



Collecting Quality Water Samples



Kupferle 2018

Beverages in History



- Beer

- Started with earliest civilization in Mesopotamia



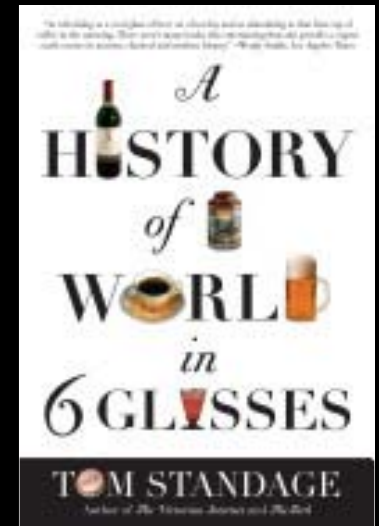
- Wine

- Cultivation of grapes for wine grew during the Greek and Roman Empire times
- Delineated social status



- Coffee

- Plant origins in Ethiopia, first brewed and consumed in Middle East before spreading during the Renaissance times



Beverages in History. Cont.

- Spirits



- More easily transportable, became a common drink in the 18th century
- Rum became the official drink of the British Royal Navy (“limey”)

- Tea

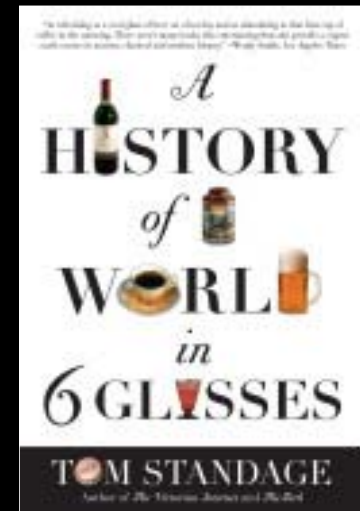


- Grown in India and China
- Became world-wide drink during the “Pax Britannica” 19th century

- Coca-Cola



- Began as a medicinal drink that turned into the most well known brand name of any product in the world



ST. JAMES, WESTMINSTER.

The GOVERNORS and DIRECTORS of the POOR
HEREBY GIVE NOTICE,

That, with the view of affording prompt and Gratuitous assistance to Poor Persons resident in this Parish, affected with Bowel Complaints and

CHOLERA,

The following Medical Gentlemen are appointed, either of whom may be immediately applied to for Medicine and Attendance, on the occurrence of those Complaints, viz.—

Mr. FRENCH, 41, Gt. Marlborough St.
(Opposite, Bow's Court, Marshall Street)

Mr. HOUSLEY, 28, Broad Street.

Mr. WILSON, 16, Great Ryder St.

Mr. JAMES, - 49, Princes Street.

Mr. DAVIES, 25, Brewer Street.

SUGGESTIONS AS TO FOOD, CLOTHING, &c.

Regularity in the Hours of taking Meals, which should consist of any description of wholesome Food, with the moderate use of sound Beer.

Abstinence from Spirituous Liquors.

Warm Clothing and Cleanliness of Person.

The avoidance of unnecessary exposure to Cold and Wet, and the wearing of Dirty Clothes, or Wet Shoes.

Regularity in obtaining sufficient Rest and Sleep.

Cleanliness of Rooms, which should be aired by opening the Windows in the middle of each day.

By Order of the Board,

GEORGE BUZZARD,

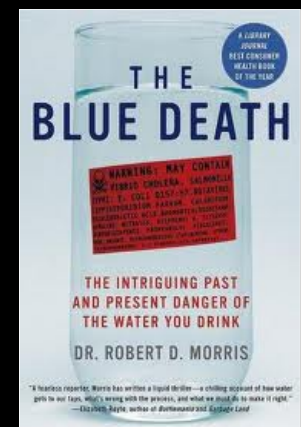
Parochial Officer, Palace Street,
26th November, 1833.

It is requested that this Paper be taken care of, and placed where it can be easily referred to.

J. BONDAGE, PRINTER, 4, BRIDGE STREET, HOLBORN SQUARE.

LIFE *before* DISINFECTION

- Seven Cholera pandemics have killed over 10 million in the past 200 years (mostly in the 19th century)
- Thought to be an airborne disease, until Dr. Snow (c1830) proved otherwise
- First methods of wide-spread disinfection in Chicago 1908
- EPA – Safe Water Drinking Act 1974)
- Milwaukee (1993)
Katrina (2005)
Haiti (2010)



Sampling & Total Coliform Rule

The provisions of the federal Safe Drinking Water Act (1974) require public water suppliers to collect microbiological and chemical samples at various frequencies.

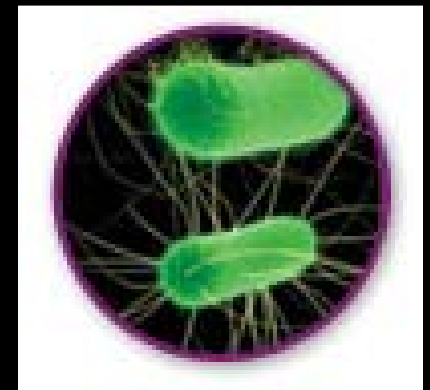
Water is tested for:

- Bacteriological Sample (BacT)
 - Total coliform
 - Fecal coliform
- Other elements tested for:
 - Arsenic, Barium, Cadmium, Chromium, Mercury, Selenium, Beryllium, Nickel, Antimony, Thallium, Cyanide, Fluoride, Nitrite, Nitrate, Iron, Manganese, Silver, Chloride, Sulfate, Zinc



Sampling & Total Coliform Rule

- **Total Coliform Rule / What are Total Coliforms?**
 - Requires all public water systems (PWSs) to monitor for the presence of total coliforms in the distribution system.
 - Total coliforms are a group of closely related bacteria that are (with few exceptions) not harmful to humans. Origins of total coliform bacteria can include untreated surface and ground water, vegetation, soils, insects and animal and human fecal material.

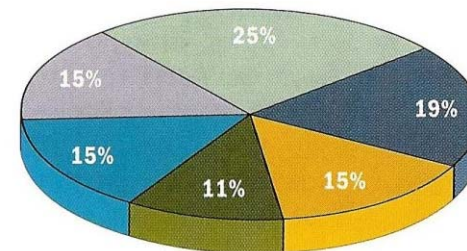


Sampling & Total Coliform Rule

- **How Total Coliforms Occur in Drinking Water**
 - Coliforms can break through the treatment process from source water
 - Coliforms regrow, typically in biofilms, from low initial levels with the result of a recontamination of treated water within the distribution pipeline system

Distribution System Outbreaks

USEPA classified 27 waterborne disease outbreaks caused by distribution system deficiencies from 1974 to 2004.



Source: USEPA, 2007

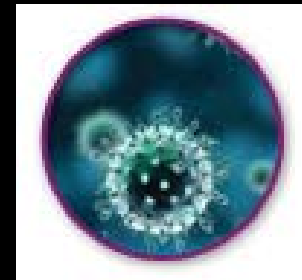
Sampling & Total Coliform Rule

- **How Total Coliforms Grow in Drinking Water**
 - Most coliform growth is thought to occur in biofilms on distribution pipe surfaces and contribute to loss of distribution system disinfectant residuals, increase bacteria levels, reduced dissolved oxygen, taste-and-odor changes, red-or-black water problems, etc.
 - Temperature – on average coliform bacteria occurrences are significantly higher when water temperatures are greater than 59°F
 - Maintaining residuals of .2 mg/L (ppm) free chlorine and .5 mg/L (ppm) chloramines can limit and control coliform occurrences
 - Researchers report the average density of coliform bacteria is 35 times higher in free chlorinated systems vs chloraminated systems

Sampling & Total Coliform Rule

• Why sample for Total Coliforms?

- Because total coliforms are common inhabitants of ambient water
- May be injured by environmental stresses (e.g., lack of nutrients) and water treatment (e.g., chlorine disinfection) in a manner similar to most bacterial pathogens and many viral enteric pathogens (cholera)
- EPA considers them a useful indicator of other pathogens (e.g. fecal coliform, e-coli)



Sampling & Total Coliform Rule

- **Why sample for Total Coliforms, cont.?**
 - More important, for drinking water, total coliforms are used to determine the adequacy of water treatment and the integrity of the distribution system
 - The absence of total coliforms in the distribution system minimizes the likelihood that fecal pathogens are present
 - Total coliforms are used to determine the vulnerability of a system to fecal contamination.



EPA UPDATE

Revised Total Coliform Rule

(February 2013, Page 15)



Dedicated Sampling Stations

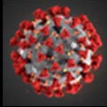
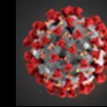
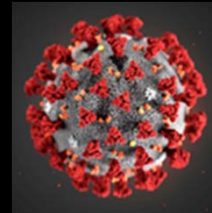
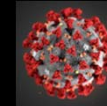
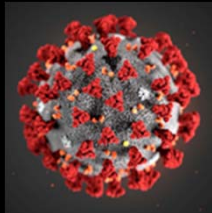
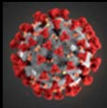
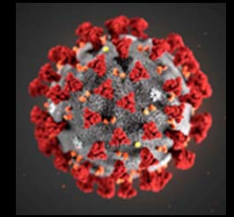
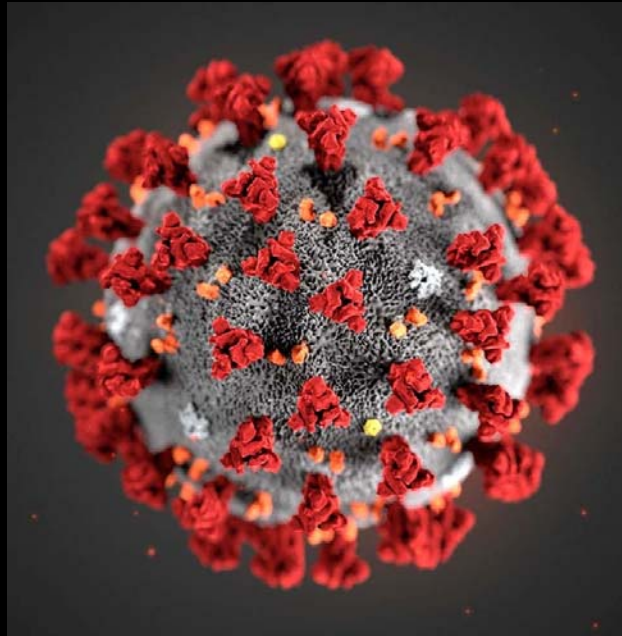
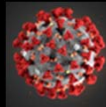
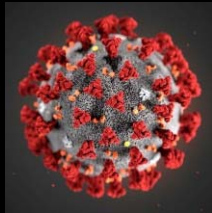
“...EPA is specifically allowing the use of dedicated sampling stations for the following reasons:

- To reduce potential contamination of the sampling taps. Utilities will have more control to prevent contamination of the sampling tap by preventing its use by unauthorized persons and allowing no routine use of the tap except for sampling.

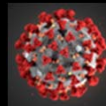
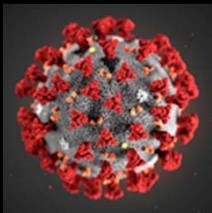
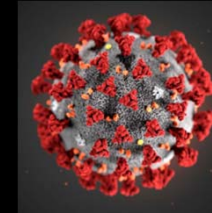
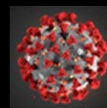
EPA UPDATE

- To facilitate access to sampling taps. Currently systems may be constrained by where they sample, e.g., only at public buildings or in certain individual customer's house.
- To improve sampling representation of the distribution system. Allowing dedicated sampling taps in areas where systems have not been able to gain access will facilitate better sampling representation of the distribution system.”





COVID-19



Collecting Water Samples

Steps for taking a Total Coliform Water Sample

Collecting Water Samples

1. Hand Hygiene

- Latex gloves are the best method of hand hygiene
- If gloves are not available, then wash hands as thoroughly as possible with soap and water or use a hand sanitizer



Collecting Water Samples

2. Avoid Contact with unsterile objects

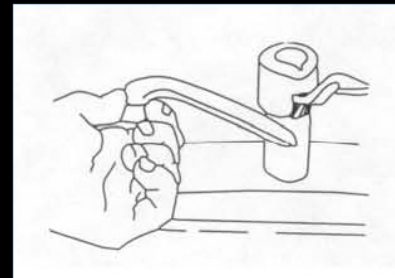
- Ensure your fingers, clothing or other unsterile objects don't touch the interior or mouth of the container, or the container cap



Collecting Water Samples

3. Remove the nozzle cap if using sample station or aerator if using sink faucet

- Avoid taking samples from swivel faucets
- Avoid faucets leaking at handle
- Avoid faucets with attachments (hose/aerator)
- Avoid faucets used for food preparation
- Avoid taking samples from threaded outlets
- Never take a sample from a fire or flushing hydrant or any unit that drains to ground



Collecting Water Samples

4. Sterilize the sampling outlet

- Flaming the tap is most effective method
 - Blow Torch or Cigarette Lighter
 - Heat the faucet, don't burn it
 - Run flame back and forth over faucet several times
- Chlorine bleach solution
 - Immerse the outlet for a couple of minutes
 - Spray or immersion method



Collecting Water Samples

5. Run water before taking sample

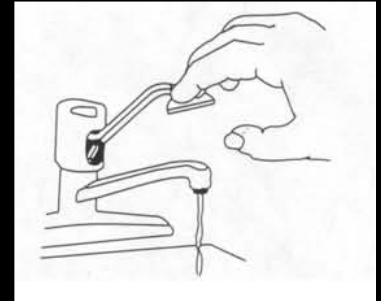
- If using home tap, run from 5-15 minutes to draw sample from main
- If using sample station, run from 2-5 minutes depending on how far the sampling site is from the main



Collecting Water Samples

6. Prepare to take a sample

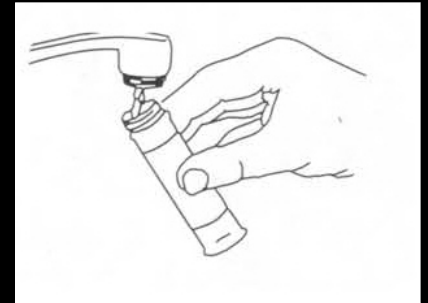
- Reduce the water flow to a $\frac{1}{4}$ " stream in diameter with no air gaps
- Do not touch the inside edge and threads of either the bottle or the cap
- Do not rinse the bottle before taking sample because a chemical preservative is intentionally added (sodium thiosulfate)



Collecting Water Samples

7. Taking the sample

- Carefully unscrew cap , leaving it facing downward. Do not set the cap down.
- Do not breathe in the direction of the sample, turn head to side as sample is being collected
- Fill a prepared laboratory container as instructed by the lab. Hold the container at an angle to reduce aeration



Collecting Water Samples

7. Taking the sample, cont.

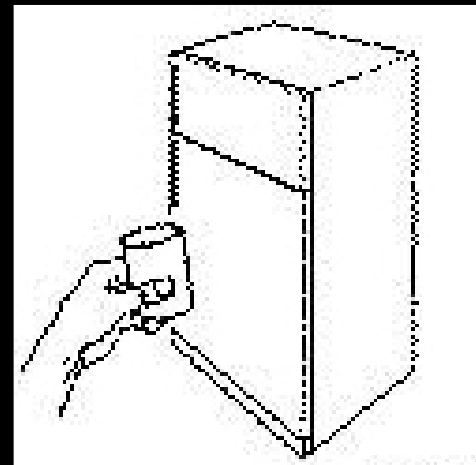
- Two methods of filling the container
 - Fill the container until there is a curved surface to the water top
 - Fill container leaving to fill line or $\frac{3}{4}$ " from the top to allow lab technician to adequately mix the sample
- Replace cap as quickly as possible



Collecting Water Samples

8. Storage and Shipping

- Place sample in a cooler with ice/ice packs when transporting, store in refrigerator
- Send sample to lab within 24-48 hours of collecting



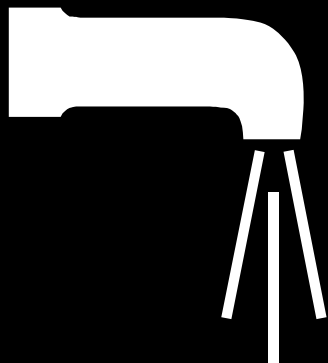
Selecting Sampling Sites

Dedicated Stations versus Private/Public Taps

Private/Public Taps –

Advantages

- No cost per site
- Positive PR with community (?)



Private/Public Taps –

Disadvantages

- Unsecured sites (multi use)
- Samples from site plumbing
- Increased liability issues
- Limited access
- Possible increased chance of false positives
- Higher chance of tap contamination
- Ever changing sampling sites and re-approval process

Selecting Sampling Sites

Dedicated Stations versus Private/Public Taps

- Dedicated Stations - **Advantages**
 - Secure site (not shared)
 - Samples from water main
 - Reduced liability issues
 - 24/365 access
 - Reduced chance of false positives
 - No cross contamination issues
 - Easy above-grade maintenance
 - Set site approved plan that does not change
- Dedicated Stations - **Disadvantages**
 - Higher initial costs
 - Routine cost of maintenance



Kupferle Sampling Products

Eclipse

Eclipse #88 Series
Sampling Stations



Eclipse #82 Series
Sampling Stations

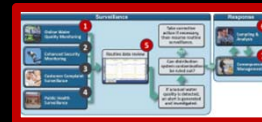


MainGuard

MainGuard #94WM /
#95WM Sampling
Station
(fits inside a water meter
box)



MainGuard #66
Series Sampling
Stations



EPA Surveillance & Response System

ECLIPSE™

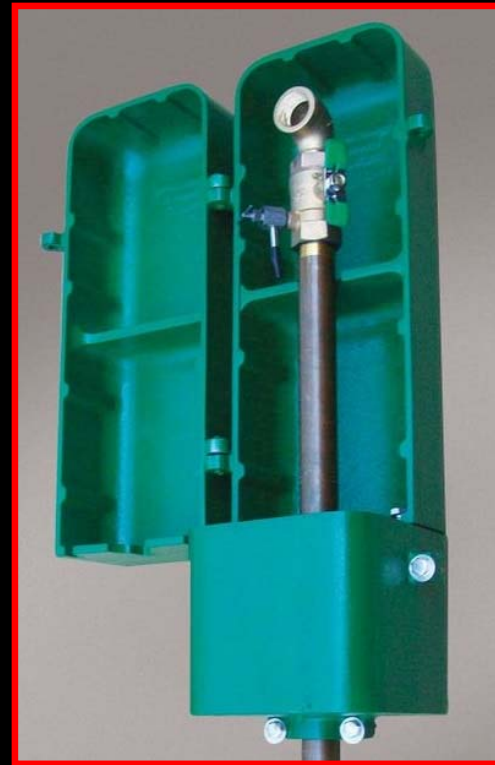
Eclipse #88 Series Water Sampling Stations



Model #88
(cold climate)



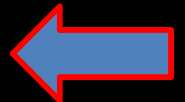
Model #88-SS
(cold climate)



Model #88WC
(warm climate)



Model #88WC-SS
(warm climate)



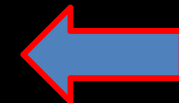
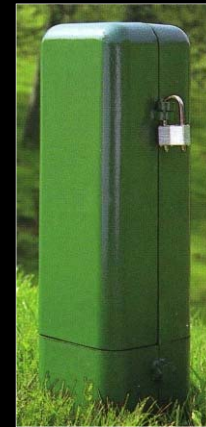
Eclipse #88 Sampling Station

FEATURES

- Specifically designed and engineered for safe sampling
- Allows for sampling directly from your water main
- All brass waterway (no corrosion)
- Unthreaded sampling and nozzle with protective cap
- Secure, lockable aluminum-cast box (optional plastic casing)
- Any depth of bury available
- Brass siphoning vent-tube ensure no cross contamination
- Fully serviceable from above ground – no digging!



Electric Evacuation Pump



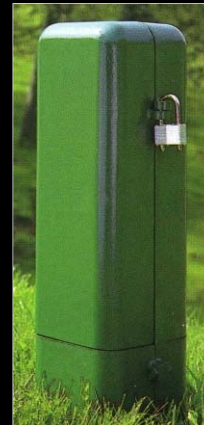
Eclipse #88-SS Sampling Station

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- Specifically designed and engineered for safe sampling
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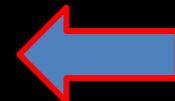


Electric Evacuation Pump



ECLIPSE™

Kupferle 2018



SPEC

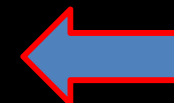
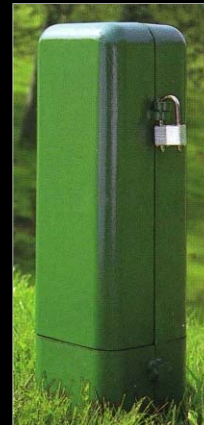


VIDEO

Eclipse #88WC Sampling Station

FEATURES

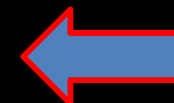
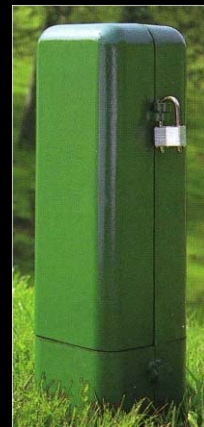
- Specifically designed and engineered for safe sampling
- Allows for sampling directly from your water main
- All brass waterway (no corrosion)
- Unthreaded sampling nozzle with protective cap
- Secure, lockable aluminum-cast box
- 1" flushing capability
- 1/4" petcock sampling point



Eclipse #88WC-SS Sampling Station

FEATURES

- Specifically designed and engineered for safe sampling
- Allows for sampling directly from your water main
- All stainless steel waterway (no corrosion)
- Unthreaded sampling nozzle with protective cap
- Secure, lockable aluminum-cast box
- 1" flushing capability
- 1/4" petcock sampling point



ECLIPSE™

Eclipse #82 Series Water Sampling Stations



Model #82
(cold climate)



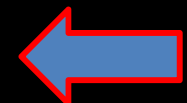
Model #82WC
(warm climate)



Eclipse #82 Sampling Station

FEATURES

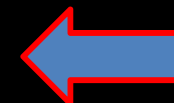
- Specifically designed and engineered for safe sampling
- Allows for sampling directly from your water main
- All stainless steel waterway (no corrosion)
- Unthreaded sampling nozzle
- 1/2" mechanical temperature control valve
- Freeze proof to -20°F (both functionality and freeze protection)
- Secure, lockable UV resistant enclosure
- 2" flushing capability
- 1/2" sampling point



Eclipse #82WC Sampling Station

FEATURES

- Specifically designed and engineered for safe sampling
- Allows for sampling directly from your water main
- All stainless steel waterway (no corrosion)
- Unthreaded sampling nozzle
- 1/2" mechanical temperature control valve
- Freeze proof to -20°F (blow-off and sampling point may become inoperable)
- Secure, lockable UV resistant enclosure
- 2" flushing capability
- 3/8" sampling point



MAINGUARD™

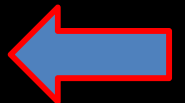
MainGuard #94WM / #95WM Series Meter Resetter Sampling Stations



Model #94WM



Model #95WM



MAINGUARD™

MainGuard #94WM Sampling Station

FEATURES

- Specifically designed and engineered for safe sampling
- All brass waterway
- Fits into standard water meter box
- Spring loaded valve lets operator obtain sample standing up
- Custom-fitted O-ring PVC valve cover standard
- Threaded valve makes it easy to attach/detach sampling rod
- Water is pulled from the water main side of the meter
- All brass sampling rod and case for easy transport
- Standard dual-check valve
- Fully serviceable from above ground – no digging!



Course thread nozzle



MAINGUARD™

MainGuard #94WM Sampling Station

PATENTED

FEATURES

- Specifically designed and engineered for safe sampling
- All brass waterway
- Fits into standard water meter box
- Spring loaded valve lets operator obtain sample standing up
- Custom-fitted O-ring PVC valve cover standard
- Threaded valve makes it easy to attach/detach sampling rod
- Water is pulled from the water main side of the meter
- Sampling rod and case for easy transport
- Optional dual-check valve
- Fully serviceable from above ground – no digging!



Course thread nozzle



Adjustable horns

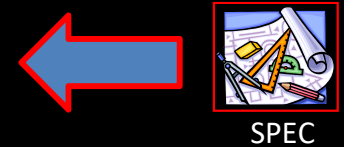


Removable and Replaceable horns

MAINGUARD



Kupferle 2018



SPEC

MAINGUARD™

MainGuard #66 Series Water Sampling Stations



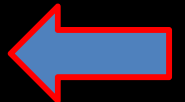
Model #66
(cold climate)



Model #66WC
(warm climate)



Model #66MB
(wall mount)



MAINGUARD™

MainGuard #66 Sampling Station

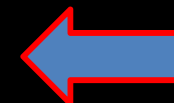


FEATURES

- All surgical stainless steel water way and parts
- Fabricated aluminum lockable enclosure
- Covering lid and side shields for protection when taking samples
- Vinyl outlet caps to keep out contaminants
- No drain valve to prevent cross-contamination



Electric Evacuation Pump



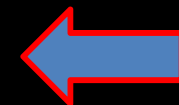
MAINGUARD™

MainGuard #66WC Sampling Station



FEATURES

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- No drain valve to prevent cross-contamination



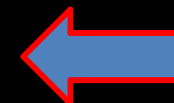
MAINGUARD™

MainGuard #66MB Sampling Station



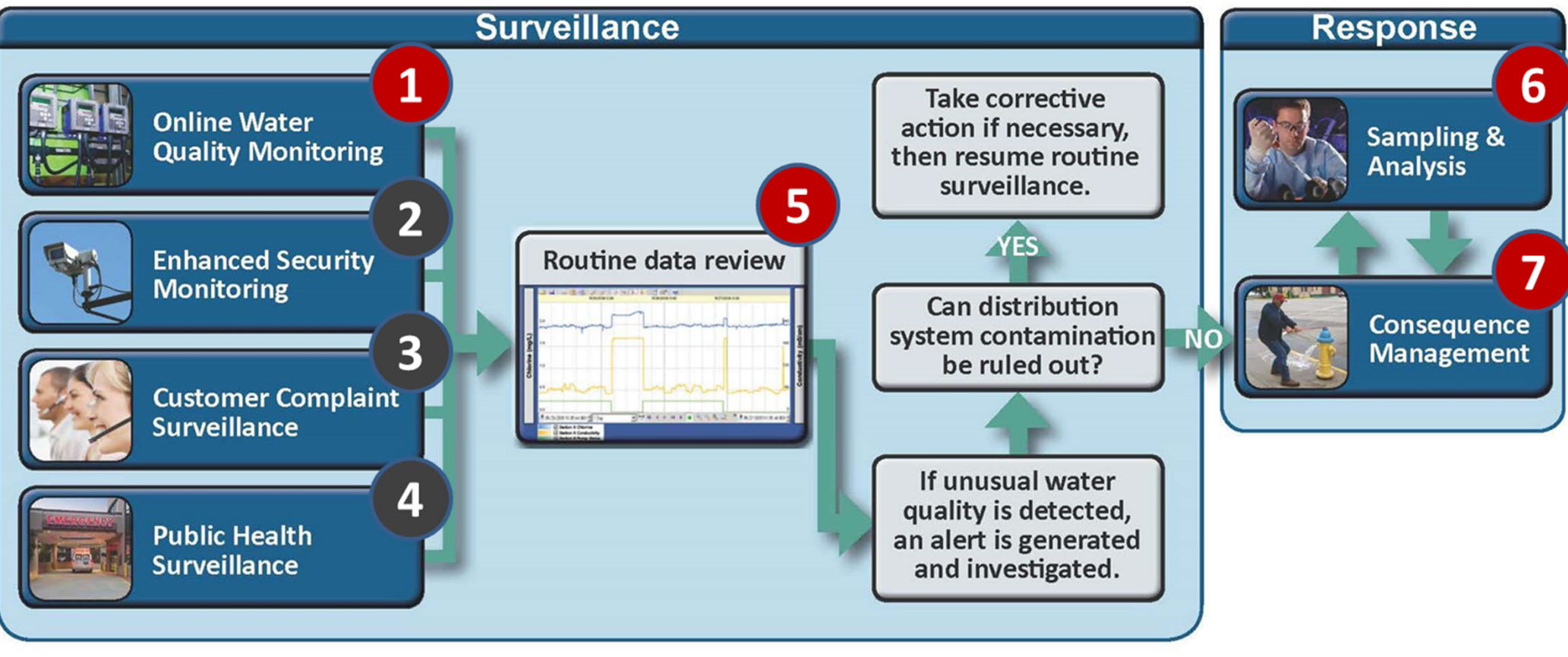
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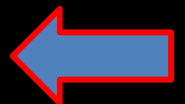


EPA Surveillance and Response System



A Surveillance and Response System (SRS) supports monitoring and management of distribution system water quality. Drinking water utilities can use an SRS to detect and respond to water quality incidents.

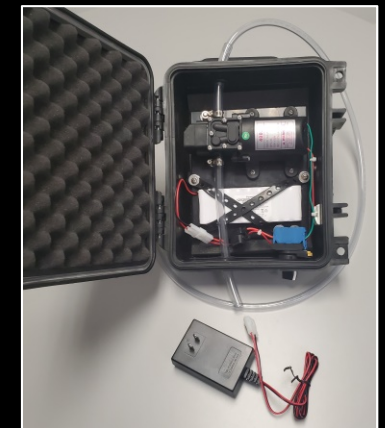
Kupferle manufactures Intelligent Monitoring and Flushing Stations as well as Sampling Stations covering 4 of these 7 areas of an SRS; assisting water utilities in monitoring, improving and maintaining water quality for their customers.





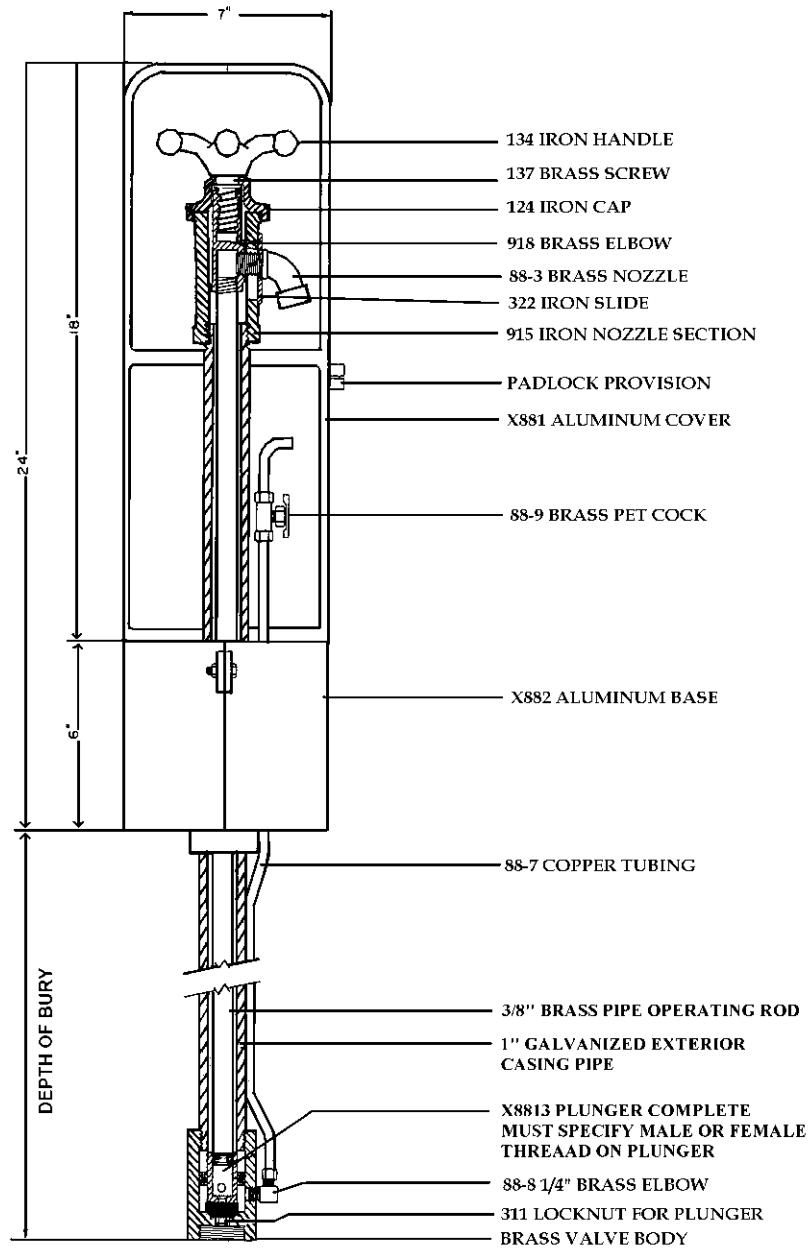
Electric Evacuation Pump (#EEP)

- 12 volt NiCd rechargeable battery pack (1.25 hours runtime)
- Self-priming pump with capacity of pumping 4.5 liters per minute (evacuated a 22' DOB sampling station in less than 35 seconds!)
- Connecting hoses for both standard and extreme cold climate units
- Wall charger
- Hard shell case

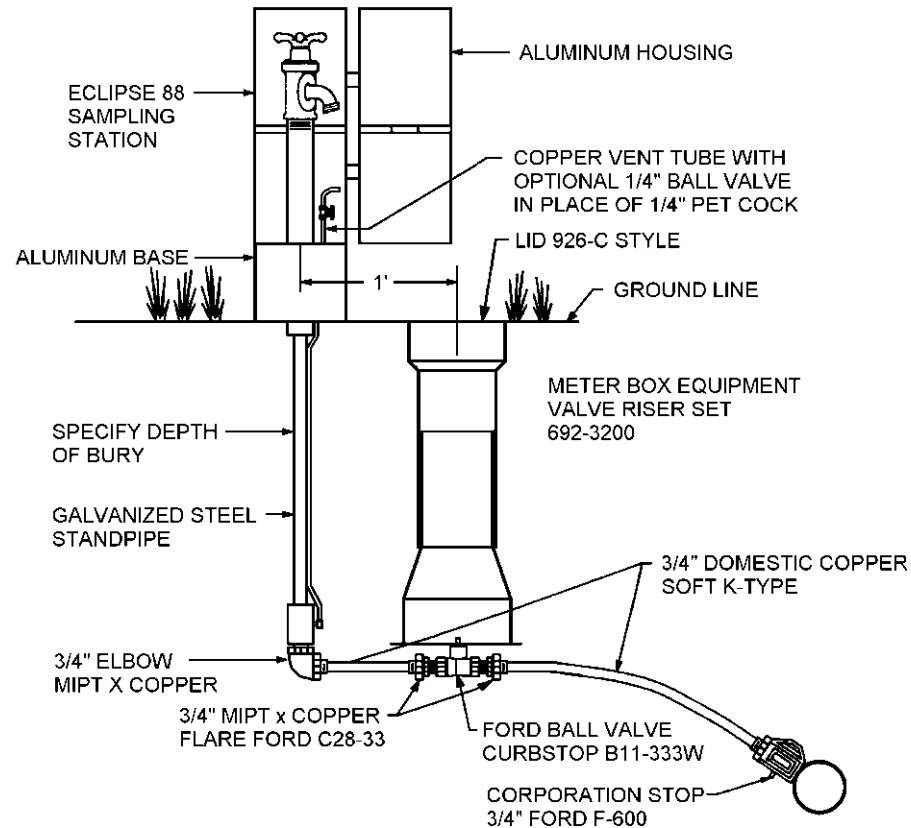


[#88](#) | [#88-SS](#) | [#66](#)

ECLIPSE #88 SAMPLING STATION



ECLIPSE # 88 SAMPLING STATION



Sampling Stations shall be 1' bury, with a 3/4" FIP inlet, and a 3/4" (3/4" hose or unthreaded) nozzle.

All stations shall be enclosed in a lockable, nonremovable, aluminum-cast housing.

When opened, the station shall require no key for operation, and the water will flow in an all brass waterway.

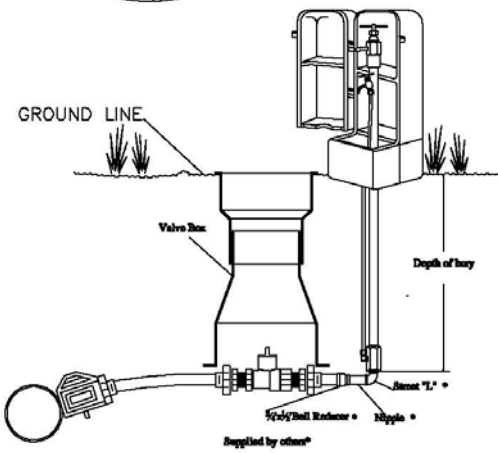
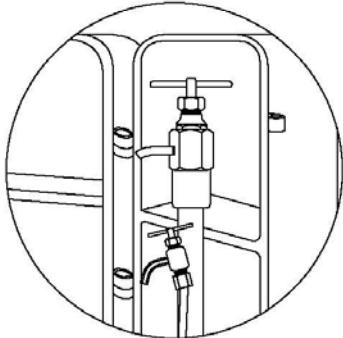
All working parts will also be of brass and be removable from above ground with no digging. Exterior piping shall be galvanized steel (brass pipe also available).

A copper vent tube will enable each station to be pumped free of standing water to prevent freezing and to minimize bacteria growth.

Eclipse No. 88 Sampling Station shall be manufactured by Kupferle Foundry, St. Louis, MO 63102.



#88-SS Sampling Station



Sampling Stations shall be ___' bury, with a 1/2" FIP inlet, and a 7/16" unthreaded blow off and sampling bibb.

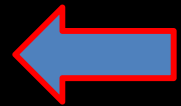
All stations shall be enclosed in a lockable, nonremovable aluminum housing with hinged opening.

When open, the station shall require no key for operation, and water will flow in an all stainless steel waterway.

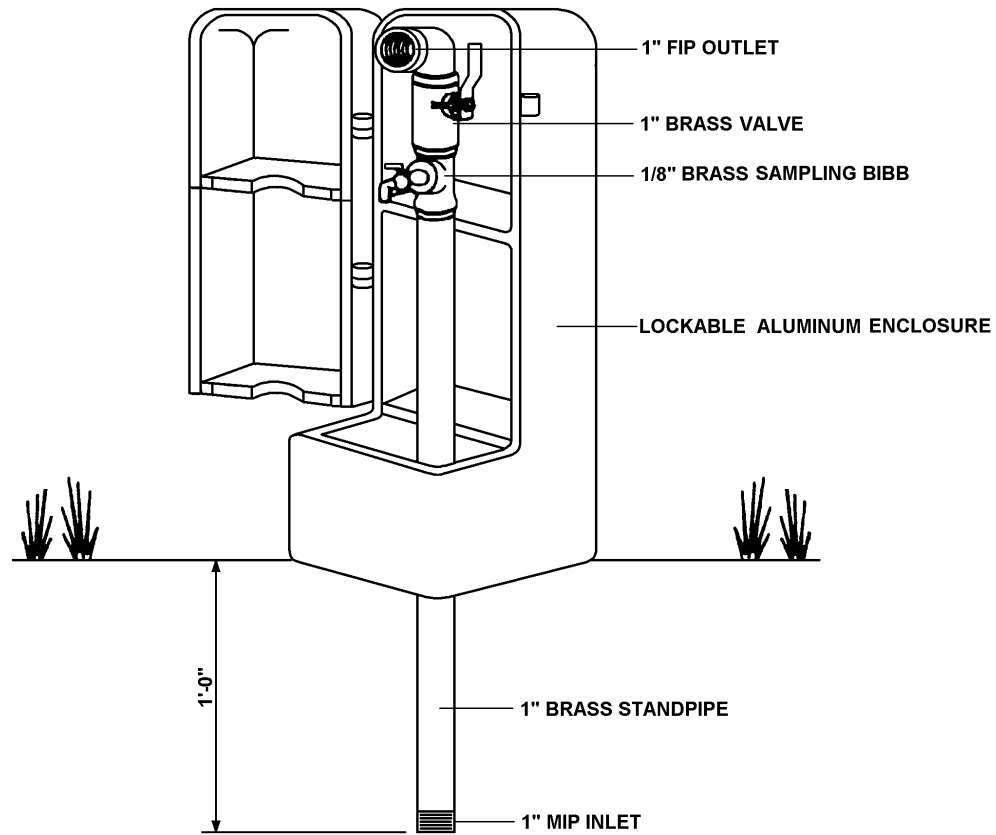
All working parts shall be of stainless steel and serviceable from above ground with no digging or replacement needed.

A stainless steel pet cock will be located below the sampling bibb to allow pumping of remaining water to insure non-freezing, as manufactured by Kupferle Foundry, St. Louis Mo. 63102, Mainguard Model # 88, or approved equal. 1 pump shall be furnished with every ___ stations.

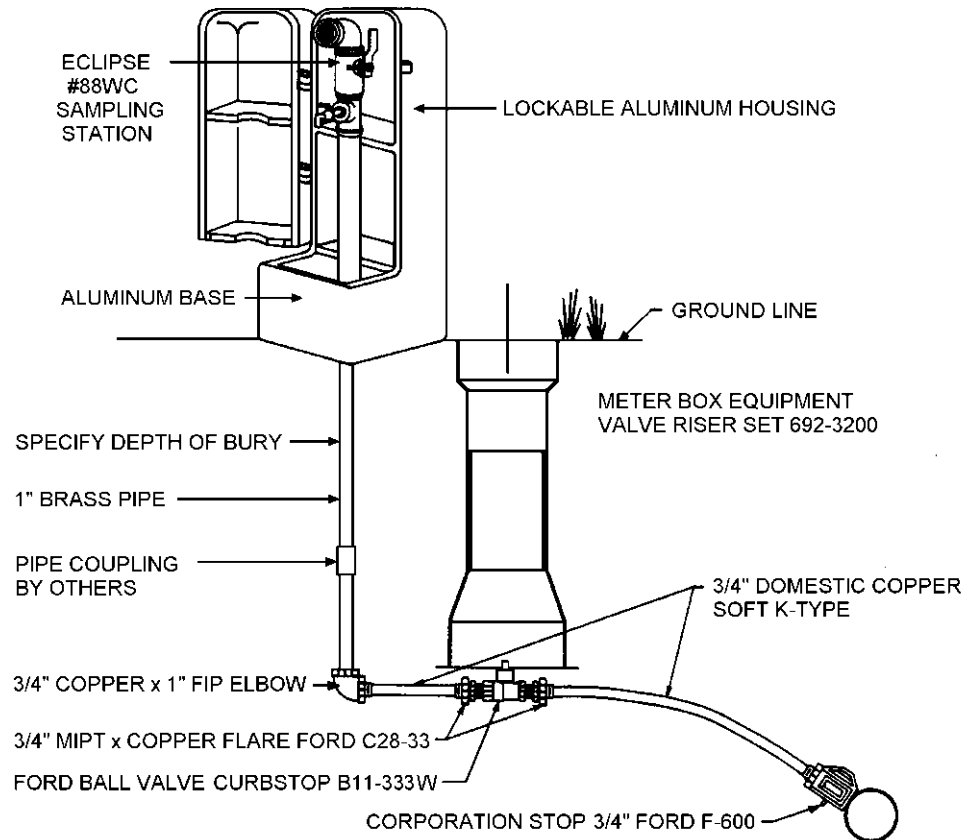
		DRAWN		 KUPFERLE FOUNDRY COMPANY 2511 NORTH 9TH STREET, ST. LOUIS, MO 63102 314-281-8738 800-231-3690 FAX 314-213-2820 http://www.hydrants.com
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DATE	REVISION	PART NO.	SHEET	OF



#88WC ECLIPSE SAMPLING STATION



ECLIPSE #88WC SAMPLING STATION



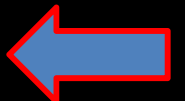
Sampling Stations shall be ____' bury, with a 1" MIP inlet, and a 1" FIP the discharge. A 1/8" sampling bibb shall be located before the discharge pipe.

All stations shall be enclosed in a lockable, nonremovable, aluminum-cast housing.

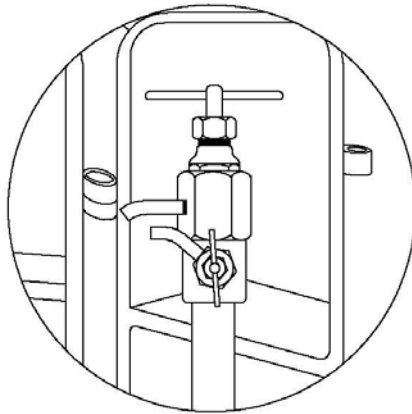
When opened, the station shall require no key for operation, and the water will flow in an all brass waterway.

All working parts will be of brass and serviceable from above ground with no digging. (Optional: If desired, a 1/2" brass drain tube shall be within the locking cover)

A 1" ball valve will control the water flow, and be located before (or after) the sampling bibb, as manufactured by Kupferle Foundry St. Louis, MO 63102.



#88WC-SS Sampling Station



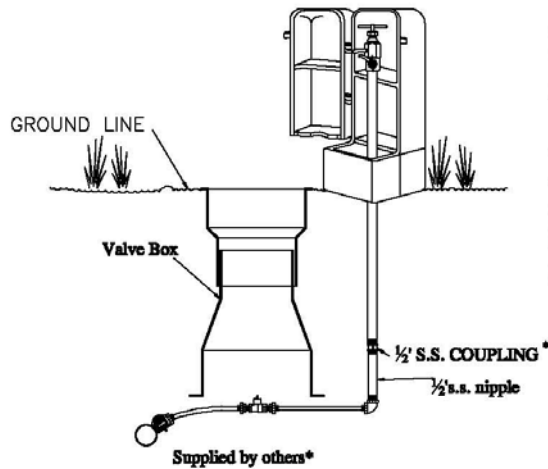
Sampling Stations shall be 1' Bury, with a 1/2" MIP Inlet, and a 7/16" unthreaded blow off, and a 1/4" unthreaded sampling point.

All stations shall be enclosed in a lockable, non-removable aluminum housing. All openings shall be hinged.

When open, the station shall require no key for operation, and water will flow in an all stainless steel waterway.

All working parts shall be of stainless steel and serviceable from above ground with no digging or replacement needed.

A slow turning valve with 6 turns to open will control the water flow, and be located after the sampling bibb, as manufactured by Kupferle Foundry, St. Louis Mo. 63102. Model #88WC-SS, or approved equal.



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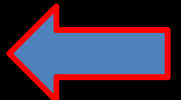
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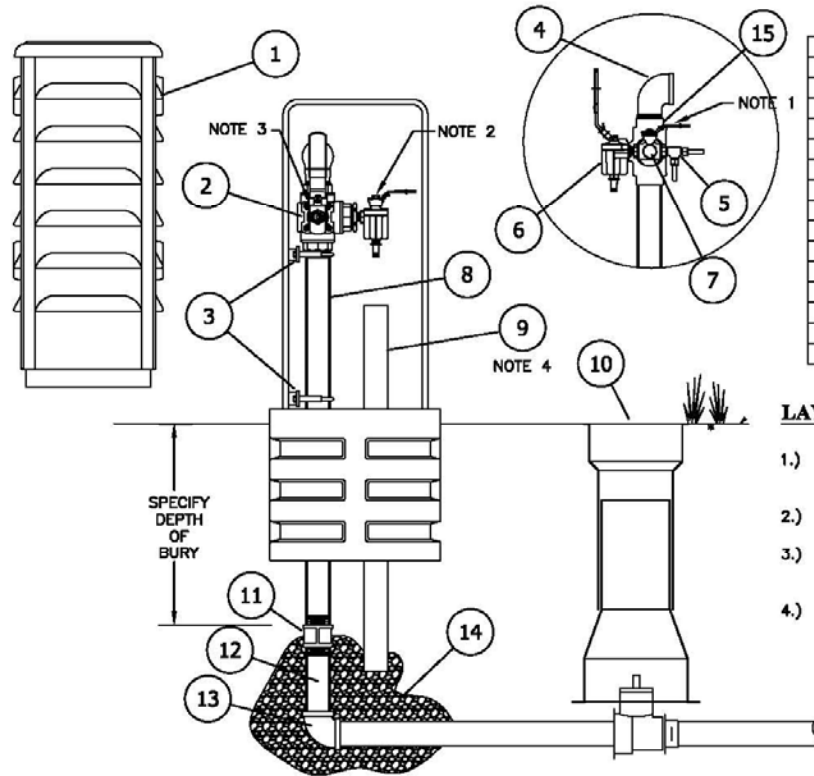
PART NO. #88WC-SS SAMPLING STATION

SHEET 1 OF 1



#82 FREEZE PROOF HYDRANT

Multiple purpose freeze proof blow-off and sampling device shall be installed in the following locations:



ITEM	ITEM / DESCRIPTION	BY OTHERS	OPTIONAL
1	UV RESISTANT LOCKABLE LID		
2	2" 3-WAY S.S. BALL VALVE		
3	MOUNTING BRACKET		
4	2" NPT S.S. DISCHARGE		
5	S.S. SAMPLING POINT		
6	FREEZE PROTECTION VALVE		
7	1/2" 3-WAY S.S. BALL VALVE		
8	2" S.S. WATERWAY		
9	3" min. PVC DRAIN	X	
10	VALVE BOX	X	
11	2" S.S. COUPLING	X	X
12	2" S.S. NIPPLE	X	X
13	2" S.S. ELBOW	X	X
14	1" CLEAN ROCK	X	
15	THREAD 10-32 DRAIN HOLE		

LAYOUT NOTES:

- 1.) 3-WAY SAMPLING VALVE SHOWN IN THE FREEZE PROTECTION POSITION.
- 2.) 3-WAY SAMPLING VALVE SHOWN IN THE SAMPLING POSITION.
- 3.) MAIN 2" 3-WAY BLOW-OFF VALVE SHOWN IN THE FREEZE PROTECTION POSITION.
- 4.) A DRAIN SHALL BE INSTALLED TO ALLOW THE FREEZE PROTECTION VALVE TO DRAIN BELOW THE FROST LINE.
 - @ 20°F - APPROXIMATELY 13 GALLONS PER DAY
 - @ -10°F - APPROXIMATELY 42 GALLONS PER DAY

THE EXACT AMOUNT OF WATER DISPENSED DEPENDS ON AMBIENT AIR TEMPERATURE, MAKE UP WATER TEMPERATURE, AND DURATION OF COLD SPELL.

The #82 Freeze Proof Sampling Station shall be a standard 20" bury, with a 2" MIP inlet and a 2" NPT threaded discharge. A 3/8" Stainless Steel T compression shall be located before the discharge to allow for sampling. A 2" Stainless Steel Ball Valve shall control the flow of water for the main discharge. The unit shall be fully enclosed in a UV resistant lockable cover and when opened, the station shall require no key for operation. All water flow must be thru Stainless Steel and all operational parts shall be servicable from above ground without any digging. A temperature activated water relief valve shall maintain a controlled water temperature within the waterway by opening the valve port when the water temperature reaches 43°F and remain open until warmer water reaches the port, thus creating a non freezing environment. The freeze proof cycle shall repeat as often as necessary to prevent freezing..

Unit model # shall be 82 as manufactured by Kupferle Foundry Company, St. Louis MO (1-800-231-3990), or approved equal.

NOTE: Flush water lines free of debris before installation

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1/10/13

SHEET 1 OF 1 SCALE: 1/2"=1'
#82 SPEC SHEET

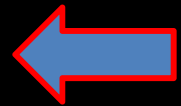
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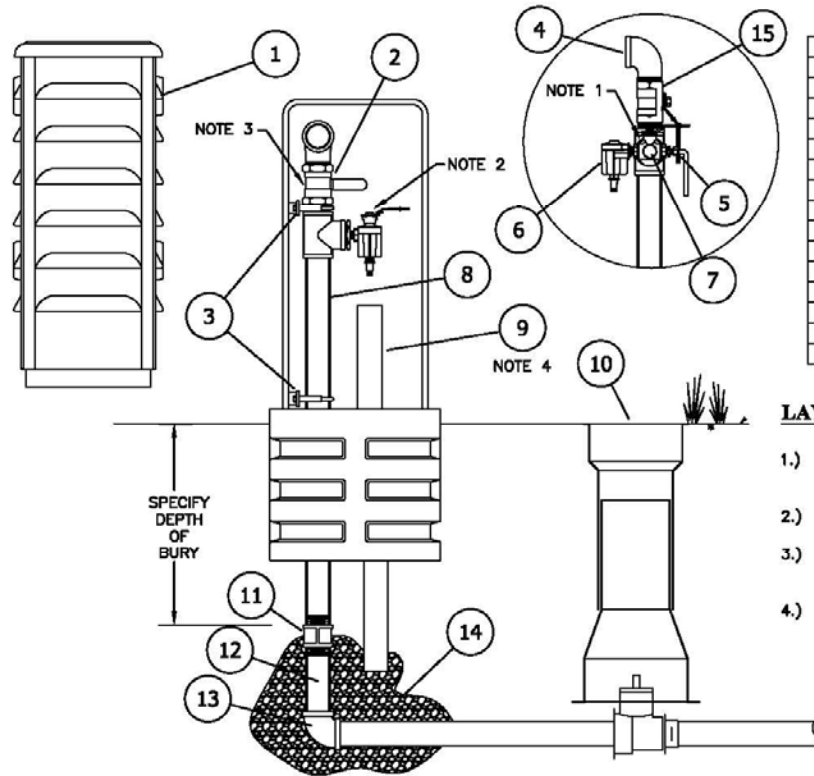
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DATE	STATUS / REVISION



#82WC FREEZE PROOF HYDRANT

Multiple purpose freeze proof blow-off and sampling device shall be installed in the following locations:



ITEM	ITEM / DESCRIPTION	BY OTHERS	OPTIONAL
1	UV RESISTANT LOCKABLE LID		
2	2" S.S. BALL VALVE		
3	MOUNTING BRACKET		
4	2" NPT S.S. DISCHARGE		
5	S.S. SAMPLING POINT		
6	FREEZE PROTECTION VALVE		
7	1/2" 3-WAY S.S. BALL VALVE		
8	2" S.S. WATERWAY		
9	3" min. PVC DRAIN	X	
10	VALVE BOX	X	
11	2" S.S. COUPLING	X	X
12	2" S.S. NIPPLE	X	X
13	2" S.S. ELBOW	X	X
14	1" CLEAN ROCK	X	
15	THREAD 10-32 DRAIN HOLE		

LAYOUT NOTES:

- 3-WAY SAMPLING VALVE SHOWN IN THE FREEZE PROTECTION POSITION.
- 3-WAY SAMPLING VALVE SHOWN IN THE SAMPLING POSITION.
- MAIN 2" BLOW-OFF VALVE SHOWN IN THE FREEZE PROTECTION POSITION.
- A DRAIN SHALL BE INSTALLED TO ALLOW THE FREEZE PROTECTION VALVE TO DRAIN BELOW THE FROST LINE.
 - 20°F - APPROXIMATELY 13 GALLONS PER DAY
 - -10°F - APPROXIMATELY 42 GALLONS PER DAY

THE EXACT AMOUNT OF WATER DISPENSED DEPENDS ON AMBIENT AIR TEMPERATURE, MAKE UP WATER TEMPERATURE, AND DURATION OF COLD SPELL.

The #82WC Freeze Proof Sampling Station shall be a standard 20" bury, with a 2" MIP inlet and a 2" NPT threaded discharge. A 2" Stainless Steel T shall be located before the discharge to allow for sampling. A 2" Stainless Steel Ball Valve shall control the flow of water for the main discharge. The unit shall be fully enclosed in a UV resistant lockable cover and when opened, the station shall require no key for operation. All water flow must be thru Stainless Steel and all operational parts shall be serviceable from above ground without any digging. A temperature activated water relief valve shall maintain a controlled water temperature within the waterway by opening the valve port when the water temperature reaches 43°F and remain open until warmer water reaches the port, thus creating a non freezing environment. The freeze proof cycle shall repeat as often as necessary to prevent freezing.

NOTE: Operational parts may freeze if the temperature drops below 32°F for any extended duration.

Unit model # shall be 82WC as manufactured by Kupferle Foundry Company, St. Louis MO (1-800-231-3990), or approved equal.

NOTE: Flush water lines free of debris before installation

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DATE
1/30/13

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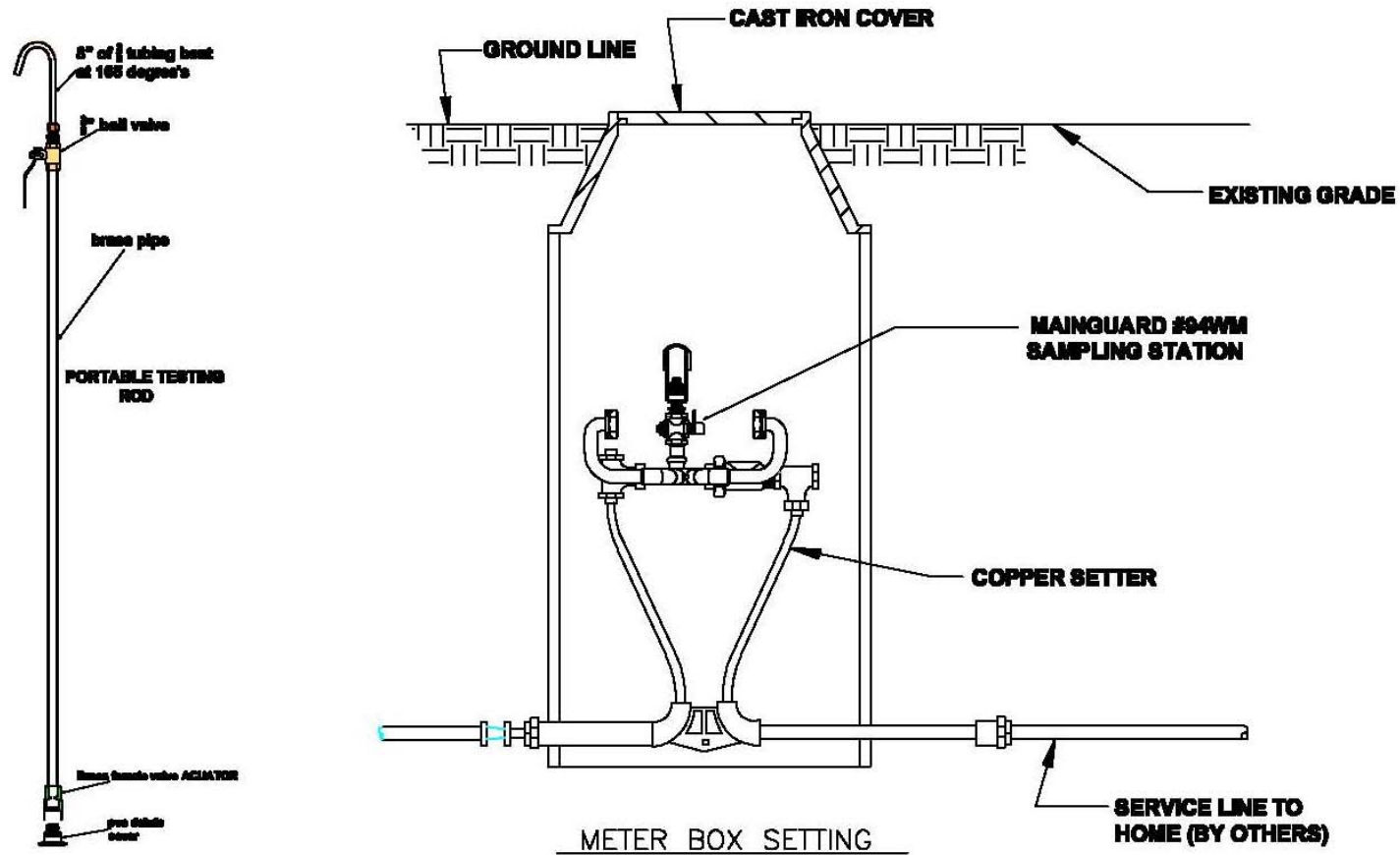
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DATE	STATUS / REVISION	

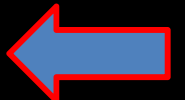
SHEET 1 OF 1 SCALE: 1/2"=1'
#82WC SPEC SHEET



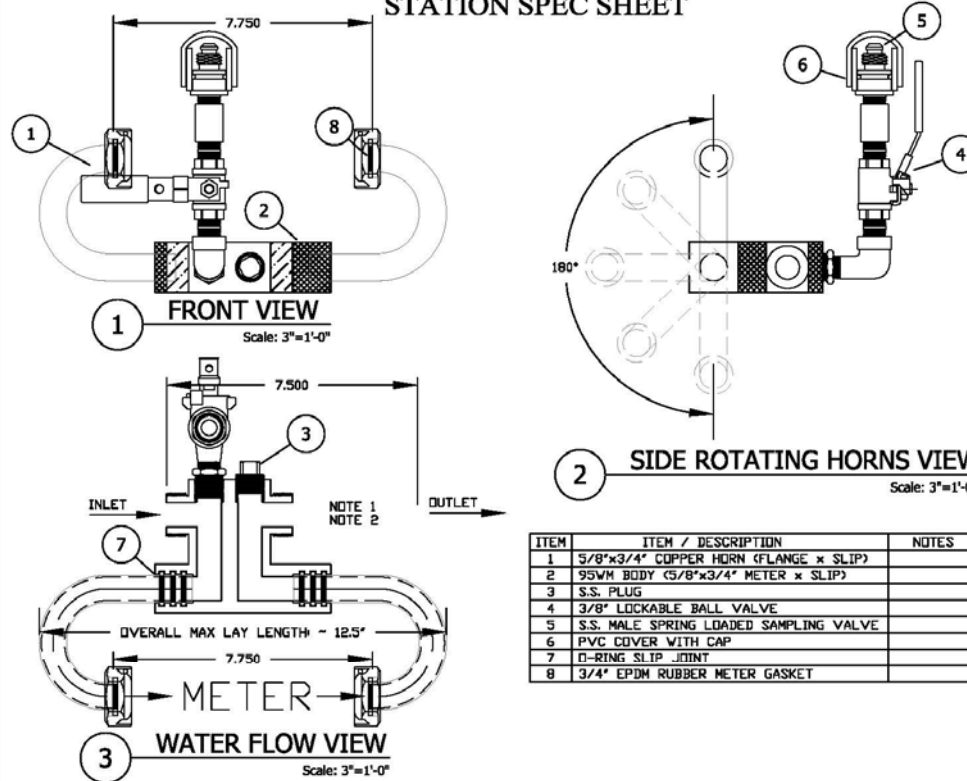
#94WM METER BOX SAMPLING STATION



Sampling Stations shall be meter box- retrofit style. Each station will install into existing meter yokes, and water meters can then be re-set into sampling station setter. To begin water flow, a portable rod with a female coupler will screw onto a male valve connected to the station. This connection will require a turning motion only, with no pushing or pulling needed. Each male valve will be located before the water meter, have an auxiliary shut-off valve, and be protected by a (PVC or brass) cover when not in use. Each station shall have a dual check valve between water meter and residence. Portable rod will be brass and each furnished with protective plug and carrying case. One rod will be furnished for every ___ stations. Stations shall be manufactured by Kupferle Foundry Company, St. Louis, Mo. model #94WM, or approved equal.



#95WM 5/8"x3/4" METER SETTER SAMPLING STATION SPEC SHEET



METER SETTER SAMPLING STATION SHALL BE METER BOX RETROFIT STYLE FOR A 5/8" x 3/4" METER, WITH 1" MIP METER THREADED INLET AND OUTLET, BOTH WITH A FACE FOR GASKET SEAL. IF DESIRED A DUAL CHECK VALVE (EITHER NYLON OR BRASS BODY) SHALL BE LOCATED BETWEEN THE WATER METER AND RESIDENCE.

METER SETTER SHALL HAVE REMOVABLE HORNS THAT ATTACH TO THE RESETTER BODY VIA A 3 O-RING SLIP CONNECTION. THE METER ITSELF SHALL HOLD THE HORNS INTO THE BODY ONCE INSTALLED.

METER SHALL BE ABLE TO BE ROTATED AROUND THE HORN AXIS ALLOWING THE SETTER TO ACCOMODATE FOR DIFFERENT ANGLES AS NEEDED.

TO PERFORM SAMPLING, A PORTABLE ROD WITH A FEMALE COUPLER WILL THREAD ONTO THES.S. MALE SPRING LOADED PISTON VALVE (#5) CONNECTED TO THE METER SETTER. THIS CONNECTION SHALL REQUIRE A TURNING MOTION ONLY, WITH NO PUSHING OR PULLING NECESSARY. MALE VALVE SHALL BE LOCATED BEFORE THE WATER METER, HAVE AN AUXILIARY SHUT-OFF VALVE, AND BE PROTECTED BY A (PVC OR BRASS) COVER WHEN NOT IN USE.

NOTES:

- DUAL CHECK VALVE OPTIONAL WITH DIFFERENT BODY STYLES AVAILABLE (REINFORCED NYLON OR BRASS).
 - ZURN WILKINS (NYLON) DUAL CHECK MANUFACTURED IN COMPLIANCE WITH ANSI/ASSE 1024, CSE CERTIFIED, NSF 61 (ANNEX G) LISTED, CERTIFIED TO NSF/ANSI 372 BY IAPMO R&T.
 - A.Y. MCDONALD (BRASS) DUAL CHECK MANUFACTURED IN COMPLIANCE WITH ANSI/ASSE 1024 AND COMPLIANT WITH USA PUBLIC LAW 111-380 AND IDENTIFIED WITH "NL".
- IDLER OPTIONAL WITH DIFFERENT BODY STYLES AVAILABLE (PVC OR BRASS).
 - KUPFERLE (PVC) IDLER .
 - A.Y. MCDONALD (BRASS) IDLER COMPLIANT WITH USA PUBLIC LAW 111-380 AND IDENTIFIED WITH "NL".

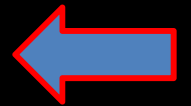
#95WM METER SETTER SAMPLING STATION TO BE INSTALLED AT THE FOLLOWING LOCATIONS:

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3/24/15
SCALE
3"=1'-0"

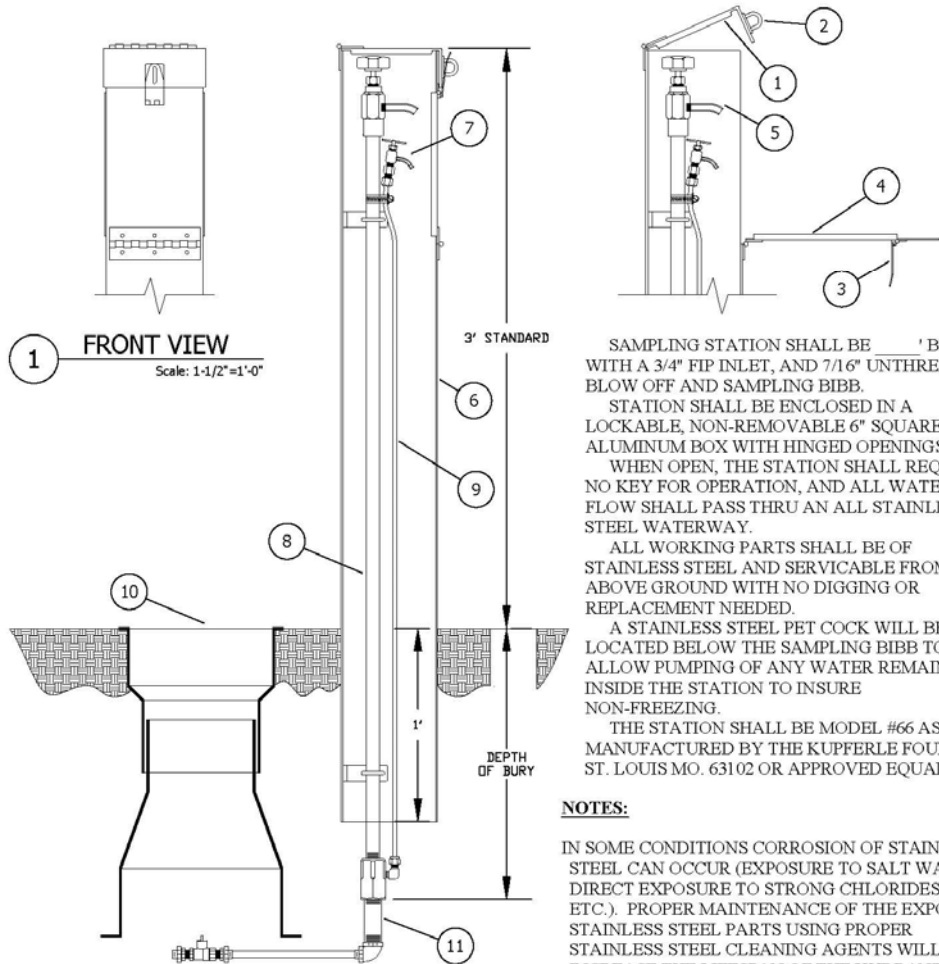


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DD/MM/YY	ISSUED FOR REFERENCE	#95WM SAMPLING STATION	SHEET 1 OF 1
DATE	STATUS / REVISION		



#66 SAMPLING STATION SPEC SHEET



SAMPLING STATION SHALL BE _____' BURY, WITH A 3/4" FIP INLET, AND 7/16" UNTHREADED BLOW OFF AND SAMPLING BIBB.

STATION SHALL BE ENCLOSED IN A LOCKABLE, NON-REMOVABLE 6" SQUARE ALUMINUM BOX WITH HINGED OPENINGS.

WHEN OPEN, THE STATION SHALL REQUIRE NO KEY FOR OPERATION, AND ALL WATER FLOW SHALL PASS THRU AN ALL STAINLESS STEEL WATERWAY.

ALL WORKING PARTS SHALL BE OF STAINLESS STEEL AND SERVICABLE FROM ABOVE GROUND WITH NO DIGGING OR REPLACEMENT NEEDED.

A STAINLESS STEEL PET COCK WILL BE LOCATED BELOW THE SAMPLING BIBB TO ALLOW PUMPING OF ANY WATER REMAINING INSIDE THE STATION TO INSURE NON-FREEZING.

THE STATION SHALL BE MODEL #66 AS MANUFACTURED BY THE KUPFERLE FOUNDRY, ST. LOUIS MO. 63102 OR APPROVED EQUAL.

NOTES:

IN SOME CONDITIONS CORROSION OF STAINLESS STEEL CAN OCCUR (EXPOSURE TO SALT WATER, DIRECT EXPOSURE TO STRONG CHLORIDES, ETC.). PROPER MAINTENANCE OF THE EXPOSED STAINLESS STEEL PARTS USING PROPER STAINLESS STEEL CLEANING AGENTS WILL INCREASE THE LIFESPAN OF THE HYDRANT. IF DESIRED, KUPFERLE CAN ALSO OFFER AN ADDITIONAL PASSIVATION PROCESS FOR ADDITIONAL CORROSION PROTECTION.

#66 SAMPLING STATION TO BE INSTALLED AT THE FOLLOWING LOCATIONS:

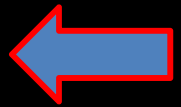
ITEM	ITEM / DESCRIPTION	NOTES
1	TOP ACCESS DOOR	
2	PADLOCK EYE	
3	PADLOCK HASP	
4	FRONT ACCESS DOOR	
5	BLOW OFF & SAMPLING BIBB	
6	6" ALUMINUM SQUARE BOX	
7	PET COCK	
8	1/2" S.S. WATERWAY	
9	1/4" S.S. TUBING	
10	VALVE BOX	BY OTHERS
11	3/4" S.S. NIPPLE	BY OTHERS

DD/MM/YY	ISSUED FOR REFERENCE	#66 SAMPLING STATION	SCALE	1-1/2"=1'
DATE	STATUS / REVISION			

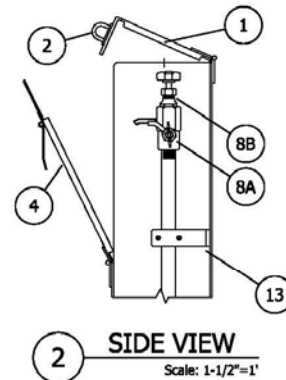
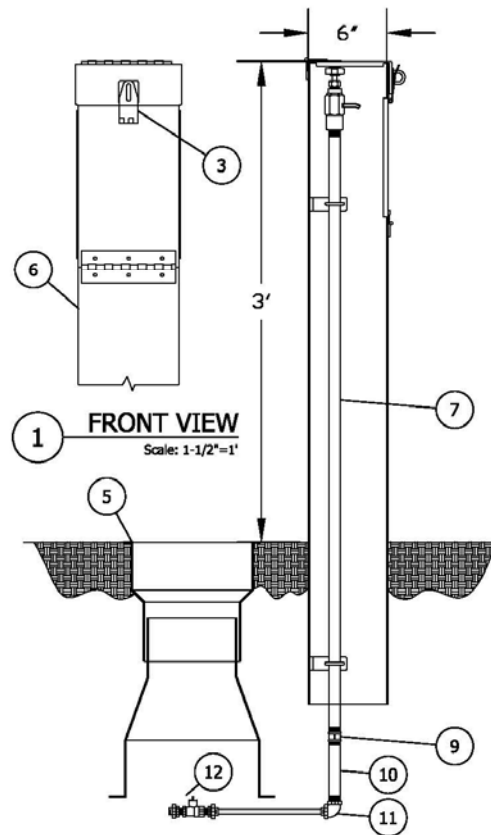
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APPROVED	DCL	8/29/13
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#66WC SAMPLING STATION SPEC SHEET



#66WC SAMPLING STATION TO BE INSTALLED AT THE FOLLOWING LOCATIONS:

NOTES:

IN SOME CONDITIONS CORROSION OF STAINLESS STEEL CAN OCCUR (EXPOSURE TO SALT WATER, DIRECT EXPOSURE TO STRONG CHLORIDES, ETC.). PROPER MAINTENANCE OF THE EXPOSED STAINLESS STEEL PARTS USING PROPER STAINLESS STEEL CLEANING AGENTS WILL INCREASE THE LIFESPAN OF THE HYDRANT. IF DESIRED, KUPFERLE CAN ALSO OFFER AN ADDITIONAL PASSIVATION PROCESS FOR ADDITIONAL CORROSION PROTECTION.

#66WC SAMPLING STATION SHALL BE 1' BURY WITH A 1/2" MIP INLET AND A 7/16" UNTHREADED BLOW OFF. ALL STATIONS SHALL BE ENCLOSED IN A LOCKABLE, NON-REMOVABLE 6" SQUARE ALUMINUM HOUSING. ALL OPENINGS SHALL BE HINGED. STATION SHALL REQUIRE NO KEY FOR OPERATION. AN OPERATING VALVE SHALL CONTROL THE FLOW OF WATER THRU THE 7/16" OUTLET, WITH 6 ROTATIONS OF THE HANDLE BEING FULLY OPEN. ALL WATER FLOW SHALL PASS THRU AN ALL STAINLESS STEEL WATERWAY. ALL WORKING PARTS SHALL BE OF STAINLESS STEEL AND SERVICEABLE ABOVE GROUND WITH NO DIGGING OR REPLACEMENT NEEDED.

ITEM	ITEM / DESCRIPTION	NOTES	OPTIONAL
1	TOP ACCESS DOOR		
2	PADLOCK EYE		
3	PADLOCK HASP		
4	FRONT ACCESS DOOR		
5	VALVE BOX	BY OTHERS	
6	6" ALUMINUM SQUARE BOX		
7	1/2" S.S. WATERWAY		
8A	SAMPLING BIBB		
8B	OPERATING VALVE		
9	1/2" S.S. COUPLING	BY OTHERS	X
10	1/2" S.S. NIPPLE	BY OTHERS	X
11	1/2" S.S. ELBOW	BY OTHERS	X
12	HYDRANT SHUT-OFF VALVE	BY OTHERS	X
13	MOUNTING BRACKET		
14	OPERATING VALVE		

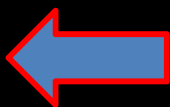
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#66WC SHEET 1 OF 1

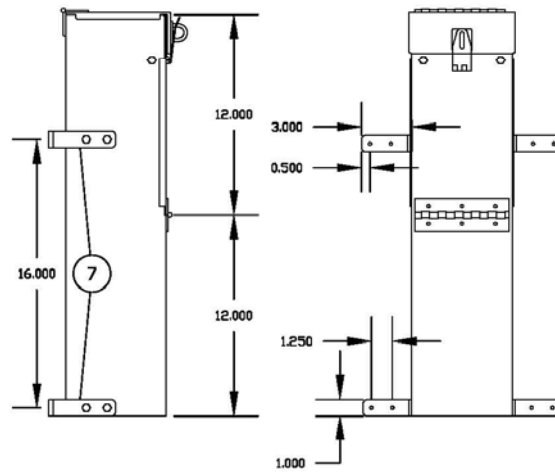
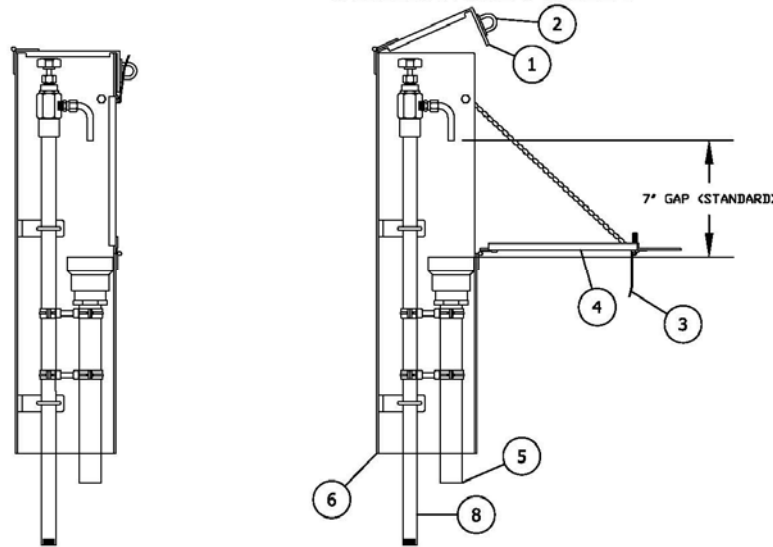
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3/13/14
SCALE
1.2"=1'



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#66MB SAMPLING STATION SPEC SHEET



#66MB SAMPLING STATION SHALL BE ENCLOSED IN A LOCKABLE, NON-REMOVABLE 6" SQUARE ALUMINUM BOX WITH HINGED OPENINGS. SAMPLING STATION SHALL BE WALL-MOUNTED, AND USE A 1/2" STAINLESS STEEL WATERWAY AND DRAIN INTO A 1" SCH. 40 PVC DRAIN PIPE. SAMPLING STATION SHALL ALSO UTILIZE CHAINS ATTACHED TO FRONT DOOR AND INSIDE WALLS OF ENCLOSURE TO CREATE A FLIP-DOWN TABLE WHEN ENCLOSURE IS OPENED. ALL WORKING PARTS SHALL BE OF STAINLESS STEEL.

#66MB SAMPLING STATION TO BE INSTALLED AT THE FOLLOWING LOCATIONS:

ITEM	ITEM / DESCRIPTION	NOTES
1	TOP ACCESS DOOR	
2	PADLOCK EYE	
3	PADLOCK HASP	
4	FRONT ACCESS DOOR	
5	1" SCH. 40 PVC DRAIN PIPE	
6	6" ALUMINUM SQUARE BOX	
7	WALL MOUNT BRACKETS	
8	1/2" S.S. WATERWAY	

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6/21/13
SCALE
1-1/2"=1'

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KUPFERLE FOUNDRY COMPANY

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DATE	STATUS / REVISION		
		#66 WALL MOUNT SAMPLING STATION	

