NTN Sample Change-out, N-CON Bucket Collector

Items needed:

- Field Observer Report Form (FORF), as started the previous week
- FORF, for next week's sample
- power switch key, if used
- new bucket in protective plastic bag
- new lid in protective plastic bag
- fresh (< 6 months old) deionized or distilled water in a plastic squeeze bottle
- paper towels or lab wipes (e.g., Kimwipes[*])
- plastic washers (16), to adjust height of NTN bucket
- sensor switch (for troubleshooting, if needed, see N-CON sensor change-out SOP)
- carrier (if used) for supplies, lid, and new bucket
- log book, if used

| New bucket and lid in carrier | N-CON NTN bucket collector |

Precautions:

Use care when handling the sample bucket and lid to avoid contaminating the sample.   NTN samples are analyzed for sodium, chloride, and potassium all of which are present in sweat.

NTN has buckets of different height (see figure on next page). By default, the N-CON collector is configured for the tall bucket. When a short bucket is used, plastic washers must be placed on each of the four bucket posts to raise the height of the bucket. Use the appropriate number of washers to ensure a good seal between the lid pad and the bucket. In general, start with 3 washers, close the collector and check the seal between the bucket and the collector lid. Add/remove washers to each post as needed. Remember to handle the sample bucket with a gloved (or bagged) hand when adjusting the number of washers.

[*] **Disclaimer:** Use of a trade or manufacturer's name does not constitute an endorsement by the University of Wisconsin, the Wisconsin State Laboratory of Hygiene, the National Atmospheric Deposition Program, or project sponsors.

NTN-2110_Sample_Changeout_NCON
Version: 2.0

Page **1** of **10**

Questions? Contact NADP Site Support 1-800-952-7353

Solid band = SHORT bucket, so,... use 2 to 4 washers per post

2 narrow rings = TALL bucket, so,... no washers

Instructions:

1. Approach the collector from the downwind side (i.e., facing the wind). This will reduce the chance that the sample is contaminated inadvertently. If there is snow or ice on the collector lid, brush it off before proceeding.

2. Make observations as to the conditions of the collection site and equipment. Record observations in Block 10 (**Remarks**) on the Field Observer Report Form (FORF). See the Appendix to this document for a sample FORF.

10. REMARKS   *For example: equipment malfunction, contamination, farming, burning, logging, leakage before weighing, etc.*

Retrieving the deployed sample bucket.

3. Locate the ON/OFF switch on the underside of the collector housing. The switch may be a toggle switch, or require a key.

4. Activate the collector lid by waving your hand through the sensor until the lid starts to open. When the lid is open halfway, turn off power to the collector.

Questions? Contact NADP Site Support 1-800-952-7353

5. Inspect the contents of the bucket for contaminants. Do not lean over the open bucket. Doing so may lead to contamination of the sample (e.g., human hair, clothing fibers). Note any contaminants in Block 5 (**Sample Conditions**) of the FORF.

6. Grasp the bagged lid from the side opposite the zip. Fold the bag back over your wrist, exposing the lid with the seal side down. Use the bag as a "glove" and place the lid on the bucket.

7. Using your bagged hand, push the leading edge of the lid down firmly on the bucket rim. Avoid touching the lip of the bucket and the underside of the lid with bare hands. Doing so may lead to sample contamination when the sample is decanted.

8. Lift the sealed bucket from the collector holder and place it in the carrier or on a clean surface. *Do not set the bucket on bare ground as dirt and dust are difficult to remove when the bucket is washed*. Verify that the lid is sealed firmly on the bucket.

9. Complete Block 3 (**Field Bucket**) of the FORF for the previous week to include the OFF Date and Time for the sample bucket that was collected. The Date is expressed in the form MMDDYY. Time is expressed based on a 24-hr clock.

Cleaning the collector.

The previous week's bucket should be removed, sealed, and secured. The new bucket should be bagged and protected prior to deployment.

10. Moisten a lab wipe (e.g. Kimwipes) or paper towels (non-print/colored) with deionized (or distilled) water. Wipe down the:
    - underside of the lid seal pad,
    - top and sides of the collector lid,
    - lid arms,
    - bucket holder posts,
    - splash shield, and
    - clean any debris or spider webs from the sensor.

11. Note the condition of the lid seal pad and record any problems in Block 10 (**Remarks**). If the seal pad is torn, punctured or looks discolored, call the CAL for a replacement and circle *lid seal pa*d in Block 9 (**Supplies**) of the FORF. A damaged lid seal or one that fits poorly can lead to sample contamination.

> **9. SUPPLIES**   *Request early.*
> *Circle if needed, until received.*
> CAL address labels   lid seal pad
> dashpot fluid   packing tape
> dry sample env.   raingage charts
> field forms   raingage ink
> gloves (S, M, L)

12. Verify correct operation of the equipment (motorbox, sensor, and raingage). Complete Block 4 (**Site Operations**) of the FORF.

> **4. SITE OPERATIONS** *Check YES, NO, or U (Unable to determine) for each field bucket. If NO or U for Item 1 or 2, describe in Block 10 and call CAL.*
>
> | YES | NO | U |
> |-----|----|----|
> | 2 | 1 | 0 |
> | 2 | 1 | 0 |
> | 2 | 1 | 0 |
>
> 1. The **collector sensor heater** and **motor box** operated properly. Lid is in correct position
> 2. Raingage operated properly during the week.
> 3. Collector opened and closed at least once during the week, **other than for testing.**
>
> | YES | NO |
> |-----|----|
> | | |
>
> 4. Raingage in winterized state during sampling period (antifreeze in bucket & funnel out).

Deploying new sample bucket.

13. Determine whether the bucket to be deployed is "tall" or "short." Add, or remove plastic washers from the bucket holder posts as described above.

14. Switch to the FORF for the current week's sample. Complete blocks 1 and 2 (**Site** and **Observer,** respectively) for the sample bucket to be deployed. This includes:

- the name of the Site
- the 4 character ID of the Site (e.g., IL11)
- your name as the Observer, and
- your initials

1. SITE		2. OBSERVER	
Name _____ ID		Print name _____ Initials	

15. Grasp the new clean bucket by its handle and remove the twist-tie that holds the bag closed. Pull the bag back over your arm so that the bag acts as a "glove". Turn the bucket upside down and shake it to ensure that no rinse water remains in the bucket. Place the bucket on the collector so its handle is located toward the front of the collector (as illustrated below). The N-CON Systems identification plate is on the front of the collector. Ensure the bucket is firmly seated between the bucket holder posts.

16. Using the switch on the bottom of the collector, turn the collector ON. The collector lid will close. The collector lid should move smoothly. Verify that the lid seal fits snugly over the bucket. If there is a gap between the bucket and the lid seal, it may be necessary to either:
    a. place plastic washers on the bucket holder posts, beneath the sample bucket, or
    b. adjust the collector lid arms

    See the SOP titled *Adjusting Collector Lid, N-CON Collector* for details on adjusting the collector arms. Be certain to protect the exposed sample bucket to avoid contamination when cycling or servicing the collector.

    If present, remove the power switch key and store for the next site visit.

17. Enter the Date and Time that the sample bucket was placed "ON" the collector in Block 3 (**Field Bucket**) of the FORF for the current week.

18. Place the sealed bucket containing last week's sample in the plastic bag that the new bucket came in. Seal the bag, and return it to the carrier for transport to the field laboratory.

19. Verify that the power switch is in the ON position before leaving the site.

Incorporating data from raingage.

20. Complete Block 7 (**Precipitation Record**) of the previous week's FORF to include the daily precipitation values, and the type of precipitation (i.e., rain, snow, mixed, unknown) for each data with precipitation. Refer to the appropriate SOP for interpreting a Belfort raingage chart, or for downloading data from the electronic raingage.

21. Take the bagged and sealed bucket containing last week's sample to the field lab for processing. This includes weighing the bucket and sample. The sample is then decanted to a bottle for shipment to the CAL for analysis. Refer to the SOP titled *Decanting the Sample for Shipment to the CAL.* Block 6 (**Bucket Sample Weight**) and Block 8 (**Sample Bottle Use**) of the FORF will be completed.

NTN-2110_Sample_Changeout_NCON
Version: 2.0

Page **7** of **10**

Questions? Contact NADP Site Support 1-800-952-7353

6. BUCKET SAMPLE WEIGHT
Weigh **ALL** sample buckets.

Bucket +Lid +Sample

− CAL Bucket

− CAL Lid

= Sample Weight (grams)

8. SAMPLE BOTTLE USE

Pour **ANY** and **ALL** liquid up to 1-liter into the sample bottle.

Did you pour sample into the bottle?

YES   NO

22. Indicate any supplies that are needed in Block 9 (Supplies) of the FORF.

Contact Information

Please contact the NADP Site Liaison at 800-952-7353 or via email at ntn@slh.wisc.edu if you have any questions, or if any problems are encountered. The site liaison can:

- help troubleshoot equipment problems,
- order replacement parts,
- explain the FORF, and
- explain the steps in this manual in greater detail.

Appendix – Sample Field Observer Report Form (FORF)

Questions? Contact NADP Site Support 1-800-952-7353

NADP

NATIONAL TRENDS NETWORK
FIELD OBSERVER REPORT FORM (FORF)

Send Completed Form with Each Sample to:
Central Analytical Laboratory, 2601 Agriculture Drive, Madison, WI 53718

Problems? Call the CAL at 1-800-952-7353
e-mail: ntn@slh.wisc.edu

Place barcode sticker here

FOR OFFICE USE ONLY
NO BOTTLE ☐   BAG ☐ LEAK ☐ SP ☐

1. SITE

Name _____   ID ☐☐☐☐

2. OBSERVER

Print name _____   Initials ☐☐☐

3. FIELD BUCKET

Date (MO / DAY / YR)   Time (0001-2400)

ON ☐☐ ☐☐ ☐☐   ☐☐☐☐
OFF ☐☐ ☐☐ ☐☐   ☐☐☐☐

4. SITE OPERATIONS Check YES, NO, or U (Unable to determine) for each field bucket. If NO or U for Item 1 or 2, describe in Block 10 and **call CAL.**

1. The **collector sensor heater** and **motor box** operated properly. Lid is in correct position
2. Raingage operated properly during the week.
3. Collector opened and closed at least once during the week, **other than for testing.**
4. Raingage in winterized state during sampling period (antifreeze in bucket & funnel out).

5. SAMPLE CONDITION

Check type of contamination for all field buckets before and after decanting. Describe **all** contamination in Block 10, including any not listed here.

1. Bird droppings
2. Cloudy or discolored
3. Soot/ash/dirt particles
4. Insects/animal matter
5. Leaves/twigs/pollen/plant matter
6. Handling contamination

After decanting into sample bottle, look closely at sample and field bucket and double-check your entry.

6. BUCKET SAMPLE WEIGHT

Weigh **ALL** sample buckets.

☐☐☐☐☐·☐ Bucket + Lid + Sample
− ☐☐☐☐☐·☐ CAL Bucket
− ☐☐☐☐☐·☐ CAL Lid
= ☐☐☐☐☐·☐ → Sample Weight (grams)

7. PRECIPITATION RECORD *All sites must circle Precipitation Type*

← **Bucket On** R – Rain Only (Includes Hail) S – Snow Only M – Mixture U – Unknown **Bucket Off** →

	TUES	WED	THURS	FRI	SAT	SUN	MON	TUES
Type circle one →	R S M U	R S M U	R S M U	R S M U	R S M U	R S M U	R S M U	R S M U
Amount Inches or circle one →	Z T MM	Z T MM	Z T MM	Z T MM	Z T MM	Z T MM	Z T MM	Z T MM

Z – Zero   T – Trace (Circle **Type**)   MM - Missing

Sample Weight (grams)
X 0.00058 inches/gram = ☐☐☐·☐☐ ← Do these values agree within 3<5% ? → ☐☐☐·☐☐

Sample Depth (inches) YES ☐ NO ☐ (If no, reweigh) Total Raingage Depth (inches)

E-gage sites: Please submit your electronic raingage data promptly after shipping this sample.

8. SAMPLE BOTTLE USE

Pour **ANY** and **ALL** liquid up to 1-liter into the sample bottle.

Did you pour sample into the bottle?

YES ☐   NO ☐

CAL USE RGSRC ☐

9. SUPPLIES *Request early.* Circle if needed, until received.

CAL address labels   lid seal pad
dashpot fluid   packing tape
dry sample env.   raingage charts
field forms   raingage ink
gloves (S, M, L)

10. REMARKS For example: equipment malfunction, contamination, farming, burning, logging, leakage before weighing, etc.

White copy – Analytical Lab   Pink Copy – Site Operator   Rev. 3-18

Questions? Contact NADP Site Support 1-800-952-7353