

UV Water Purification System Annotated Layout

Plumbing

Plumbing Overview

Step 1: Connection to existing water source



Step 2: Filtration



Step 3: UV treatment



Step 4: Distribution

This will vary depending on existing conditions and needs, but the goal is to bring enough parts, within reason, so as to have options when installing, without having to rely on obtaining parts locally

PEX Connections between Steps allow for flexible installation – Decisions on placement of system elements can therefore be made in a manner suited to site conditions, such as available space, shelter from weather of electrical components, minimizing sun exposure on filter housings, etc.

A typical, preferred arrangement of components is illustrated. Depending on water pressure at the site (due to tank (cistern) height above the system), pressure drop caused by the 5-micron filter may be unacceptably low. In this case, an optional filter arrangement for placing two 5-micron filters in parallel is illustrated.

If this is unnecessary, but high levels of sediment appear in the water, the third filter housing can be placed before the first, with a coarse sediment filter, or the filter housing can be retained in case replacement is needed (not a common issue)

Electrical components should be placed in an area protected from rain, and are preferably mounted above the plumbing components

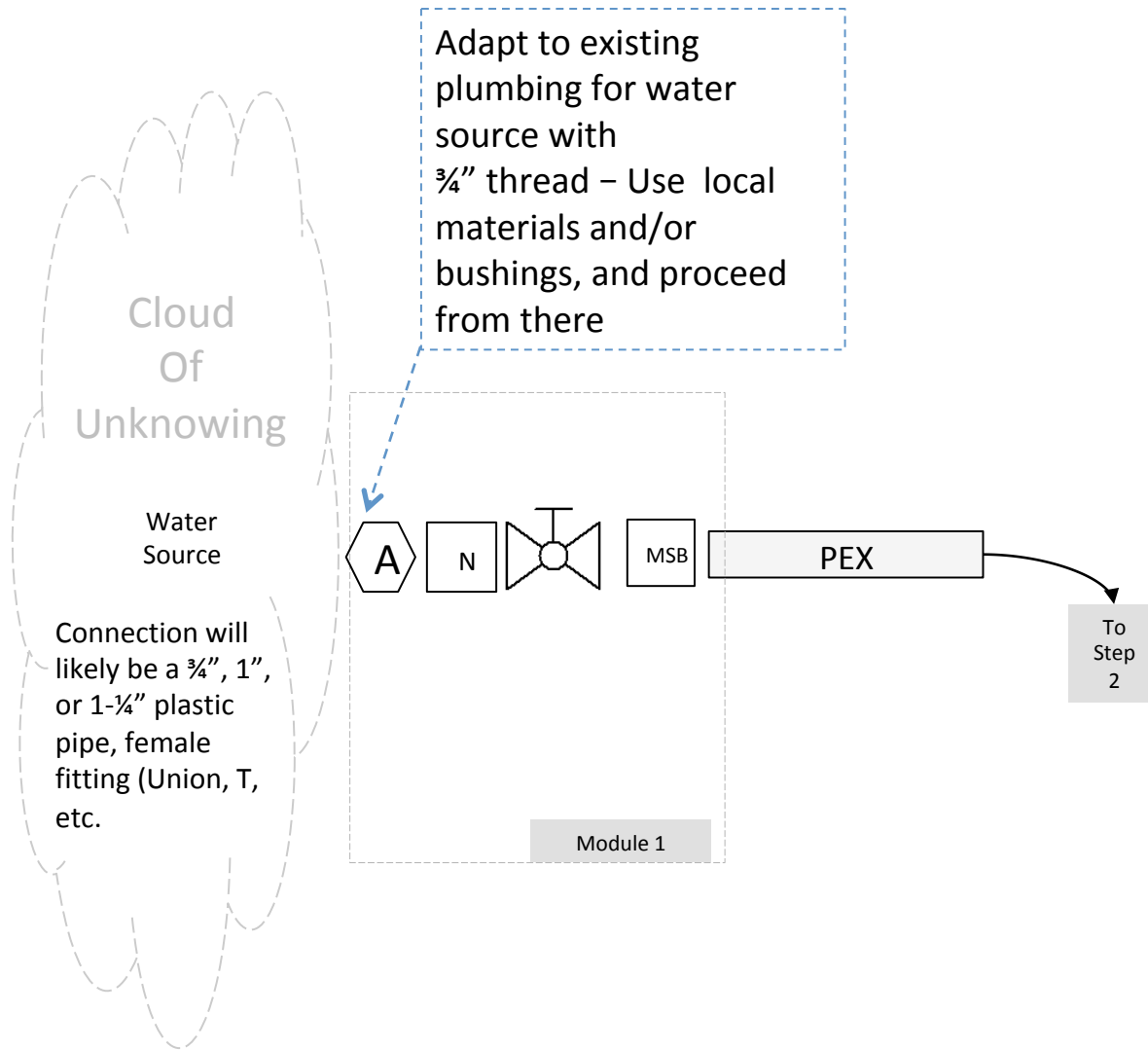
Note:
Assembly can be broken down into modules as noted on the following pages to allow for faster assembly and participation of more people in assembly

This will vary depending on needs, but the goal is to bring enough parts, within reason, so as to have options when installing, without having to rely on obtaining parts locally

Standard Configuration

Plumbing

Step 1: Connection to existing water source *Standard Configuration*



3/4" Diameter (unless otherwise noted)

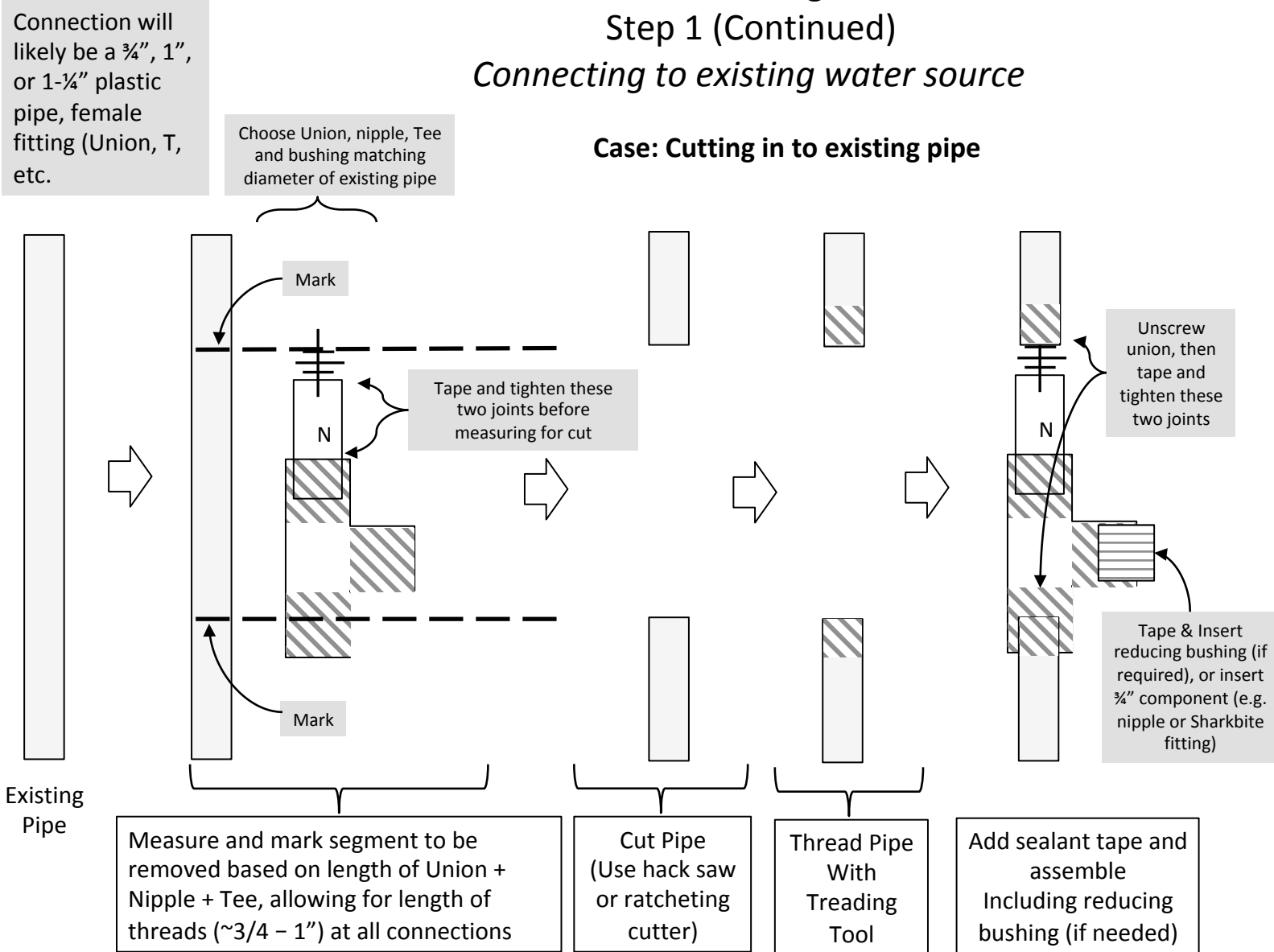
Legend	
	Adapter(s) - Varies
	Ball Valve
	Motorized Ball Valve
	Nipple (e.g. 2.5")
	Male Sharkbite
	Female Sharkbite
	Length of Pipe
	Tee - Fitting
	Cross - fitting
	Elbow - fitting
	Union
	Swing Check valve
	Pressure Gauge

Plumbing

Step 1 (Continued)

Connecting to existing water source

Case: Cutting in to existing pipe



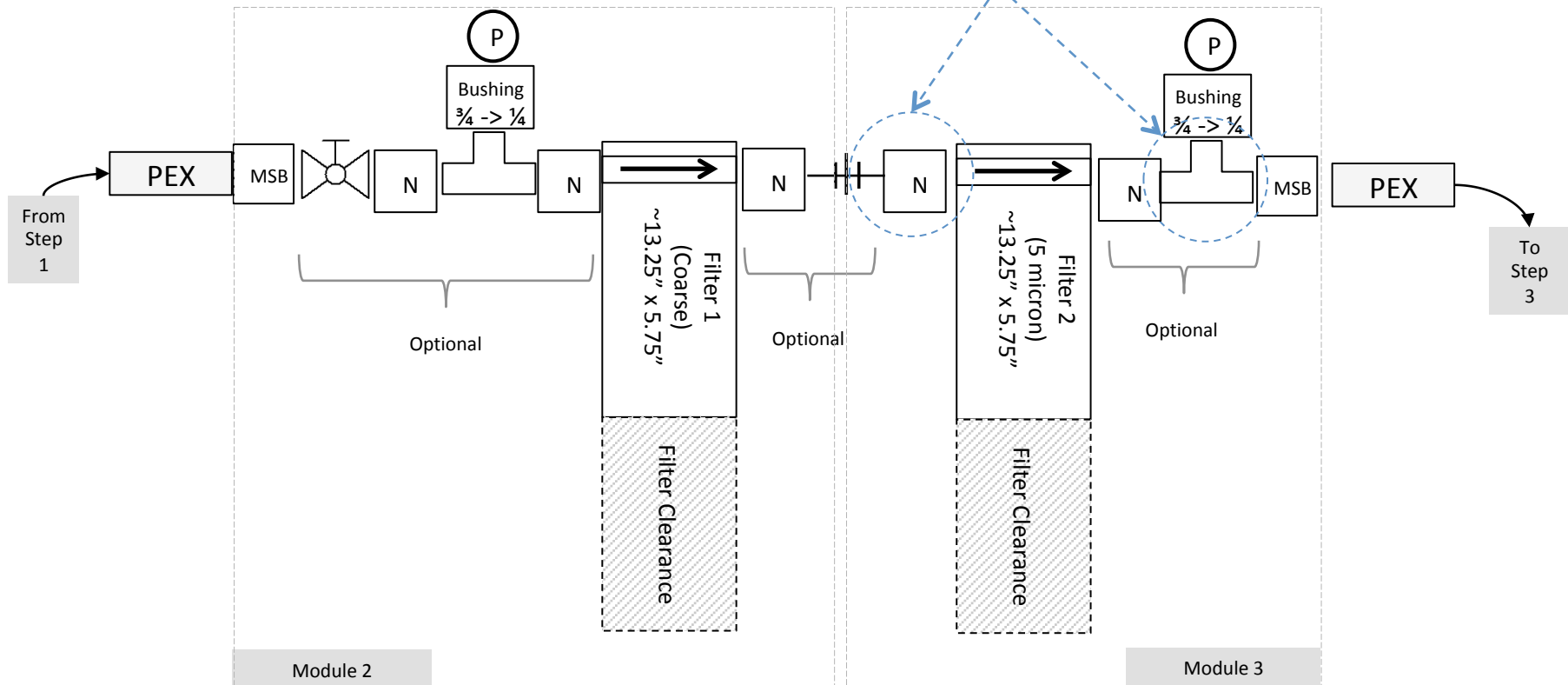
3/5/18

****Revision Notes: For uncertain local conditions, Add 2 each of: { [(1" to 3/4") & (1-1/4" to 3/4") reducing bushings]; 3/4", 1" & 1-1/4" Unions; 3/4", 1" & 1-1/4" Nipples, 3/4", 1" & 1-1/4" Tees }**

Plumbing

Step 2: Standard Filter Configuration (with one 5 micron filter)

In case of very low water pressure, add second 5 micron filter in parallel- connecting here as shown on later page



Filter Placement

Filters should be placed in shadiest place available, or otherwise protected from sun, to minimize possible algae growth

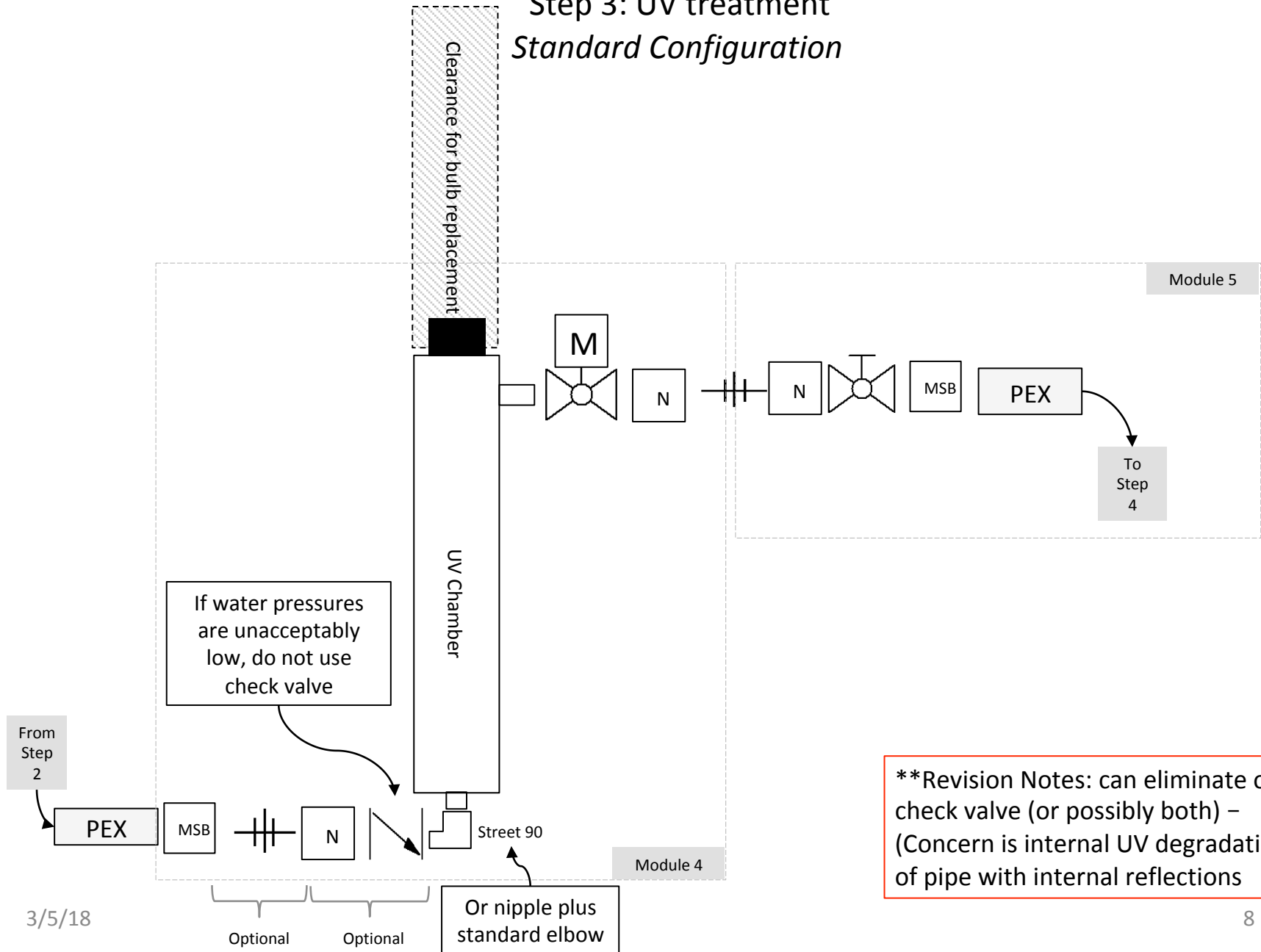
Notes on pressure gages

- Pressure gages are optional, but helpful.
- Because of low water pressures, gages preferably have lowest pressure range available, e.g. ~0 to 20 psi
- If only using one gage, place gage before filters.
- When two gages are used, a change (reduction) of pressure differential between gages (compared with differential when filters are new) would indicate one or more clogged filters.
- Note that pressure differential should be taken when water is flowing. When not flowing, gages will show the same pressure.

Plumbing

Step 3: UV treatment

Standard Configuration



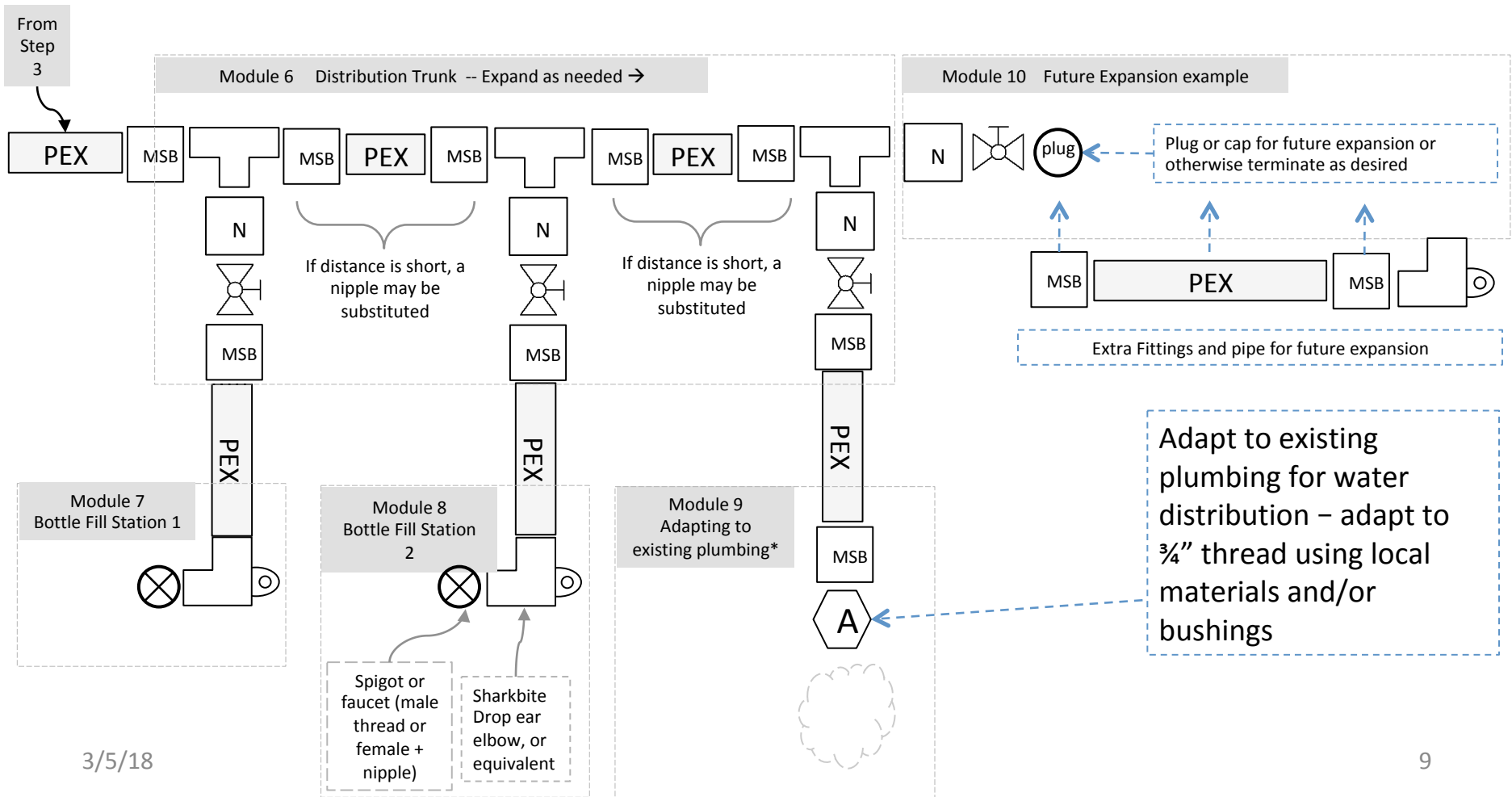
Plumbing

Step 4: Distribution

Standard Generalized Configuration

If distributing through existing pipes (previously used with untreated water), follow instructions for sanitizing system with chlorine – calculate & check concentration, pass treated water through ALL existing pipes, allow to remain for prescribed time

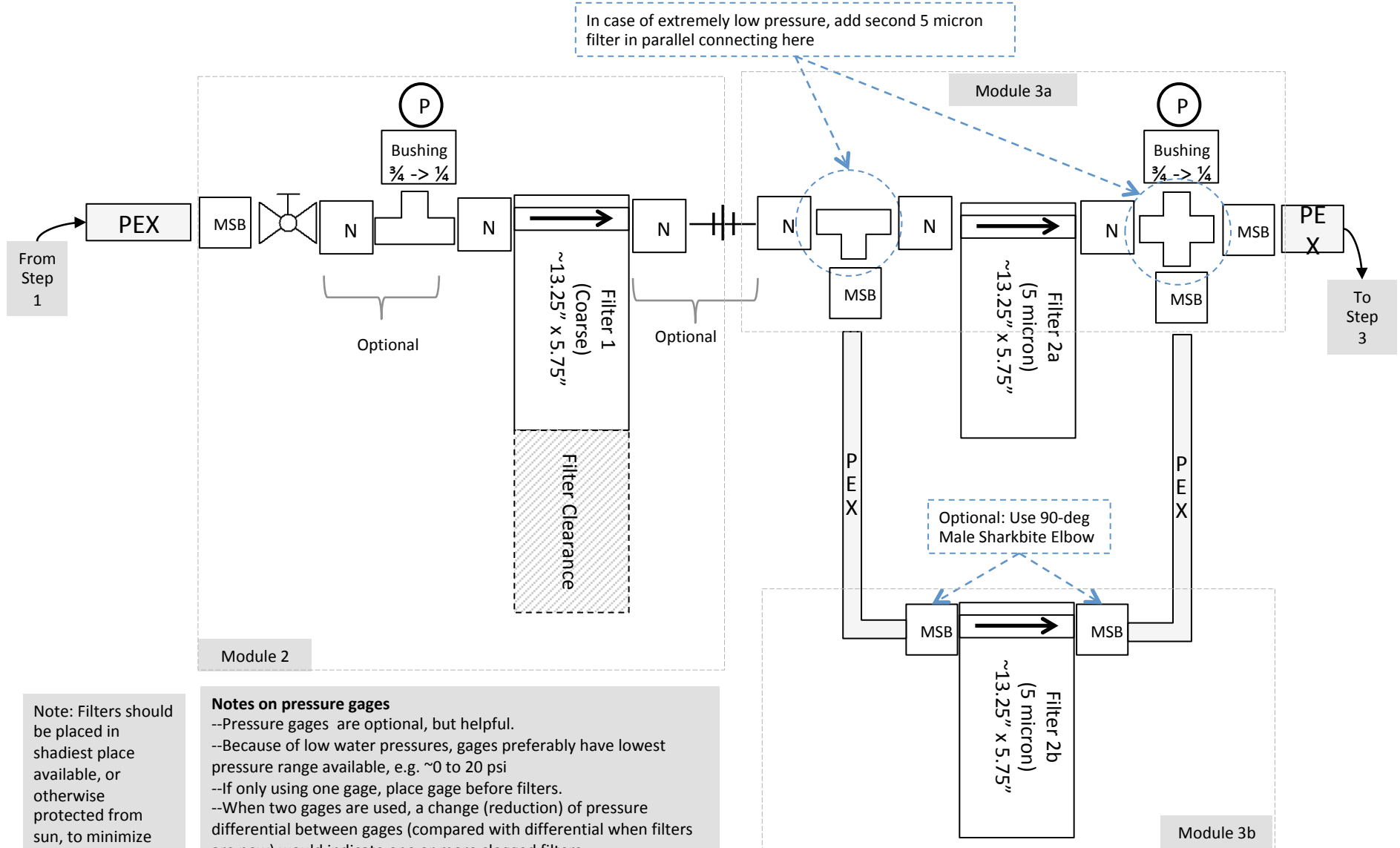
This portion will vary, depending on needs or wishes, but this is a typical example:



Alternate Configurations

Plumbing

Alternate Step 2: Filtration (with two 5 micron filters)



Note: Filters should be placed in shadiest place available, or otherwise protected from sun, to minimize possible algae growth

3/5/18

Notes on pressure gages

- Pressure gages are optional, but helpful.
- Because of low water pressures, gages preferably have lowest pressure range available, e.g. ~0 to 20 psi
- If only using one gage, place gage before filters.
- When two gages are used, a change (reduction) of pressure differential between gages (compared with differential when filters are new) would indicate one or more clogged filters.
- Note that pressure differential should be taken when water is flowing. When not flowing, gages will show the same pressure.

****Revision Notes:** Add two 90-deg Male Sharkbites for this or other options

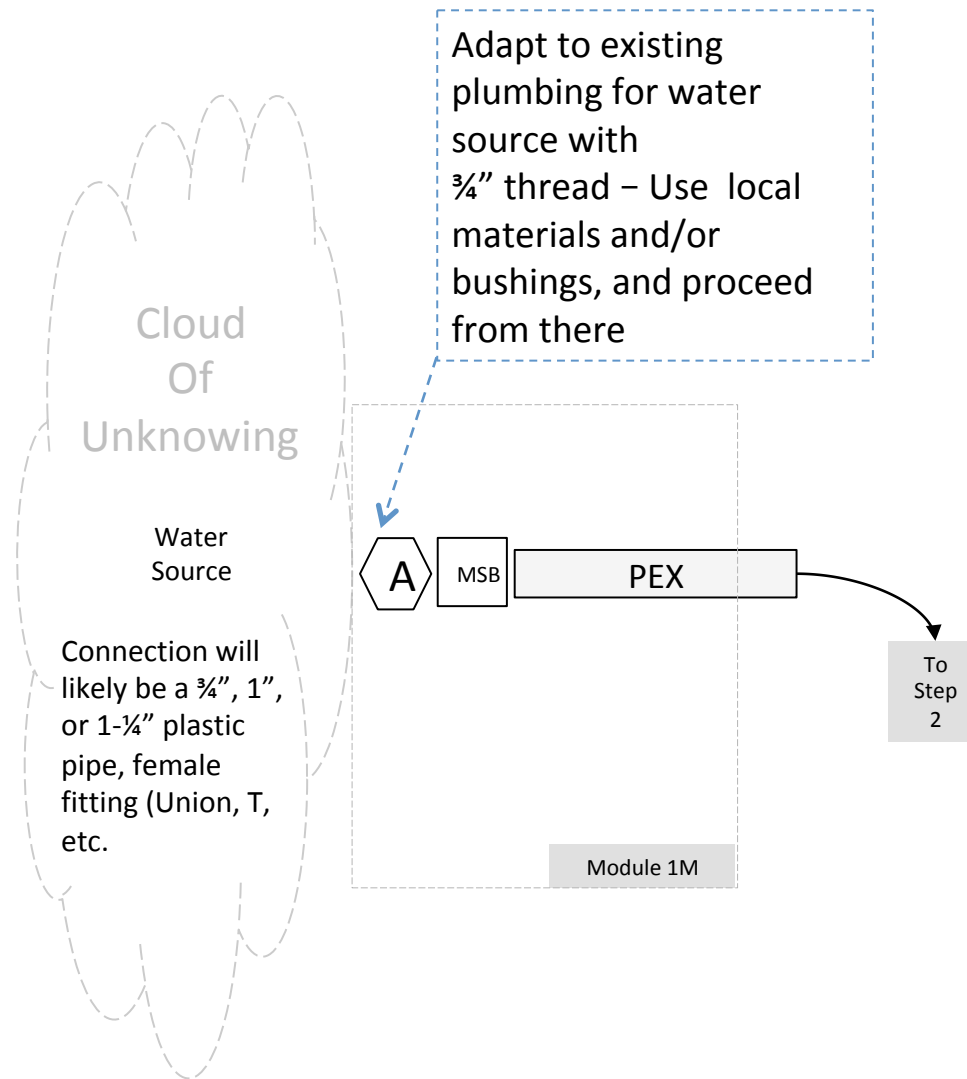
****Revision Notes:** reduce CrossFitting to one or skip entirely and just add an extra Tee & Nipple

Minimal Configuration

Plumbing

Step 1: Connection to existing water source

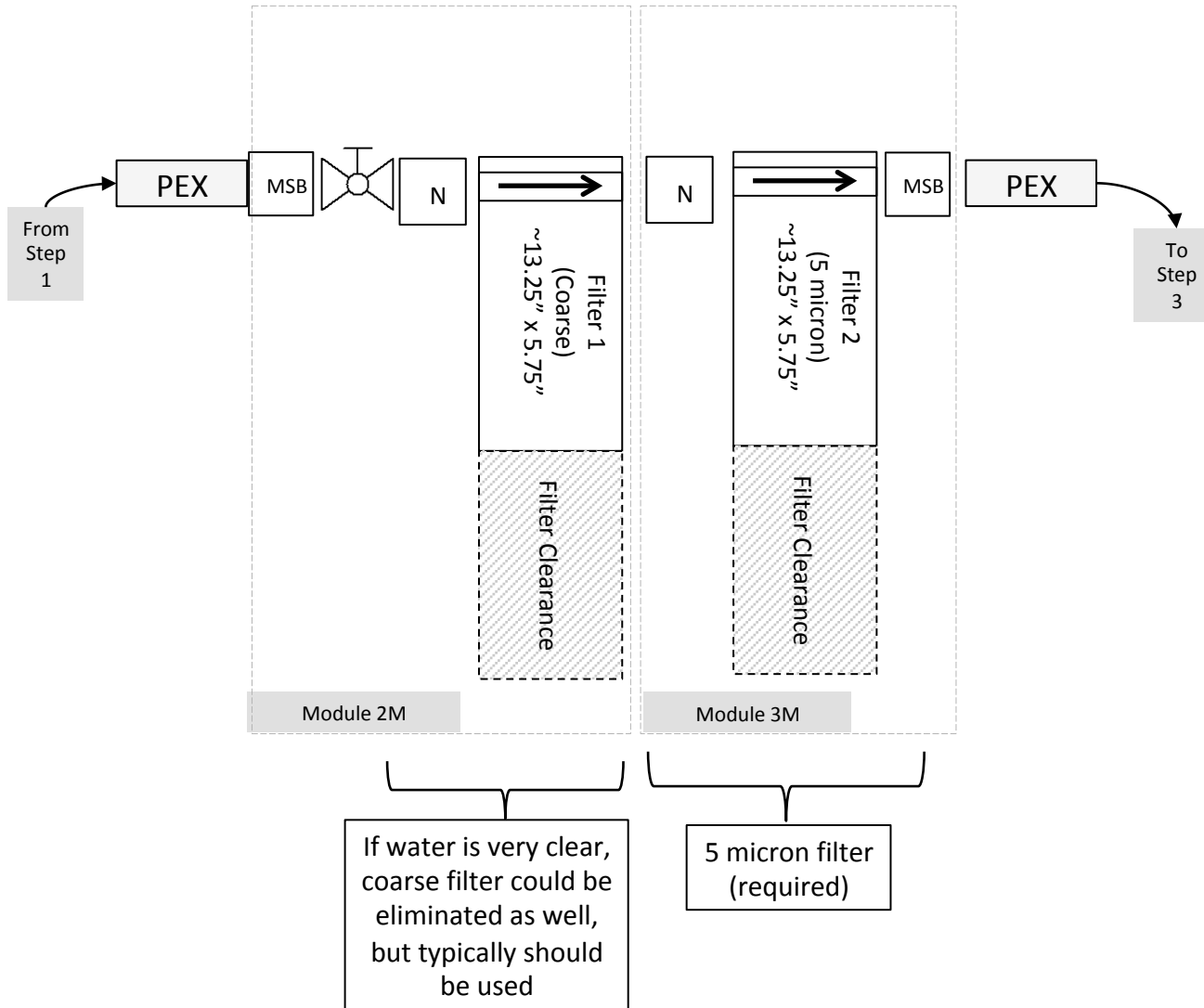
Minimal Configuration



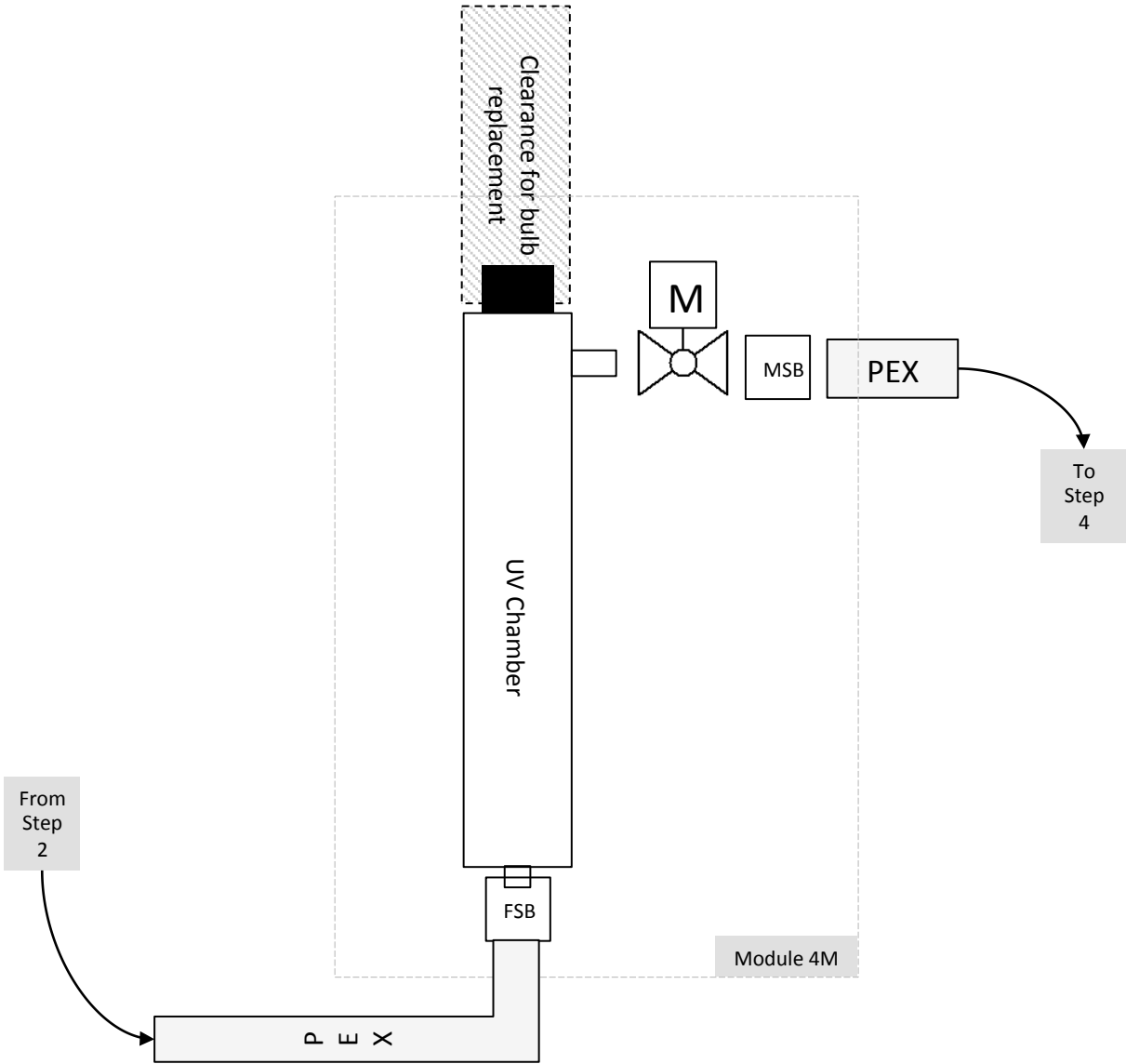
Plumbing

Step 2: Filtration

Minimal Configuration



Plumbing
Step 3: UV treatment
Minimal Configuration



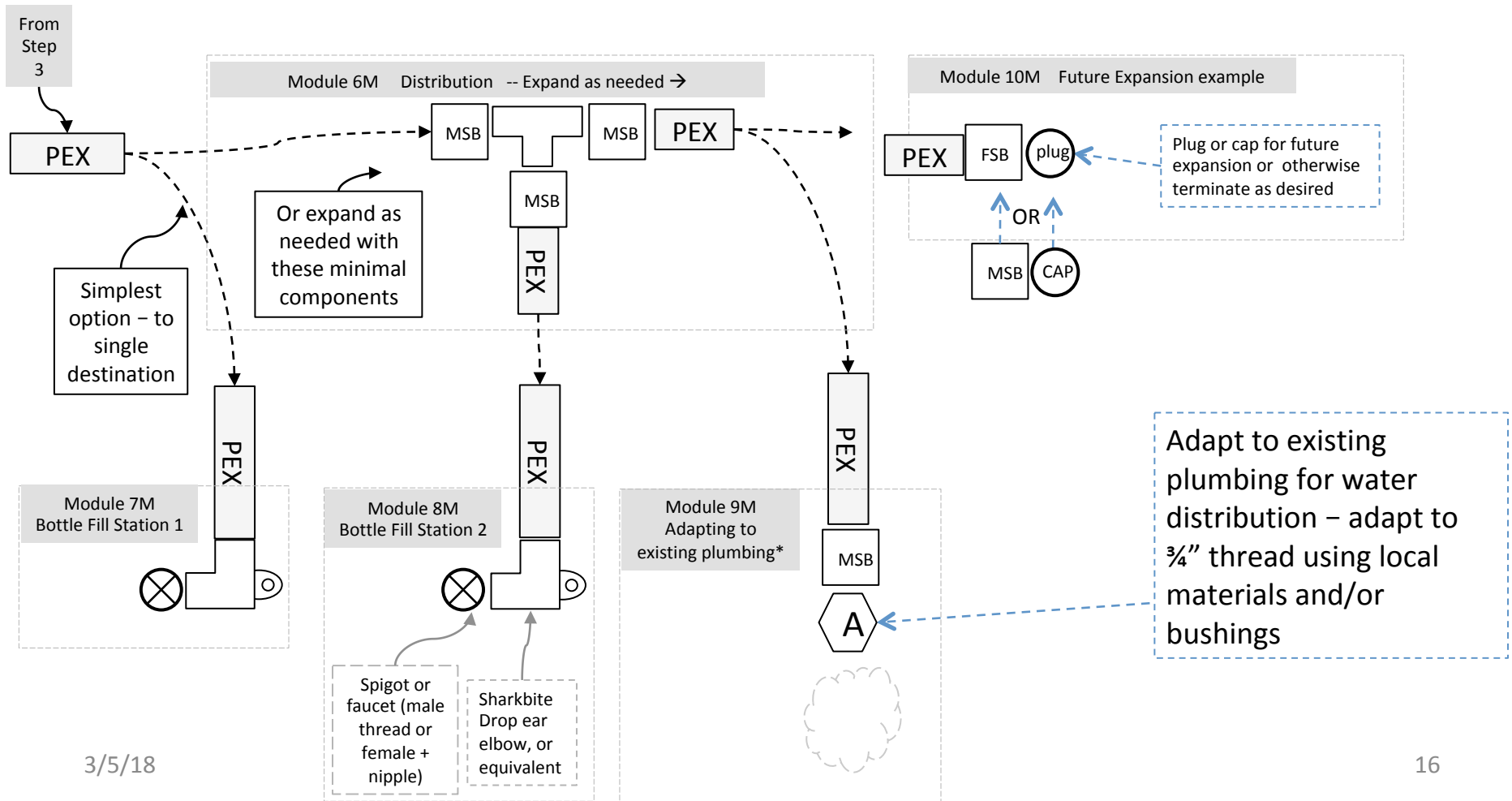
Plumbing

Step 4: Distribution

Minimal Configuration

If distributing through existing pipes (previously used with untreated water), follow instructions for sanitizing system with chlorine – calculate & check concentration, pass treated water through ALL existing pipes, allow to remain for prescribed time

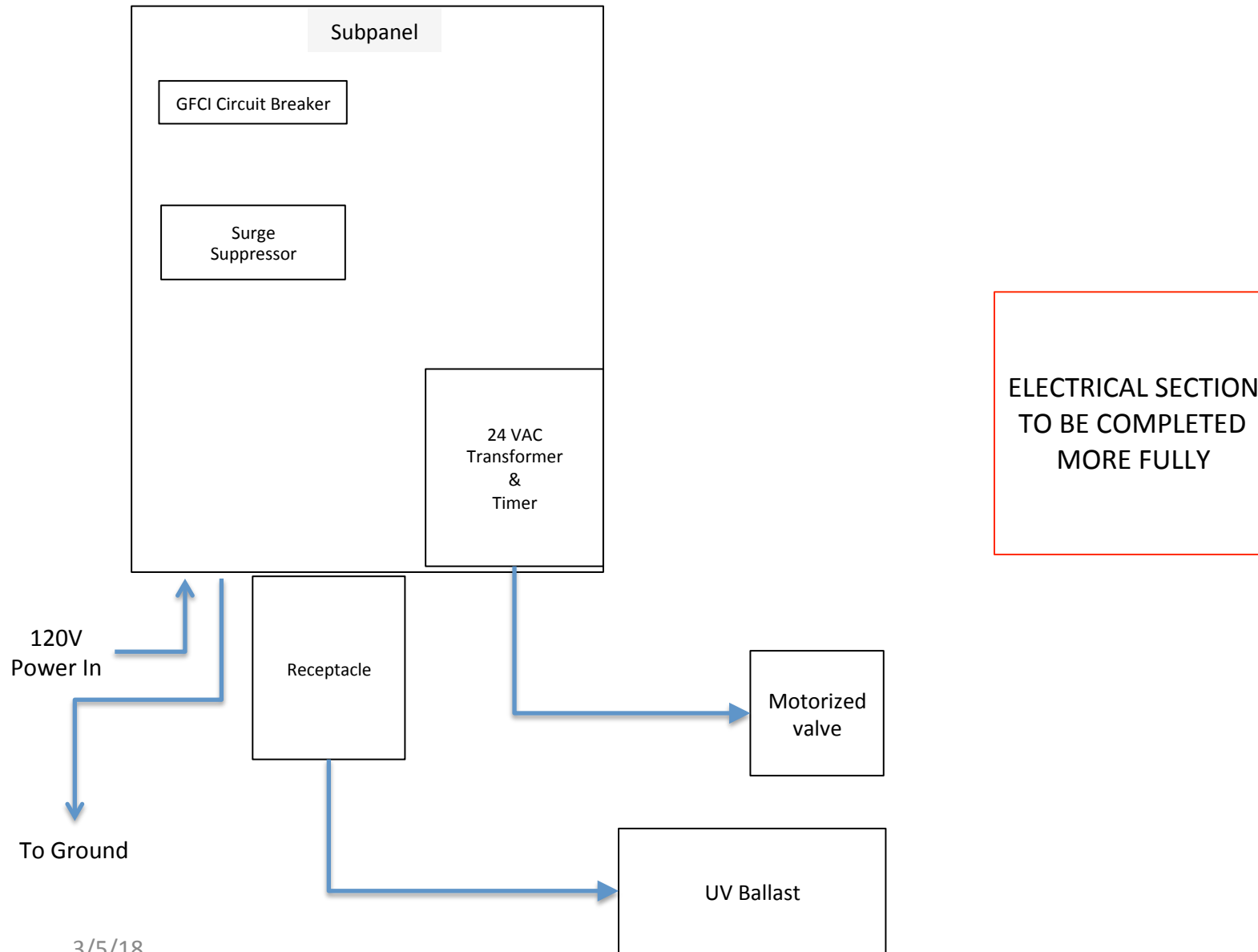
This portion will vary, depending on needs or wishes, but this is a typical example:



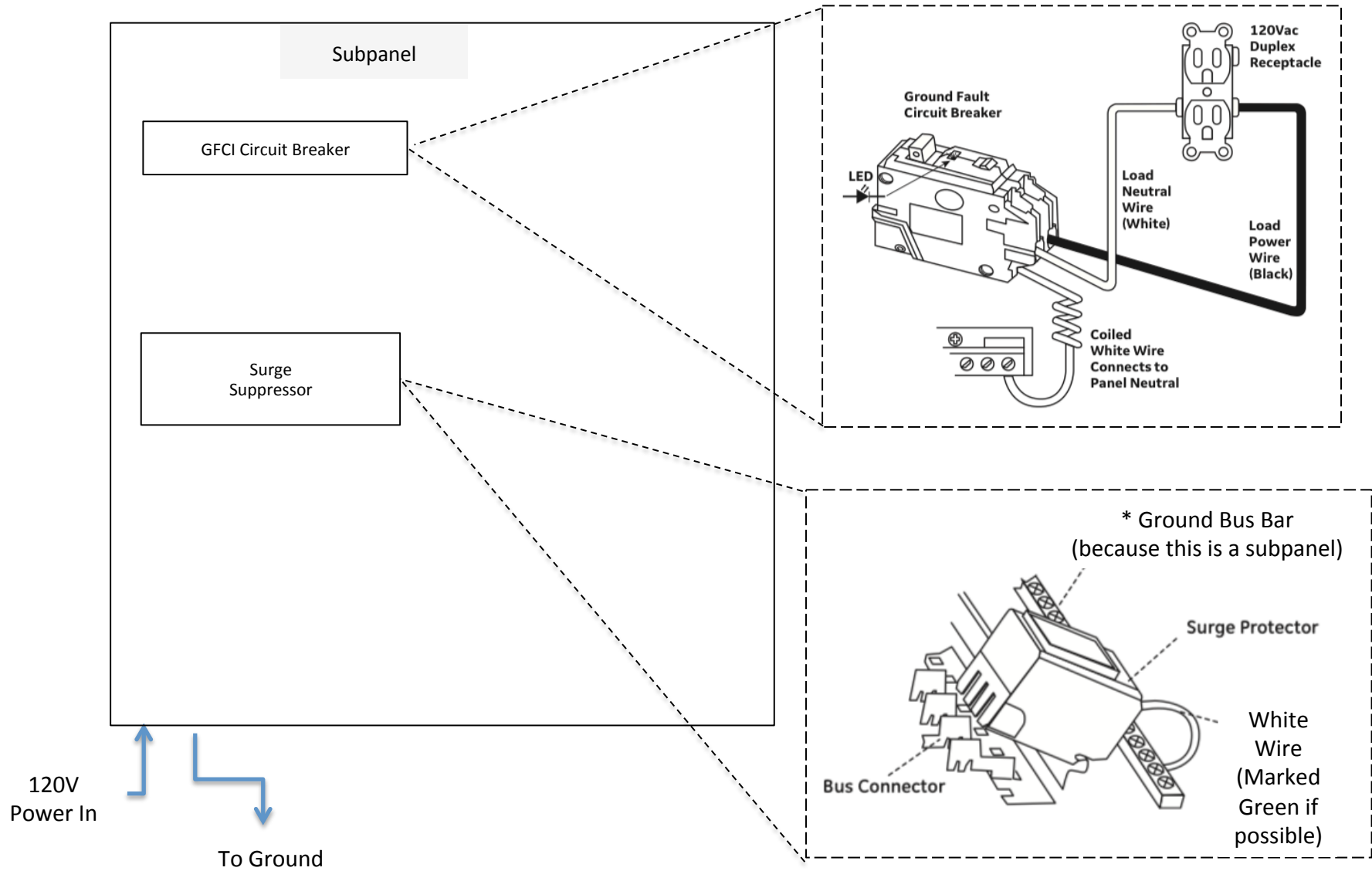
Electrical

ELECTRICAL SECTION
TO BE COMPLETED
MORE FULLY

Electrical Overview

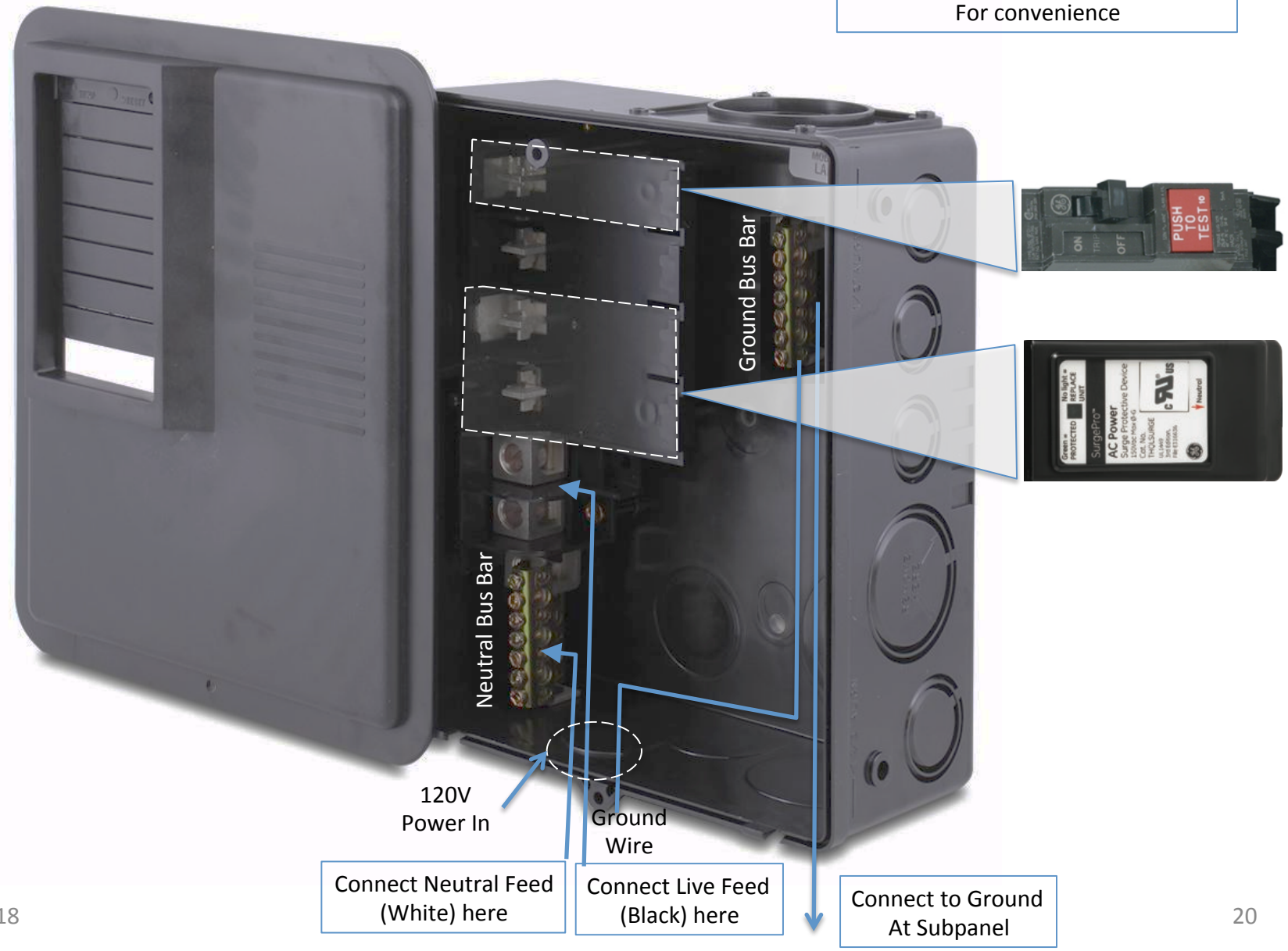


Electrical



Electrical

The Ground Bus Bar can be moved to a position in the housing as needed For convenience



Connect Neutral Feed (White) here

Connect Live Feed (Black) here

Connect to Ground At Subpanel

Electrical



Electrical



Try to fit 24 V AC transformer
And Timer in this area

Otherwise, transformer can
Be mounted to the box,
And the timer can be outside,
Or in a separate box, if one is
Available

*Power for transformer and receptacle
Can and should both be taken from
the GFCI breaker

120 V to
Receptacle
*Power fed from GFCI
Circuit breaker

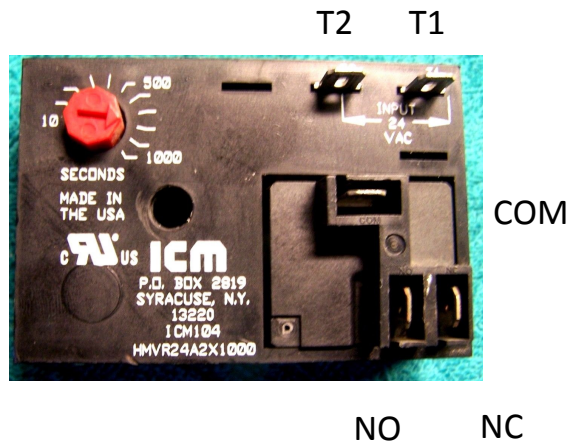
24 VAC power (from Timer) to valve

Electrical

Transformer
Input
120 VAC



Transformer
output
24 VAC



Timer

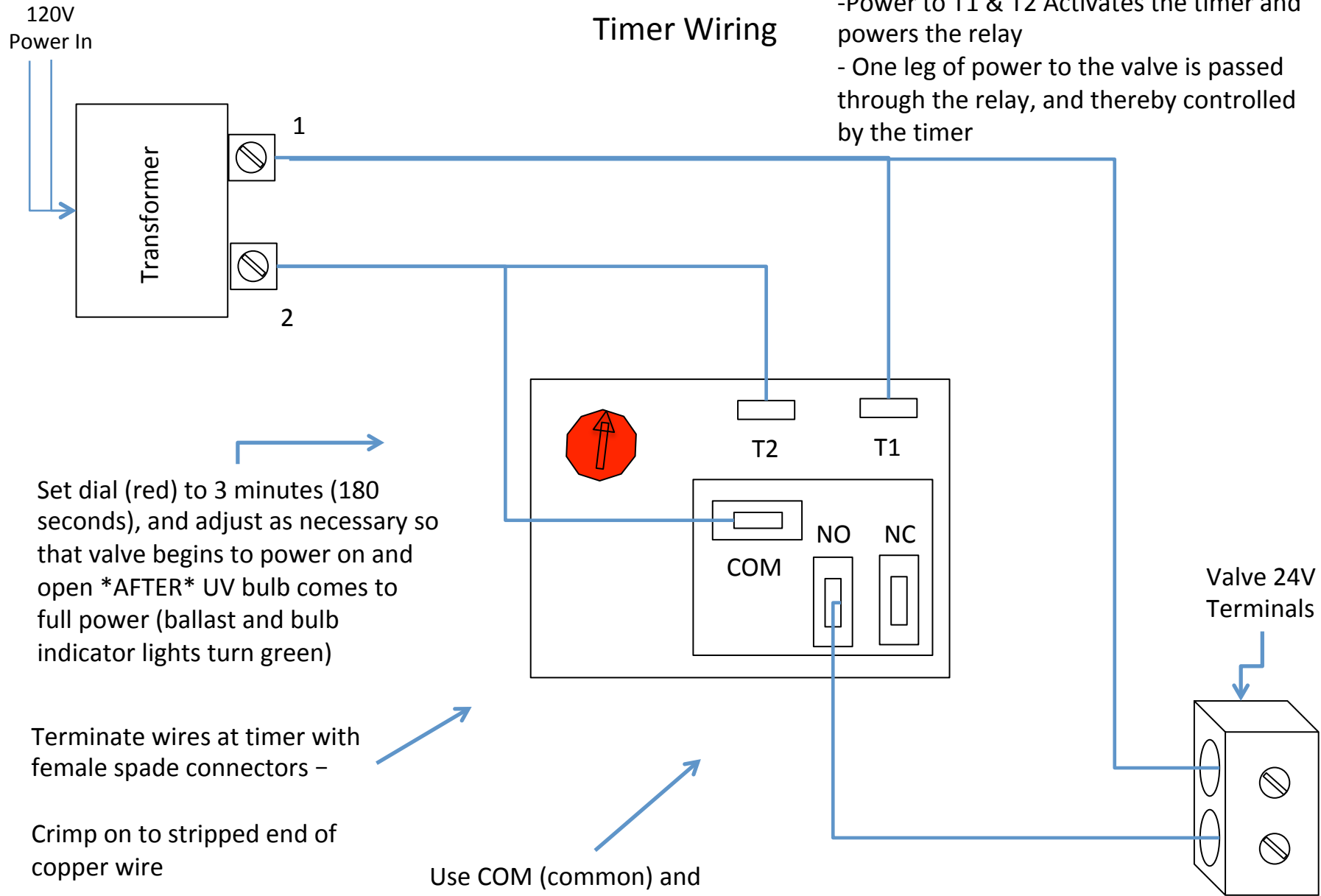


Valve 24V
Terminals



Electrical Timer Wiring

- Power to T1 & T2 Activates the timer and powers the relay
- One leg of power to the valve is passed through the relay, and thereby controlled by the timer



Set dial (red) to 3 minutes (180 seconds), and adjust as necessary so that valve begins to power on and open *AFTER* UV bulb comes to full power (ballast and bulb indicator lights turn green)

Terminate wires at timer with female spade connectors -

Crimp on to stripped end of copper wire

Use COM (common) and "NO" (Normally Open) Terminals

- To add details/ drawings/ complete:
- Instructions on stripping UF wire – Use Utility Knife to expose ground wire, then pull ground wire away from end to tear through outer casing. A regular wire stripper can be used after that to strip wire ends as necessary.
- Connection at source – Power may be taken from wherever the nearest point is. If that point is an outlet, you can remove the receptacle, after turning off power, use the adapter ring, install the ring over the existing box, allowing a wire to pass through the ring (and strain relief bushing), and head to the breaker panel for the water purification system. The original (or a new) receptacle can be reinstalled.
- References/
 - Background information
 - electrical supply (120 v 240)

ELECTRICAL SECTION
TO BE COMPLETED
MORE FULLY