

Appendix H: Lift Station Inspection Forms



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**City of Modesto
Lift Station Condition Assessment Form**



1. LIFT STATION NAME: Woodland Lift Station
2. DATE: December 1, 2015
3. TIME: 10:00 am to 12:30 pm
4. CONSULTANT STAFF: Bernadette Visitacion and Tim Banyai
5. DISTRICT STAFF: Miguel Alvarez, David Felix, and Pete Kambel

Background Information

NOTE: SEE INVENTORY FORM FOR BACKGROUND INFORMATION

Pump Equipment Summary

NOTE: SEE INVENTORY FORM FOR EQUIPMENT NOT LISTED HERE

Pump Information

	Pump 1	Pump 2	Pump 3, 4 and 5
Capacity, gpm	2,000	3,500	4,500
Manufacturer	Wemco	Wemco	Wemco
Motor Configuration	Horizontal	Horizontal	Horizontal

Rating Criteria (1 best to 5 worst)

General Condition Rating

- 1 New or nearly-new equipment or structure.
- 2 Well maintained, like-new condition of equipment or structure.
- 3 Visible degradation of equipment or structure.
- 4 Equipment or structure integrity compromised by corrosion and wear.
- 5 Equipment or structure integrity severely compromised by corrosion and wear. Possible imminent failure.

General Functionality Rating

- 1 Structure or equipment functions better than other similar structures or equipment.
- 2 Structure or equipment functions as intended.
- 3 Structure or equipment is in service but maintenance or operational requirements are excessive.
- 4 Structure or equipment is in service but function is highly impaired.
- 5 Structure or equipment is not currently functioning for its intended use.



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Site

NOTE: SEE INVENTORY FORM FOR SITE INFORMATION NOT LISTED HERE

Access

6. General Condition Rating 1 2 3 4 5 – Repaving
 7. General Functionality Rating 1 2 3 4 5 – Tight/limited access

Turf / Landscaping

8. General Condition Rating 1 2 3 4 5
 9. General Functionality Rating 1 2 3 4 5

Future Expansion Area

10. Space available for future expansion Y N

Building Structure

Superstructure Building

11. General Condition Rating 1 2 3 4 5 - Dry well is in good condition. Condition of wet well appears to be in poor condition. Further investigation needed.
 12. General Functionality Rating 1 2 3 4 5 – Access to wet well limited due to corroding stair and handrail, limited ventilation, and no lighting.

<u>Criteria</u>		<u>Comments</u>
13. Exterior wall condition	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	
14. Interior wall condition	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	
15. Exterior finish condition	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	
16. Interior finish condition	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	
17. Equipment finish condition	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	
18. Roof condition	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5	
19. Door condition	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	
20. Window condition	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	
21. Pipe support condition	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	
22. Grating condition	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	
23. Layout OK for equipment access	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	

Wet Well

24. General Condition Rating 1 2 3 4 5
 25. General Functionality Rating 1 2 3 4 5

<u>Criteria</u>		<u>Comments</u>
26. Top slab condition	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	N/A
27. Interior wall condition	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5	
28. Hatchway condition	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	N/A



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29. Hatchway accessible	<input type="checkbox"/> Y <input type="checkbox"/> N	N/A
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Pumps, Valves and Piping

Suction Piping and Valve(s)

30. General Condition Rating 1 2 3 4 5

31. General Functionality Rating 1 2 3 4 5

Criteria		Comments
32. Velocity < 8 fps	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
33. At least 5 pipe diameters straight run to pump from last fitting	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
34. No air entrainment problems	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
35. No loss of pump prime	<input type="checkbox"/> Y <input type="checkbox"/> N	N/A

Pump

36. General Condition Rating 1 2 3 4 5

37. General Functionality Rating 1 2 3 4 5

Criteria		Comments
Pump		
38. Pumps performing near rated capacity	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
39. Seals functional	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
40. Seal water system functional	<input type="checkbox"/> Y <input type="checkbox"/> N	N/A
41. Pump parts available	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
Motor		
42. High efficiency	<input type="checkbox"/> Y <input type="checkbox"/> N	Not known
43. Over-temperature protection	<input type="checkbox"/> Y <input type="checkbox"/> N	Not known



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Discharge Piping and Valve(s)

44. General Condition Rating 1 2 3 4 5
 45. General Functionality Rating 1 2 3 4 5

<u>Criteria</u>		<u>Comments</u>
Discharge Valve		
46. Accessible for operation and maintenance	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
47. Horizontal	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
Check Valve		
48. Accessible for operation and maintenance	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
49. Horizontal	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
Flow Meter		
50. Reliable output	<input type="checkbox"/> Y <input type="checkbox"/> N	N/A
51. Sufficient straight run	<input type="checkbox"/> Y <input type="checkbox"/> N	N/A
Piping		
52. Evidence of corrosion	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	None from exterior. Difficult to inspect interior.
53. Evidence of leaks	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
54. Hydraulic transient effects	<input type="checkbox"/> Y <input type="checkbox"/> N	N/A
Pump Connections		
55. Isolation from piping strains	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
56. Restrained in accordance with Hydraulic Institute standards	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	

Back-up Power

NOTE: SEE INVENTORY FORM FOR BACK-UP POWER INFORMATION NOT LISTED HERE

57. General Condition Rating 1 2 3 4 5
 58. General Functionality Rating 1 2 3 4 5 Comments Only sized for 3 pumps.

<u>Criteria</u>		<u>Comments</u>
59. Generator size sufficient for pumps and auxiliary equipment	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
60. Fuel tank sized for 24 hour operation	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Not known
61. Fuel tank spill containment provisions	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
62. Outdoor panel location area satisfactory for portable generator	<input type="checkbox"/> Y <input type="checkbox"/> N	N/A
63. Transfer switch condition satisfactory	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	



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Electrical – Power

64. General Condition Rating 1 2 3 4 5

65. General Functionality Rating 1 2 3 4 5 Comments _____

<u>Criteria</u>		<u>Comments</u>
MCCs		
66. Condition satisfactory	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Location not suitable. Reaching the end of its useful life.
67. Parts available	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
Lighting		
68. Suitable for electrical classification	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	

Electrical – Controls

NOTE: SEE INVENTORY FORM FOR CONTROLS INFORMATION NOT LISTED HERE

69. General Condition Rating 1 2 3 4 5

70. General Functionality Rating 1 2 3 4 5 Comments _____

<u>Criteria</u>		<u>Comments</u>
Level Controls		
71. Sensors reliable	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	Only one set of Hydrorangers on backup power and Hydroranger only capable of connecting to three pumps maximum.
72. Parts available	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
VFDs		
73. Parts available	<input type="checkbox"/> Y <input type="checkbox"/> N	N/A
74. Controls stable	<input type="checkbox"/> Y <input type="checkbox"/> N	N/A



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Heating and Ventilation Equipment

75. General Condition Rating 1 2 3 4 5

76. General Functionality Rating 1 2 3 4 5 Comments Ventilation in wet well inadequate, no powered "fresh-air" provided.

<u>Criteria</u>		<u>Comments</u>
Wet Well Ventilation		
77. Mechanical ventilation provided	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	No "fresh-air" supply.
78. Separate from dry well	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
Dry Well Ventilation		
79. Mechanical ventilation provided	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
80. Gas detection equipment	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
81. Ventilation requirements meet NFPA 820	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
Dehumidification		
82. Effective	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
Heating		
83. Effective	<input type="checkbox"/> Y <input type="checkbox"/> N	N/A

Odor Control Facilities

NOTE: SEE INVENTORY FORM FOR CONTROLS INFORMATION NOT LISTED HERE

84. General Condition Rating 1 2 3 4 5

85. General Functionality Rating 1 2 3 4 5 Soil media has not been replaced in 20-years of operation.

<u>Criteria</u>		<u>Comments</u>
86. No objectionable odors	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Biofilter must be operating properly with adequate moisture.
87. Accessible for maintenance	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
88. Reasonable operational cost	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	

Auxiliary Equipment – Hoists

NOTE: SEE INVENTORY FORM FOR HOIST INFORMATION NOT LISTED HERE

89. General Condition Rating 1 2 3 4 5

90. General Functionality Rating 1 2 3 4 5

<u>Criteria</u>		<u>Comments</u>
91. Hoist load tested within 10 years	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
92. Hoists arrangement and location sufficient for required maintenance	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	



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Auxiliary Equipment – Bar Screen – N/A

NOTE: SEE INVENTORY FORM FOR BAR SCREEN INFORMATION NOT LISTED HERE

93. General Condition Rating 1 2 3 4 5

94. General Functionality Rating 1 2 3 4 5

<u>Criteria</u>		<u>Comments</u>
95. Pump damage or pipe blockage due to lack of screening	<input type="checkbox"/> Y <input type="checkbox"/> N	
96. Adequate provisions for screenings removal from building	<input type="checkbox"/> Y <input type="checkbox"/> N	

Safety Issues

- 97. Materials Handling
- 98. Chemical Exposure
- 99. Hydrogen Sulfide Exposure
- 100. Traffic Control
- 101. Confined Space
- 102. Other Limited access to wet well due to corroding handrails and stairs, inadequate air exchange, and limited lighting.

103. Other Maintenance Issues:

104. Comments:

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1. LIFT STATION NAME: Woodland Lift Station
 2. ADDRESS: Northeast corner of Woodland Avenue and Poust Road

Background Information

3. Year Built 1968
 4. Year of 1st Rehabilitation 1992
 5. Scope of Rehabilitation: Pumps and electrical
 6. Year of 2nd Rehabilitation _____
 7. Scope of Rehabilitation: _____

8. Pump Station Type

- Submersible
 Concrete Wet Well/Dry Well
 Steel Dry Well / Concrete Wet Well
 Self Priming Pumps Above Concrete Wet Well
 Other: _____

Pump Equipment

	9. Pump 1	16. Pump 2	23. Pump 3, 4 and 5	30. Pump 4
Pump Type	<input type="checkbox"/> Vertical <input checked="" type="checkbox"/> Dry Centrifugal <input type="checkbox"/> Submersible <input type="checkbox"/> Self Priming <input type="checkbox"/> Other _____	<input type="checkbox"/> Vertical <input checked="" type="checkbox"/> Dry Centrifugal <input type="checkbox"/> Submersible <input type="checkbox"/> Self Priming <input type="checkbox"/> Other _____	<input type="checkbox"/> Vertical <input checked="" type="checkbox"/> Dry Centrifugal <input type="checkbox"/> Submersible <input type="checkbox"/> Self Priming <input type="checkbox"/> Other _____	<input type="checkbox"/> Vertical <input type="checkbox"/> Dry Centrifugal <input type="checkbox"/> Submersible <input type="checkbox"/> Self Priming <input type="checkbox"/> Other _____
Pump Manufacturer	10. Wemco	17. Wemco	24. Wemco	31.
Pump Model	11.	18.	25.	32.
Design Flow (nameplate)	12. 2,000 gpm	19. 3,500 gpm	26. 4,500 gpm	33.
Design TDH (nameplate)	13.	20.	27.	34.
Motor Horsepower	14.	21.	28.	35.
Date Installed	15.	22.	29.	36.



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Site/Building

<u>Criteria</u>		<u>Comments</u>
37. Station accessible by boom truck	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	38.
39. Security (fences and gates)	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	40. Only chain link fence. Recently security has not been an issue. In 1999, a break-in occurred resulting in flooding of the dry pit.
41. Turnaround provided	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	42. Limited.
43. Bollard protection of critical structures	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	44. Around generator and load bank.
45. Drainage sufficient	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	46. In general drainage is sufficient, except area between buildings where equipment storage occurs and covering not available between buildings. This area is flat.
47. Snow removal provision	<input type="checkbox"/> Y <input type="checkbox"/> N	48. N/A
49. Space available for future expansion	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	50.
51. Fire break (defensible space)	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	52. Near homes.
53. Landscaping	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	54. Landscaping on biofilter and surrounding screening of neighboring homes.
55. Building Roof Type <u>Flat</u>		56.

Flow Bypass

57. Gravity Bypass Capability Y N
Description _____

58. Portable Pump Bypass Capability Y N
Description Needs to pump from manhole to manhole and requires shut down of Woodland Avenue.

Back-up Power

59. Back-up Power None Redundant Power Service Emergency Generator

60. Generator Location On-site Portable (quick connect) Portable (no quick connect)

61. Generator Startup Manual Automatic

Alarms

<u>Criteria</u>		<u>Comments</u>
62. Remote transmission of alarms	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	63.
64. Alarm signals on building exterior	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	65.
66. Fire Alarm	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	67.



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68. Intruder Alarm	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	69.
70. Power Failure Alarm	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	71.
72. Pump Failure Alarm	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	73.
74. Other Alarm _____	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	75. Wet well level, generator failure, dry well level alarm, communication failure

Pump Controls

76. Level Sensor: Bubbler Floats Ultrasonic Other _____
77. Level Sensor Redundancy Y N
78. Pump Start: Constant Speed Variable Speed
79. Operation: Lead/Lag Duty/Standby
 Other __Alternate pump control in addition to Lead/Lag_____

Force Main – Not part of Scope of Work

80. Diameter (in.) _____ 81. Material _____
82. ARV 83. CAV 84. Surge Control System _____

Other:

85. Odor Control Facilities None Activated Carbon Chemical Addition using _____
 Other Biofilter (Soil Bed)_____
86. Hoists None Monorail Hoist
87. Bar Screen None Trash rack (manual clean) Automatic bar screen Muffin Monster
88. Flow Meter None Ultrasonic Mag Other _____
89. Wet Well Isolation None Sluice Gate Operator Slide Gates Stop Logs
90. Dry Well Sump Pumps None Single Duplex
91. Wet Well Protection None Lining Coating

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