Final Report

Condition Assessment: Vine Street WTP

Submitted to

City of Albany

January 2008

APPENDIX E

Vine Street WTP Condition Assessment and Risk Reduction

Introduction

In mid-2007, CH2M HILL OMI staff with assistance from City of Albany staff? performed an onsite condition assessment of the Vine Street Water Treatment Plant (WTP) and selected? water booster stations and wastewater lift stations. Four pie charts shown as Exhibits E-1 through E-4 show the distribution of asset condition below. Exhibit E-1 shows all assets (Vine Street WTP, booster stations, and lift stations). Exhibits E-2 and E-3 break out the assets by booster station (water) and lift station (wastewater). The last exhibit shows just the Vine Street WTP assets. For specific information on the scoring of assets, three attachments (Attachments E-1, E-2, and E-3) at the end of this report have each asset and its detailed consequence and likelihood scoring. In addition, this report includes risk reduction detail sheets for the Vine St. WTP (Attachment E-4) and the field data sheets in Attachment E-5.

The assets at the Vine Street WTP were in remarkably good condition for its age, with 96 percent of the assets in the "Very Good" or "Minor Defects" categories (see Exhibit E-4). The remaining assets below these categories were low-risk items that would not have significant impact upon failure.

The condition assessment team did have concerns regarding the buildings at the facility. However, these concerns are not addressed in this condition assessment as a seismic study was performed and those conditions are covered under that report.

Risk Reduction Recommendations

The highest risk assets at the Vine Street WTP are the electrical components. These components were the electrical disconnects associated with all the pumps. It appears that the "consequence" of these failures cannot be mitigated unless a redundant unit is purchased. Also, the "likelihood" component of risk is limited in methods for mitigation. These disconnects are not in poor condition and they are not obsolete. Therefore, replacing them doesn't make much sense and would only reduce the risk slightly. The best risk reduction for these items is to improve the O&M protocols. The best method is to install a predictive maintenance task within the new CMMS that calls for thermography of these items every 2 years and a periodic visual inspection.

There are also five valve actuators that should be considered for replacement. While the consequence of failure is low, the likelihood is high due to the condition of those assets.

Risk reduction details can be found in Attachment E-4. These show the original risk score, mitigation step, and resulting risk score.

(Please note that equipment located in the high service pump station at the Vine Street site was assessed in the initial condition assessment in October 2006. The risk mitigation was provided with that report, specifically for Pump and Motor 15a).

EXHIBIT E-1
Condition Rating Summary (All Assets)

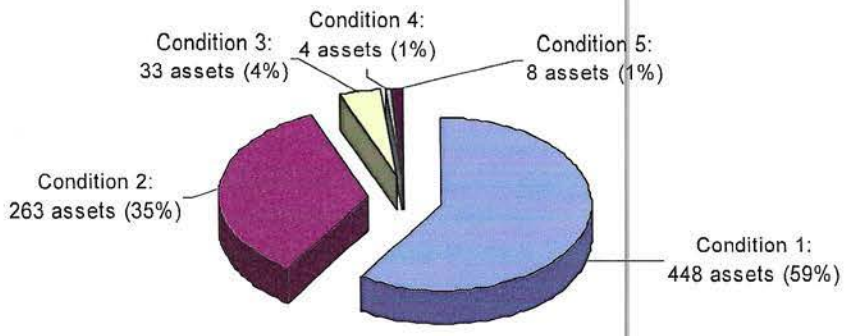


EXHIBIT E-2
Booster Station Asset Condition Distribution

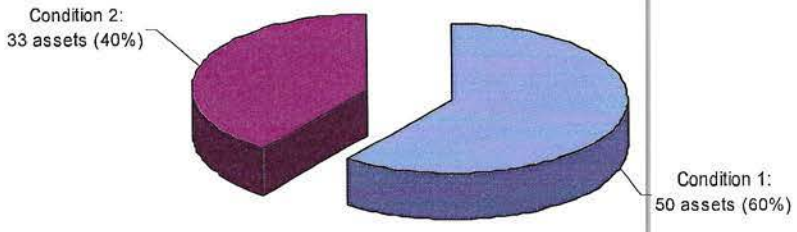


EXHIBIT E-3
Lift Station Asset Condition Distribution

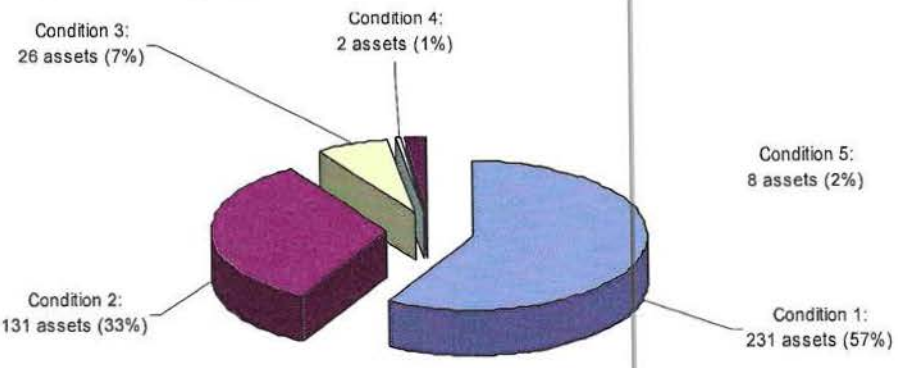
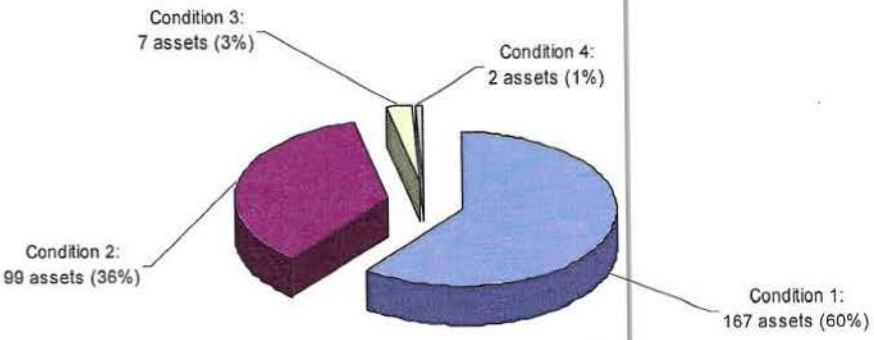


EXHIBIT E-4
Vine Street Asset Condition Distribution



ATTACHMENT E-3

Vine Street Water Plant

										Impact						Likelihood				Triggers		
Asset Name	Description	System	Facility	Over All Rank	Rank	Total Score	Consequence Score	Likelihood Score	Trigger Score	Availability to Return asset to Service	Compliance with Regulations	Disruption to Community/ Public Image	Financial Impact (repair/ replace, private property)	Health and Safety of Employees and Public	Service Reliability	Condition Assessment Overall	Effective Operating Protocols	Planned Redundancy	Reliability	Annual Maintenance Cost	Capacity and Utilization	Obsolescence
ELC-DIS-009	Main Disconnect For Pumps 2 4 6 8	Albany WTS	Vine St WTP	12	1	2.08	9.308	0.222	1.007	10	10	10	1	10		2	4	7	1	1	1	2
PMP-DIS-005	Pump No 11 Main Disconnect	Albany WTS	Vine St WTP	15	2	2.06	5.833	0.333	1.06	10	4	4	7	10	4	2	4	10	10	1	1	10
PMP-DIS-003	Pump No 13 Main Disconnect	Albany WTS	Vine St WTP	17	3	2.06	5.833	0.333	1.06	10	4	4	7	10	4	2	4	10	10	1	1	10
ELC-DIS-001	Disconnect For Pump#1	Albany WTS	Vine St WTP	22	4	1.88	8.385	0.222	1.007	10	7	10	1	10		2	4	7	1	1	1	2
ELC-DIS-002	Disconnect For Pump#2	Albany WTS	Vine St WTP	23	5	1.88	8.385	0.222	1.007	10	7	10	1	10		2	4	7	1	1	1	2
ELC-DIS-003	Disconnect For Pump#3	Albany WTS	Vine St WTP	24	6	1.88	8.385	0.222	1.007	10	7	10	1	10		2	4	7	1	1	1	2
ELC-DIS-004	Disconnect For Pump#4	Albany WTS	Vine St WTP	25	7	1.88	8.385	0.222	1.007	10	7	10	1	10		2	4	7	1	1	1	2
ELC-DIS-005	Disconnect For Pump#5	Albany WTS	Vine St WTP	26	8	1.88	8.385	0.222	1.007	10	7	10	1	10		2	4	7	1	1	1	2
ELC-DIS-007	Disconnect For Pump#7	Albany WTS	Vine St WTP	27	9	1.88	8.385	0.222	1.007	10	7	10	1	10		2	4	7	1	1	1	2
PMP-PMP-15a	No 15 Pump	Albany WTS	Vine St WTP	28	10	1.86	3.167	0.587	1	10	1	1	7	7	1	7	4	1	1	1	1	1
PMP-DIS-002	Pump No 14 Main Disconnect	Albany WTS	Vine St WTP	29	11	1.83	5.167	0.333	1.06	10	4	4	7	7	4	2	4	10	10	1	1	10
PMP-MTR-15m	No 15 Motor	Albany WTS	Vine St WTP	34	12	1.76	3	0.587	1	10	1	1	4	7	1	7	4	1	1	1	1	1
ELC-DIS-006	Disconnect For Pump#6	Albany WTS	Vine St WTP	44	13	1.67	7.462	0.222	1.007	10	7	10	1	7		2	4	7	1	1	1	2
PMP-DIS-004	Pump No 12 Main Disconnect	Albany WTS	Vine St WTP	58	14	1.39	5.167	0.254	1.06	10	4	4	7	7	4	1	4	10	10	1	1	10
ELC-DIS-008	Main Disconnect For Pumps 1 3 5 7 9	Albany WTS	Vine St WTP	60	15	1.34	9.308	0.143	1.007	10	10	10	1	10		1	4	7	1	1	1	2
DRV-MXR-01	Upflow Clarifier, Accelator - DRV-MXR-01	Albany WTS	Vine St WTP	71	16	1.25	5.333	0.232	1.01	7	7	1	7	4	7	2	2	10			1	2
PMP-MTR-09	Motor #9 Raw Water Pump VFD	Albany WTS	Vine St WTP	72	17	1.21	7.167	0.169	1	10	4	7	4	7	10	2	2	1	1	1	1	1
FED-VOL-05	Soda Ash Feeder #1 - FED-VOL-05	Albany WTS	Vine St WTP	76	18	1.14	3.167	0.36	1	7	7	4	1	1	1	4	2	7	1	1	1	1
PIP-LRG-04	Large Filter Piping - PIP-LRG-04	Albany WTS	Vine St WTP	78	19	1.12	9.167	0.122	1	10	10	10	7	7	10	1	1	7	2	1	1	1
PIP-SML-06	Small Filter Piping - PIP-SML-06	Albany WTS	Vine St WTP	79	20	1.12	9.167	0.122	1	10	10	10	7	7	10	1	1	7	2	1	1	1
PMP-CVT-01	#1 Raw Water Pump	Albany WTS	Vine St WTP	84	21	1.11	7.167	0.153	1.007	10	7	7	4	4	10	1	4	7	2	1	1	2
PMP-CVT-02	#2 Raw Water Pump	Albany WTS	Vine St WTP	85	22	1.11	7.167	0.153	1.007	10	7	7	4	4	10	1	4	7	2	1	1	2
PMP-CVT-03	#3 Raw Water Pump	Albany WTS	Vine St WTP	86	23	1.11	7.167	0.153	1.007	10	7	7	4	4	10	1	4	7	2	1	1	2
PMP-CVT-04	#4 Raw Water Pump	Albany WTS	Vine St WTP	87	24	1.11	7.167	0.153	1.007	10	7	7	4	4	10	1	4	7	2	1	1	2
PMP-CVT-05	#5 Raw Water Pump	Albany WTS	Vine St WTP	88	25	1.11	7.167	0.153	1.007	10	7	7	4	4	10	1	4	7	2	1	1	2
PMP-CVT-07	#7 Raw Water Pump	Albany WTS	Vine St WTP	89	26	1.11	7.167	0.153	1.007	10	7	7	4	4	10	1	4	7	2	1	1	2
PMP-DIS-15	Disconnect Transfer Pump #1	Albany WTS	Vine St WTP	102	27	1.05	5.167	0.201	1.007	10	4	4	7	7	4	2	2	7	1	1	1	2

										Impact						Likelihood				Triggers		
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PMP-DIS-16	Disconnect Transfer Pump #2	Albany WTS	Vine St WTP	103	28	1.05	5.167	0.201	1.007	10	4	4	7	7	4	2	2	7	1	1	1	2
PMP-DIS-18	Disconnect Backwash Pump #16	Albany WTS	Vine St WTP	104	29	1.05	5.167	0.201	1.007	10	4	4	7	7	4	2	2	7	1	1	1	2
PMP-DIS-19	Disconnect Backwash Pump #10	Albany WTS	Vine St WTP	105	30	1.05	5.167	0.201	1.007	10	4	4	7	7	4	2	2	7	1	1	1	2
PMP-CVT-08	#8 Raw Water Pump VFD	Albany WTS	Vine St WTP	108	31	1.03	7.167	0.143	1.007	10	7	7	4	4	10	1	4	7	1	1	1	2
PMP-CVT-09	#9 Raw Water Pump VFD	Albany WTS	Vine St WTP	109	32	1.03	7.167	0.143	1.007	10	7	7	4	4	10	1	4	7	1	1	1	2
ROBICON8	Robicon VFD Pump Control – Robicon 8	Albany WTS	Vine St WTP	115	33	0.98	4.833	0.201	1.01	10	1	1	7	7	7	2	1	7	2	2	1	1
PMP-DIS-001	Pump No 15 Main Disconnect	Albany WTS	Vine St WTP	116	34	0.98	5.833	0.159	1.06	10	4	4	7	10	4	1	4	10	1	1	1	10
WTP1-04 PUMP STA	Pump Station Structure	Albany WTS	Vine St WTP	118	35	0.96	2.5	0.376	1.023	10	1	4	10	1	1	4	2	10	1	1	2	2
PMP-MTR-10	Bachwash Pump 10	Albany WTS	Vine St WTP	131	36	0.87	4.333	0.201	1	10	7	1	4	7	1	2	2	7	1	1	1	1
PMP-MTR-16	Motor #16 BW Pump	Albany WTS	Vine St WTP	132	37	0.87	4.333	0.201	1	10	7	1	4	7	1	2	2	7	1	1	1	1
PMP-CVT-19	Transfer Pump #3 VFD	Albany WTS	Vine St WTP	161	38	0.8	4	0.201	1	10	1	1	7	7	4	2	2	7	1	1	1	1
DRV-MXR-02	Upflow Clarifier, Accelator - DRV-MXR-02	Albany WTS	Vine St WTP	164	39	0.78	5.333	0.144	1.01	7	7	1	7	4	7	1	2	10			1	2
PMP-MTR-01	Motor #1 Raw Water Pump	Albany WTS	Vine St WTP	195	40	0.64	7.167	0.09	1	10	4	7	4	7	10	1	2	1	1	1	1	1
PMP-MTR-02	Motor #2 Raw Water Pump	Albany WTS	Vine St WTP	196	41	0.64	7.167	0.09	1	10	4	7	4	7	10	1	2	1	1	1	1	1
PMP-MTR-03	Motor #3 Raw Water Pump	Albany WTS	Vine St WTP	197	42	0.64	7.167	0.09	1	10	4	7	4	7	10	1	2	1	1	1	1	1
PMP-MTR-04	Motor #4 Raw Water Pump	Albany WTS	Vine St WTP	198	43	0.64	7.167	0.09	1	10	4	7	4	7	10	1	2	1	1	1	1	1
PMP-MTR-05	Motor #5 Raw Water Pump	Albany WTS	Vine St WTP	199	44	0.64	7.167	0.09	1	10	4	7	4	7	10	1	2	1	1	1	1	1
PMP-MTR-07	Motor #7 Raw Water Pump	Albany WTS	Vine St WTP	200	45	0.64	7.167	0.09	1	10	4	7	4	7	10	1	2	1	1	1	1	1
PMP-MTR-08	Motor #8 Raw Water Pump VFD	Albany WTS	Vine St WTP	201	46	0.64	7.167	0.09	1	10	4	7	4	7	10	1	2	1	1	1	1	1
SCR-ROT-01	Intake Screen Drive - SCR-ROT-01	Albany WTS	Vine St WTP	202	47	0.64	3	0.215	1	10	1	1	4	7	1	2	2	7			1	1
PMP-CVT-16	#16 BW Pump: Filters 7-10	Albany WTS	Vine St WTP	205	48	0.64	3.167	0.201	1	10	1	1	7	7	1	2	2	7	1	1	1	1
FED-VOL-06	Soda Ash Feeder #2 - FED-VOL-06	Albany WTS	Vine St WTP	206	49	0.64	3.167	0.201	1	7	7	4	1	1	1	2	2	7	1	1	1	1
ROBICON9	Robicon VFD #9 - Robicon 9	Albany WTS	Vine St WTP	207	50	0.63	3.167	0.196	1.01	10	1	1	7	7	1	2	2	4	2	2	1	1
PH-MON-01	PH Monitor Finish Water - PH-MON-01	Albany WTS	Vine St WTP	208	51	0.61	3.5	0.175	1	4	7	7	1	1	1	2	1	4	1	1	1	1
PH-MON-02	PH Monitor ClearwelL - PH-MON-02	Albany WTS	Vine St WTP	209	52	0.61	3.5	0.175	1	4	7	7	1	1	1	2	1	4	1	1	1	1
PMP-CHP-11	No 11 HP Pump	Albany WTS	Vine St WTP	210	53	0.6	3.167	0.191	1	10	1	1	7	7	1	2	4	1	1	1	1	1
PMP-CHP-13	No 13 HP Pump	Albany WTS	Vine St WTP	211	54	0.6	3.167	0.191	1	10	1	1	7	7	1	2	4	1	1	1	1	1
PMP-CHP-14	No 14 HP Pump	Albany WTS	Vine St WTP	212	55	0.6	3.167	0.191	1	10	1	1	7	7	1	2	4	1	1	1	1	1
PMP-CHP-15	#15 HP Pump VFD	Albany WTS	Vine St WTP	213	56	0.6	3.167	0.191	1	10	1	1	7	7	1	2	4	1	1	1	1	1
PMP=PMP-12a	No 12 Pump	Albany WTS	Vine St WTP	220	57	0.6	3.167	0.191	1	10	1	1	7	7	1	2	4	1	1	1	1	1

										Impact						Likelihood				Triggers		
Asset Name	Description	System	Facility	Over All Rank	Rank	Total Score	Consequence Score	Likelihood Score	Trigger Score	Availability to Return asset to Service	Compliance with Regulations	Disruption to Community/ Public Image	Financial Impact (repair/ replace, private property)	Health and Safety of Employees and Public	Service Reliability	Condition Assessment Overall	Effective Operating Protocols	Planned Redundancy	Reliability	Annual Maintenance Cost	Capacity and Utilization	Obsolescence
PMP-MTR-17	Motor #17 Transfer Pump #1	Albany WTS	Vine St WTP	221	58	0.6	3	0.201	1	10	1	1	4	7	1	2	2	7	1	1	1	1
PMP-MTR-18	Motor #18 Transfer Pump #2	Albany WTS	Vine St WTP	222	59	0.6	3	0.201	1	10	1	1	4	7	1	2	2	7	1	1	1	1
PMP-SAM-01	Control Bed Sample Pump #1 - PMP-SAM-01	Albany WTS	Vine St WTP	223	60	0.6	3	0.201	1	10	1	1	4	7	1	2	2	7	1	1	1	1
PMP-SAM-02	Control Bed Sample Pump #2 - PMP-SAM-02	Albany WTS	Vine St WTP	224	61	0.6	3	0.201	1	10	1	1	4	7	1	2	2	7	1	1	1	1
CAN-GAT-01A	Radial Canal Gate Actuator	Albany WTS	Vine St WTP	228	62	0.6	4.667	0.127	1.007	4	1	7	1	1	10	1	1	4	4	1	1	2
CL2-ANL-01	CL-17 Analyzer, Clearwell Free Chlorine - CL2-ANL-01	Albany WTS	Vine St WTP	230	63	0.58	6	0.095	1.007	4	7	7	4	4	7	1	2	2	1	1	1	2
CL2-ANL-02	CL-17 Analyzer, Finish - CL2-ANL-02	Albany WTS	Vine St WTP	231	64	0.58	6	0.095	1.007	4	7	7	4	4	7	1	2	2	1	1	1	2
CL2-ANL-03	CL-17 Analyzer Settled Water - CL2-ANL-03	Albany WTS	Vine St WTP	232	65	0.58	6	0.095	1.007	4	7	7	4	4	7	1	2	2	1	1	1	2
PMP-MTR-12	No 12 Motor	Albany WTS	Vine St WTP	239	66	0.57	3	0.191	1	10	1	1	4	7	1	2	4	1	1	1	1	1
PMP-MTR-13	No 13 HP Pump	Albany WTS	Vine St WTP	240	67	0.57	3	0.191	1	10	1	1	4	7	1	2	4	1	1	1	1	1
PMP-MTR-14	No 14 HP Pump	Albany WTS	Vine St WTP	241	68	0.57	3	0.191	1	10	1	1	4	7	1	2	4	1	1	1	1	1
ELC-MCC-001	Clarifier Drive 1	Albany WTS	Vine St WTP	262	69	0.5	2.5	0.201	1	7	4	4	1	1	1	2	2	7	1	1	1	1
ELC-MCC-002	Clarifier Drive 2	Albany WTS	Vine St WTP	263	70	0.5	2.5	0.201	1	7	4	4	1	1	1	2	2	7	1	1	1	1
ELEC-PAN-01	Service Panel A	Albany WTS	Vine St WTP	264	71	0.5	2.5	0.201	1	7	4	4	1	1	1	2	2	7	1	1	1	1
PMP-CVT-17	Transfer Pump #1	Albany WTS	Vine St WTP	278	72	0.49	4	0.122	1	10	1	1	7	7	4	1	2	7	1	1	1	1
PMP-CVT-18	Transfer Pump #2	Albany WTS	Vine St WTP	279	73	0.49	4	0.122	1	10	1	1	7	7	4	1	2	7	1	1	1	1
TUR-SCT-01	Raw Water Scatterimeter - TUR-SCT-01	Albany WTS	Vine St WTP	284	74	0.49	2.167	0.222	1.007	10	4	1	1	1	1	2	4	7	1	1	1	2
CAN-GAT-01	Radial Canal Gate - CAN-GAT-01	Albany WTS	Vine St WTP	287	75	0.46	4.833	0.095	1.007	4	1	7	4	1	10	1	1	4	1	1	1	2
CON-CEN-01	ACCEL. Concentrator #1 - CON-CEN-01	Albany WTS	Vine St WTP	295	76	0.45	2.167	0.206	1.007	1	4	4	1	1	1	2	4	4	1	1	1	2
CON-CEN-02	ACCEL. Concentrator #2 - CON-CEN-02	Albany WTS	Vine St WTP	296	77	0.45	2.167	0.206	1.007	1	4	4	1	1	1	2	4	4	1	1	1	2
CON-CEN-07	ACCEL.#2 Concentrator #1 - CON-CEN-07	Albany WTS	Vine St WTP	297	78	0.45	2.167	0.206	1.007	1	4	4	1	1	1	2	4	4	1	1	1	2
CON-CEN-08	ACCEL.#2 Concentrator #2 - CON-CEN-08	Albany WTS	Vine St WTP	298	79	0.45	2.167	0.206	1.007	1	4	4	1	1	1	2	4	4	1	1	1	2
CON-CEN-09	ACCEL.#2 Concentrator #3 - CON-CEN-09	Albany WTS	Vine St WTP	299	80	0.45	2.167	0.206	1.007	1	4	4	1	1	1	2	4	4	1	1	1	2
CON-CEN-10	ACCEL.#2 Concentrator #4 - CON-CEN-10	Albany WTS	Vine St WTP	300	81	0.45	2.167	0.206	1.007	1	4	4	1	1	1	2	4	4	1	1	1	2
VAL-BFV-38A	#1 Filter To Waste - Valve 38 Actuator	Albany WTS	Vine St WTP	303	82	0.44	1.333	0.328	1.007	7	1	1	1	1	1	4	2	1	1	1	1	2
VAL-BFV-39A	#2 Filter To Waste - Valve 39 Actuator	Albany WTS	Vine St WTP	304	83	0.44	1.333	0.328	1.007	7	1	1	1	1	1	4	2	1	1	1	1	2
VAL-BFV-40A	#3 Filter To Waste - Valve 40 Actuator	Albany WTS	Vine St WTP	305	84	0.44	1.333	0.328	1.007	7	1	1	1	1	1	4	2	1	1	1	1	2
VAL-BFV-41A	#4 Filter To Waste - Valve 41 Actuator	Albany WTS	Vine St WTP	306	85	0.44	1.333	0.328	1.007	7	1	1	1	1	1	4	2	1	1	1	1	2
VAL-BFV-42A	#5 Filter To Waste - Valve 42 Actuator	Albany WTS	Vine St WTP	307	86	0.44	1.333	0.328	1.007	7	1	1	1	1	1	4	2	1	1	1	1	2
CW-LEVEL-1	Transfer Pump Pipe Gallery - CW-Level-1	Albany WTS	Vine St WTP	333	87	0.4	2	0.201	1	7	1	1	1	4	1	2	2	7	1	1	1	1

										Impact						Likelihood				Triggers		
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PMP-CVT-10	#10 BW Pump: Filters 1-6	Albany WTS	Vine St WTP	335	88	0.39	3.167	0.122	1	10	1	1	7	7	1	1	2	7	1	1	1	1
PMP-MTR-19	Motor #19 Transfer Pump #3 VFD	Albany WTS	Vine St WTP	345	89	0.37	3	0.122	1	10	1	1	4	7	1	1	2	7	1	1	1	1
RTU-RTU-003	RTU	Albany WTS	Vine St WTP	351	90	0.35	2	0.175	1	4	1	1	1	1	4	2	2	2	1	1	1	1
PMP-SUM-01	Raw Water Sump	Albany WTS	Vine St WTP	356	91	0.35	2.833	0.122	1	10	1	1	1	7	1	1	2	7	1	1	1	1
SCR-DRV-01	Canal Screen Drive Unit - SCR-DRV-01	Albany WTS	Vine St WTP	357	92	0.34	3	0.115	1	10	1	1	4	7	1	1	1	7			1	1
PMP-MTR-11	No 11 HP Pump	Albany WTS	Vine St WTP	358	93	0.33	3	0.111	1	10	1	1	4	7	1	1	4	1	1	1	1	1
PMP-MTR-15	Motor #15 HP Pump VFD	Albany WTS	Vine St WTP	361	94	0.33	3	0.111	1	10	1	1	4	7	1	1	4	1	1	1	1	1
WT1-04S-VFD-03	Small Filter Building VFD #3	Albany WTS	Vine St WTP	362	95	0.32	1.5	0.212	1.01	7	1	1	4	1	1	2	2	7	2	2	1	1
ELC-BRK-001	Main Breaker	Albany WTS	Vine St WTP	368	96	0.32	3	0.106	1	4	4	4	1	4	1	1	2	4	1	1	1	1
MXR-SOL-03	Fluoride Mixer	Albany WTS	Vine St WTP	369	97	0.32	2.5	0.126	1	4	7	1	1	1	1	1	2	7			1	1
VAL-BAL-150	Surface Wash Shutoff #1 Filter - VAL-BAL-150	Albany WTS	Vine St WTP	374	98	0.3	1.5	0.201	1	10	1	1	1	1	1	2	2	7	1	1	1	1
VAL-BAL-150A	Surface Wash Shutoff #1 Filter - Valve Actuator	Albany WTS	Vine St WTP	375	99	0.3	1.5	0.201	1	10	1	1	1	1	1	2	2	7	1	1	1	1
VAL-BAL-152	Surface Wash Shutoff #2 Filter - VAL-BAL-152	Albany WTS	Vine St WTP	376	100	0.3	1.5	0.201	1	10	1	1	1	1	1	2	2	7	1	1	1	1
VAL-BAL-152A	Surface Wash Shutoff #2 Filter - Valve Actuator	Albany WTS	Vine St WTP	377	101	0.3	1.5	0.201	1	10	1	1	1	1	1	2	2	7	1	1	1	1
VAL-BAL-154	Surface Wash Shutoff #3 Filter - VAL-BAL-154	Albany WTS	Vine St WTP	378	102	0.3	1.5	0.201	1	10	1	1	1	1	1	2	2	7	1	1	1	1
VAL-BAL-154A	Surface Wash Shutoff #3 Filter - Valve Actuator	Albany WTS	Vine St WTP	379	103	0.3	1.5	0.201	1	10	1	1	1	1	1	2	2	7	1	1	1	1
VAL-BAL-156	Surface Wash Shutoff #4 Filter - VAL-BAL-156	Albany WTS	Vine St WTP	380	104	0.3	1.5	0.201	1	10	1	1	1	1	1	2	2	7	1	1	1	1
VAL-BAL-156A	Surface Wash Shutoff #4 Filter - Valve Actuator	Albany WTS	Vine St WTP	381	105	0.3	1.5	0.201	1	10	1	1	1	1	1	2	2	7	1	1	1	1
VAL-BAL-158	Surface Wash Shutoff #5 Filter - VAL-BAL-158	Albany WTS	Vine St WTP	382	106	0.3	1.5	0.201	1	10	1	1	1	1	1	2	2	7	1	1	1	1
VAL-BAL-158A	Surface Wash Shutoff #5 Filter - Valve Actuator	Albany WTS	Vine St WTP	383	107	0.3	1.5	0.201	1	10	1	1	1	1	1	2	2	7	1	1	1	1
TUR-20C-12	Process Turbidimeter CNTRL BDS - TUR-20C-12	Albany WTS	Vine St WTP	392	108	0.27	2.833	0.095	1	10	7	1	1	1	1	1	2	2	1	1	1	1
TUR-20D-01	Process Turbidimeter Filter #1 - TUR-20D-01	Albany WTS	Vine St WTP	393	109	0.27	2.833	0.095	1	10	7	1	1	1	1	1	2	2	1	1	1	1
TUR-20D-02	Process Turbidimeter Filter #2 - TUR-20D-02	Albany WTS	Vine St WTP	394	110	0.27	2.833	0.095	1	10	7	1	1	1	1	1	2	2	1	1	1	1
TUR-20D-03	Process Turbidimeter Filter #3 - TUR-20D-03	Albany WTS	Vine St WTP	395	111	0.27	2.833	0.095	1	10	7	1	1	1	1	1	2	2	1	1	1	1
TUR-20D-04	Process Turbidimeter Filter #4 - TUR-20D-04	Albany WTS	Vine St WTP	396	112	0.27	2.833	0.095	1	10	7	1	1	1	1	1	2	2	1	1	1	1
TUR-20D-05	Process Turbidimeter Filter #5 - TUR-20D-05	Albany WTS	Vine St WTP	397	113	0.27	2.833	0.095	1	10	7	1	1	1	1	1	2	2	1	1	1	1
TUR-20D-06	Process Turbidimeter Filter #6 - TUR-20D-06	Albany WTS	Vine St WTP	398	114	0.27	2.833	0.095	1	10	7	1	1	1	1	1	2	2	1	1	1	1
TUR-20D-07	Process Turbidimeter Filter #7 - TUR-20D-07	Albany WTS	Vine St WTP	399	115	0.27	2.833	0.095	1	10	7	1	1	1	1	1	2	2	1	1	1	1
TUR-20D-08	Process Turbidimeter Filter #8 - TUR-20D-08	Albany WTS	Vine St WTP	400	116	0.27	2.833	0.095	1	10	7	1	1	1	1	1	2	2	1	1	1	1
TUR-20D-09	Process Turbidimeter Filter #9 - TUR-20D-09	Albany WTS	Vine St WTP	401	117	0.27	2.833	0.095	1	10	7	1	1	1	1	1	2	2	1	1	1	1

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TUR-20D-10	Process Turbidimeter Filter #10 - TUR-20D-10	Albany WTS	Vine St WTP	402	118	0.27	2.833	0.095	1	10	7	1	1	1	1	1	2	2	1	1	1	1
TUR-20D-11	Process Turbidimeter Clearwell - TUR-20D-11	Albany WTS	Vine St WTP	403	119	0.27	2.833	0.095	1	10	7	1	1	1	1	1	2	2	1	1	1	1
COM-AIR-02	Quincy Air Compressor - COM-AIR-02	Albany WTS	Vine St WTP	414	120	0.24	2.5	0.097	1	4	4	1	1	4	1	1	1	4		1	1	1
VAL-BFV-14A	#1 Filter Influent - Valve 14 Actuator	Albany WTS	Vine St WTP	415	121	0.24	1.333	0.18	1.007	7	1	1	1	1	1	2	2	1	2	1	1	2
VAL-BFV-15A	#1 Filter Waste - Valve 15 Actuator	Albany WTS	Vine St WTP	416	122	0.24	1.333	0.18	1.007	7	1	1	1	1	1	2	2	1	2	1	1	2
VAL-BFV-17A	#1 Filter Effluent - Valve 17 Actuator	Albany WTS	Vine St WTP	417	123	0.24	1.333	0.18	1.007	7	1	1	1	1	1	2	2	1	2	1	1	2
VAL-BFV-18A	#2 Filter Influent - Valve 18 Actuator	Albany WTS	Vine St WTP	418	124	0.24	1.333	0.18	1.007	7	1	1	1	1	1	2	2	1	2	1	1	2
VAL-BFV-30A	#5 Filter Influent - Valve 30 Actuator	Albany WTS	Vine St WTP	419	125	0.24	1.333	0.18	1.007	7	1	1	1	1	1	2	2	1	2	1	1	2
VAL-BFV-19A	#2 Filter Waste - Valve 19 Actuator	Albany WTS	Vine St WTP	420	126	0.24	1.333	0.18	1.007	7	1	1	1	1	1	2	2	1	2	1	1	2
VAL-BFV-22A	#3 Filter Influent - Valve 22 Actuator	Albany WTS	Vine St WTP	421	127	0.24	1.333	0.18	1.007	7	1	1	1	1	1	2	2	1	2	1	1	2
VAL-BFV-23A	#3 Filter Waste - Valve 23 Actuator	Albany WTS	Vine St WTP	422	128	0.24	1.333	0.18	1.007	7	1	1	1	1	1	2	2	1	2	1	1	2
VAL-BFV-25A	#3 Filter Effluent - Valve 25 Actuator	Albany WTS	Vine St WTP	423	129	0.24	1.333	0.18	1.007	7	1	1	1	1	1	2	2	1	2	1	1	2
VAL-BFV-41	#4 Filter To Waste - VAL-BFV-41	Albany WTS	Vine St WTP	426	130	0.24	1.333	0.18	1	7	1	1	1	1	1	2	2	1	2	1	1	1
VAL-BFV-40	#3 Filter To Waste - VAL-BFV-40	Albany WTS	Vine St WTP	427	131	0.24	1.333	0.18	1	7	1	1	1	1	1	2	2	1	2	1	1	1
VAL-BFV-39	#2 Filter To Waste - VAL-BFV-39	Albany WTS	Vine St WTP	428	132	0.24	1.333	0.18	1	7	1	1	1	1	1	2	2	1	2	1	1	1
VAL-BFV-42	#5 Filter To Waste - VAL-BFV-42	Albany WTS	Vine St WTP	429	133	0.24	1.333	0.18	1	7	1	1	1	1	1	2	2	1	2	1	1	1
VAL-BFV-38	#1 Filter To Waste - VAL-BFV-38	Albany WTS	Vine St WTP	430	134	0.24	1.333	0.18	1	7	1	1	1	1	1	2	2	1	2	1	1	1
VAL-BFV-31A	#5 Filter Waste - Valve 31 Actuator	Albany WTS	Vine St WTP	448	135	0.23	1.333	0.169	1.007	7	1	1	1	1	1	2	2	1	1	1	1	2
VAL-BFV-26A	#4 Filter Influent - Valve 26 Actuator	Albany WTS	Vine St WTP	449	136	0.23	1.333	0.169	1.007	7	1	1	1	1	1	2	2	1	1	1	1	2
VAL-BFV-27A	#4 Filter Waste - Valve 27 Actuator	Albany WTS	Vine St WTP	450	137	0.23	1.333	0.169	1.007	7	1	1	1	1	1	2	2	1	1	1	1	2
VAL-BFV-52A	#8 Influent - Valve 52 Actuator	Albany WTS	Vine St WTP	451	138	0.23	1.333	0.169	1	7	1	1	1	1	1	2	2	1	1	1	1	1
VAL-BFV-54A	#8 Filter To Waste - Valve 54 Actuator	Albany WTS	Vine St WTP	452	139	0.23	1.333	0.169	1	7	1	1	1	1	1	2	2	1	1	1	1	1
VAL-BFV-50A	#8 Backwash - Valve 50 Actuator	Albany WTS	Vine St WTP	453	140	0.23	1.333	0.169	1	7	1	1	1	1	1	2	2	1	1	1	1	1
VAL-BFV-53A	#8 Effluent - Valve 53 Actuator	Albany WTS	Vine St WTP	454	141	0.23	1.333	0.169	1	7	1	1	1	1	1	2	2	1	1	1	1	1
VAL-BFV-59A	#7 Filter To Waste - Valve 59 Actuator	Albany WTS	Vine St WTP	455	142	0.23	1.333	0.169	1	7	1	1	1	1	1	2	2	1	1	1	1	1
VAL-TEL-01A	Telescoping Valve Actuator	Albany WTS	Vine St WTP	456	143	0.23	1.333	0.169	1	7	1	1	1	1	1	2	2	1	1	1	1	1
VAL-CHK-07	#4 Check Valve - VAL-CHK-07	Albany WTS	Vine St WTP	457	144	0.23	1.333	0.169	1	7	1	1	1	1	1	2	2	1	1	1	1	1
VAL-CHK-08	#5 Check ValvE - VAL-CHK-08	Albany WTS	Vine St WTP	458	145	0.23	1.333	0.169	1	7	1	1	1	1	1	2	2	1	1	1	1	1
VAL-BFV-58A	#7 Backwash - Valve 58 Actuator	Albany WTS	Vine St WTP	459	146	0.23	1.333	0.169	1	7	1	1	1	1	1	2	2	1	1	1	1	1
VAL-BFV-70A	Surface Wash Control #7 Filter - Valve 70 Actuator	Albany WTS	Vine St WTP	460	147	0.23	1.333	0.169	1	7	1	1	1	1	1	2	2	1	1	1	1	1

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VAL-BFV-71A	Surface Wash Control #8 Filter - Valve 71 Actuator	Albany WTS	Vine St WTP	461	148	0.23	1.333	0.169	1	7	1	1	1	1	1	2	2	1	1	1	1	1
VAL-BFV-72A	Surface Wash Control #9 Filter - Valve 72 Actuator	Albany WTS	Vine St WTP	462	149	0.23	1.333	0.169	1	7	1	1	1	1	1	2	2	1	1	1	1	1
VAL-BFV-73A	Surface Wash Control #10 Filter - Valve 73 Actuator	Albany WTS	Vine St WTP	463	150	0.23	1.333	0.169	1	7	1	1	1	1	1	2	2	1	1	1	1	1
PMP-VLV-002	Pump No 11 Clay Valve	Albany WTS	Vine St WTP	464	151	0.23	1.333	0.169	1	7	1	1	1	1	1	2	2	1	1	1	1	1
MET-FLO-05	Sparling Meter BW 1-6 - MET-FLO-05	Albany WTS	Vine St WTP	467	152	0.22	1.167	0.191	1	4	1	1	1	1	1	2	1	7	1	1	1	1
MET-FIL-02	Sparling Meter Filter #2 - MET-FIL-02	Albany WTS	Vine St WTP	469	153	0.22	1.167	0.191	1	4	1	1	1	1	1	2	1	7	1	1	1	1
MET-FIL-03	Sparling Meter Filter #3 - MET-FIL-03	Albany WTS	Vine St WTP	470	154	0.22	1.167	0.191	1	4	1	1	1	1	1	2	1	7	1	1	1	1
MET-FIL-04	Sparling Meter Filter #4 - MET-FIL-04	Albany WTS	Vine St WTP	471	155	0.22	1.167	0.191	1	4	1	1	1	1	1	2	1	7	1	1	1	1
MET-FIL-05	Sparling Meter Filter #5 - MET-FIL-05	Albany WTS	Vine St WTP	472	156	0.22	1.167	0.191	1	4	1	1	1	1	1	2	1	7	1	1	1	1
MET-FIL-06	Sparling Meter Filter #6 - MET-FIL-06	Albany WTS	Vine St WTP	481	157	0.2	1.167	0.175	1	4	1	1	1	1	1	2	1	4	1	1	1	1
VAL-TEL-02	Telescoping Valve	Albany WTS	Vine St WTP	554	158	0.18	1.333	0.132	1.01	7	1	1	1	1	1	1	2	7	2		1	2
VAL-TEL-01	Telescoping Valve	Albany WTS	Vine St WTP	555	159	0.18	1.333	0.132	1.01	7	1	1	1	1	1	1	2	7	2		1	2
VAL-AIR-01	Backwash Line Air Release - VAL-AIR-01	Albany WTS	Vine St WTP	567	160	0.14	1.5	0.095	1.007	10	1	1	1	1	1	1	2	2	1	1	1	2
VAL-AIR-02	Backwash Line Air Release - VAL-AIR-02	Albany WTS	Vine St WTP	568	161	0.14	1.5	0.095	1.007	10	1	1	1	1	1	1	2	2	1	1	1	2
VAL-AIR-03	Backwash Line Air Release - VAL-AIR-03	Albany WTS	Vine St WTP	569	162	0.14	1.5	0.095	1.007	10	1	1	1	1	1	1	2	2	1	1	1	2
CRN-001	Overhead Crane	Albany WTS	Vine St WTP	571	163	0.14	1.333	0.106	1	7	1	1	1	1	1	1	2	4	1	1	1	1
PMP-VLV-010	Pump No 14 Suction Valve	Albany WTS	Vine St WTP	574	164	0.14	1.5	0.09	1	10	1	1	1	1	1	1	2	1	1	1	1	1
PMP-VLV-011	Pump No 14 Clay Valve	Albany WTS	Vine St WTP	575	165	0.14	1.5	0.09	1	10	1	1	1	1	1	1	2	1	1	1	1	1
PMP-VLV-012	Pump No 14 Discharge Valve	Albany WTS	Vine St WTP	576	166	0.14	1.5	0.09	1	10	1	1	1	1	1	1	2	1	1	1	1	1
PMP-VLV-013	Pump No 15 Suction Valve	Albany WTS	Vine St WTP	577	167	0.14	1.5	0.09	1	10	1	1	1	1	1	1	2	1	1	1	1	1
PMP-VLV-014	Pump No 15 Discharge Valve Actuated	Albany WTS	Vine St WTP	578	168	0.14	1.5	0.09	1	10	1	1	1	1	1	1	2	1	1	1	1	1
PMP-VLV-015	Pump No 15 Check Valve	Albany WTS	Vine St WTP	579	169	0.14	1.5	0.09	1	10	1	1	1	1	1	1	2	1	1	1	1	1
PMP-VLV-008	Pump No 13 Clay Valve	Albany WTS	Vine St WTP	580	170	0.14	1.5	0.09	1	10	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-21A	#2 Filter Effluent - Valve 21 Actuator	Albany WTS	Vine St WTP	582	171	0.14	1.333	0.101	1.007	7	1	1	1	1	1	1	2	1	2	1	1	2
VAL-BFV-29A	#4 Filter Effluent - Valve 29 Actuator	Albany WTS	Vine St WTP	583	172	0.14	1.333	0.101	1.007	7	1	1	1	1	1	1	2	1	2	1	1	2
VAL-BFV-30	#5 Filter Influent - VAL-BFV-30	Albany WTS	Vine St WTP	584	173	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-27	#4 Filter Waste - VAL-BFV-27	Albany WTS	Vine St WTP	585	174	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-32	#5 Filter Backwash - VAL-BFV-32	Albany WTS	Vine St WTP	586	175	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-31	#5 Filter Waste - VAL-BFV-31	Albany WTS	Vine St WTP	587	176	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-33	#5 Filter Effluent - VAL-BFV-33	Albany WTS	Vine St WTP	588	177	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1

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VAL-BFV-22	#3 Filter Influent - VAL-BFV-22	Albany WTS	Vine St WTP	589	178	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-23	#3 Filter Waste - VAL-BFV-23	Albany WTS	Vine St WTP	590	179	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-20	#2 Filter Backwash - VAL-BFV-20	Albany WTS	Vine St WTP	591	180	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-20A	#2 Filter Backwash - Valve 20 Actuator	Albany WTS	Vine St WTP	592	181	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-21	#2 Filter Effluent - VAL-BFV-21	Albany WTS	Vine St WTP	593	182	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-28	#4 Filter Backwash - VAL-BFV-28	Albany WTS	Vine St WTP	594	183	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-28A	#4 Filter Backwash - Valve 28 Actuator	Albany WTS	Vine St WTP	595	184	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-29	#4 Filter Effluent - VAL-BFV-29	Albany WTS	Vine St WTP	596	185	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-26	#4 Filter Influent - VAL-BFV-26	Albany WTS	Vine St WTP	597	186	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-24	#3 Filter BackwasH - VAL-BFV-24	Albany WTS	Vine St WTP	598	187	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-24A	#3 Filter Backwash - Valve 24 Actuator	Albany WTS	Vine St WTP	599	188	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-50	#8 Backwash - VAL-BFV-50	Albany WTS	Vine St WTP	600	189	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-15	#1 Filter Waste - VAL-BFV-15	Albany WTS	Vine St WTP	601	190	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-14	#1 Filter Influent - VAL-BFV-14	Albany WTS	Vine St WTP	602	191	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-19	#2 Filter Waste - VAL-BFV-19	Albany WTS	Vine St WTP	603	192	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-18	#2 Filter Influent - VAL-BFV-18	Albany WTS	Vine St WTP	604	193	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-16	#1 Filter Backwash - VAL-BFV-16	Albany WTS	Vine St WTP	605	194	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-16A	#1 Filter Backwash - Valve 16 Actuator	Albany WTS	Vine St WTP	606	195	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
VAL-BFV-17	#1 Filter Effluent - VAL-BFV-17	Albany WTS	Vine St WTP	607	196	0.13	1.333	0.101	1	7	1	1	1	1	1	1	2	1	2	1	1	1
MET-FIL-07	Sparling Meter Filter #7 - MET-FIL-07	Albany WTS	Vine St WTP	608	197	0.13	1.167	0.111	1	4	1	1	1	1	1	1	1	7	1	1	1	1
MET-FIL-08	Sparling Meter Filter #8 - MET-FIL-08	Albany WTS	Vine St WTP	609	198	0.13	1.167	0.111	1	4	1	1	1	1	1	1	1	7	1	1	1	1
MET-FIL-09	Sparling Meter Filter #9 - MET-FIL-09	Albany WTS	Vine St WTP	610	199	0.13	1.167	0.111	1	4	1	1	1	1	1	1	1	7	1	1	1	1
MET-FIL-10	Sparling Meter Filter #10 - MET-FIL-10	Albany WTS	Vine St WTP	611	200	0.13	1.167	0.111	1	4	1	1	1	1	1	1	1	7	1	1	1	1
MET-FLO-06	Sparling Meter BW 7-10 - MET-FLO-06	Albany WTS	Vine St WTP	612	201	0.13	1.167	0.111	1	4	1	1	1	1	1	1	1	7	1	1	1	1
VAL-BFV-33A	#5 Filter Effluent - Valve 33 Actuator	Albany WTS	Vine St WTP	624	202	0.12	1.333	0.09	1.007	7	1	1	1	1	1	1	2	1	1	1	1	2
VAL-BFV-32A	#5 Filter Backwash - Valve 32 Actuator	Albany WTS	Vine St WTP	625	203	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-53	#8 Effluent - VAL-BFV-53	Albany WTS	Vine St WTP	626	204	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-55	#7 Influent - VAL-BFV-55	Albany WTS	Vine St WTP	627	205	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-55A	#7 Influent - VALVE 55 ACTUATOR	Albany WTS	Vine St WTP	628	206	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-56	#7 Effluent - VAL-BFV-56	Albany WTS	Vine St WTP	629	207	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1

										Impact						Likelihood				Triggers		
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VAL-BFV-51	#8 Waste - VAL-BFV-51	Albany WTS	Vine St WTP	630	208	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-51A	#8 Waste - VALVE 51 ACTUATOR	Albany WTS	Vine St WTP	631	209	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-52	#8 Influent - VAL-BFV-52	Albany WTS	Vine St WTP	632	210	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-44	#2 Transfer Pump - VAL-BFV-44	Albany WTS	Vine St WTP	633	211	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-45	#3 Transfer Pump - VAL-BFV-45	Albany WTS	Vine St WTP	634	212	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-60	#10 Waste - VAL-BFV-60	Albany WTS	Vine St WTP	635	213	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-60A	#10 Waste -Valve 60 Actuator	Albany WTS	Vine St WTP	636	214	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-61	#10 Influent - VAL-BFV-61	Albany WTS	Vine St WTP	637	215	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-61A	#10 Influent - Valve 61 Actuator	Albany WTS	Vine St WTP	638	216	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-54	#8 Filter-To-Waste - VAL-BFV-54	Albany WTS	Vine St WTP	639	217	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-57	#7 Waste - VAL-BFV-57	Albany WTS	Vine St WTP	640	218	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-57A	#7 Waste - Valve 57 Actuator	Albany WTS	Vine St WTP	641	219	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-58	#7 Backwash - VAL-BFV-58	Albany WTS	Vine St WTP	642	220	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-63	#10 Effluent - VAL-BFV-63	Albany WTS	Vine St WTP	643	221	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-63A	#10 Effluent - Valve 63 Actuator	Albany WTS	Vine St WTP	644	222	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-64	#9 Influent - VAL-BFV-64	Albany WTS	Vine St WTP	645	223	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-64A	#9 Influent - Valve 64 Actuator	Albany WTS	Vine St WTP	646	224	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-65	#9 Waste - VAL-BFV-65	Albany WTS	Vine St WTP	647	225	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-65A	#9 Waste - Valve 65 Actuator	Albany WTS	Vine St WTP	648	226	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-66	#9 Backwash - VAL-BFV-66	Albany WTS	Vine St WTP	649	227	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-66A	#9 Backwash - Valve 66 Actuator	Albany WTS	Vine St WTP	650	228	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-67	#10 Filter-To-Waste - VAL-BFV-67	Albany WTS	Vine St WTP	651	229	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-67A	#10 Filter To Waste - Valve 67 Actuator	Albany WTS	Vine St WTP	652	230	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-68	#9 Filter-To-Waste - VAL-BFV-68	Albany WTS	Vine St WTP	653	231	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-68A	#9 Filter To Waste - Valve 68 Actuator	Albany WTS	Vine St WTP	654	232	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-69	#9 Effluent - VAL-BFV-69	Albany WTS	Vine St WTP	655	233	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-69A	#9 Effluent - VALVE 69 ACTUATOR	Albany WTS	Vine St WTP	656	234	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-70	Surface Wash Control #7 Filter - VAL-BFV-70	Albany WTS	Vine St WTP	657	235	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-RPV-02	Backflow Prevention - VAL-RPV-02	Albany WTS	Vine St WTP	664	236	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1		1	1
VAL-TEL-02A	Telescoping Valve Actuator	Albany WTS	Vine St WTP	665	237	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1

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VAL-CHK-04	#1 Pump Check Valve - VAL-CHK-04	Albany WTS	Vine St WTP	667	238	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-CHK-05	#2 Pump Check Valve - VAL-CHK-05	Albany WTS	Vine St WTP	668	239	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-CHK-06	#3 Check Valve - VAL-CHK-06	Albany WTS	Vine St WTP	669	240	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-GAT-38	Backflow PRV - VAL-GAT-38	Albany WTS	Vine St WTP	670	241	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1		1	1
VAL-BFV-73	Surface Wash ControL #10 FILTER - VAL-BFV-73	Albany WTS	Vine St WTP	674	242	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-72	Surface Wash Control #9 FILTER - VAL-BFV-72	Albany WTS	Vine St WTP	675	243	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-71	Surface Wash Control #8 FILTER - VAL-BFV-71	Albany WTS	Vine St WTP	676	244	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-59	#7 Filter-To-Waste - VAL-BFV-59	Albany WTS	Vine St WTP	677	245	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-CHK-10	#7 Check Valve - VAL-CHK-10	Albany WTS	Vine St WTP	678	246	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-CHK-11	#8 Check Valve - VAL-CHK-11	Albany WTS	Vine St WTP	679	247	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1		1	1
VAL-CHK-12	#9 Check Valve - VAL-CHK-12	Albany WTS	Vine St WTP	680	248	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1		1	1
VAL-CHK-18	#1 Transfer Pump - VAL-CHK-18	Albany WTS	Vine St WTP	681	249	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1		1	1
VAL-CHK-19	#2 Transfer Pump - VAL-CHK-19	Albany WTS	Vine St WTP	682	250	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1		1	1
VAL-CHK-20	#3 Transfer Pump - VAL-CHK-20	Albany WTS	Vine St WTP	683	251	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1		1	1
VAL-CHK-22	PRV - VAL-CHK-22	Albany WTS	Vine St WTP	684	252	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1		1	1
VAL-CHK-23	PRV - VAL-CHK-23	Albany WTS	Vine St WTP	685	253	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1		1	1
VAL-GAT-08	#1 Gate Valve - VAL-GAT-08	Albany WTS	Vine St WTP	686	254	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1		1	1
VAL-GAT-09	#2 Gate Valve - VAL-GAT-09	Albany WTS	Vine St WTP	687	255	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1		1	1
VAL-GAT-10	#3 Gate Valve - VAL-GAT-10	Albany WTS	Vine St WTP	688	256	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1		1	1
VAL-GAT-11	#4 Gate Valve - VAL-GAT-11	Albany WTS	Vine St WTP	689	257	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1		1	1
VAL-GAT-12	#5 Gate Valve - VAL-GAT-12	Albany WTS	Vine St WTP	690	258	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1		1	1
VAL-GAT-13	#6 Gate Valve - VAL-GAT-13	Albany WTS	Vine St WTP	691	259	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1		1	1
VAL-GAT-14	#7 Gate Valve - VAL-GAT-14	Albany WTS	Vine St WTP	692	260	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1		1	1
VAL-GAT-15	#8 Gate Valve - VAL-GAT-15	Albany WTS	Vine St WTP	693	261	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1		1	1
VAL-GAT-16	#9 Gate Valve - VAL-GAT-16	Albany WTS	Vine St WTP	694	262	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1		1	1
VAL-GAT-34	#1 Transfer Pump - VAL-GAT-34	Albany WTS	Vine St WTP	695	263	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1		1	1
PMP VLV-007	Pump No 13 Suction Valve	Albany WTS	Vine St WTP	696	264	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-13	Backwash Pump Intertie - VAL-BFV-13	Albany WTS	Vine St WTP	697	265	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
PMP-VLV-009	Pump No 13 Discharge Valve	Albany WTS	Vine St WTP	700	266	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
PMP-VLV-003	Pump No 11 Discharge Valve	Albany WTS	Vine St WTP	713	267	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1

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PMP-VLV-004	Pump No 12 Suction Valve	Albany WTS	Vine St WTP	714	268	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
PMP-VLV-005	Pump No 12 Discharge Valve Actuated	Albany WTS	Vine St WTP	715	269	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
PMP-VLV-001	Pump No 11 Suction Valve	Albany WTS	Vine St WTP	716	270	0.12	1.333	0.09	1	7	1	1	1	1	1	1	2	1	1	1	1	1
VAL-BFV-56A	#7 Effluent - Valve 56 ACTUATOR	Albany WTS	Vine St WTP	749	271	0.11	1.333	0.079	1	7	1	1	1	1	1	1	1	1	1	1	1	1
VAL-GAT-37	Backflow PRV - VAL-GAT-37	Albany WTS	Vine St WTP	751	272	0.11	1.167	0.09	1	4	1	1	1	1	1	1	2	1	1		1	1
VAL-BFV-62	#10 Backwash - VAL-BFV-62	Albany WTS	Vine St WTP	753	273	0.09	1	0.09	1	1	1	1	1	1	1	1	2	1	1	1	1	1
SSBAS-ACL-01	Upflow Clarifier Accelator - BAS-ACL-01	Albany WTS	Vine St WTP																			
GATE CNTRL	Canal Gate Controls - Gate CNTRL	Albany WTS	Vine St WTP																1			
GATE CNTRLA	Canal Gate Control Actuator	Albany WTS	Vine St WTP																			
GEN-HYD-01	Hydroelectric Generator - GEN-HYD-01	Albany WTS	Vine St WTP																			
PMP-CVT-06	#6 Raw Water Pump	Albany WTS	Vine St WTP																2	1		
PMP-CVT-20	Transfer Pump #4 VFD	Albany WTS	Vine St WTP																1	1		
PMP-MTR-06	Motor #6 Raw Water Pump	Albany WTS	Vine St WTP																1	1		
PMP-MTR-20	Motor #20 Transfer Pump #4 VFD	Albany WTS	Vine St WTP																1	1		
RAW-VAL-01	Raw Water Valve - Raw-VAL-01	Albany WTS	Vine St WTP																			
RAW-VAL-01A	Raw Water Valve Actuator-Raw-VAL-01	Albany WTS	Vine St WTP																			
VAL-BAL-160	Surface Wash Shutoff #6 Filter - VAL-BAL-160	Albany WTS	Vine St WTP																			
VAL-BAL-160A	Surface Wash Shutoff #6 Filter - Valve Actuator	Albany WTS	Vine St WTP																			
VAL-BFV-25	#3 Filter Effluent - VAL-BFV-25	Albany WTS	Vine St WTP																2	1		
VAL-BFV-34	#6 Filter Influent - VAL-BFV-34	Albany WTS	Vine St WTP																2			
VAL-BFV-34A	#6 Filter Influent - Valve 34 Actuator	Albany WTS	Vine St WTP																			
VAL-BFV-35	#6 Filter Waste - VAL-BFV-35	Albany WTS	Vine St WTP																2			
VAL-BFV-35A	#6 Filter Waste - Valve 35 Actuator	Albany WTS	Vine St WTP																			
VAL-BFV-36	#6 Filter Backwash - VAL-BFV-36	Albany WTS	Vine St WTP																			
VAL-BFV-36A	#6 Filter Backwash - Valve 36 Actuator	Albany WTS	Vine St WTP																			
VAL-BFV-37	#6 Filter Effluent - VAL-BFV-37	Albany WTS	Vine St WTP																			
VAL-BFV-37A	#6 Filter Effluent - Valve 37 Actuator	Albany WTS	Vine St WTP																			
VAL-BFV-43	#6 Filter To Waste - VAL-BFV-43	Albany WTS	Vine St WTP																			
VAL-BFV-43A	#6 Filter To Waste - Valve 43 Actuator	Albany WTS	Vine St WTP																			
VAL-BFV-46	#4 Transfer Pump - VAL-BFV-46	Albany WTS	Vine St WTP																			

Asset Name	Description	System	Facility	Over All Rank	Rank	Total Score	Consequence Score	Likelihood Score	Trigger Score	Impact						Likelihood				Triggers		
										Availability to Return asset to Service	Compliance with Regulations	Disruption to Community/ Public Image	Financial Impact (repair/ replace, private property)	Health and Safety of Employees and Public	Service Reliability	Condition Assessment Overall	Effective Operating Protocols	Planned Redundancy	Reliability	Annual Maintenance Cost	Capacity and Utilization	Obsolescence
VAL-BFV-62A	#10 Backwash - Valve 62 Actuator	Albany WTS	Vine St WTP													1			1	1		
VAL-CHK-09	#6 Check Valve - VAL-CHK-09	Albany WTS	Vine St WTP																			
VAL-CHK-21	#4 Transfer Pump - VAL-CHK-21	Albany WTS	Vine St WTP																			
WT1-01-VFD-08	Large Filter Building VFD #8	Albany WTS	Vine St WTP																			
WT1-01-VFD-09	Large Filter Building VFD #9	Albany WTS	Vine St WTP																			
WT1-04L-VFD-04	Small Filter Building VFD #4	Albany WTS	Vine St WTP																			

ATTACHMENT E-4

Vine St. WTP Risk Reduction Detail Sheet

Location
Vine Street Water Plant

Asset Posing Unacceptable Risk		
Asset ID	Asset Common Name / Location	Risk Score
ELEC-DIS-009	Main Disconnect for Pumps 2,4,6, and 8	2.08

Primary Cause of Risk	
Type	Category
☐ Consequence ☑ Likelihood	Effective O&M Protocols

Secondary Cause of Risk	
Type	Category
☐ Consequence ☐ Likelihood	

Risk Reduction Option #1					
Addresses	Description	Risk Score w/ Option	Reduction in Risk Score	Estimated Lifecycle Cost	Risk Reduction:Cost
☑ Primary ☐ Secondary	Predictive Maintenance Performed every two years	1.79	0.29	N/A	1,500/2yr

Risk Reduction Option #2					
Addresses	Description	Risk Score w/ Option	Reduction in Risk Score	Estimated Lifecycle Cost	Risk Reduction:Cost
☐ Primary ☐ Secondary					

Combined Risk Reduction of Completing Both Option #1 and Option #2					
Addresses	Description	Risk Score w/ Option	Reduction in Risk Score	Estimated Lifecycle Cost	Risk Reduction:Cost
☐ Primary ☐ Secondary					

Notes/Comments
Use the new CMMS to trigger Predictive Maintenance (Thermography) on the disconnects.

Location
Vine Street Water Plant

Asset Posing Unacceptable Risk		
Asset ID	Asset Common Name / Location	Risk Score
ELC-DIS-001 ELC-DIS-002 ELC-DIS-003 ELC-DIS-004 ELC-DIS-005 ELC-DIS-007	Pump 1, 2, 3, 4, 5, and 7 electrical disconnects	1.88

Primary Cause of Risk	
Type	Category
☐ Consequence ☑ Likelihood	Effective O&M

Secondary Cause of Risk	
Type	Category
☐ Consequence ☐ Likelihood	

Risk Reduction Option #1					
Addresses	Description	Risk Score w/ Option	Reduction in Risk Score	Estimated Lifecycle Cost	Risk Reduction:Cost
☑ Primary ☐ Secondary	New CMMS with Predictive Maintenenace Task every two years	1.61	0.27	N/A	1,500/2 yr

Risk Reduction Option #2					
Addresses	Description	Risk Score w/ Option	Reduction in Risk Score	Estimated Lifecycle Cost	Risk Reduction:Cost
☐ Primary ☐ Secondary					

Combined Risk Reduction of Completing Both Option #1 and Option #2					
Addresses	Description	Risk Score w/ Option	Reduction in Risk Score	Estimated Lifecycle Cost	Risk Reduction:Cost
☐ Primary ☐ Secondary					

Notes/Comments	
	Use the new CMMS to trigger Predictive Maintenance (Thermography) on the disconnects.

Location
Vine Street Water Plant

Asset Posing Unacceptable Risk		
Asset ID	Asset Common Name / Location	Risk Score
VAL-BFV-38A	#1 FILTER TO WASTE - VALVE 38 ACTUATOR	0.44
VAL-BFV-39A	#2 FILTER TO WASTE - VALVE 39 ACTUATOR	
VAL-BFV-40A	#3 FILTER TO WASTE - VALVE 40 ACTUATOR	
VAL-BFV-41A	#4 FILTER TO WASTE - VALVE 41 ACTUATOR	
VAL-BFV-42A	#5 FILTER TO WASTE - VALVE 42 ACTUATOR	

Primary Cause of Risk	
Type	Category
☐ Consequence ☑ Likelihood	Condition Assesment Overall

Secondary Cause of Risk	
Type	Category
☐ Consequence ☐ Likelihood	

Risk Reduction Option #1					
Addresses	Description	Risk Score w/ Option	Reduction in Risk Score	Estimated Lifecycle Cost	Risk Reduction:Cost
☑ Primary ☐ Secondary	Replace Actuators	0.12	0.32	N/A	$17,500

Risk Reduction Option #2					
Addresses	Description	Risk Score w/ Option	Reduction in Risk Score	Estimated Lifecycle Cost	Risk Reduction:Cost
☐ Primary ☐ Secondary					

Combined Risk Reduction of Completing Both Option #1 and Option #2					
Addresses	Description	Risk Score w/ Option	Reduction in Risk Score	Estimated Lifecycle Cost	Risk Reduction:Cost
☐ Primary ☐ Secondary					

Notes/Comments	
	Replace actuators.