

US EPA ARCHIVE DOCUMENT

Subpart M - Pipeline Sampling (§§761.240-761.257)

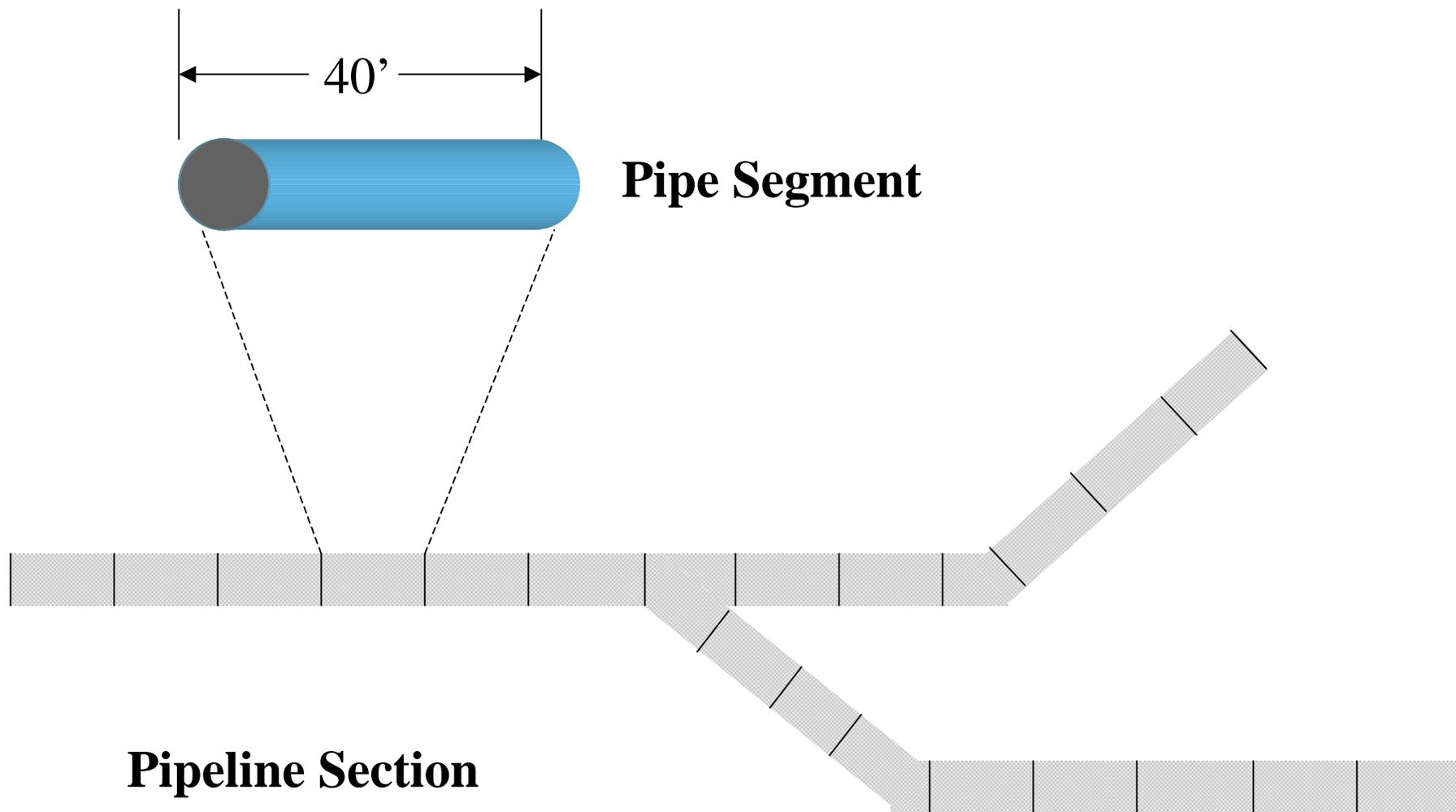
1. Cut into 40 foot segments, and number from upstream end.
2. Is pipeline section greater than 3 miles long?

Yes - Sample first segment, and segments every half mile or 66th segment (1, 67, 133, etc.)

No - Take 7 samples: first segment, last segment, and five interim segments

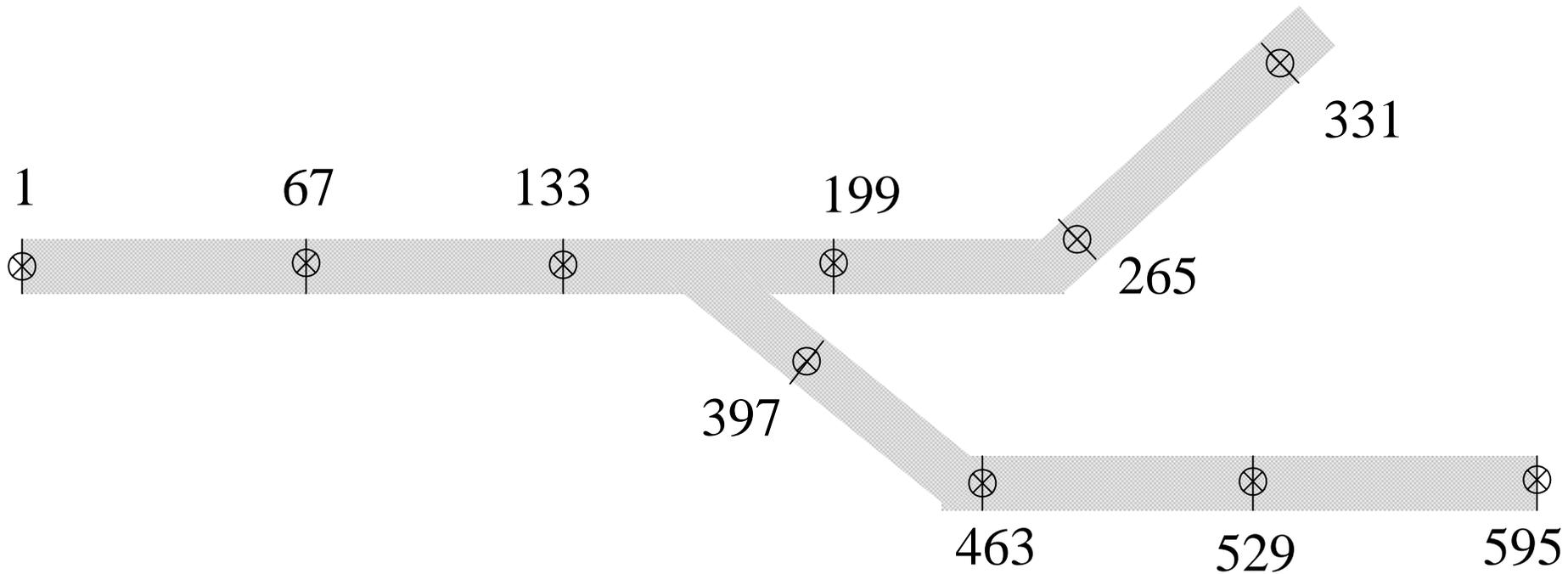
3. Sampling points are on upstream end of segment, inside pipe on bottom

Definition of Pipe Segment and Pipeline Section (§761.240)



Sampling Pipeline Section (longer than 3 miles) (§761.247)

Every half mile, or 66th segment

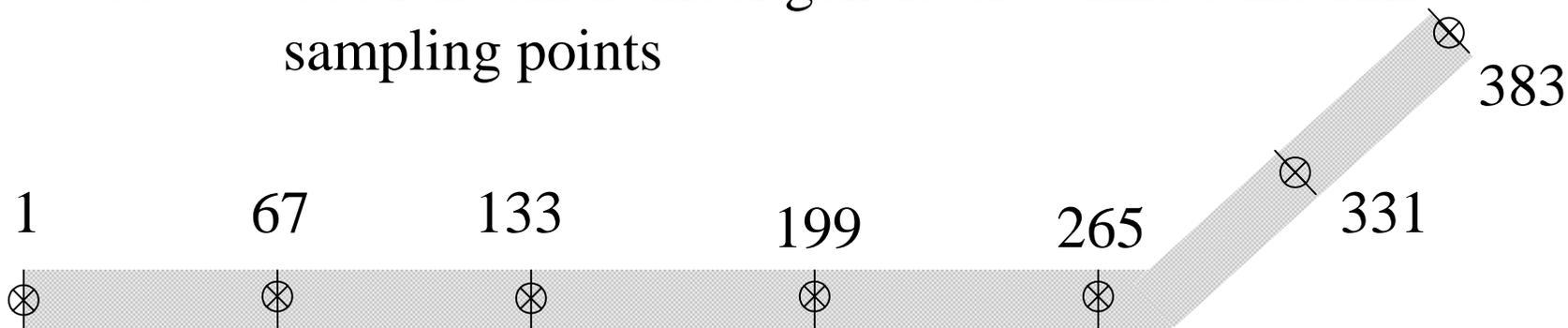


Sampling Pipeline Section (shorter than 3 miles) (§761.247)

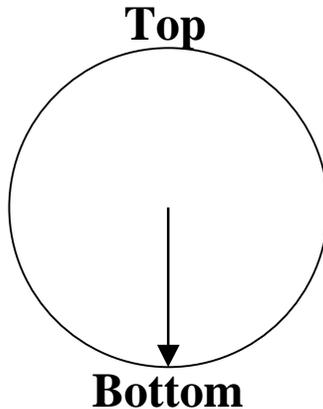
1. Number segments (i.e., 1- 383)
2. Sample first and last segments
- 3a. Find Sampling Interval
 - = Total number of segments divided by 6
 - = $383/6 = 63.8 = 64$Take 5 interim samples at sampling intervals
(i.e., 65, 133, 199, 265, and 331)

or

- 3b. Use random number generator to find 5 interim sampling points



Cross Section View



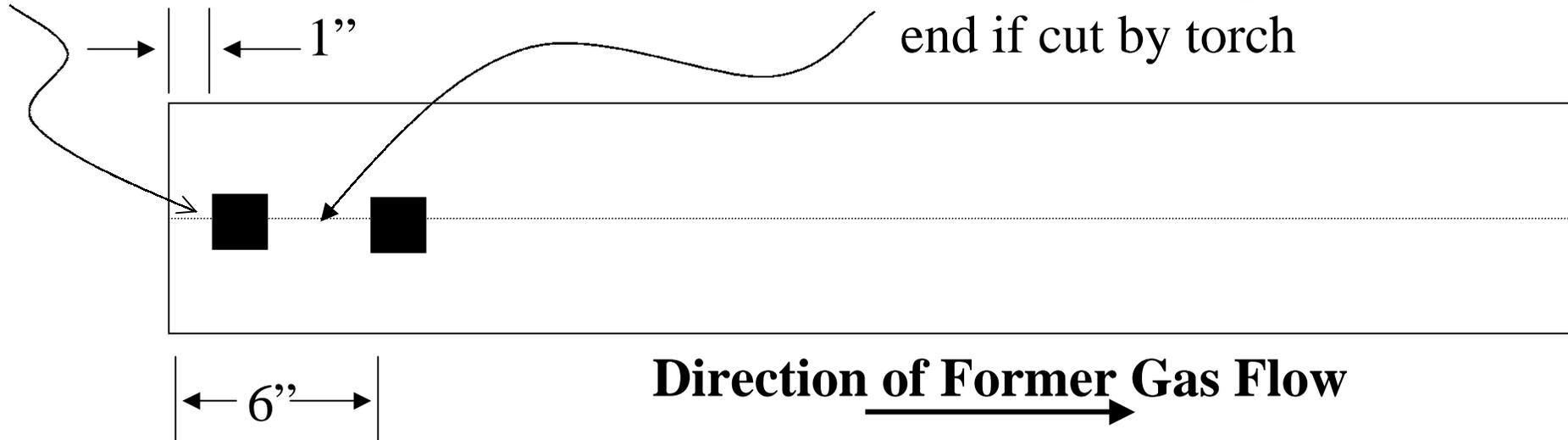
Sample bottom
of upstream end
of pipe segment

■ Sampling Point

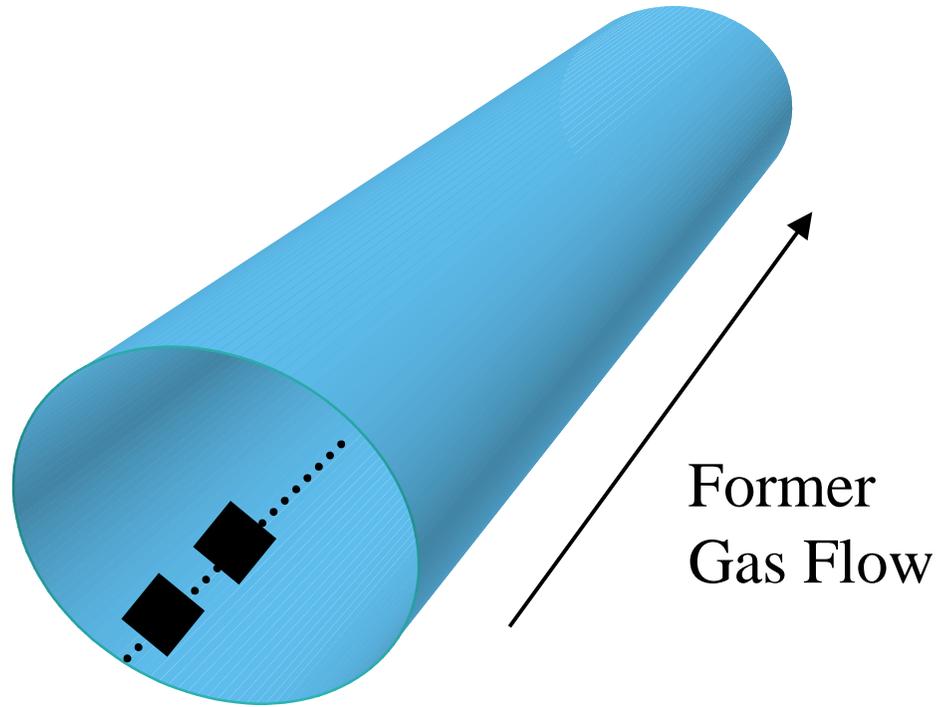
1 inch from
upstream end,
if cut by saw

Top View

6 inches from upstream
end if cut by torch



Three Dimensional View

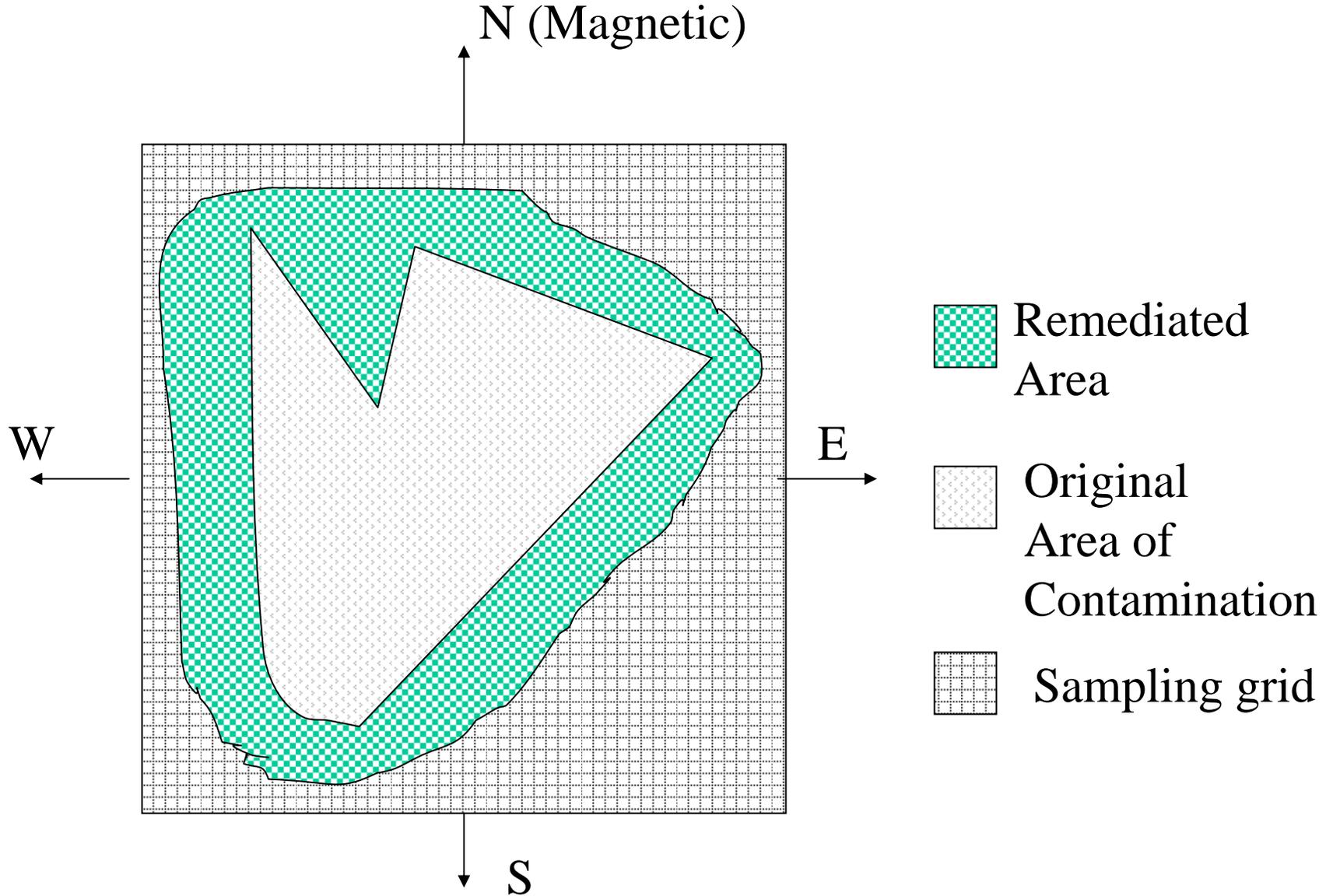


■ Sampling Point

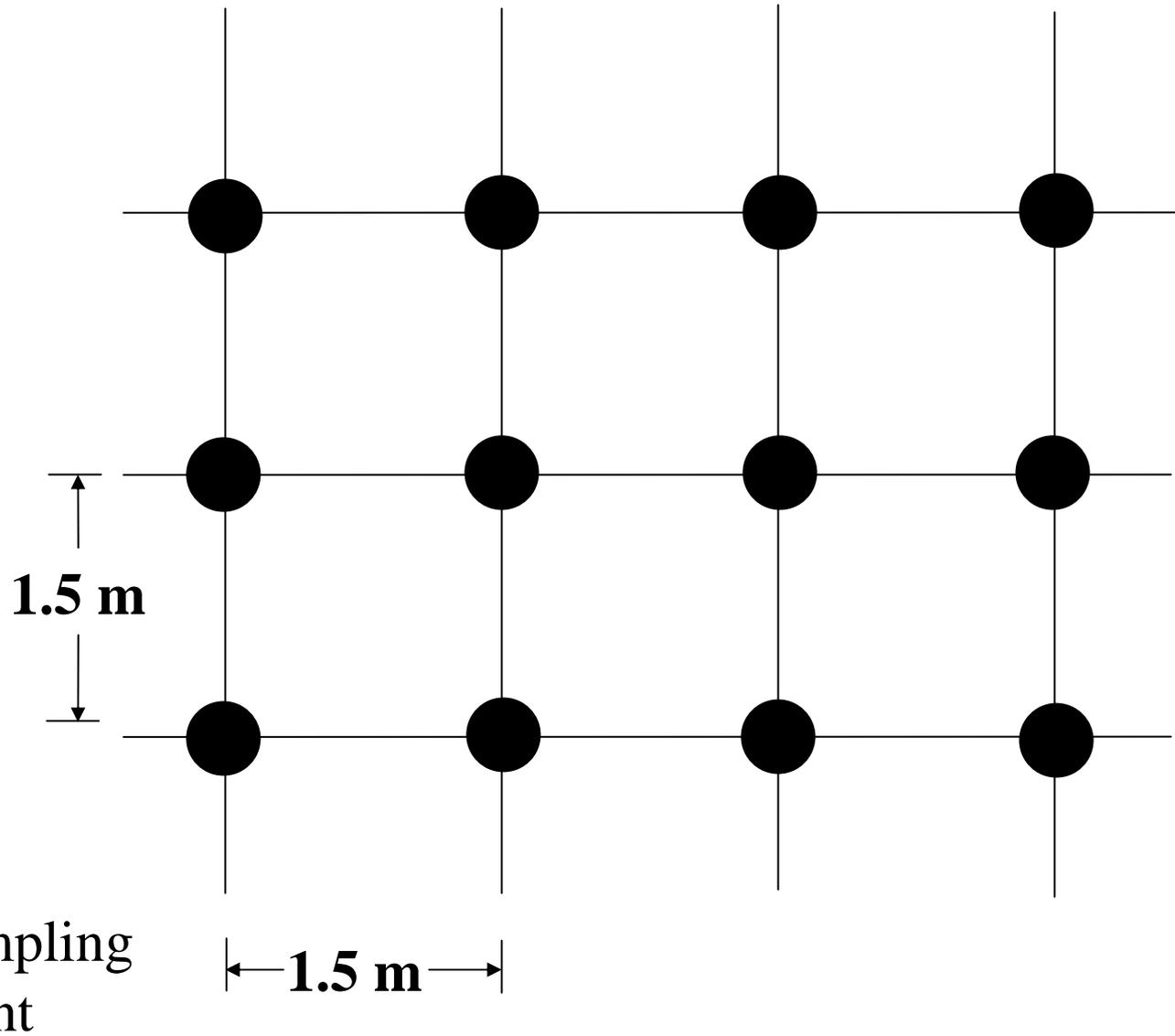
Subpart O
Verification Sampling of Self-Implementing Cleanup
(§§761.280 -761.298)

1. Overlay grid oriented on Magnetic N/S/E/W
2. Mark Sampling Points
3. Collect Samples
4. Composite Samples

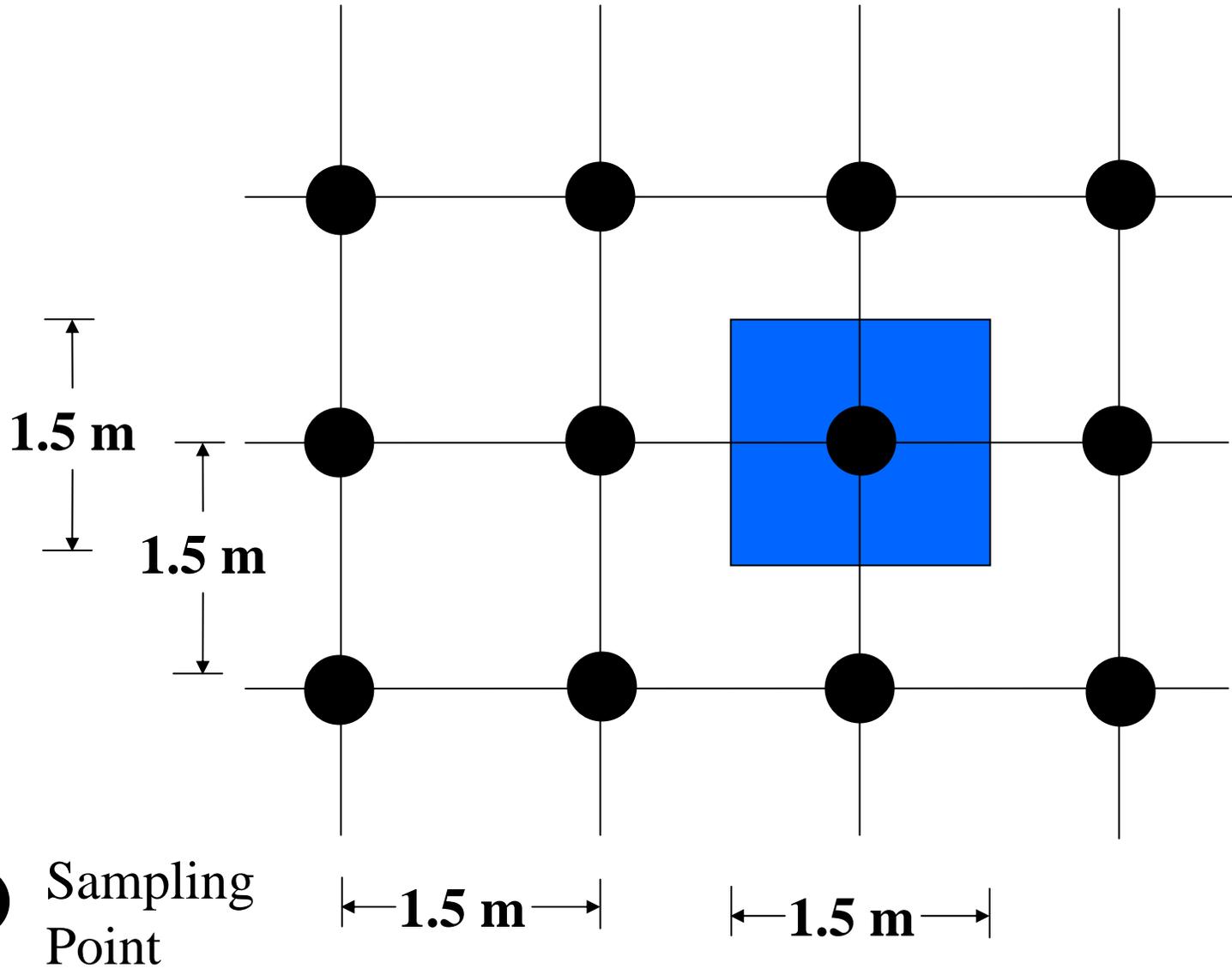
Center Grid on Remediated Area



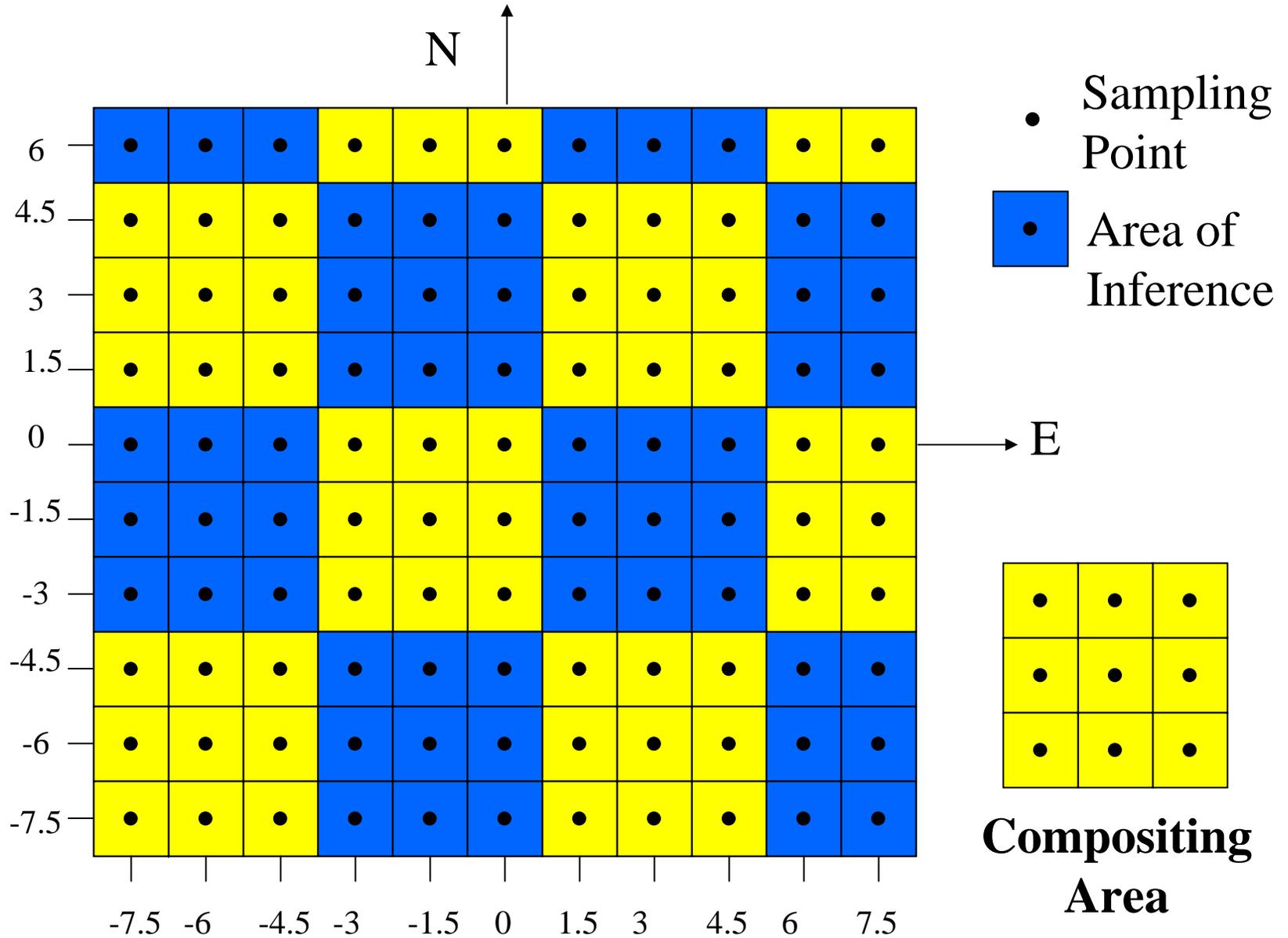
Mark Sampling Points at Intersection of Grid Lines



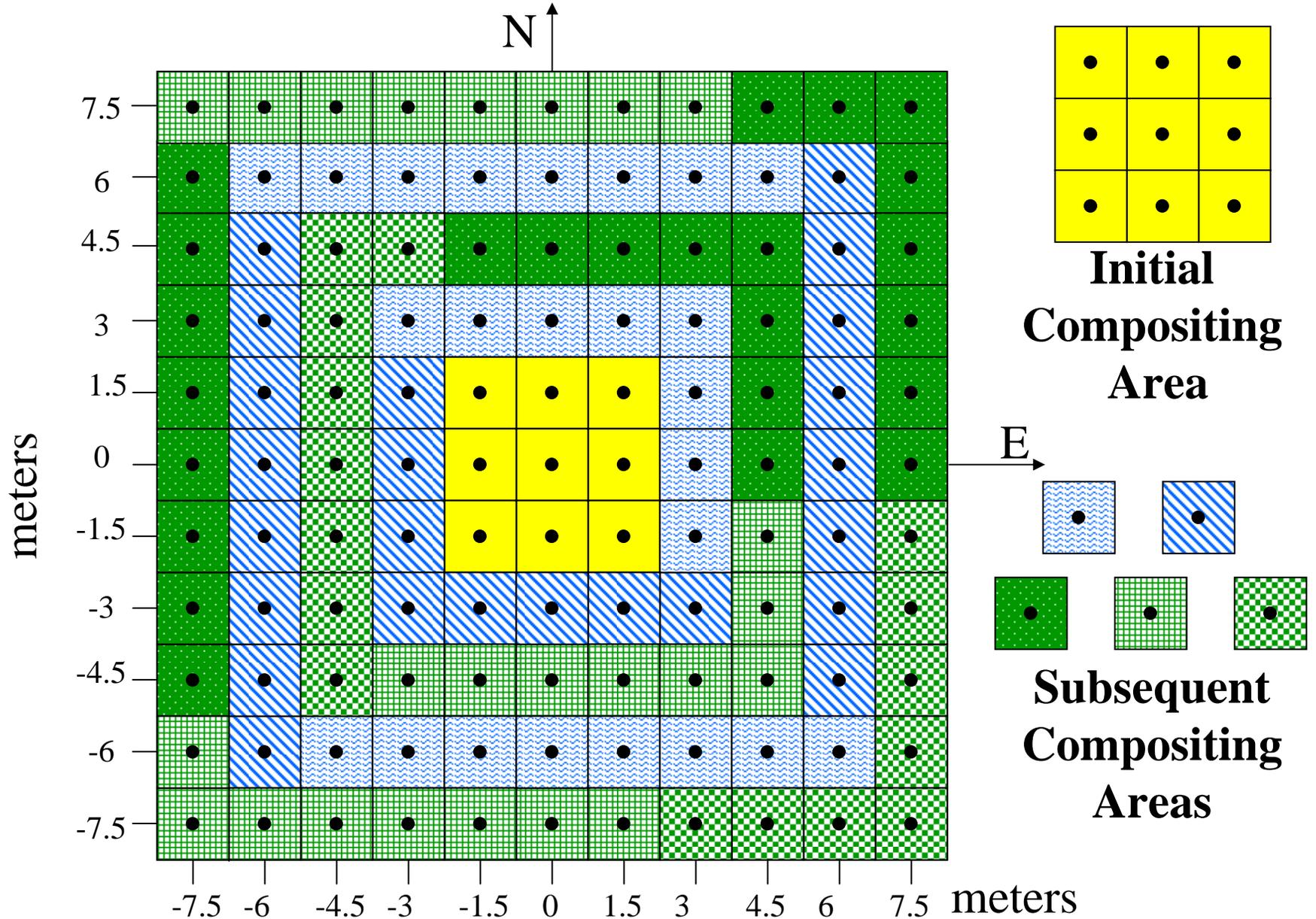
Area of Inference Around Sampling Point



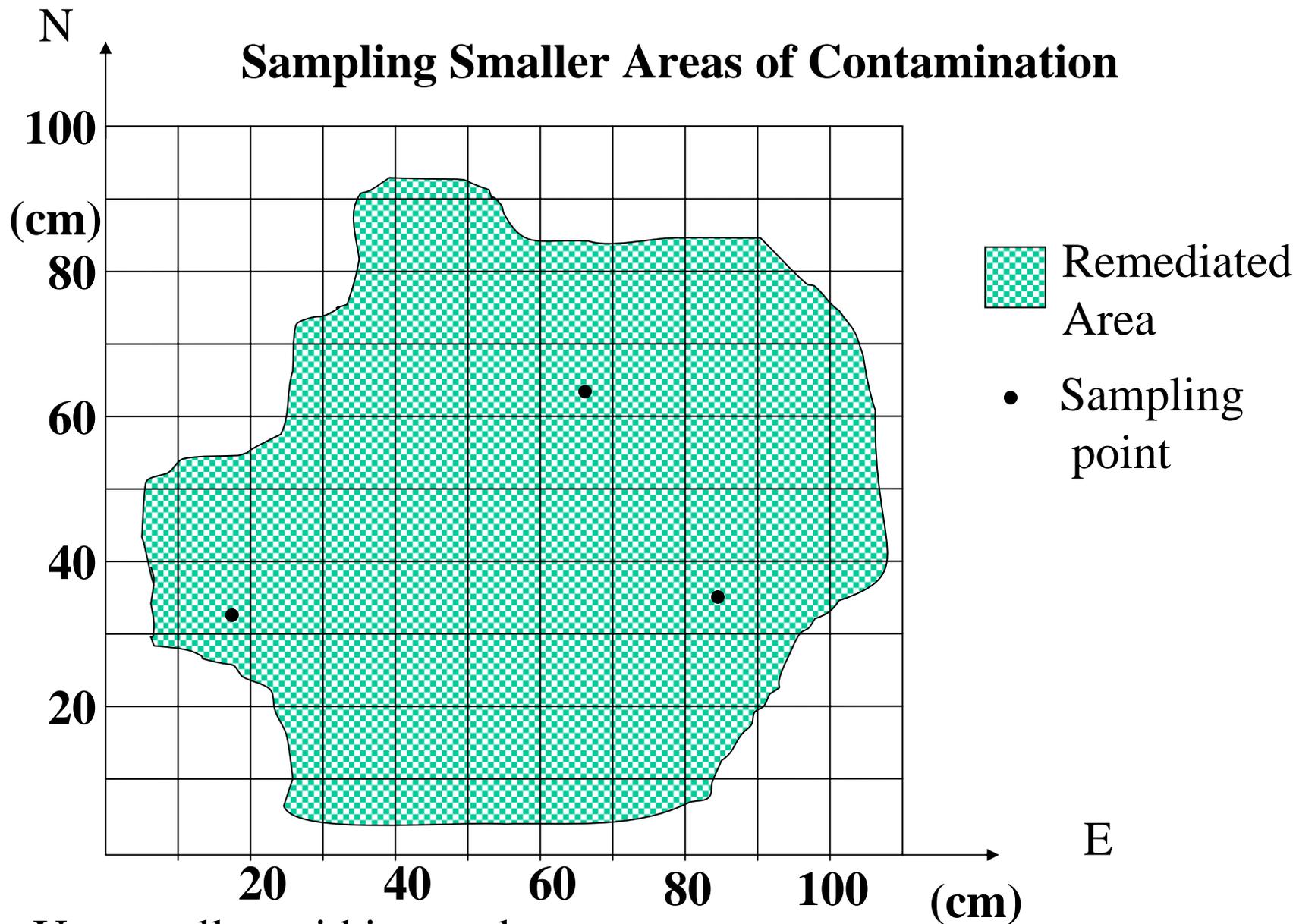
Compositing Areas: Non-point Source



Compositing Areas: Point Source



Sampling Smaller Areas of Contamination

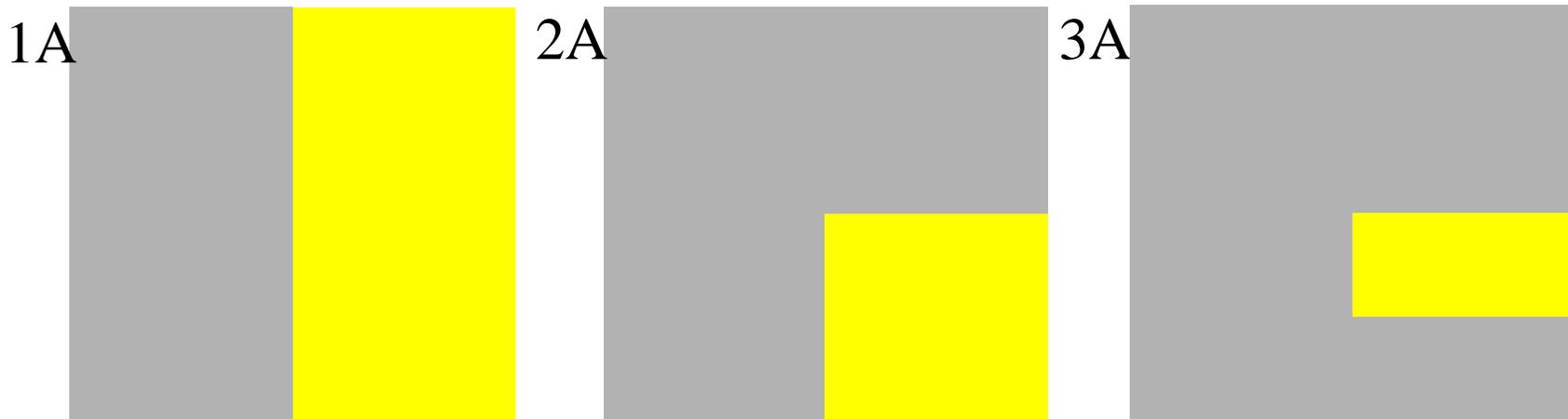
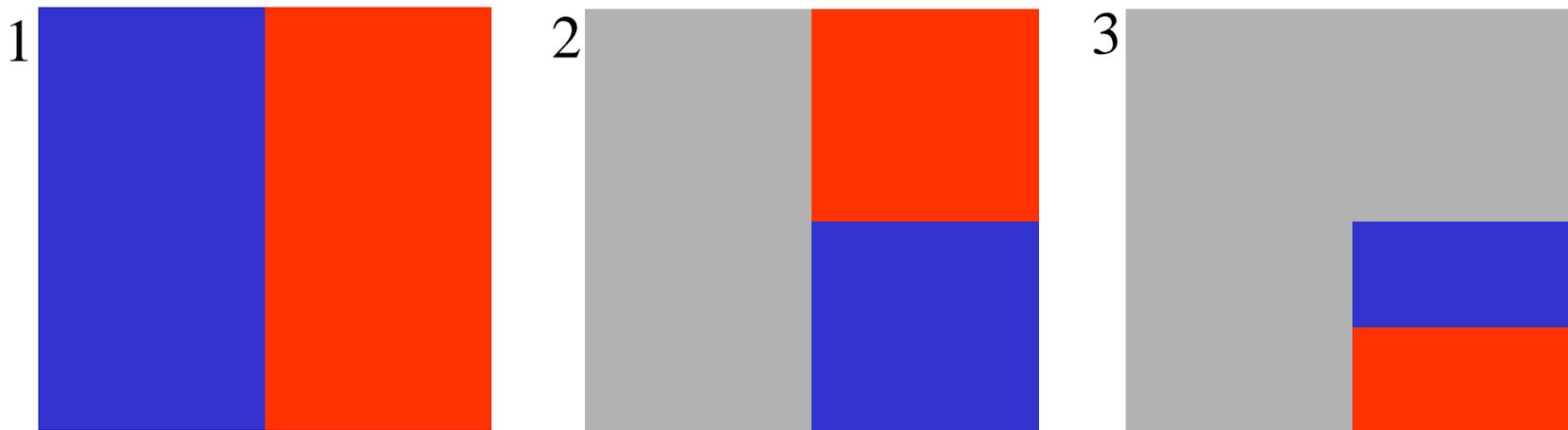


1. Use smaller grid interval
2. Use random number to identify 3 coordinates within remediated area

Subpart P - Sampling Non-Porous Surfaces by Halves (§761.306)

1. Divide 1 square meter area in half
2. Assign each half “heads” or “tails”
3. Flip coin
4. Select “winning side” and divide in half
5. Repeat from step 2 until selected half is $>100 \text{ cm}^2$
and $<200 \text{ cm}^2$

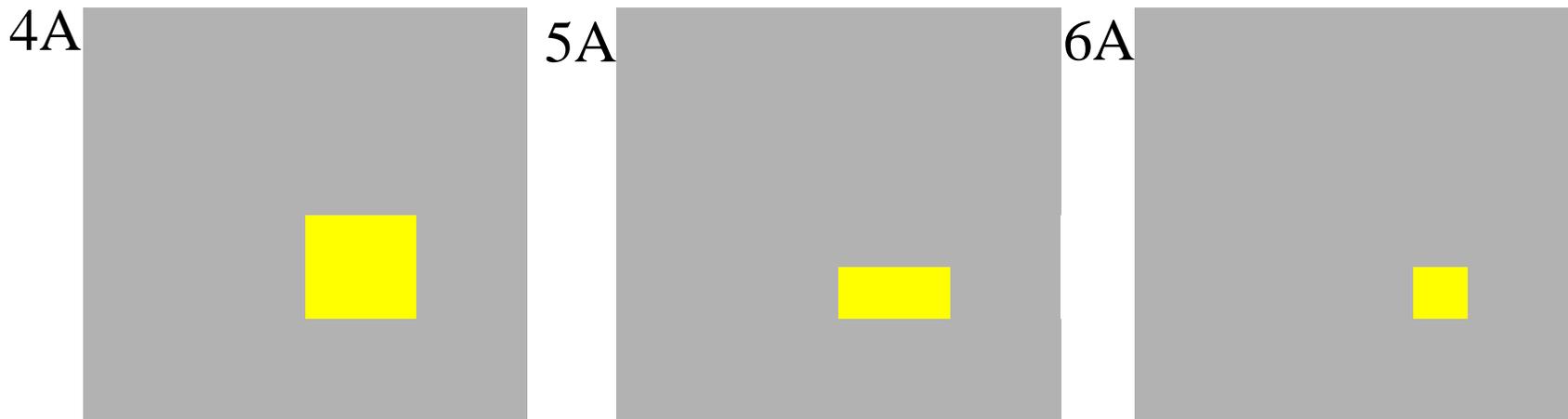
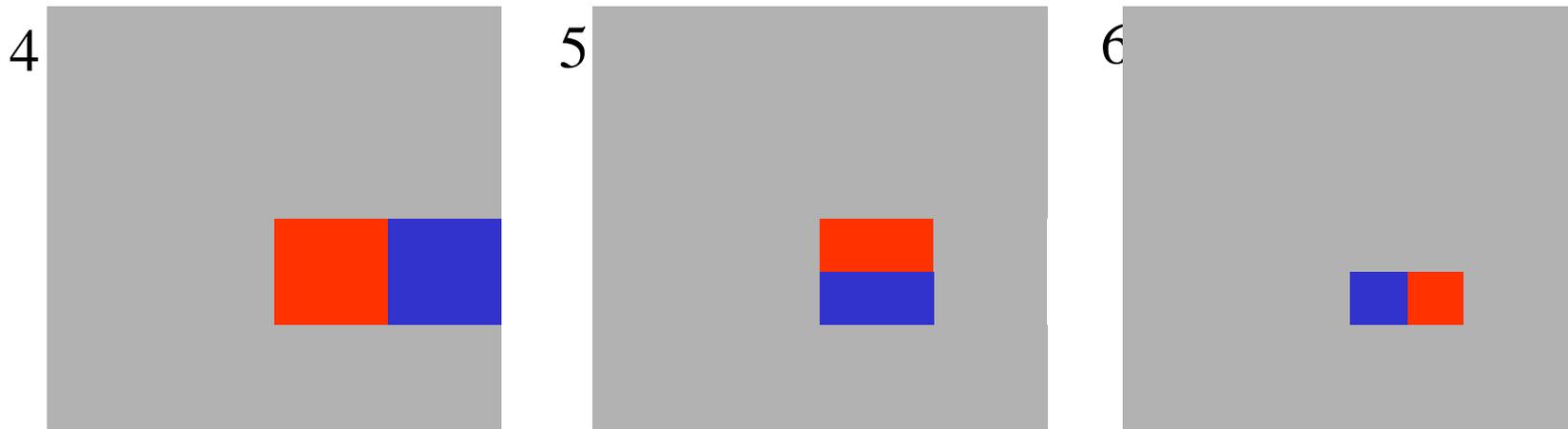
Subpart P - Sampling Non-Porous Surfaces by Halves (§761.306)



 Heads
 Tails
 Winner

First coin toss - heads
Second coin toss - tails
Third coin toss - tails

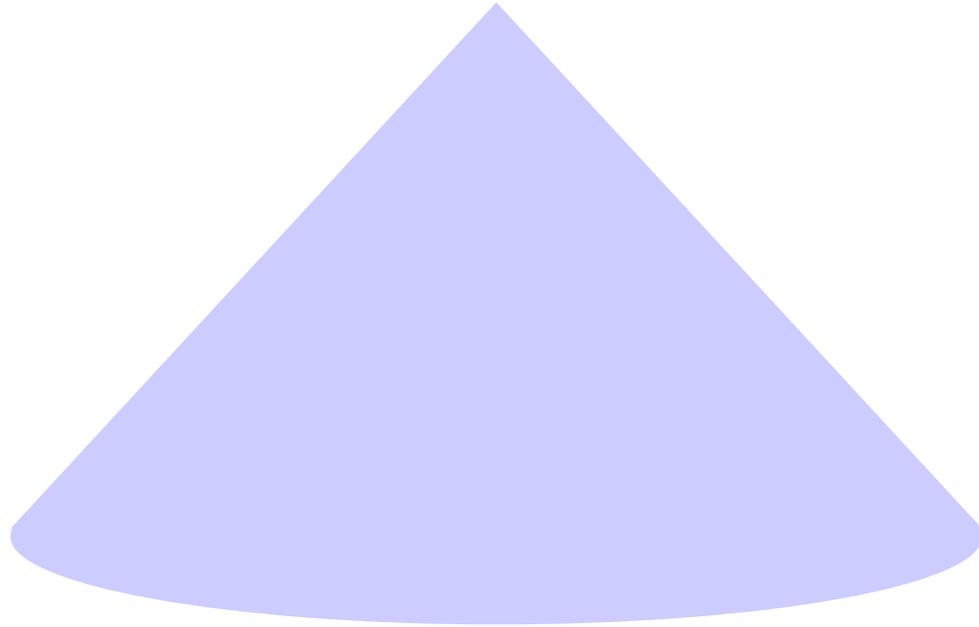
Subpart P - Sampling Non-Porous Surfaces by Halves (§761.306)



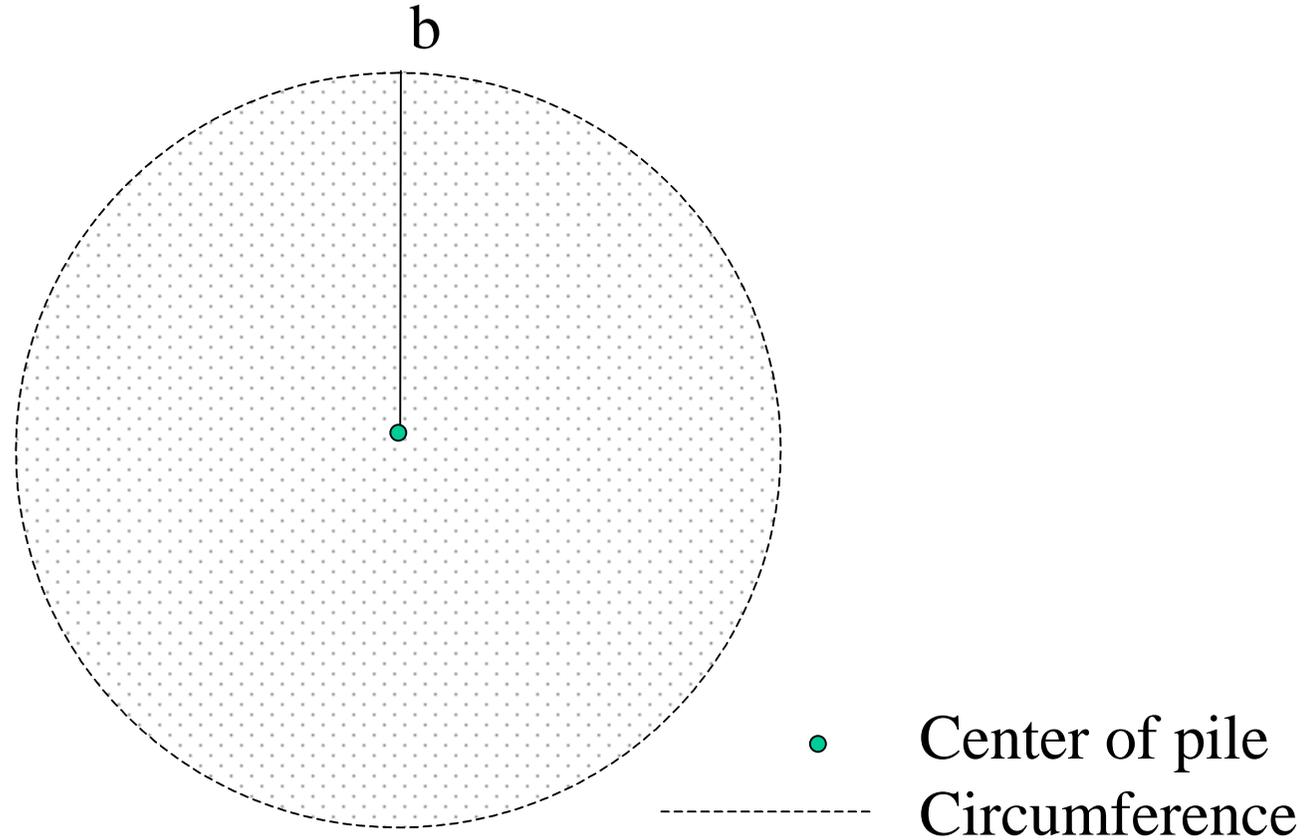
■ Heads
■ Tails
■ Winner

Fourth coin toss - heads
Fifth coin toss - tails
Sixth coin toss - heads

Subpart R - Sampling a Conical Pile **(§761.347)**

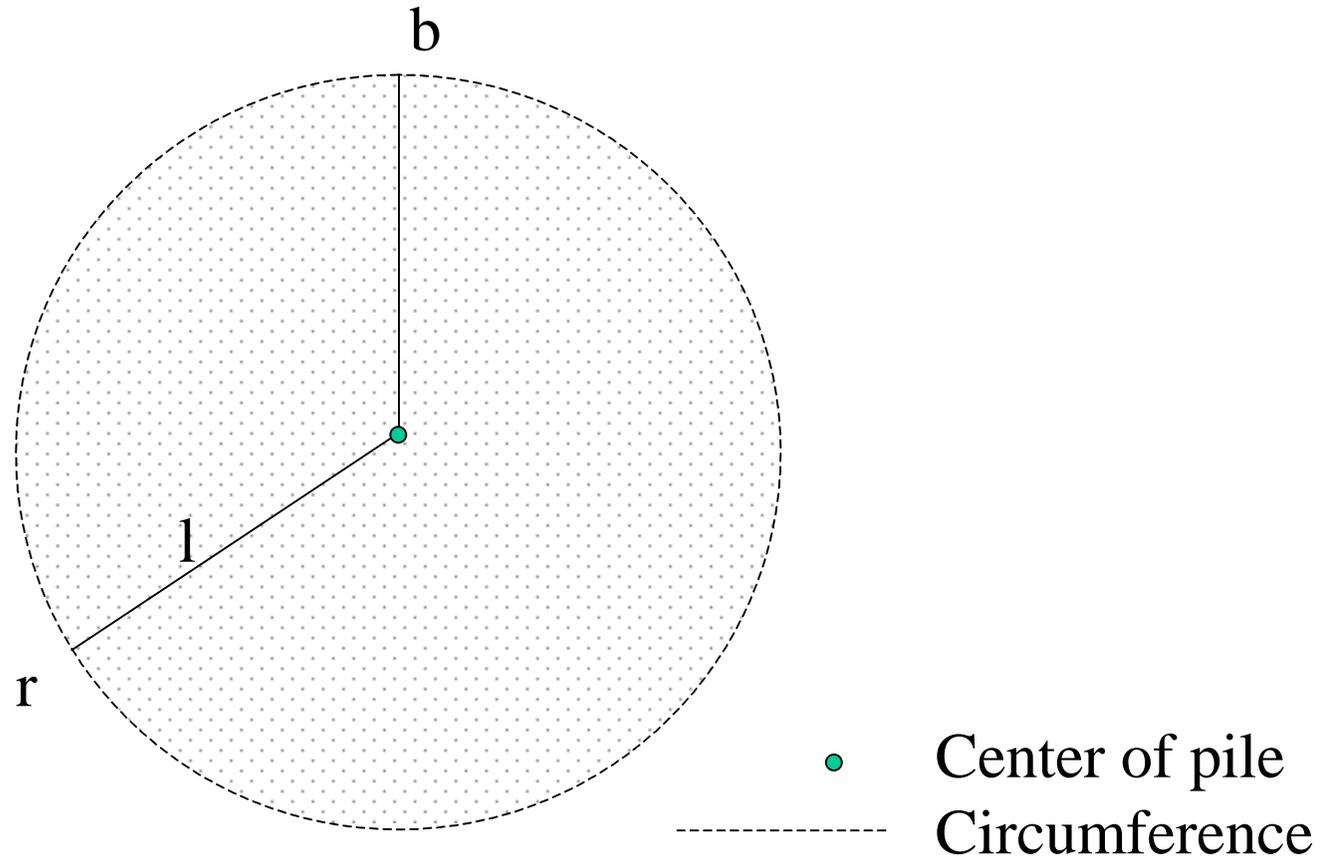


Top View



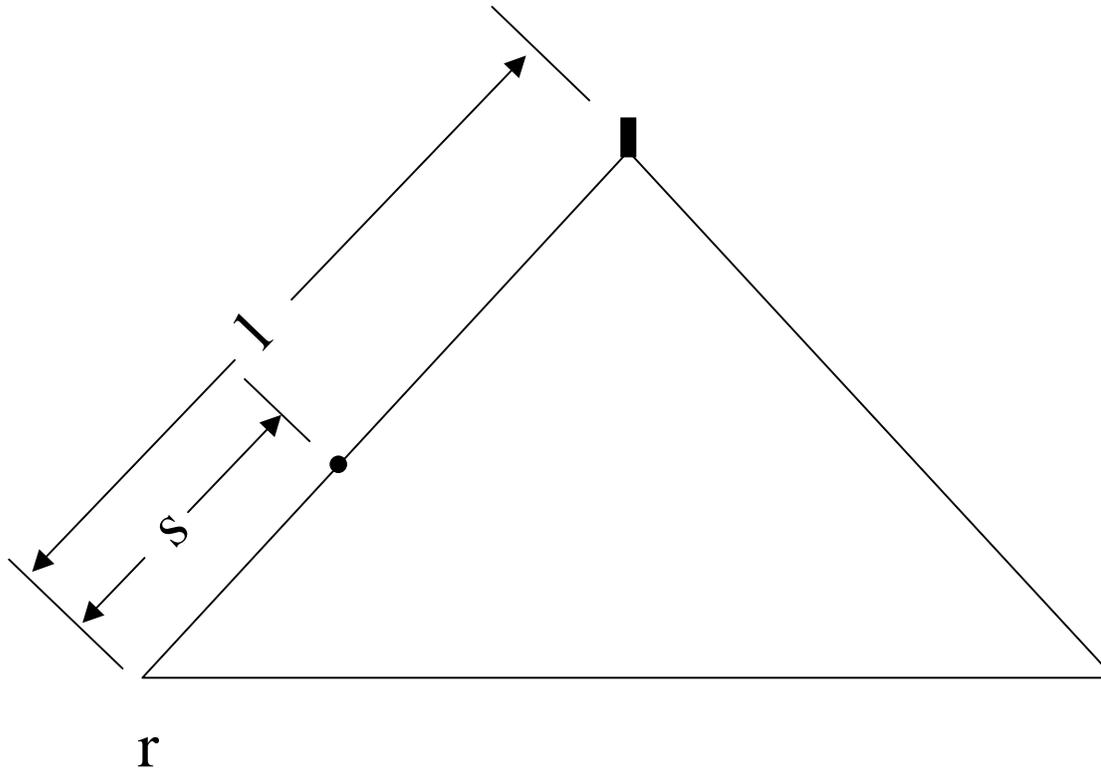
1. Mark center of pile using rod, stake, etc.
2. Run string from top of center marker to base (b)
3. Measure circumference (c) from base (b)

Top View



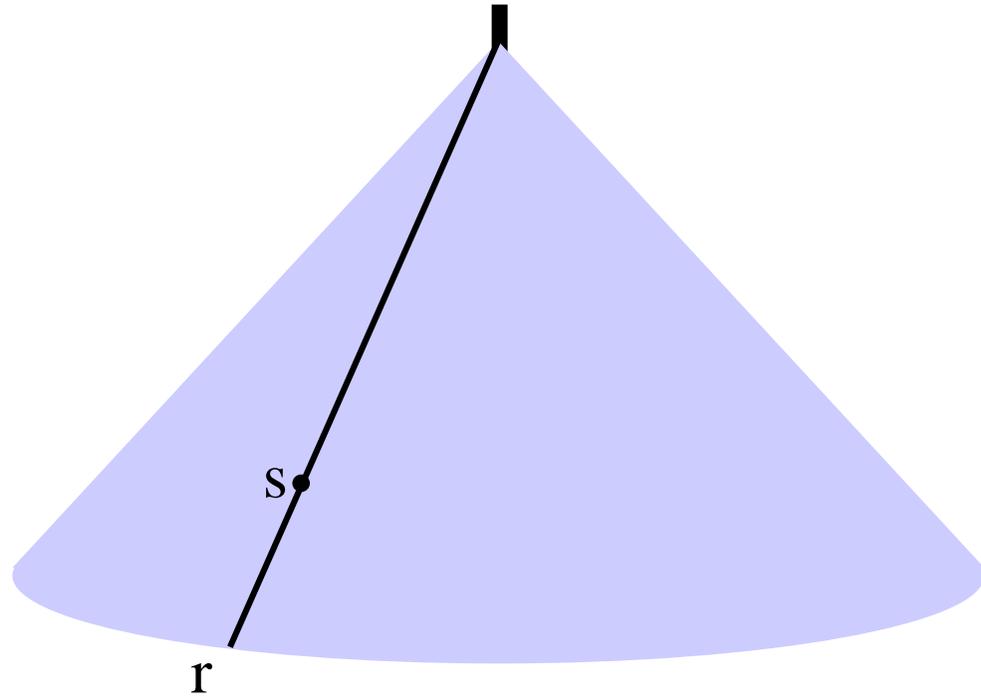
4. Find sampling radius (r) by multiplying circumference (c) by a random number
5. Run string from center marker to base at point (r)
6. Measure length (l) from center marker to base (r)

Cross Section at r

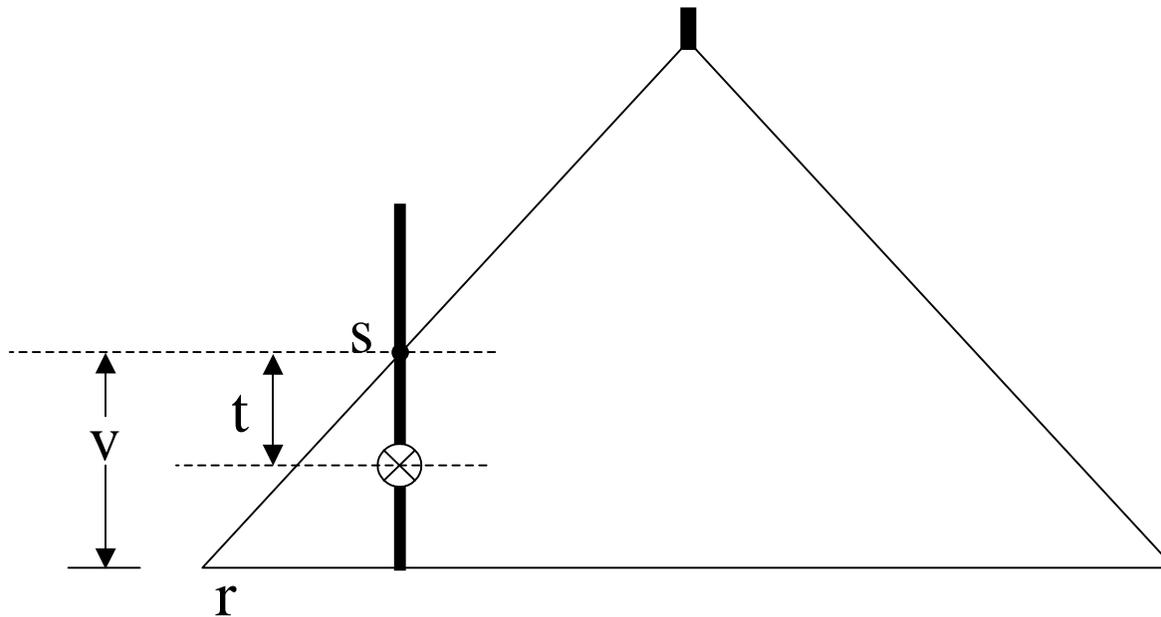


7. Find sampling length (s) by multiplying (l) by a random number
8. Starting from base (r), find point (s) on length (l)

Three Dimensional View

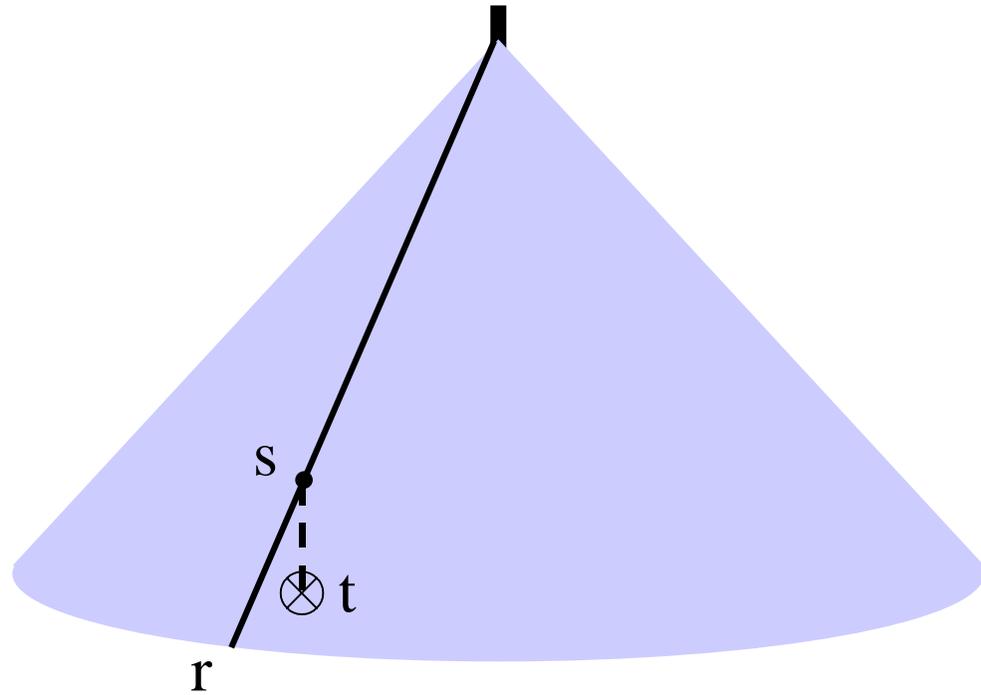


Cross Section at r



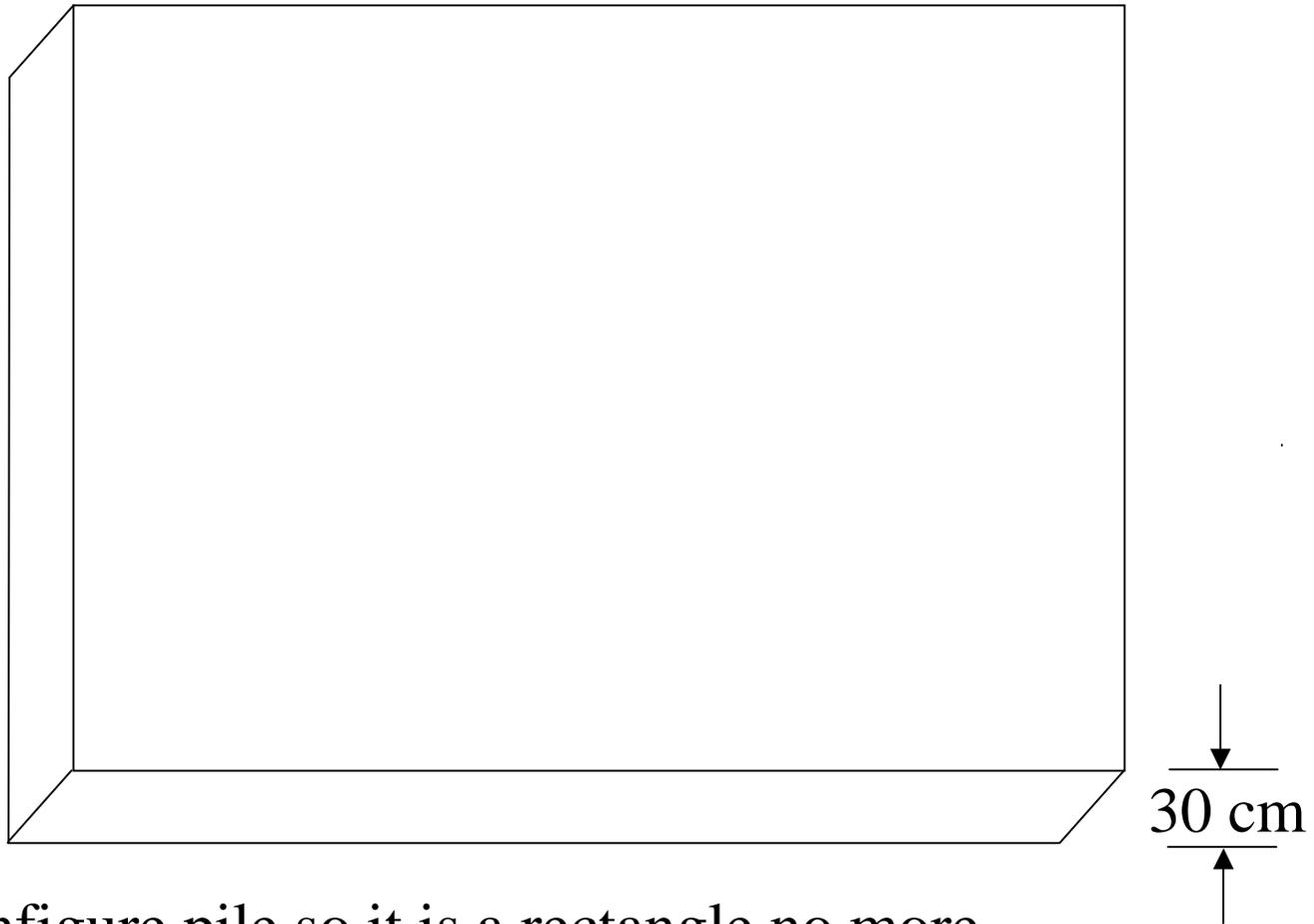
9. Determine the vertical distance (v) by inserting a rod marked in cm
10. Find sampling depth (t) by multiplying (v) by a random number
11. Take sample at point (t)

Three Dimensional View



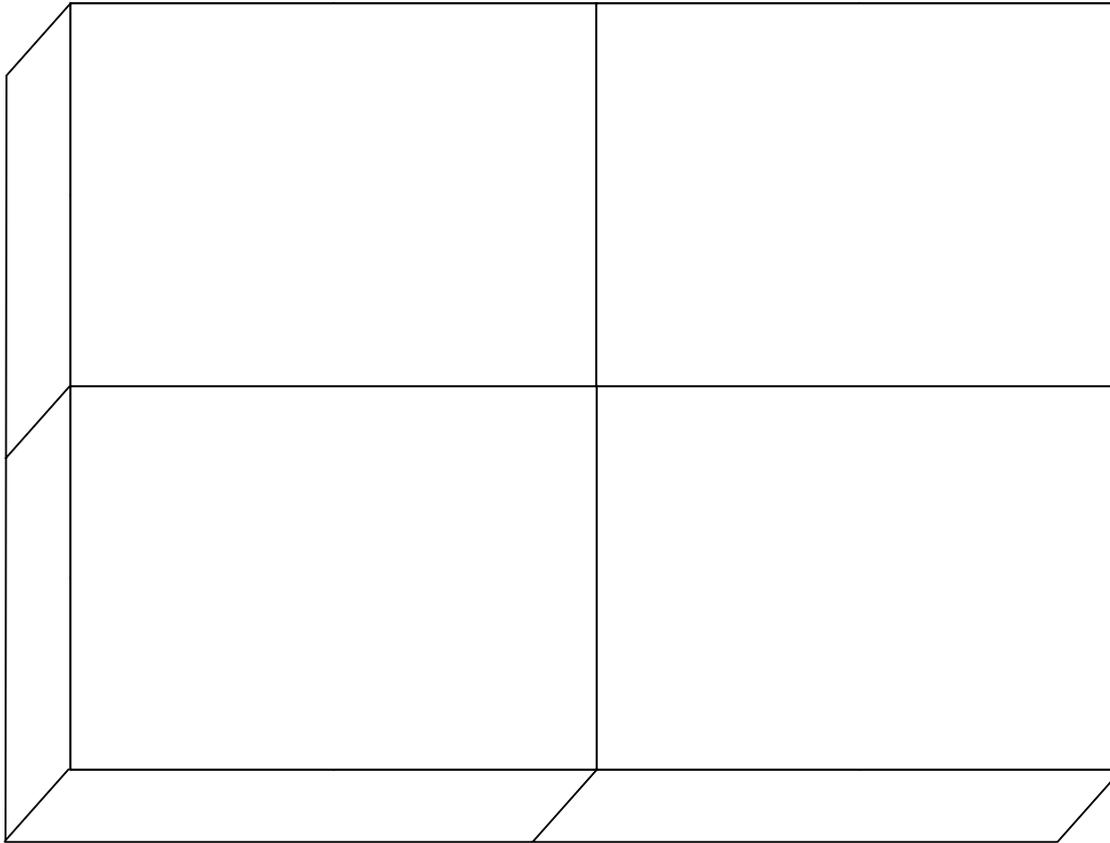
⊗ Sampling Point

Subpart R - Sampling a Specifically Configured Pile (§761.347)



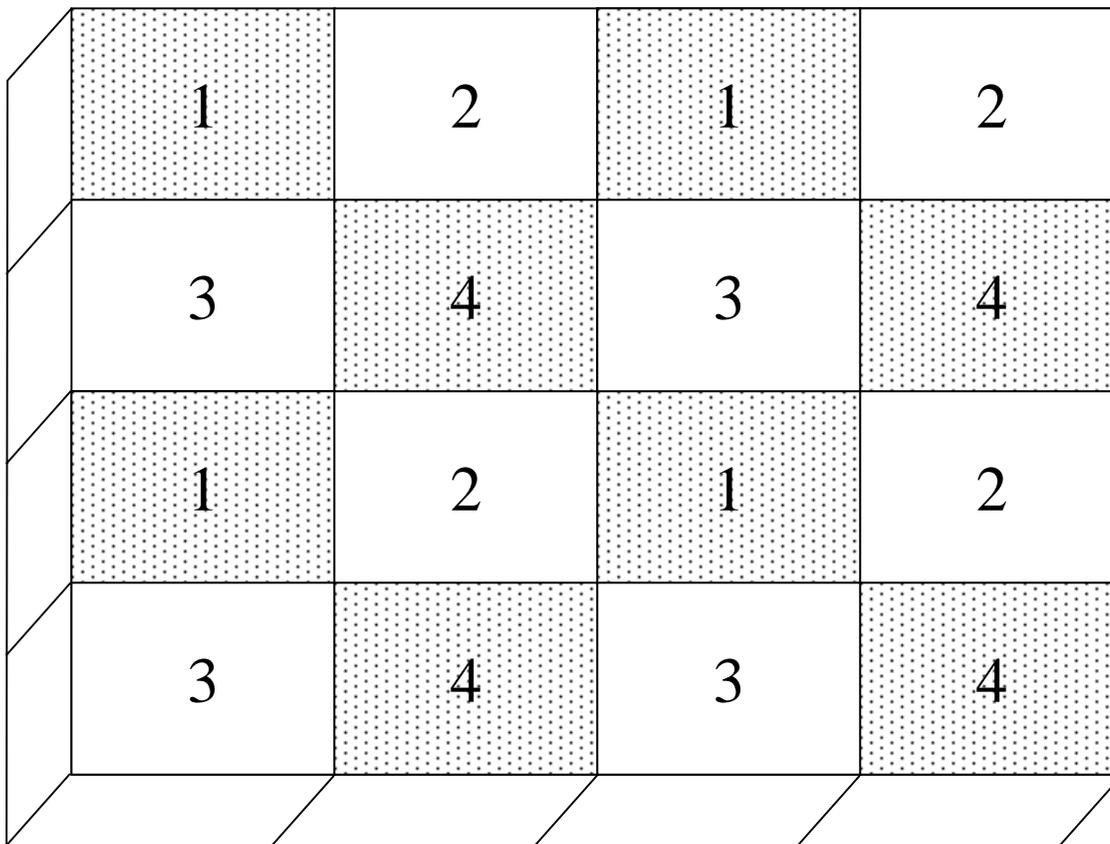
1. Configure pile so it is a rectangle no more than 30 cm (1 ft) deep

Subpart R - Sampling a Specifically Configured Pile



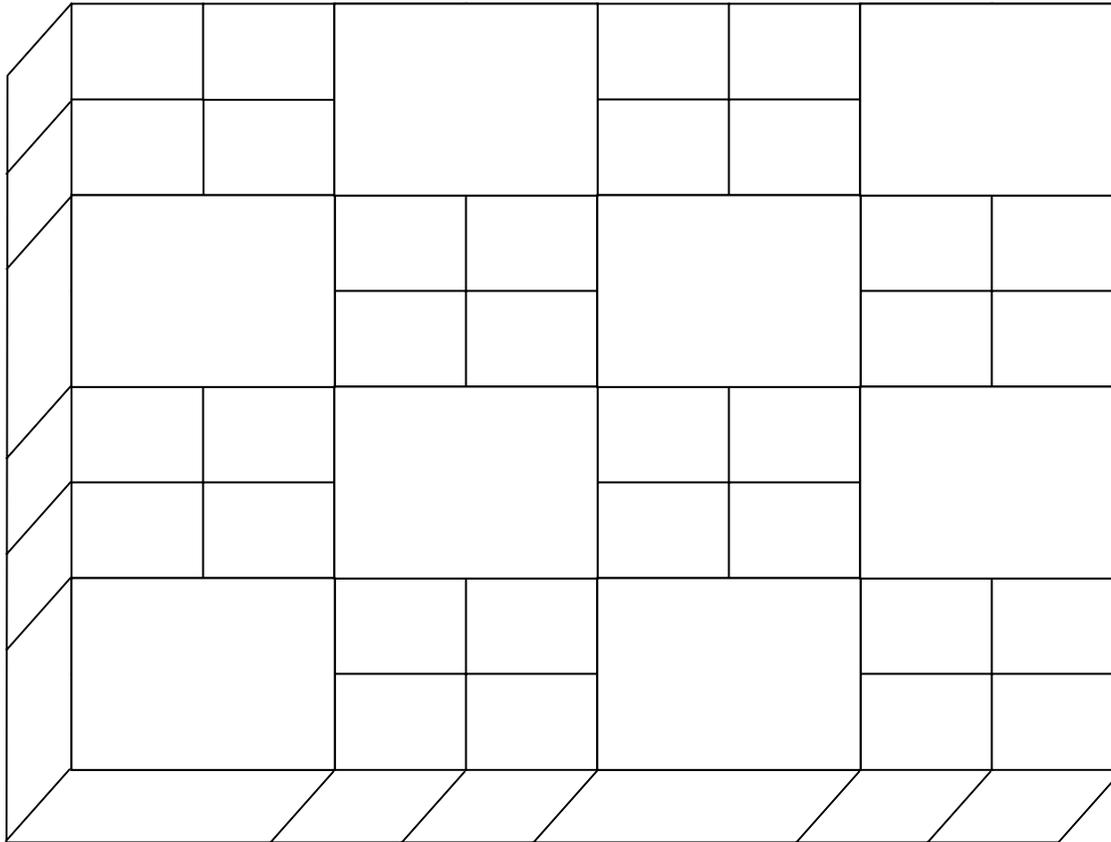
2. Divide pile into quarters

Subpart R - Sampling a Specifically Configured Pile



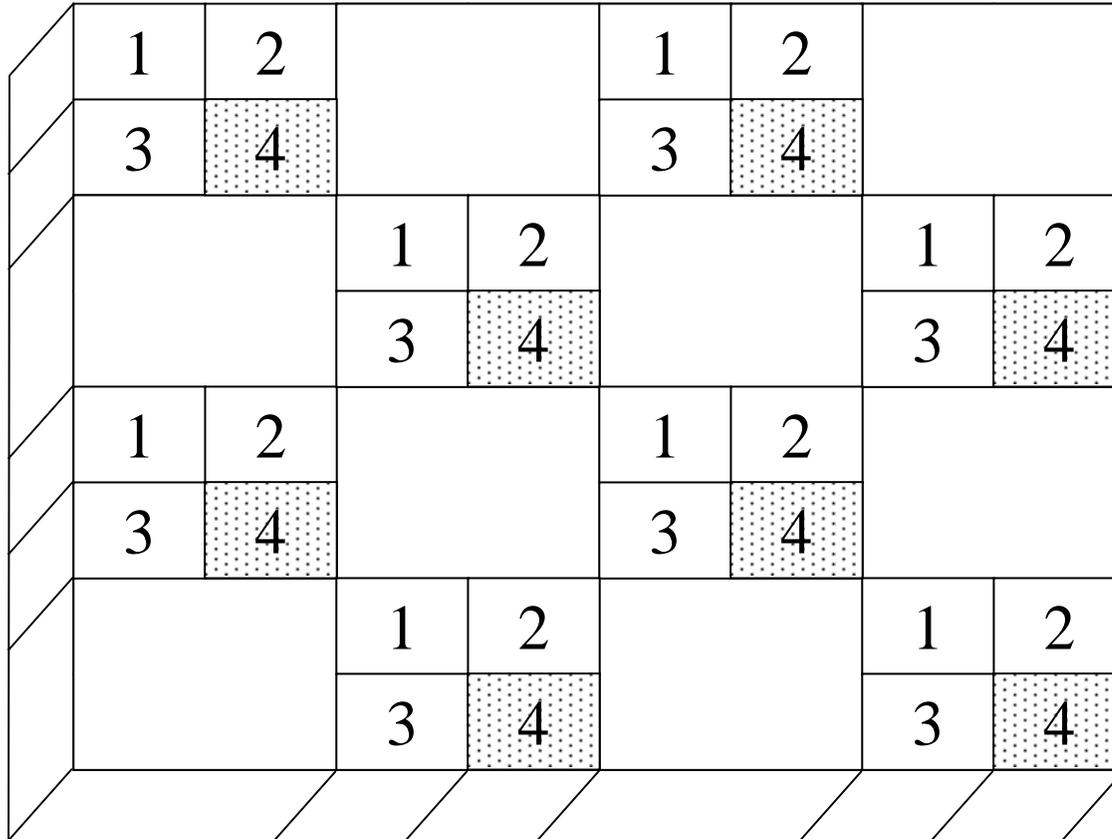
3. Divide quarters into quarters, and number from 1 to 4
4. Randomly select 2 of the 4 numbers to sample (e.g., 1 and 4)

Subpart R - Sampling a Specifically Configured Pile



5. If volume of 1/16th of the original area is greater than 76 liters, continuing dividing into quarters until volume is <76 liters but >19 liters

Subpart R - Sampling a Specifically Configured Pile



6. Number and randomly select subsection for sampling (e.g., 4)
7. Take samples in same position in each corresponding subsection
8. Composite samples