

SMOKY LAKE COUNTY



Title: Spedden Plant Procedures	Policy No.: 07-01
Section: 04	Page No.: 1 of 17

Legislation Reference:	<i>Alberta Water and Wastewater Operator Guidelines.</i>
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Purpose:	To establish procedures to be followed by the water plant operators for the water facility at the Hamlet of Spedden, required by the Alberta Water and Wastewater operator Guidelines.
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Policy Statement and Guidelines:

STATEMENT

The Spedden Plant Procedures would assist operators to proactively identify the routine procedures to operate the treatment facility in an efficient and safe manner. The procedures are also a terrific asset for new operators to refer to.

PROCEDURES

The **Spedden Plant Procedures** as outlined in *Schedule "A"* include:

1. Facility Overview
2. Daily Inspections of Plant and Surrounding Area
3. Daily Logging of Pumps, Gauges, and Filtration Systems
4. Testing of Plant and Distribution Water
5. Weekly Bacteriological Sampling and Logging
6. Basic Operation and Calibration of Equipment
7. Calculations for Chlorine
8. Manganese Greensand Plant Backwashing Procedures
9. Guidelines for Water Chemistry
10. Maintenance Schedule
11. Water Operation Logbook
12. Exiting Plant Checklist
13. Inspection Flowchart
14. Water Testing Flowchart
15. Water Plant Flowchart
16. Piping Color Codes

	Date	Resolution Number
Approved	January 14, 2010	#021-10 - Page 58
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SPEDDEN PLANT PROCEDURES

SCHEDULE "A"

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1.0	Facility Overview
1.1	Infrastructure Location
	1.1.1 Water Plant – 12368 TP 595A SW 33-59-12-W4
	1.1.2 Well – SW 33-59-12-W4
1.2	Plant type
	1.2.1 One multimedia sand pressure filter
	1.2.2 Two greensand pressure filters
1.3	Design Flow
	1.3.1 43.2 m3 per day
1.4	Capacity
	1.4.1 45 m3 holding tanks
1.5	Water withdrawal information
	1.5.1 Well # 0159918
	1.5.2 Attached to this file
1.6	Treatment Plant Approval
	1.6.1 Approval # 262203-00-00
	1.6.2 Application # 001-262203
	1.6.3 Attached to this file
1.7	Staff List
	1.7.1 Manager - Dave Franchuk: Cell (780) 650-1800 Home (780) 656-3887
	1.7.2 Operator – Terry Bodnar: Cell (780) 656-8856
	1.7.3 County Office: (780) 656-3730
1.8	Service Area
	1.8.1 Hamlet of Spedden truckfill, Spedden Inn and Garner Lake Provincial Park (summer only).
1.9	Infrastructure
	1.9.1 Well location above
	1.9.2 App. 2.6 Km of 4" distribution water pipe
	1.9.3 App. 6.2 Km of 2" distribution water pipe
	1.9.4 1 service connection
	1.9.5 45 m3 reservoir
	1.9.6 1-3 hp backwash pump
	1.9.7 2-5 hp distribution pumps for Spedden
	1.9.8 1-1 hp distribution pump for Garner Lake
	1.9.9 1-2 hp submersible pump
	1.9.10 1 – ½ hp service pump
	1.9.11 4.5 m3 raw water storage tank
	1.9.12 2 – 121 L pressure tanks
	1.9.13 1 Badger raw water meter
	1.9.14 Chlorine, pH and temperature analyzer – Seimens duplex 3 plus
	1.9.15 Turbidity meter – Hach 1720E
	1.9.16 Chlorine feed system and tanks
	1.9.17 Chlorine analyzer, pump and recirculation system
	1.9.18 2 – 8000L holding tanks

2.0**Daily Inspection of Plant and Surrounding Area****2.1 Outside:**

- 2.1.1 Walk around building looking for damage and leaks; note them down so they can be repaired.
- 2.1.2 Check holding tank covers and vents so all are secured; note and correct any problems.
- 2.1.3 Check well area for damage or leaks.

2.2 Inside:

- 2.2.1 Check all piping for leaks and cracks; note and correct problems.
- 2.2.2 Listen to pumps for unusual noises; note and repair.
- 2.2.3 Check all gauges and valves for proper operation.
- 2.2.4 Inspect walls and ceiling of building for leaks; note and repair.
- 2.2.5 Make sure chemical metering pumps are working, note and repair.

3.0**Daily Logging of Pumps, Gauges and Filtration Systems**

3.1 Pumps: On touch screen located on east wall of plant under pump runtime button record the following on pump log sheet.

- 3.1.1 Well pump runtime.
- 3.1.2 Calculate daily run time by subtracting reading from day before from today's reading and record.
- 3.1.3 Service pump runtime.
- 3.1.4 Calculate daily run time by subtracting reading from day before from today's reading and record.
- 3.1.5 Backwash pump runtime.
- 3.1.6 Calculate daily run time by subtracting reading from day before from today's reading and record.
- 3.1.7 Spedden pump 1 runtime.
- 3.1.8 Calculate daily run time by subtracting reading from day before from today's reading and record.
- 3.1.9 Spedden pump 2 runtime.
- 3.1.10 Calculate daily run time by subtracting reading from day before from today's reading and record.
- 3.1.11 Garner Lake Pump runtime.
- 3.1.12 Calculate daily run time by subtracting reading from day before from today's reading and record.

3.2 Metering Pumps:

- 3.2.1 Off of the two metering pumps note the speed and stroke.
- 3.2.2 If changes are made note in operations log book.

3.0 Daily Logging of Pumps, Gauges and Filtration Systems- *Cont.*

3.3 Gauges:

3.3.1 Note the pressures:

- 3.3.1.1 Spedden Water pressure: 45 psi.
- 3.3.1.2 Garner Lake Water pressure: 37 psi.
- 3.3.1.3 Filter pressures: #1: 39 – 42 psi; #2: 37 – 40 psi; #3: 35 – 38 psi.
- 3.3.1.4 Backwash pressure: 58 – 61 psi.

3.3.2 In water plant on water treatment plant log:

- 3.3.2.1 Read and record raw water reading off badger meter on 2" line located in south west corner.
- 3.3.2.2 Calculate daily usage by subtracting previous days reading from today's reading.
- 3.3.2.3 Read and record reservoir level off touch screen on east wall of building.
- 3.3.2.4 If backwashing plant record when last backwashed in last backwash column.
- 3.3.2.5 Subtract raw water reading of last backwash from today's raw water meter reading and record in water between backwashes column.
- 3.3.2.6 Calculate water used during backwash by noting water reservoir level before and after backwashing.

i.e. Initial level 2.000 m level after backwash 1.850 m. $2.000 - 1.850 = 0.15$ m
level change in m x radius of tank squared x 3.14 x # of tanks holding water
x 1000

$$0.15 \text{ m} \times 1.2 \text{ m} \times 1.2 \text{ m} \times 3.14 \times 4 \text{ tanks} \times 1000 = 2713 \text{ L}$$

3.4 Chemical levels and dosages:

3.4.1 On Treatment Plant Log:

- 3.4.1.1 Read and record filter chlorine level off of chlorine tank located near filters west side.
- 3.4.1.2 Subtract reading from previous day's reading and record in chlorine used column.
- 3.4.1.3 To calculate chlorine dose = (chlorine used x chlorine concentrate percentage x 10) / blended water produced, record in filtration dosage column.
- 3.4.1.4 Read and record post chlorination level off chlorine tank located by raw water tank east of distribution pumps.
- 3.4.1.5 Subtract reading from previous day's reading and record in chlorine used column.
- 3.4.1.6 To calculate chlorine dose = (chlorine used x chlorine concentrate percentage x 10) / blended water produced, record in post-chlorination dosage column.

4.0 Testing of Plant and Distribution of Water

4.1 Raw Water:

- 4.1.1 Turn on tap above raw water service pump and flush line for 30 seconds.
- 4.1.2 Rinse out 225 ml flask used for testing with raw water.
- 4.1.3 Fill the 225 ml flask approximately half full of raw water this will be used for iron and manganese testing.

4.1.3.1 Iron testing:

- 4.1.3.1.1 For iron fill two 25 ml covets with sample water.
- 4.1.3.1.2 Turn on DR890 colorimeter and enter program 33 for iron testing.
- 4.1.3.1.3 Add contents of 25 ml FerroVer iron reagent in one covet and mix well, press timer button on DR890 for 3 minute countdown.
- 4.1.3.1.4 Clean and dry covets with chem. wipes.
- 4.1.3.1.5 Insert covet with no reagent into colorimeter and press zero, insert covet with reagent and press read button.
- 4.1.3.1.6 Record reading, in raw iron reading, on Spedden chemistry and metal level log sheet.

4.1.3.2 Manganese Testing:

- 4.1.3.2.1 For manganese testing fill one 10 ml covet with de-ionized water.
- 4.1.3.2.2 Fill another 10 ml covet with 10 ml of raw sample.
- 4.1.3.2.3 Turn on DR890 colorimeter and enter program 43 for manganese testing.
- 4.1.3.2.4 Add contents of 10 ml ascorbic acid reagent in each covet and mix well.
- 4.1.3.2.5 Add 4ml of Alkaline Cyanide reagent to each covet and mix well.
- 4.1.3.2.6 Add 4 ml of PAN indicator solution to each covet and mix well.
- 4.1.3.2.7 Press timer button on DR890 for 2 minute countdown.
- 4.1.3.2.8 Clean and dry covets with chem. wipes.
- 4.1.3.2.9 Insert covet, with de-ionized water into colorimeter and press zero, insert covet with reagent and press read button.
- 4.1.3.2.10 Record reading in raw manganese reading on Spedden chemistry and metal level log sheet.

4.2 Treated water:

- 4.2.1 Turn on tap above Spedden distribution pump and flush line for 60 seconds.
- 4.2.2 Rinse out two 225 ml flasks used for testing with treated water.
- 4.2.3 Fill the two 225 ml flasks approximately half full of treated water these will be used for iron, manganese, chlorine, pH testing and temperature reading.

4.0 Testing of Plant and Distribution of Water– Cont.**4.2.3.1 Iron testing:**

- 4.2.3.1.1 For iron fill two 25 ml covets with sample water.
- 4.2.3.1.2 Turn on DR890 colorimeter and enter program 33 for iron testing.
- 4.2.3.1.3 Add contents of 25 ml FerroVer iron reagent in one covet and mix well, press timer button on DR890 for 3 minute countdown.
- 4.2.3.1.4 Clean and dry Covets with chemical wipes.
- 4.2.3.1.5 Insert covet with no reagent into colorimeter and press zero, insert covet with reagent and press read button.
- 4.2.3.1.6 Record reading in treated iron column on Spedden chemistry and metal level log sheet.

4.2.3.2 Manganese testing:

- 4.2.3.2.1 For manganese testing fill one 10 ml covet with de-ionized water.
- 4.2.3.2.2 Fill another 10 ml covet with 10 ml of raw sample.
- 4.2.3.2.3 Turn on DR890 colorimeter and enter program 43 for manganese testing.
- 4.2.3.2.4 Add contents of 10 ml ascorbic acid reagent in each covet and mix well.
- 4.2.3.2.5 Add 4ml of Alkaline Cyanide reagent to each covet and mix well.
- 4.2.3.2.6 Add 4 ml of PAN indicator solution to each covet and mix well.
- 4.2.3.2.7 Press timer button on DR890 for 2 minute countdown.
- 4.2.3.2.8 Clean and dry covets with chemical wipes.
- 4.2.3.2.9 Insert covet, with de-ionized water into colorimeter and press zero, insert covet with reagent and press read button.
- 4.2.3.2.10 Record reading in treated manganese reading on Spedden chemistry and metal level log sheet.

4.2.3.3 Chlorine testing:

- 4.2.3.3.1 Rinse out the two 25 ml covets with tap water twice.
- 4.2.3.3.2 Fill two 25 ml covets with treated water to 10 ml mark.
- 4.2.3.3.3 Clean and dry one covet with chem. wipes.
- 4.2.3.3.4 Turn on colorimeter and make sure it is on program 9 for total chlorine.
- 4.2.3.3.5 Insert Covet into colorimeter and press zero.
- 4.2.3.3.6 In other Covet add contents of one total dpd package and shake until all powder is dissolved.
- 4.2.3.3.7 Press timer for 3 minute countdown and press enter.
- 4.2.3.3.8 When countdown is ended insert covet with reagent and press read.
- 4.2.3.3.9 Record reading in plant treated water column on water plant daily log.

4.2.3.4 pH testing:

- 4.2.3.4.1 For pH reading insert pH probe in 225ml flask turn on and press read when meter locks in display record pH reading and temperature in treated columns.

4.0. Testing of Plant and Distribution of Water– Cont.**4.3 Distribution water:**

- 4.3.1 Turn on tap Spedden truck fill and flush line for 60 seconds.
- 4.3.2 Rinse out sample jar used for testing with sample water.
- 4.3.3 Fill the two 225 ml flasks approximately half full of treated water these will be used for iron, manganese and chlorine. (Chlorine test is required weekly, manganese and iron only for comparison with plant readings).

4.3.3.1 Iron testing:

- 4.3.3.1.1 For iron fill two 25 ml covets with sample water.
- 4.3.3.1.2 Turn on DR890 colorimeter and enter program 33 for iron testing.
- 4.3.3.1.3 Add contents of 25 ml FerroVer iron reagent in one covet and mix well, press timer button on DR890 for 3 minute countdown.
- 4.3.3.1.4 Clean and dry covets with chemical wipes.
- 4.3.3.1.5 Insert covet with no reagent into colorimeter and press zero, insert covet with reagent and press read button.
- 4.3.3.1.6 Record reading in distribution iron reading on Spedden chemistry and metal level log sheet.

4.3.3.2 Manganese testing:

- 4.3.3.2.1 For manganese testing fill one 10 ml covet with de-ionized water.
- 4.3.3.2.2 Fill another 10 ml covet with 10 ml of raw sample.
- 4.3.3.2.3 Turn on DR890 colorimeter and enter program 43 for manganese testing.
- 4.3.3.2.4 Add contents of 10 ml ascorbic acid reagent in each covet and mix well.
- 4.3.3.2.5 Add 4ml of Alkaline Cyanide reagent to each covet and mix well.
- 4.3.3.2.6 Add 4 ml of PAN indicator solution to each covet and mix well.
- 4.3.3.2.7 Press timer button on DR890, for 2 minute countdown.
- 4.3.3.2.8 Clean and dry covets with chemical wipes.
- 4.3.3.2.9 Insert Covet, with de-ionized water into colorimeter and press zero, insert covet with reagent and press read button.
- 4.3.3.2.10 Record reading in distribution manganese reading on Spedden chemistry and metal level log sheet.

4.3.3.3 Chlorine testing:

- 4.3.3.3.1 Rinse out the two 25 ml covets with tap water twice.
- 4.3.3.3.2 Fill two 25 ml covets with treated water to 10 ml mark.
- 4.3.3.3.3 Clean and dry one covet with chemical wipes.
- 4.3.3.3.4 Turn on colorimeter and make sure it is on program 9 for total chlorine.
- 4.3.3.3.5 Insert Covet into colorimeter and press zero.
- 4.3.3.3.6 In other Covet add contents of one total dpd package and shake until all powder is dissolved.
- 4.3.3.3.7 Press timer for 3 minute countdown and press enter.
- 4.3.3.3.8 When countdown is ended insert covet with reagent and press read.
- 4.3.3.3.9 Record reading in distribution water column on water plant daily log.

5.0 Weekly Bacteriological Sampling and Logging

5.1 Weekly bacteriological sampling and recording:

- 5.1.1 Obtain required number of sample bottles and requisition forms from hospital at start of week after 8:30 A.M.
- 5.1.2 Have all supply location labels for week accessible
- 5.1.3 Return sample bottles and requisition forms to hospital before noon.

5.2 Distribution water (weekly):

- 5.2.1 Run water from collection site for 5 to 10 minutes so stale water is purged.
- 5.2.2 From distribution sample bottle fill sample bottle to full mark.
- 5.2.3 Dry bottle and detach identification label from requisition form and affix to bottle.
- 5.2.4 Attach location label to requisition form.
- 5.2.5 Fill out requisition form and location label.
- 5.2.6 Record location, time, ID number and chlorine concentration on daily log sheet.
- 5.2.7 Place requisition form around bottle and secure with rubber band.
- 5.2.8 Secure for transport to hospital.

6.0 Basic Operation and Calibration of Lab Equipment

6.1 Colorimeter DR/890:

- 6.1.1 Used for testing iron and manganese (Programs 33 and 43).
- 6.1.2 For accurate results refer to manual section 1 (reagent blank correction).
- 6.1.3 Refer to colorimeter DR/890 manual.

6.2 Pocket Colorimeter:

- 6.2.1 Used for testing chlorine.
- 6.2.2 Calibration is not needed.
- 6.2.3 Refer to pocket colorimeter manual.

6.3 Portable pH Meter sensION1:

- 6.3.1 Used for measuring pH and temperature.
- 6.3.2 Calibrate weekly, refer to manual Section 3.2.
- 6.3.3 Refer to sensION1 manual.

6.4 Platinum Series pH Electrode:

- 6.4.1 Used in conjunction with pH meter.
- 6.4.2 Refer to pH electrode Model 5910 manual.

6.5 Hach 1720E Turbidimeter:

- 6.5.1 Used for measuring post filtration water.
- 6.5.2 Clean monthly.
- 6.5.3 Calibrate when required.

6.6 Seimens Wallace and Tiernan Duplox 3 plus:

- 6.6.1 Used for post filtration measurement of total chlorine, pH and temperature.
- 6.6.2 Clean monthly.
- 6.6.3 Calibrate when required.

All manuals are kept in file cabinet.

7.0 Calculations for chlorine

7.1 Chlorine:

7.1.1 Calculation for chlorine:

7.1.1.1 For any concentration actual:

Dose = (CL2 used in liters x tank concentration x sodium hypochlorite 12% x 1000 mg/L) / (blended water produced in m3).

e.g. Dose = (5L x 0.25 x 0.12 x 1000 mg/L) / (40 m3).
Dose = 3.75 mg/L.

7.1.1.2 Simplified:

Dose = (CL2 used in liters x tank concentration x sodium hypochlorite 12% / (blended water produced in m3 x 10).

Dose = (5L x 25% x 12%) / (40 x 10).

Dose = 3.75 mg/L.

7.2 Adding sodium hypochlorite to chlorine solution tank:

7.2.1 Tank capacity is 24 Liters:

7.2.1.1 Subtract level from full tank level x % solution.

e.g. Hypo = (Full level in liters – fluid level in liters) x (% solution / 100).

Hypo = (24L – 10L) x (25/100).

Hypo = 3.6 L.

7.2.1.2 Mark level on tank and add amount of Hypo needed and put mark on tank - add hypo to that mark.

e.g. 10L + 3.6L = 13.6L.

7.2.1.3 Top off with tap water to full mark 24L.

8.0**Manganese Greensand Plant Backwashing Procedures****8.1 Backwashing Procedure:**

- 8.1.1 If plant is running skip to Step #1.3
- 8.1.2 To start plant if not running on control panel choose fill SP button, then choose start plant button, and set to level above what water level is reading:
e.g. If treated reservoir reads 1.800 m, start plant level reads 1.750 m, set start plant level to 1.850 m, wait for plant to start then reset plant start to 1.750 m.
- 8.1.3 Open drain valve located between storage tanks 3 and 4 on west side of building to mark indicated, this will prevent dirty water from backwash procedure from entering storage tanks.
- 8.1.4 Plug in timer control box for filter 1 and rotate timer control clockwise to engage first set of short pins.
- 8.1.5 After 30 seconds rotate timer control clockwise to next set of pins (long pins) this will engage the backwash pump (pressure should go up on gauge by backwash pump and gauge before filter to 60 psi).
- 8.1.6 Watch backwash water entering drain pit for color change it should turn from clear to milky orange and back to a light orange, when water starts to clear, should take around 5 minutes. Turn timer control to blank position just past the second set of pins.
- 8.1.7 Wait for 30 seconds and rotate timer control to next set of pins, which will initiate a rinse cycle, again watch color change in water should turn from clear to light orange and clear again, water should clear out in 30 seconds. Then turn timer control to next blank position.
- 8.1.8 Wait for 30 seconds and rotate timer to last set of pins, this is supposed to initiate a brine injection which is not used, so leave for 30 seconds and rotate timer control to last blank position.
- 8.1.9 Unplug timer control box for filter 1.
- 8.1.10 Plug in timer control box for filter 2 and rotate timer control clockwise to engage first set of short pins.
- 8.1.11 After 30 seconds rotate timer control clockwise to next set of pins (long pins) this will engage the backwash pump (pressure should go up on gauge by backwash pump and gauge before filter to 60 psi).
- 8.1.12 Watch backwash water entering drain pit for color change it should turn from clear to bright yellow and back to a light yellow, when water starts to clear, should take around 5 minutes. Turn timer control to blank position just past the second set of pins.
- 8.1.13 Wait for 30 seconds and rotate timer control to next set of pins, which will initiate a rinse cycle, again watch color change in water should turn from clear to light yellow and clear again, water should clear out in 30 seconds. Then turn timer control to next blank position.
- 8.1.14 Wait for 30 seconds and rotate timer to last set of pins, this is supposed to initiate a brine injection which is not used, so leave for 30 seconds and rotate timer control to last blank position.
- 8.1.15 Unplug timer control box for filter 2.
- 8.1.16 Plug in timer control box for filter 3 and rotate timer control clockwise to engage first set of short pins.

8.0**Manganese Greensand Plant Backwashing Procedures- *Cont.***

- 8.1.17 After 30 seconds rotate timer control clockwise to next set of pins (long pins) this will engage the backwash pump (pressure should go up on gauge by backwash pump and gauge before filter to 60 psi).
- 8.1.18 Watch backwash water entering drain pit for color change it should turn from clear to dark grey and back to a light grey, when water starts to clear, should take around 5 minutes. Turn timer control to blank position just past the second set of pins.
- 8.1.19 Wait for 30 seconds and rotate timer control to next set of pins, which will initiate a rinse cycle, again watch color change in water should turn from clear to light grey and clear again, water should clear out in 30 seconds. Then turn timer control to next blank position.
- 8.1.20 Wait for 30 seconds and rotate timer to last set of pins, this is supposed to initiate a brine injection which is not used, so leave for 30 seconds and rotate timer control to last blank position.
- 8.1.21 Unplug timer control box for filter 3.
- 8.1.22 Wait for turbidity reading on turbidity meter to come below 0.5 and close drain valve located on west wall allowing water back in to storage tanks.

9.0**Guidelines for Water Chemistry****9.1 Guidelines for Water Chemistry:**

- 9.1.1 Guidelines for Canadian Drinking Water Quality located in water department office.
- 9.1.2 Plant approval can be located in top right drawer of file cabinet.
- 9.1.3 Weekly bacterial tests can be located in water department office.
- 9.1.4 Analytical Report of raw and treated water can be found in top right drawer of file cabinet in plant.
- 9.1.5 If readings are far off from what is recorded in log sheets could indicate problems such as well contamination, plant operation failure, reservoir contamination or distribution infiltration.

10.0**Maintenance Schedule****10.1 Maintenance schedule:**

- 10.1.1 Greasing of distribution pumps should be done every month.
- 10.1.2 Valves should be checked for proper operation twice a year.
- 10.1.3 Solenoids should be checked for proper operation annually.
- 10.1.4 Gauges and meters should be checked annually.
- 10.1.5 Metering pumps should be checked for scale buildup and clogged or broken piping weekly.

11.0 Water Operations Logbook

11.1 Water operations logbook:

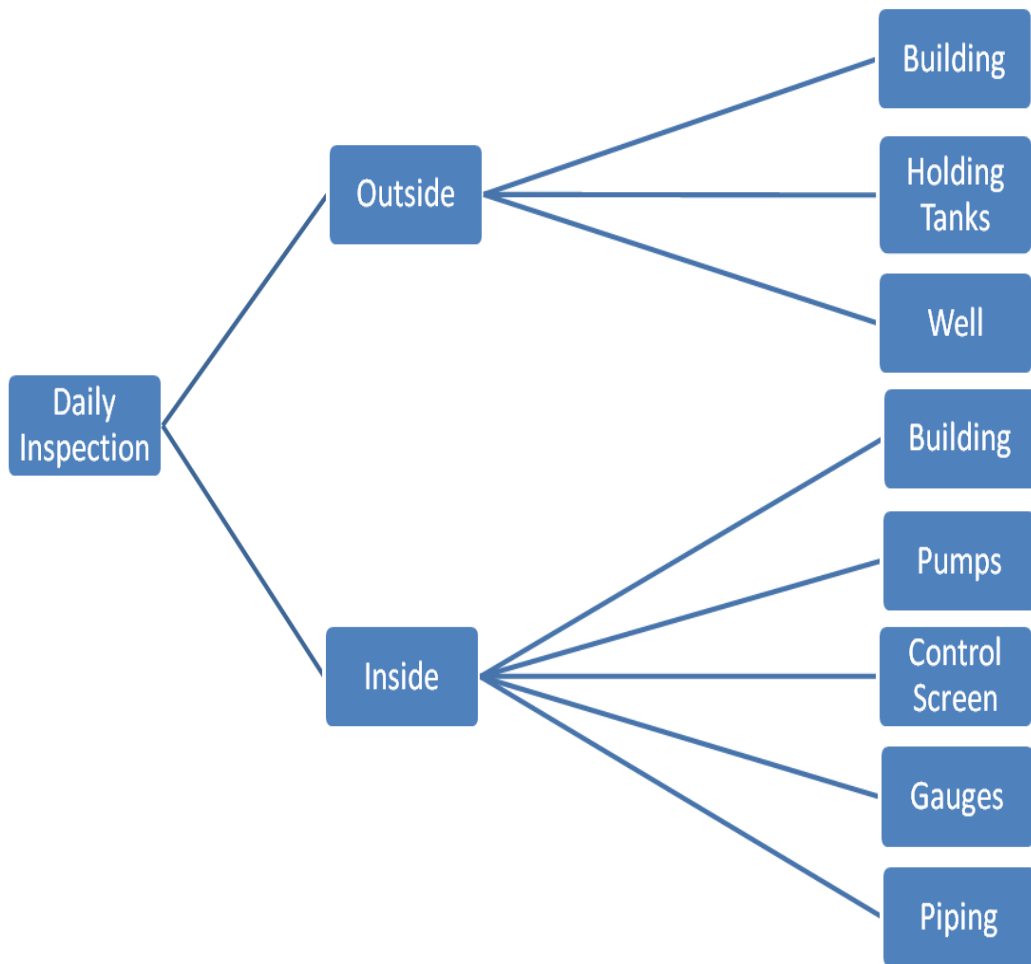
- 11.1.1 Logbook should contain date and time of recordings.
- 11.1.2 Indicate that plant check was done.
- 11.1.3 Record total chlorine readings for plant and distribution.
- 11.1.4 Any changes to solutions should be recorded.
- 11.1.5 Metering pump adjustments should be recorded.
- 11.1.6 Trend changes in water chemistry or chemical usage should be noted.
- 11.1.7 Equipment repair or replacement should be recorded.
- 11.1.8 Note anything not operating properly or needing repair.
- 11.1.9 Condition of plant and area should be recorded.
- 11.1.10 Building, well, holding tank and surrounding area problems should be noted.
- 11.1.11 Repairs to these areas should be noted.

12.0 Exiting Plant Checklist

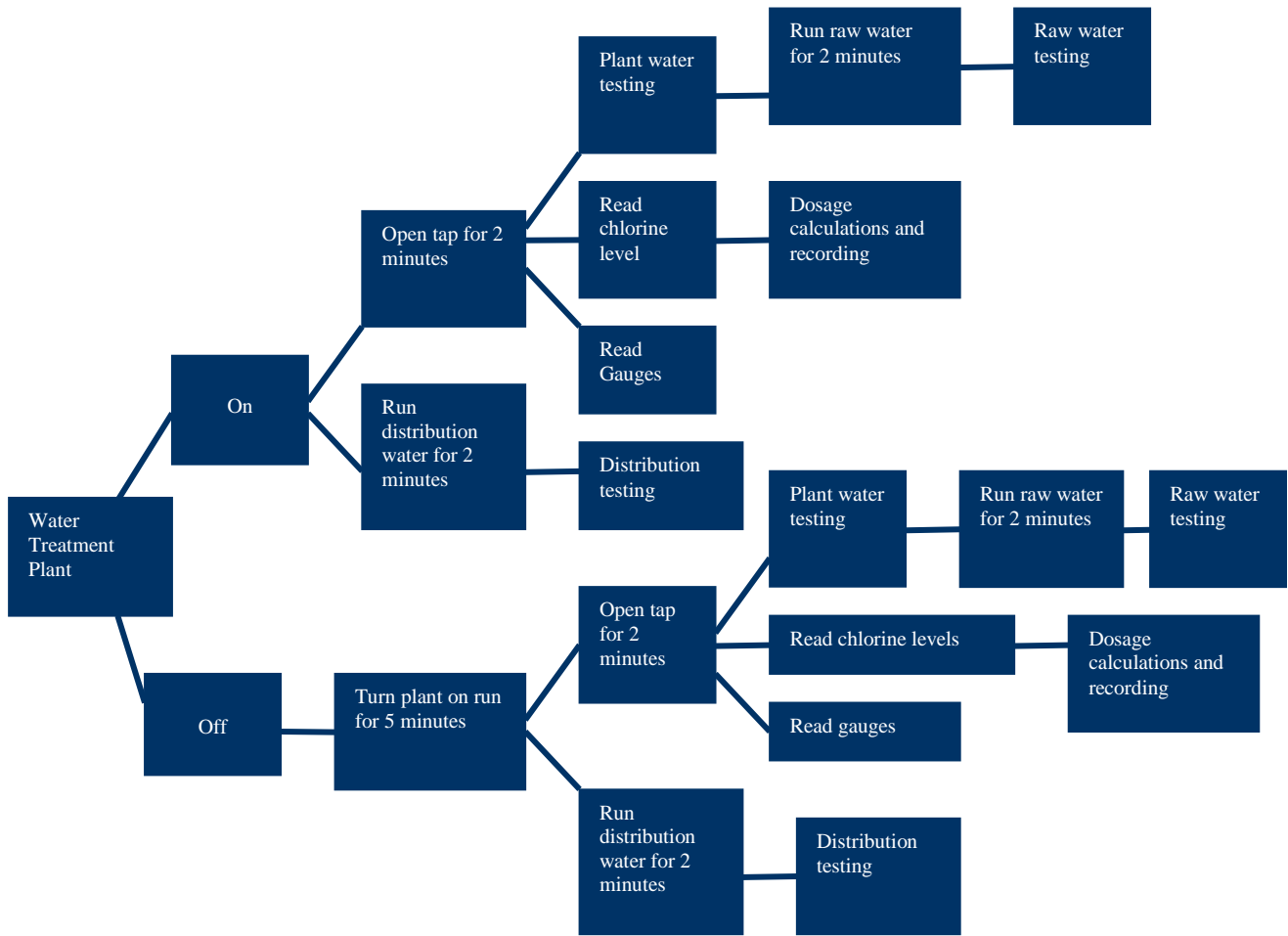
12.1 Exiting Plant Checklist:

- 12.1.1 This information should be placed in an area so workers can view it before leaving water treatment plant for the day.
 - 12.1.1.1 Insure all switches are in proper position.
 - 12.1.1.2 Service pump switch in auto position.
 - 12.1.1.3 Spedden distribution pump switch in auto position.
 - 12.1.1.4 Chemical tanks have enough solution for required water produced. (enough for weekends).
 - 12.1.1.5 No taps or water hoses left on.
 - 12.1.1.6 Metering pumps working.
 - 12.1.1.7 Insure all doors closed and locked.

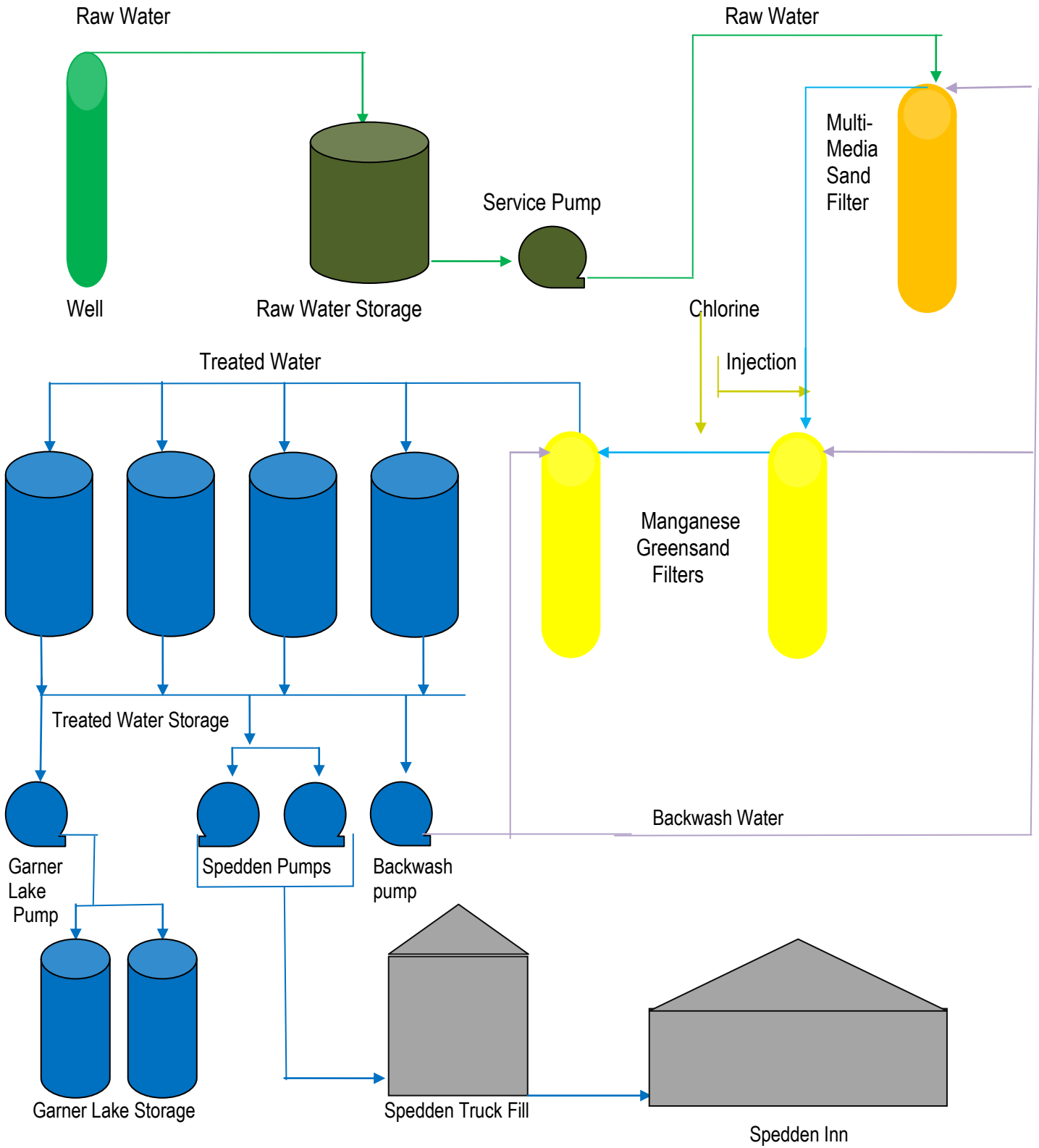
13.0 Inspection Flowchart



14.0 Water Testing Flowchart



15.0 Water Plant Flowchart



16.0 Piping Color Codes

- 16.1 Raw water and untreated water piping should be dark green.
- 16.2 Treated and distribution piping should be dark blue.
- 16.3 Waste water and backwash waste piping should be dark brown.
- 16.4 Chlorine piping should be yellow.