP	HYDRO YR: 2012

Hydro Freq Yrs: 3 Tot Len: 435.64

Basin: T16D4 Tot Len: 1,981.43

OUTPUT

Hydro
Cleaning
Schedule

CCTV
Inspection
Schedule

Data Integrity
For pipe
specifications

Preventative
& Corrective
Work Orders

Replacement
Costs

CIP Projects

Performance
Metrics

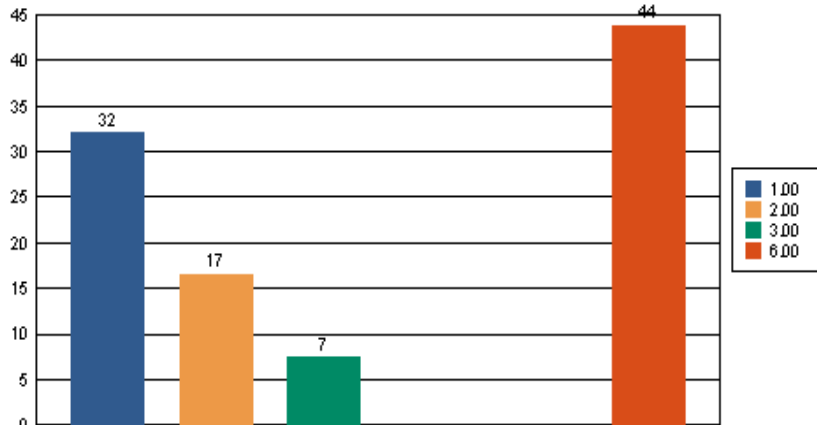
Web Based
CMMS
Application

Web Based
GIS
Application

Crystal
Reports

Critical
Assets

Complete Hydro by Pri %



Completed PM Hydro Cleaning 2015 Summary

3/25/2015 9:03:31 AM

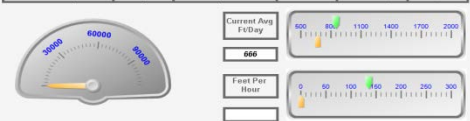
Total Feet Required	478,862	Completed	11,223	Remaining	467,639
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Total Projected Hours	Total Projected Labor Cost	Labor Cost/Hr.					
Encumbered Labor Hrs	Labor Cost Per HR	Encumbered Labor Costs	Encumbered Equipment Costs				
			\$0				

Completed PM CCTV 2015 Summary

Total Feet Required	272,940	Completed		Remaining	272,940
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Total Projected Hours	Total Projected Labor Cost	Labor Cost/Hr.	<				
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Hydro Cleaning 6 Year Overview Dublin San Ramon Services District

7/6/2011 10:56:37AM

Page: 1

Year
Sequence

Calendar
Year

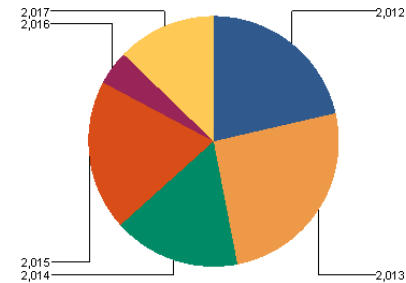
1
2
3
4
5
6

2012
2013
2014
2015
2016
2017

Scheduling & Budget

				% of Total
23,739	274,831	298,570		25%
23,739	165,365	189,104		30%
40,973	187,313	228,286		19%
23,739	28,742	52,481		23%
67,770	76,955	144,725		5%
				15%

Chart of Total Feet by Year



OUTPUT

Integrity

Preventative
& Corrective
Work Orders

Replacement
Costs

CIP Projects

Performance
Metrics

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CMMS
Application

Web Based
GIS
Application

Crystal
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Critical
Assets

T2001-MH20

4/6/2011

TO

ROOT PROBLEMS

T2001-MH20

14:01

Engineering Support

Project Identification and CIP Planning

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T2001-MH30

UpstreamMH	DownstreamMH	Diameter	Material	Length	Highest Condition Rating	Install Date	R
V17C1-32	V17C1-31	8	PVC	161.4	5	1991	2
V19A2-6	V19A2-5	10	PVC	382.6	5	1985	2
U17C3-11	U17C3-8	8	VCP-Vetrified Clay Pipe	272.2	5	1972	4
U18D2-5	U18D2-3	8	VCP	372.9	5	1964	4
V19A1-23	V19A1-22	8	VCP-Vetrified Clay Pipe	249.2	5	1965	4
T18D1-21	T18D1-20	8	VCP-Vetrified Clay Pipe				4
U20C1-30	U20C1-29	8	VCP-Vetrified Clay Pipe	161	5	1981	4
T16D1-19	T16D1-18	6	VCP-Vetrified Clay Pipe	108.6	5	1969	4
T20D1-1	U20C2-14	8	VCP-Vetrified Clay Pipe	284.9	5	1965	4
U20C1-18	U20C1-17	8	VCP-Vetrified	167.6	5	1981	4

Critical Assets



OUTPUT

Hydro
Cleaning
Schedule

CCTV
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& Corrective
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GIS
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Crystal
Reports

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Assets

T2001-MH20
4/6/2011

TO
ROOT PROBLEMS

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14:01

Financial Support

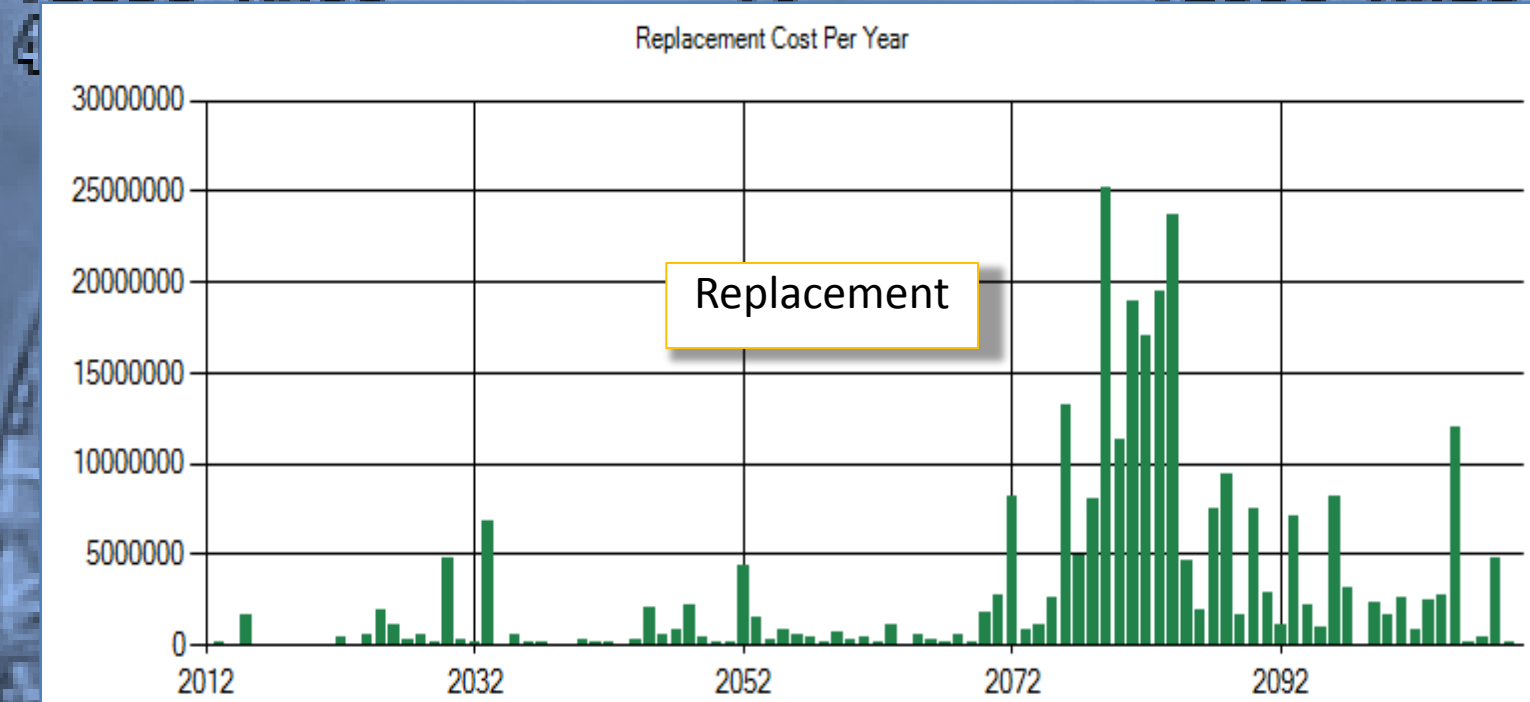
Provide Finance with
Replacement Funding
Estimates

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T2001-MH30

T0

T2001-MH29



OUTPUT

Hydro
Cleaning
Schedule

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Inspection
Schedule

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& Corrective
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Costs

CIP Projects

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Application

Web Based
GIS
Application

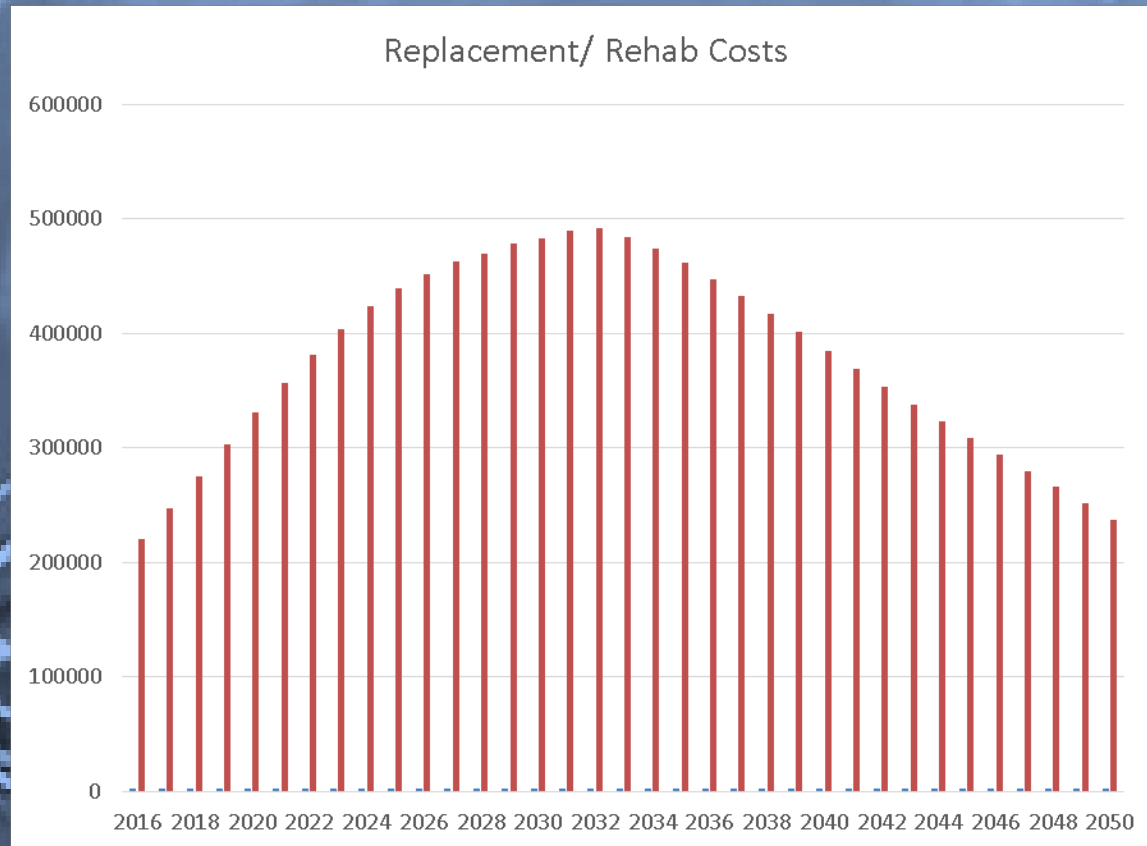
Crystal
Reports

Critical
Assets

T2001-MH30
4/6/2011

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T2001-MH29
14:01



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lucity

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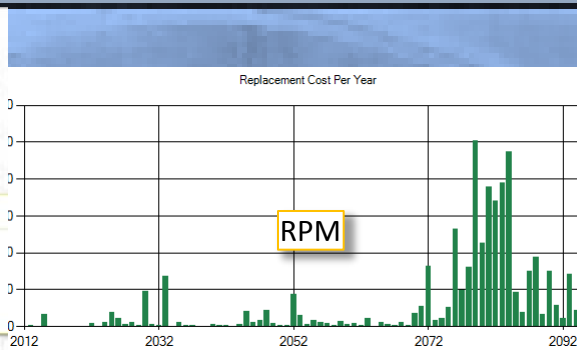
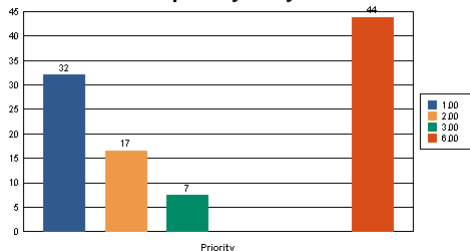
Engineering

Hydro Cleaning 6 Year Overview Report
Hydro Cleaning Schedule Report
Hydro Cleaning Complete / Incomplete
Hydro Cleaning Reports User Manual
Collection System Critical Asset Information

Submitted Work Request (0)

Collection System PACP Inspection O&M Defects

Complete Hydro by Pri %



RPM

Completed PM Hydro Cleaning 2015 Summary 3/25/2015 8:03:31 AM

Total Feet Required: 478,862 Completed: 11,223 Remaining: 467,639

Metrics

Current Avg Feet Per Hour: 600

Completed PM CCTV 2015 Summary

Total Feet Required: 272,940 Completed: Remaining: 272,940

Current Avg Feet Per Hour: 600

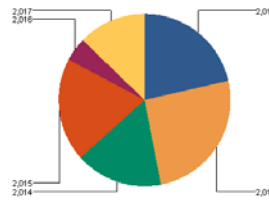
Hydro Cleaning 6 Year Overview
Dublin San Ramon Services District

Page: 1

Year Sequence	Calendar Year	Recurring Feet	One-time Feet	Total Feet	% of Total
1	2012	0	250,321	250,321	25%
2	2013	23,739	274,831	298,570	30%
3	2014	23,739	165,365	189,104	19%
4	2015	40,973	187,313	228,286	23%
5	2016			481	5%
6	2017			725	15%

Scheduling & Budget

Chart of Total Feet by Year



Year: 2012
7/6/2011 11:06:05AM

Hydro Cleaning Schedule
Dublin San Ramon Services District

Page: 3

ID	Basin	THD	US	THD-3	DS	THD-3-2	RISK	9	DIA	8	MAT	VCP-Ventilated Clay Pipe	HYDRO YR	2012
1699	BASIN THD3	US	THD-3-2	DS	THD-3-1	RISK	15	DIA	15	MAT	VCP-Ventilated Clay Pipe	HYDRO YR	2012	
1694	BASIN THD3	US	THD-3-15	DS	THD-3-14	RISK	8	DIA	8	MAT	VCP-Ventilated Clay Pipe	HYDRO YR	2012	
2307	BASIN THD3	US	THD-3-1	DS	THD-3-9	RISK	11	DIA	10	MAT	VCP-Ventilated Clay Pipe	HYDRO YR	2012	
1699	BASIN THD4	US	THD-4-6	DS	THD-4-7	RISK	14	DIA	6	MAT	VCP	HYDRO YR	2012	
1595	BASIN THD4	US	THD-4-2	DS	THD-4-1	RISK	13	DIA	8	MAT	VCP-Ventilated Clay Pipe	HYDRO YR	2012	
1698	BASIN THD4	US	THD-4-4	DS	THD-4-3	RISK	13	DIA	8	MAT	VCP	HYDRO YR	2012	
590	BASIN THD4	US	THD-4-21	DS	THD-4-20	RISK	13	DIA	8	MAT	VCP-Ventilated Clay Pipe	HYDRO YR	2012	
594	BASIN THD4	US	THD-4-3	DS	THD-4-2	RISK	10	DIA	8	MAT	VCP	HYDRO YR	2012	
1684	BASIN THD4	US	THD-4-1	DS	THD-4-23	RISK	8	DIA	8	MAT	VCP	HYDRO YR	2012	

Hydro Cleaning Schedule

Material	Length	Hubless Condition Rating	Install Date	Effective Remaining Life (Yrs)	Replacement Date	Replacement Value	POE	COF	Risk
PVC	161.4	5	1991	2	2013	40003.7500	0.96	17	16.32
PVC	382.6	5	1985	2	2013	115567.8200	0.96	25	24
VCP-Ventilated Clay Pipe	272.2	5	1972	5	2015	67791.1200	0.96	21	20.16
VCP	372.5	5	1964	5	2015	92864.5300	0.96	21	20.16
VCP-Ventilated Clay Pipe	249.2	5	1965	4	2015	62569.9500	0.96	21	20.16
VCP	83.1	5	1986	4	2015	20706.2300	0.96	17	16.32
VCP-Ventilated Clay Pipe	161	5	1981	4	2015	40111.9400	0.96	17	16.32
VCP-Ventilated Clay Pipe	108.6	5	1969	5					
VCP-Ventilated Clay Pipe	284.9	5	1965	5					
VCP-Ventilated Clay Pipe	173.6	5	1961	5					



Accessibility

OUTPUT

Hydro Cleaning Schedule

CCTV Inspection Schedule

Data Integrity For pipe specifications

Preventative & Corrective Work Orders

Replacement Costs

CIP Projects

Performance Metrics

Web Based CMMS Application

Web Based GIS Application

Crystal Reports

Critical Assets

T2001-MH20
4/6/2011

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T2001-MH20
14:01

Questions?

Contact Information

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FT 212.7