STATUS AND TREND NETWORKS EQUIPMENT CLEANING

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EQUIPMENT CLEANING

- Sampling Manual - Section 16 (pg. 119).

OVERVIEW

- Why is cleaning important?
- Cleaning materials and containers.
- General cleaning requirements.
- Documentation.
- Field cleaning groundwater (GW), surface water (SW) and sediment equipment.
- Contamination.

WHY IS CLEANING IMPORTANT?

Cleaning and decontamination procedures must remove any remaining analytes or substances that could interfere with obtaining quality data.

WHY IS CLEANING IMPORTANT?

Helps prevent data from being qualified due to detections in associated field collected blanks.

Parameter Detected	Value	Qualifier	Units	MDL	PQL	Comments	Spreadsheet Edited By	Actions Taken
Calcium (dissolved)	0.16	I	mg/L	0.075	0.3	The calcium result was confirmed on 10/15/2015.	ss - 12/30/2015	
Ammonia-N	0.003	I	mg N/L	0.002	0.005	The result was confirmed on 11/12/2015.	ss - 12/30/2015; KM 3/18/16	G qualified stations 48352 and 48351 due to ammoni detections <10.0x amount in blank
Ammonia-N	0.005		mg N/L	0.002	0.005	The result was confirmed on 11/17/2015.	ss - 12/30/2015; KM 3/18/16	G qualified stations 48352 and 48351 due to ammoni detections <10.0x amount in blank
Copper	0.17	I	ug/L	0.1	0.4	The copper result was confirmed in the undigested sample on 11/21/2015.	ss - 12/30/2015; KM 3/18/16 & 5/25/16	G qualified station 48356 collected with peristaltic# contained copper detection <10.0x the amount in blan
Ammonia-N	0.006		mg N/L	0.002	0.005	The result was confirmed on 11/24/2015	ss - 12/30/2015; KM 3/18/16 & 5/16/16	G qualified station 48340 & 48358 due to ammonia detections <10.0x amount in blank, and 48354 from l month's ammonia detections <10.0x amount in blank
Chromium	0.09	I	ug/L	0.05	0.2	The presence of chromium and copper were confirmed in the undigested sample on 12/03/2015.	ss - 12/30/2015; KM 3/18/16	G qualified stations 48358 & 48340 due to chromium detections <10.0x amount in blank, and stations 4835 48350 from last month's chromium detections in Flo- Masta blank.
Copper	0.21	I	ug/L	0.1	0.4	The presence of chromium and copper were confirmed in the undigested sample on 12/03/2015.	ss - 12/30/2015; KM 3/18/16	G qualified station 48340 due to copper detections < amount in blank, and stations 48354 & 48350 from la month's copper detections in Flo-Masta blank
Total Coliforms-	1	BQ	cfu/100 mL	1	1	Precision data for QC sample is unavailable due to the colony count	ss - 3/11/16	

CLEANING MATERIALS

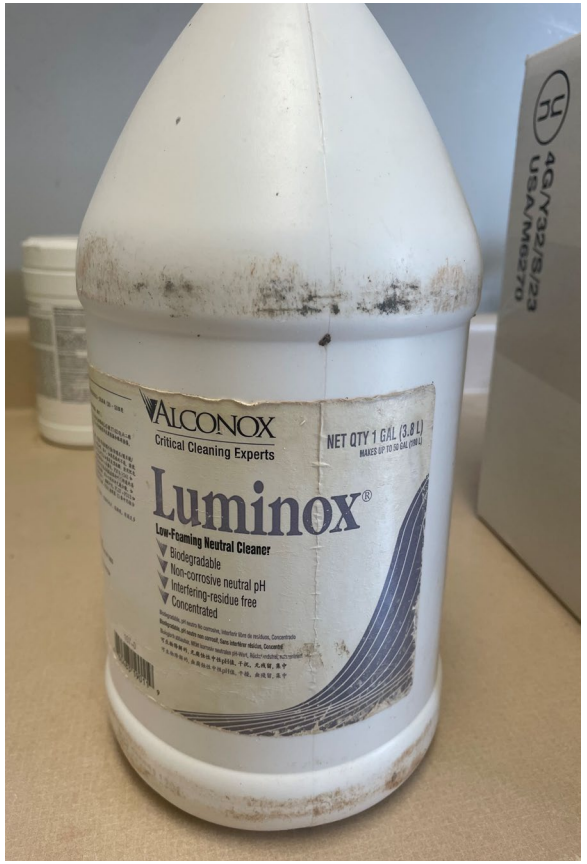
ANALYTE-FREE WATER

- Analyte-free water should be below method detection limits (MDLs).
- Uses:
  - Final cleaning rinse.
  - Prepare for blanks.

CLEANING MATERIALS

SOAP/DETERGENT

- Non-organics sampling.
  - LiquiNox, Luminox or other non-phosphate detergent.
- Organics sampling.
  - Luminox, or another non-phosphate solvent-based equivalent.
    - If not available, a solvent rinse (99% isopropanol) is required when sampling for organics.
  - Examples of organic analytes.
    - Sucralose, pharmaceuticals and pesticides.
- Detergents can be diluted.



CLEANING MATERIALS

ACID RINSE

- Acid rinses (metals, inorganic analytes).
  - Rinse all the non-stainless-steel equipment with 10% hydrochloric acid (HCl).
  - Dispose of acids properly.
  - Neutralize to a pH of between five and nine before pouring down sanitary sewer drain.

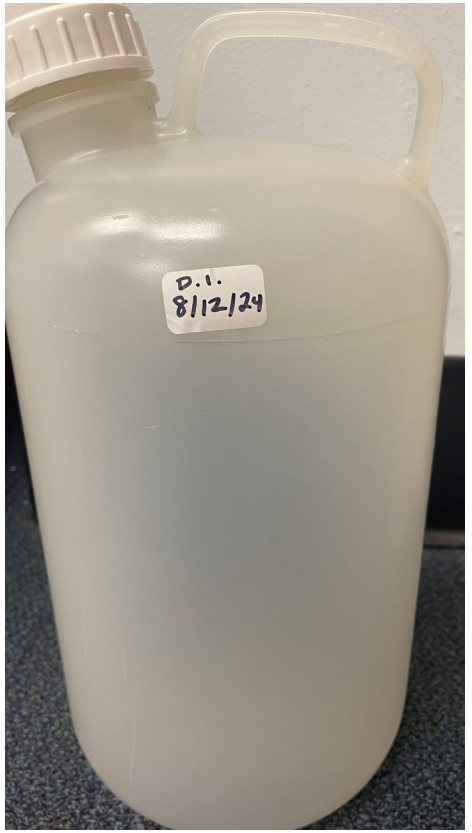
HANDLING FOR CLEANING SOLUTIONS

- Soap should be kept in polyethylene (PE) or polypropylene (PP) containers.
- Keep them clean, with protectors over spigots.
- Avoid contamination.

Clearly label bottles as de-ionized (DI) water, tap water or detergent.

HANDLING FOR ANALYTE-FREE WATER CONTAINERS

- Analyte-free water must be stored in clean glass, fluoropolymer (FP), polyethylene (PE), or polypropylene (PP) containers that can be closed.
- If logistics permit, empty **all** DI containers daily, however at a minimum:
  - Large containers (i.e., carboys) have a **one-week** max storage time.
  - Small containers (i.e., squirt bottles) emptied daily.
- Label analyte-free water containers with date filled.



CLEANING

- All cleaning should be done as soon as possible.
- Lab cleaning is preferred.
- Do not let “dirty” equipment sit overnight to prevent microbial growth.

GENERAL CLEANING REQUIREMENTS

NINE STEPS

1. Rinse with hot tap water.
2. Soak in hot soapy tap water (organics = Luminox).
3. Scrub with brush to remove particulates.
4. Rinse with hot tap water.
5. Rinse with hydrochloric acid (do not use on stainless steel equipment).
6. Rinse with pesticide grade isopropanol (step only required if sampling for organics and Luminox is not used in step two).
7. Rinse with analyte-free water.
8. Air dry.
9. Wrap and store properly.

FIELD CLEANING MATERIALS

- Tap water.
- DI water.
- Tub or container for soaking.
- Scrub brush.
- Liquinox or Luminox solution.

GENERAL CLEANING REQUIREMENTS
IN THE FIELD

1. Rinse with tap water.
2. Soak in soapy tap water (Organics = Luminox).
3. Scrub with brush to remove particulates.
4. Rinse with tap water.
5. Rinse with pesticide grade isopropanol (Step only required if sampling for organics and Luminox is not used in step two).
6. Rinse with analyte-free water.
7. Air dry.
8. Wrap and store properly.

GROUNDWATER CLEANING
PUMPS

- Purging only.
  - Pump's Internal cavity.
    - Flush with tap or analyte-free water before purging the next well.
  - Exterior of pump/tubing that contacts formation water should be scrubbed with soapy water, rinsed with tap water and finally rinsed with analyte-free water.
- Purging and sampling.
  - Disassemble (if able) and decontaminate.
  - If pump cannot be disassembled, then follow the steps on the next slide.

CLEANING GROUNDWATER PUMPS

PURGING AND SAMPLING

1. Fill dedicated container with sudsy tap water.
2. Pump three volumes through tubing.
3. Use sudsy tap water to clean outside.
4. Rinse dedicated container with analyte-free water and fill with analyte-free water.
5. Pump analyte-free water through tubing/rinse outside of pump and tubing.
6. Protect the clean pump with aluminum foil or untreated butcher paper.

Consider using plastic ground covers while cleaning to protect clean equipment.

GROUNDWATER CLEANING

TUBING

- New tubing
  - If certified clean – ok.
  - If not, soak in hot soapy water, rinse with hot tap water and then analyte-free water.
  - Wrap/store in clean container (wrap ends with foil and seal in plastic bag).
- Re-used tubing
  - In-house cleaning.
  - Follow general cleaning procedure.

SURFACE WATER CLEANING

VAN DORN

1. Half fill Van Dorn with hot tap water and Liquinox or Luminox.
2. Shake well and brush.
3. Drain some sudsy water through spigot.
4. Dump soapy water.

SURFACE WATER CLEANING

VAN DORN

5. Rinse Van Dorn thoroughly with hot tap water.
6. Rinse with HCl.
7. Rinse with analyte-free water.
8. Rinse through spigot.
9. Air dry.
10. Store in a clean container or bag.

SEDIMENT SAMPLING EQUIPMENT CLEANING

Sediment collection equipment includes Ekman dredge, petite ponar, stainless steel corer, scoops and forceps.

1. Rinse.

   Pour tap water over the equipment to prerinse. Place equipment into dedicated tub or cooler.

2. Soak and scrub with brush.

   Use dedicated pump spray bottles of prepared detergent solution.

SEDIMENT SAMPLING EQUIPMENT CLEANING

3. Dispose soapy water, rinse tub.
4. Pour 5-gallon tap water over equipment into tub.
5. Dunk four to five times, working jaws.
6. Rinse tub.
7. Pour 5-gallon Analyte-free water over equipment into tub.
8. Dunk four to five times, working jaws.
9. Store in clean bag or container.

Reminder: Clean between sediment sampling sites, both at small lakes and all sites on a large lake.

CLEANING DOCUMENTATION

KEEP A CLEANING LOG

Equipment Cleaning Log
Regional Operation Centers

Equipment	Unique ID	Date	Time (24 hr)	Location (Lab / Field)	Liquinox Wash (Y/N)	Luminox Wash (Y/N)	Tap Water Rinse (Y/N)	10% HCl Rinse (Y/N)	DI Water Rinse X3 (Y/N)	Other (Describe)	Sampler Name

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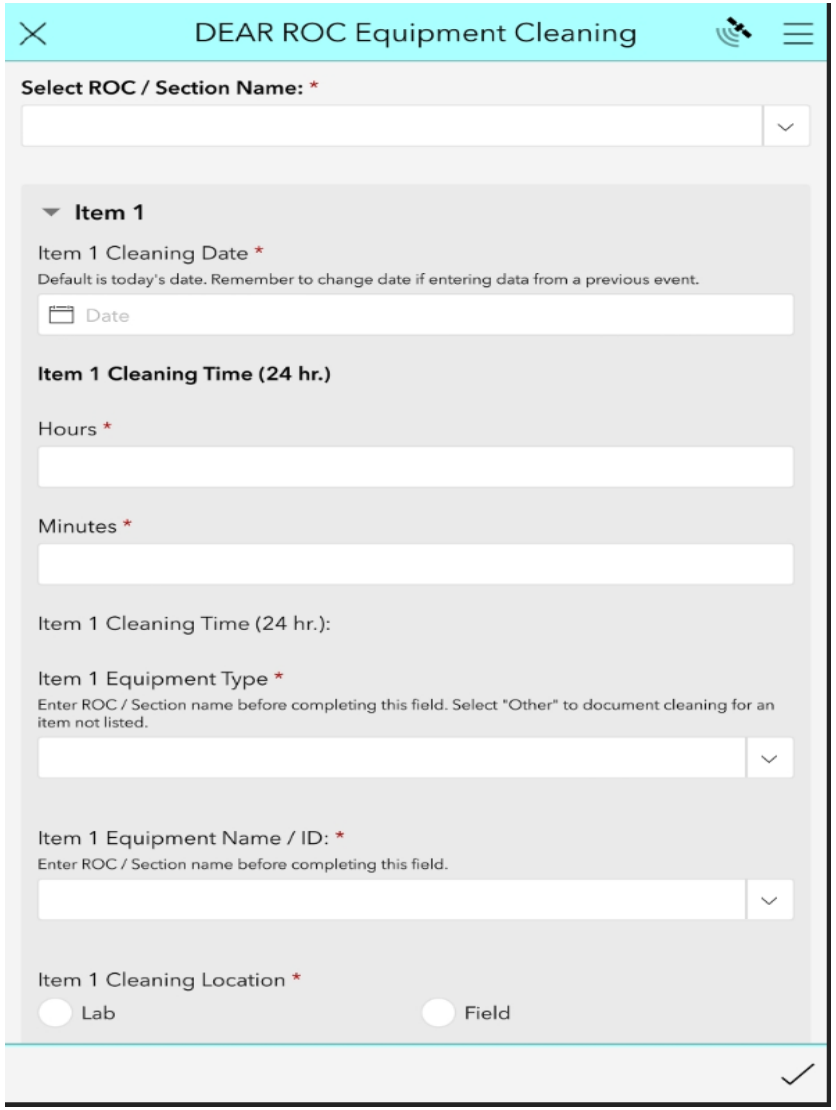
Form effective April 1, 2015

(Add codes for commonly used equipment types here)

Required information.

- Specific piece(s) of equipment.
- Date (and time if field cleaned).
- Location (lab or field).
- Procedure.
- Name of person performing cleaning.

CLEANING DOCUMENTATION



- Electronic cleaning log form available in Survey123 for DEP teams.
- Data are automatically transferred to cleaning log spreadsheets (SharePoint).

HEAVILY CONTAMINATED EQUIPMENT

- If sampling site is heavily contaminated, contact Division of Environmental and Assessment (DEAR) staff in Tallahassee.
- If equipment is used at a contaminated site, use DEP SOP FC 1120, document contamination, and contact DEAR staff in Tallahassee.
- For example, while purging a well, samplers may see or smell obvious contamination (not including sulfur).

THANK YOU

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