Emission Sampling Protocols for PCC Reduction &/or Termination

Kansas
Department of Health and Environment

Leachate & Landfill Gas Sampling*

The **sampling principles**, which will be reviewed in this session, **are the same for both emissions**; only, the **medium** is changed.

Also, note that the two types of samples should be taken as close to each other so that the resulting data can be better correlated.

* Note that **flow** is just as important as **concentration** and will be discussed later.

Resources for Topic

- Chronology of related events (see **Handout No. 1**) to give an overview of PCC project efforts & results.
- Approximate chronology of related documents (see **Handout No. 2**). These documents are/or will be available on the S drive & in an accordion folder located in Carl's cubical entitled **Key Documents re PCC**.

Resources for Topic (continued)

- BWM Website references for **policies** (see http://www.kdheks.gov/waste/p_policies.html) BWM 2014-P2
- for **Technical Guidance Documents** (see http://www.kdheks.gov/waste/p_techguides.html) SW-2014-G1 & G2; 2013-G3.
- for **workshops, training & special events** (see http://www.kdheks.gov/waste/p_workshops.html) SWANA/BWM on November 19-20, 2014 in Manhattan & BWM on May 7, 2014 in Salina.

Where to start?

Let's begin with the **heart** of **Support Document No. 4 (2014)** in the chronology of documents list: **The Training Primer for Sampling of MSWLF Emissions** which **is based on** the taking of **representative leachate and LFG** samples.

Then, we will focus on the **choosing the best leachate sampling location**.

Taking a Representative Sample:

Of a **liquid (leachate)** medium. **How do you do this?**

Answer: You take an aliquot/portion of the whole regime so that it best represents the regime. The regime spectrum is from static/batch/stratified/unmixed (for a **wetwell, tank, or SEB**) **to** moving/flowing/mixed (for the **output of a phase**; **inputs and outputs for wetwell, tank or SEB**).

Leachate Sampling Options:

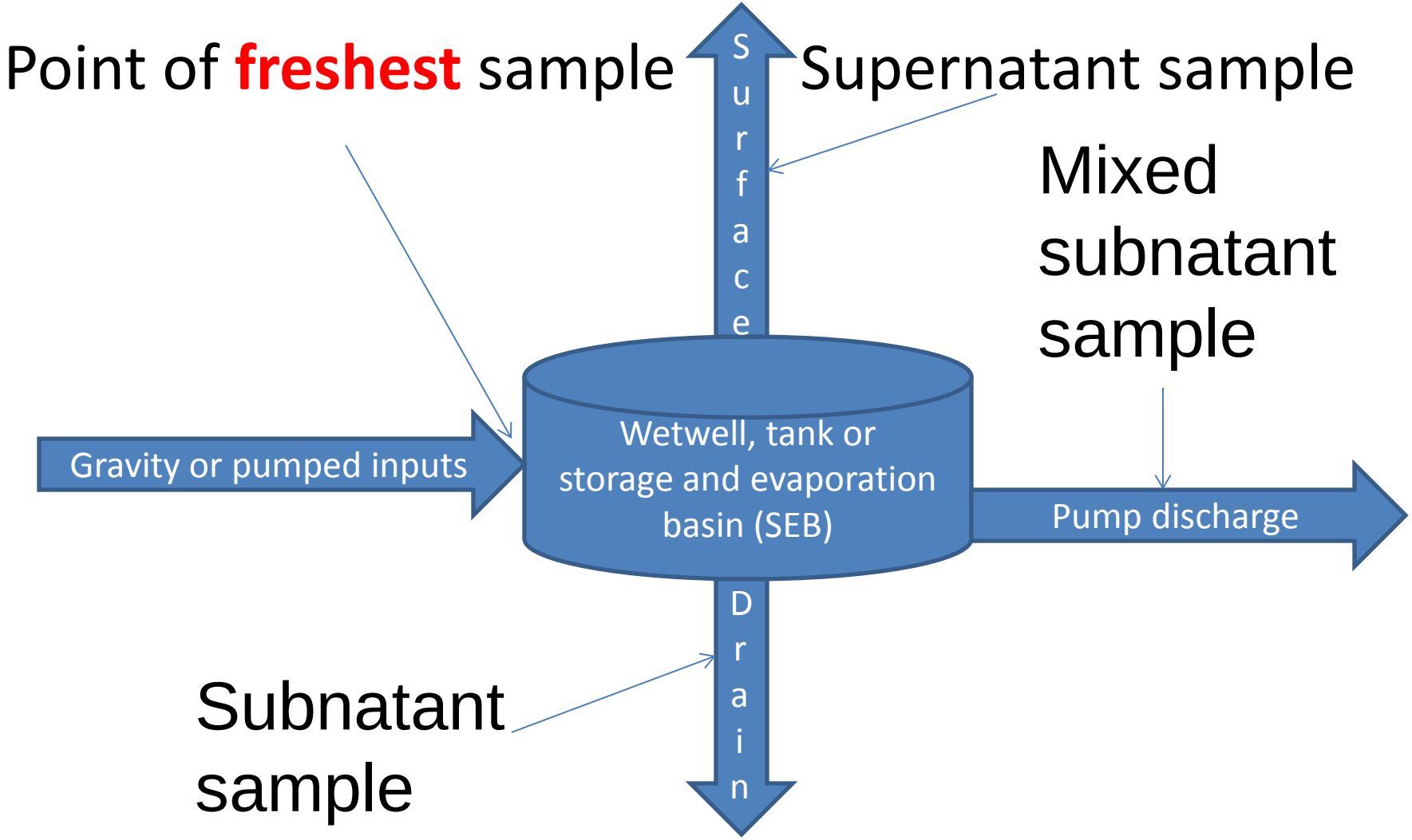


Diagram No. 1 - Separate Leachate Discharges

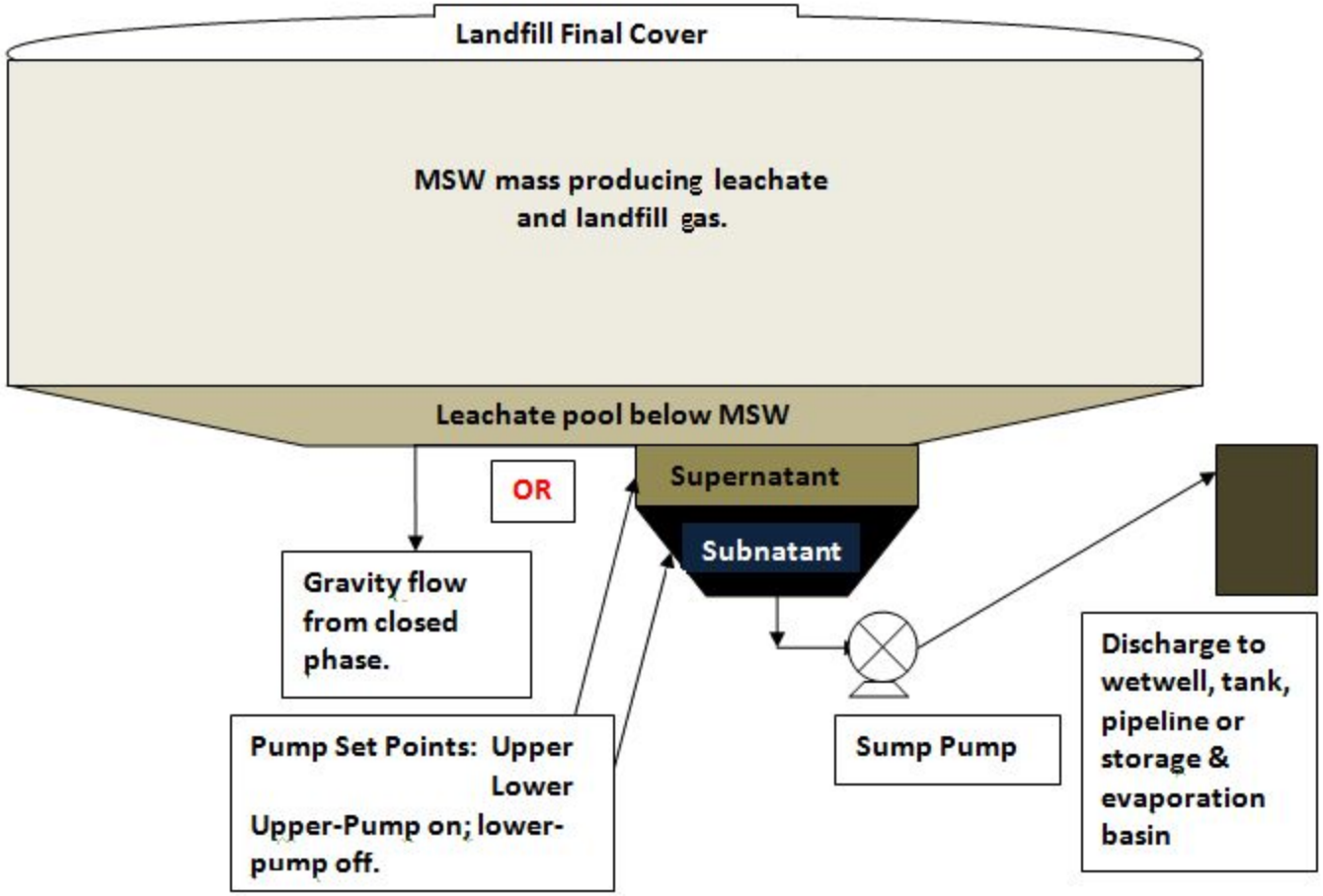
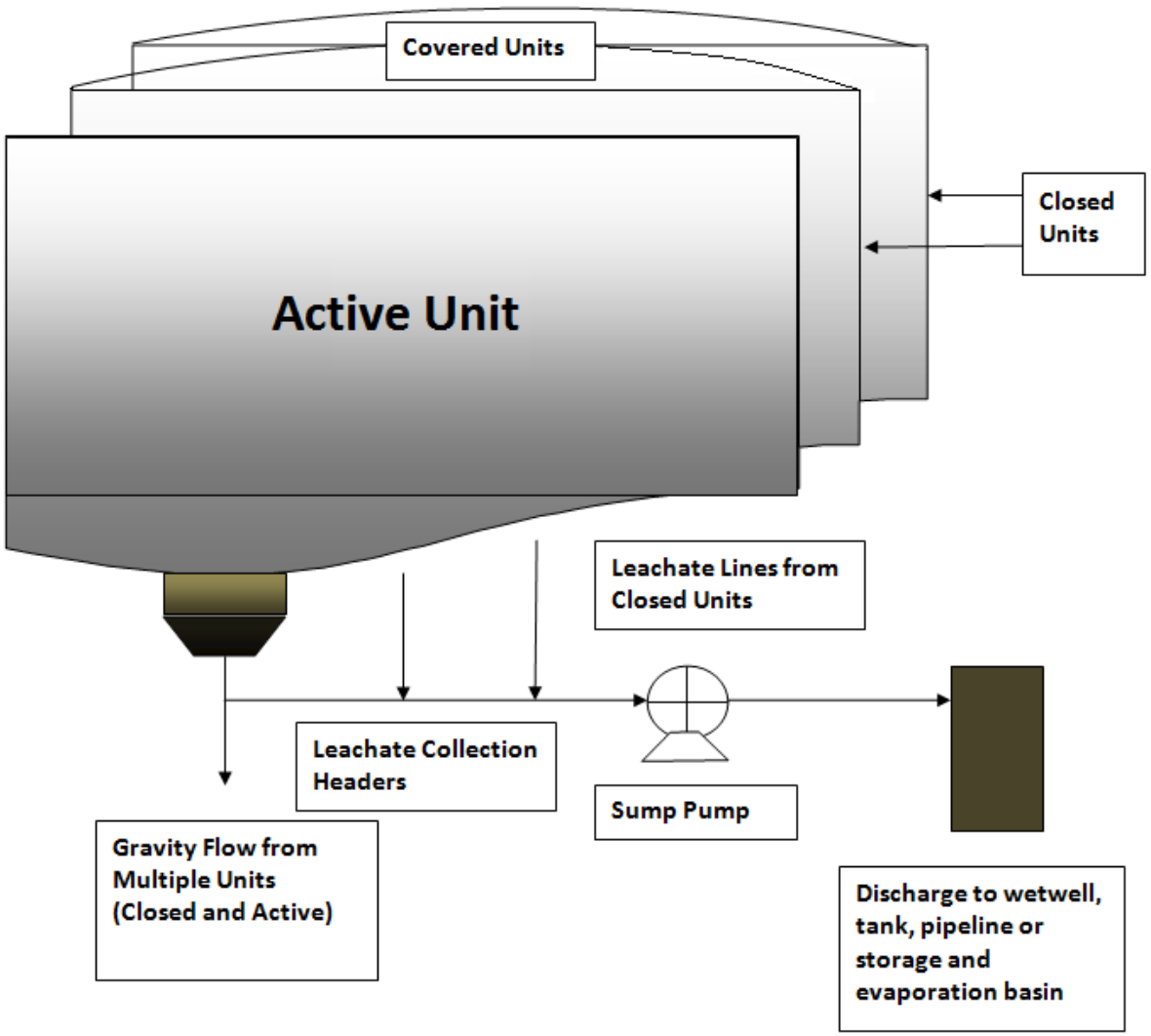
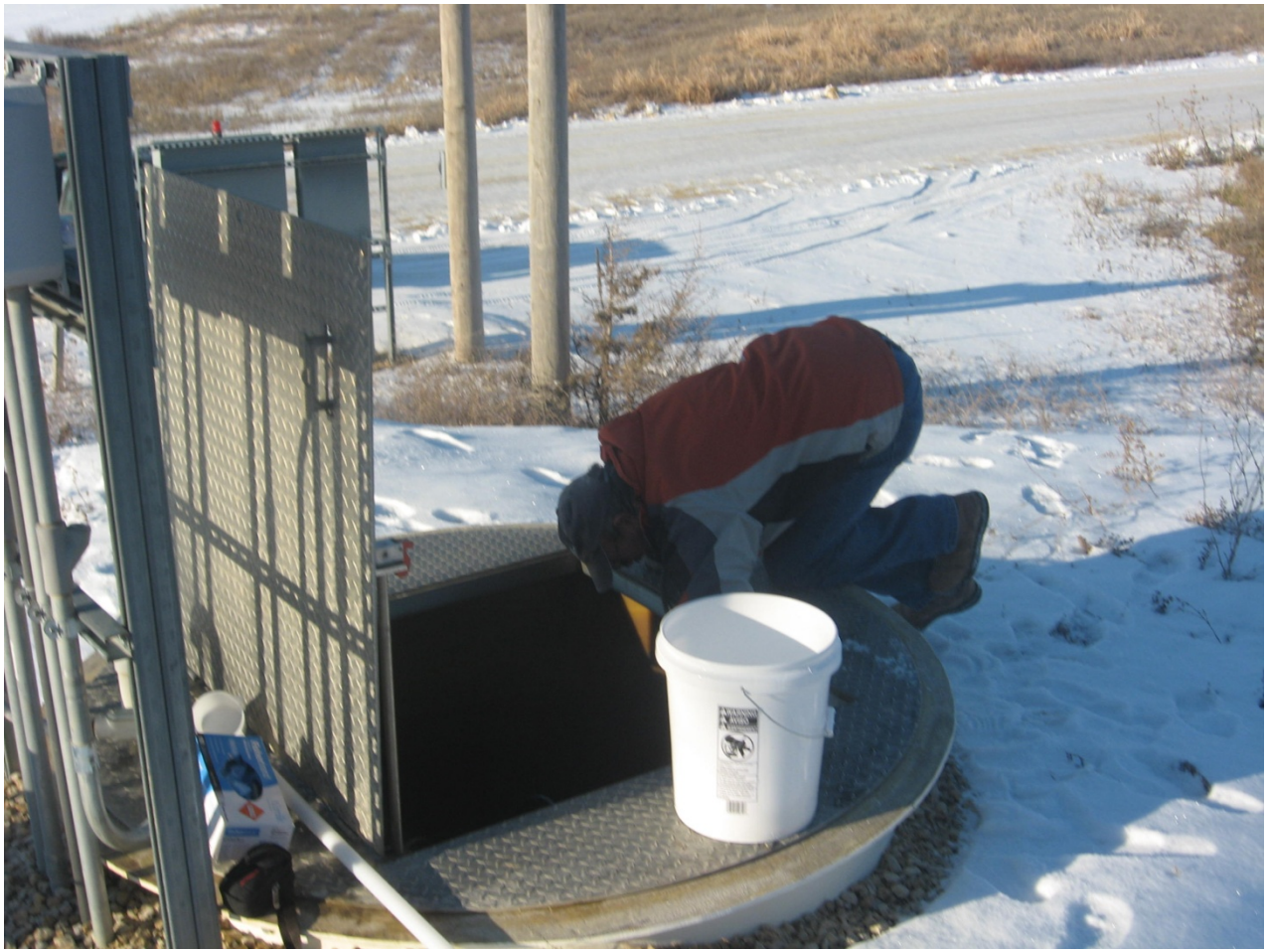


Diagram No. 2 – Common Collection System



Wetwell Sampling at ACL

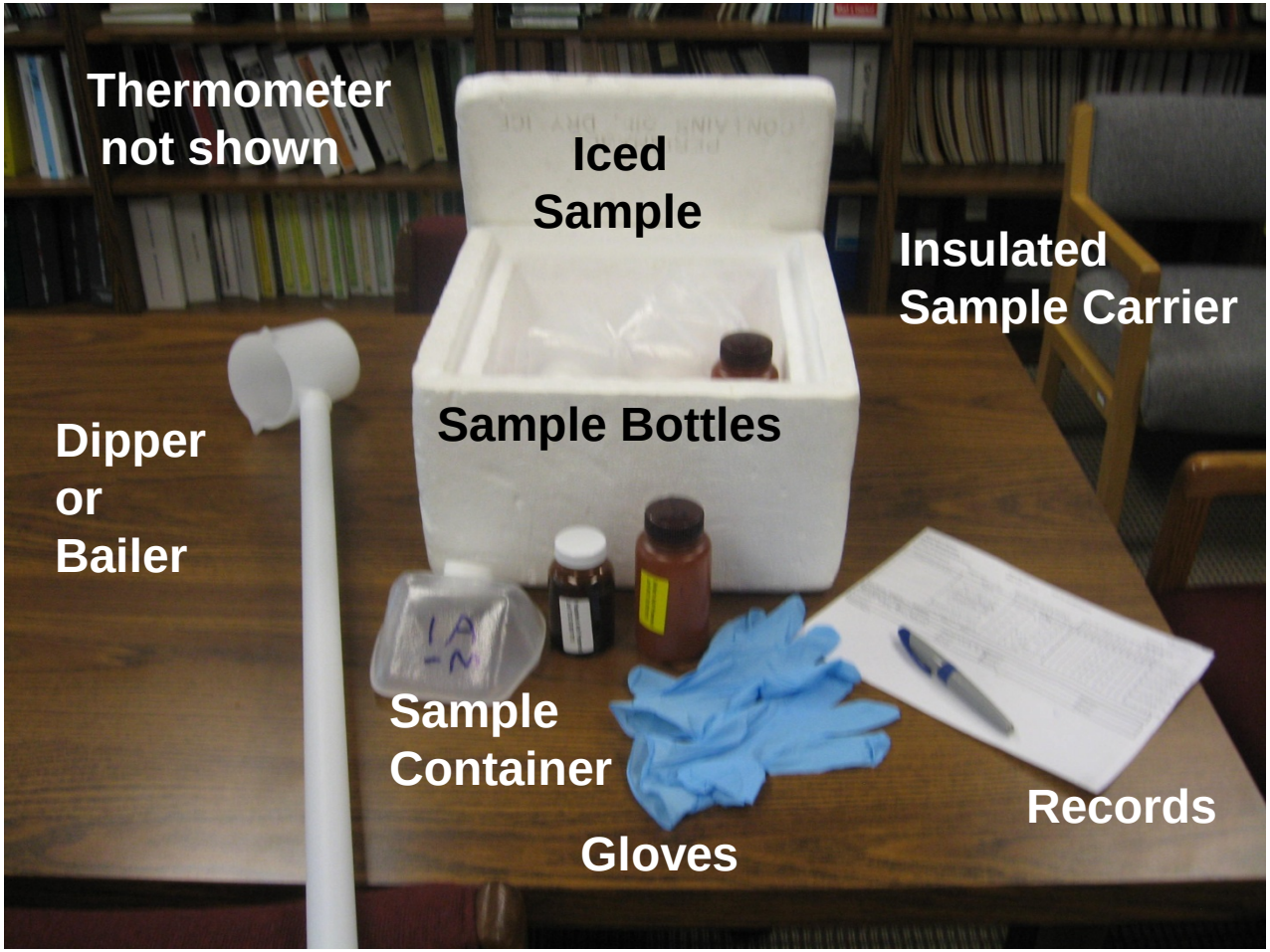


Tank Sampling at ACL

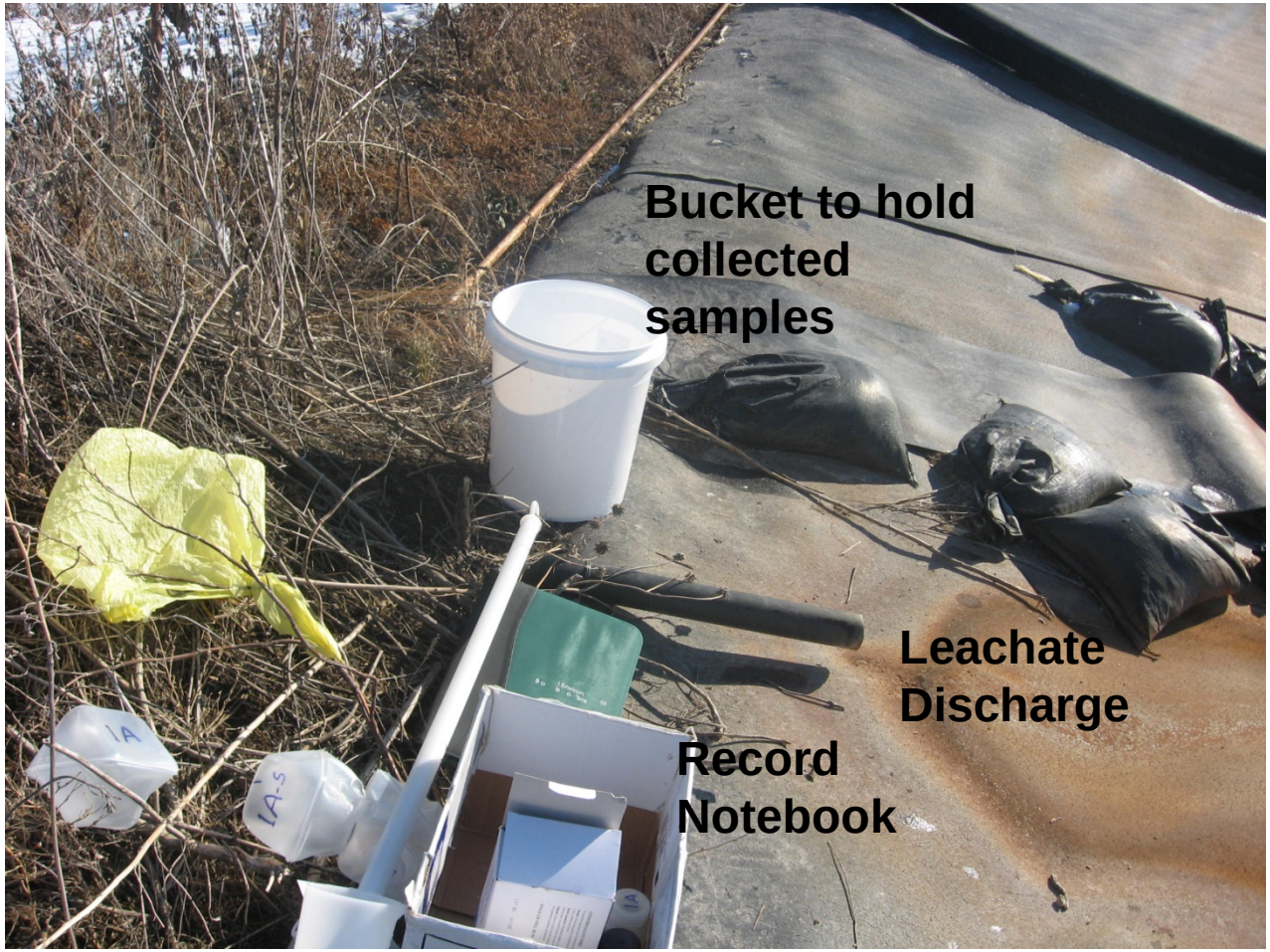
SEB Sampling at ACL

Gravity or Sump Pump Sampling at ACL

Discharge Sampling Equipment



Use of Sampling Equipment in Field



Trash Bag

Sample Containers

Dipper or Bailer

Box with sample bottles, thermometer & rubber gloves

Sump Pump Sampling Considerations:

1. Allow time for sump leachate level to near low set point. Communicate with sampler time to sample.

See Handout No. 3: Leachate Sampling Check Lists (11-6-14) for all sampling options. Also, see Slide 18 for summary of Subtitle D leachate practices.

Leachate Control Panel at ACL

Sump Pump Sampling Considerations (continued):

2. Flush sample collection device (dipper).
3. Collect needed sample(s) in labeled containers. Fill to top; but, don't overfill containers.
4. Measure and record temperature (or other field parameters of interest) of leachate.
5. Record other useful ambient information.
6. Store sample(s) for transportation to lab.
7. Send/take sample(s) to lab.

Summary of Subtitle D Leachate Collection, Storage and Distribution Survey

(Support Document No. 5, 2013)

- Collection from: 4 wetwells, 6 tanks, 4 SEBs; and discharges by: 3 gravity & 11 sumps.
- Storage: 11 tanks, 6 SEBs & 2 none.
- Distribution: 11 to POTWs, 1 deep well & 7 no discharge.

Relationship of measured leachate stability parameters

1. **Quantity**: Flow.
2. **Composition**: BOD_5, COD, NH_3, pH, TSS and temperature (topic of this presentation).
3. **Mass Flow** = Composition X Quantity **or** Total amount of biodegradable (BOD_5, NH_3 & TSS); non-biodegradable (COD – Ultimate BOD_5) material leaving phase/landfill.
4. **Leachate Conditions** = ƒ(temperature & pH)

Recommended Actions

1. Assimilate provided & discussed emission sampling information.
2. Contact & meet with your assigned Subtitle D landfill personnel to help them establish a PCC emission sampling plan for their facility.
3. Validate the approved plan during the next sampling event.
4. Revise the plan based on the preceding experiences.