# National Zinc Overlay District
# Soil Sampling Procedure

Properties that have not been previously sampled and analyzed for metals contamination (lead, cadmium, arsenic), will need to be sampled using the following procedures.

The property owner should first contact a certified analytical laboratory to gather information about sample collection and testing. Some laboratories will provide both the sample collection as well as the sample testing. If you want to collect the samples yourself, some laboratories will provide a soil sampling kit for heavy metals (lead, cadmium, and arsenic), which will include sample jars, labels, chain of custody records and seals. If they do not provide a kit, ask what type of decontaminated container they require the sample be collected in. If you do not provide the sample as per the laboratory requirements, they will not perform the testing of the samples.

If the laboratory has no preference on the type of container, then you can use a 1-gallon size Ziploc bag for each sample collected, double bagged in a second 1-gallon size Ziploc bag for shipping. You will also need a 2-gallon bucket, a trowel or small shovel, latex gloves, a permanent marker, and dishwashing liquid and water.

The City of Bartlesville uses Green Country Testing laboratory in Tulsa (see contact information below) for its testing needs. However, the Oklahoma Department of Environmental Quality also provides laboratory services (see contact information below).

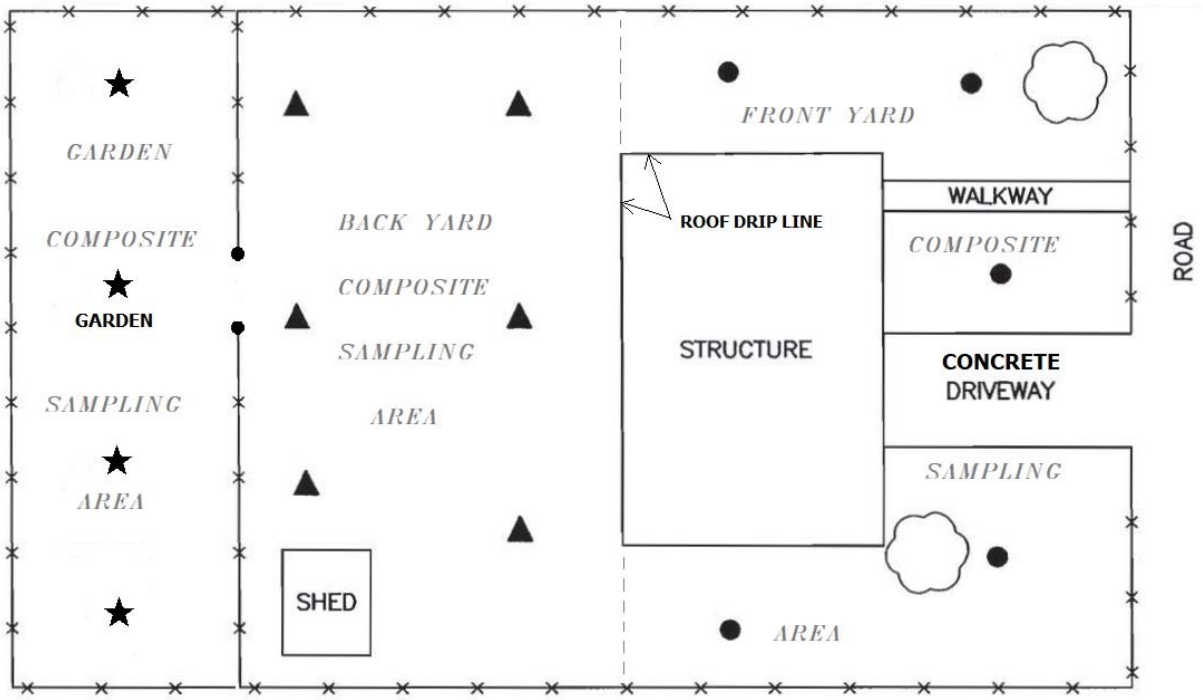
Green Country Testing
6825 E 38th Street
Tulsa, OK 74145
918.828.9977
Website: www.greencountrytesting.com

State Environmental Laboratory Services
Oklahoma Department of Environment Quality
707 N Robinson
Oklahoma City, OK 73102
405.702.1000
Website:
https://www.deq.ok.gov/state-environmental-laboratory-services/laboratory-services-fees/

**Collecting the Soil Samples:**

The property owner should then proceed with the following sampling procedures.

1. For a typical lot approximately 50 feet wide by 100 feet long and empty, divide the property into 2 composite sampling areas (front half and back half). Composite sampling areas are areas in which multiple individual samples are combined following a specific process and then mixed and tested as one composite sample. Each composite sampling area should be divided into a 20-foot by 20-foot sampling grid and should contain no more than 5 or 6 samples in a composite. If the property is larger, the number of composite samples will increase. If there is a home on the property and a side yard is at least 15 ft wide from the drip line of the structure to the closest property boundary, then it should be tested as its own composite area. Gravel driveways, gardens, & bare-ground play areas shall also be tested as their own composite areas.
2. Draw a map of the property showing the outline of each composite area, and write the name of each area on the map, like "front", "back", "gravel drive", "north side", etc. This will help you lay out your sampling locations. A blank grid is included with this application for your use.
3. Once you've got the property mapped out, decide which composite area you are going to do first. Each composite area should be divided into a 20-foot by 20-foot sampling grid. Driveways, sidewalks, or fences may help decide the shape of the composite areas.
4. Decide on places to dig holes within the first composite area (but don't dig yet—that comes in the next step. Mark the sampling locations on your map. Below is an example of three composite areas and sampling locations within each area.



5. Prepare your first composite sampling container so it will be ready to fill. Print your name, your address, the composite area name (i.e. “front yard” or “back yard”), the date, and the time. Write very clearly and use a permanent marker so it doesn’t smear. Sharpie pens work well for this.
6. Now you are ready to dig your sampling holes in the first composite area. Put on a pair of clean latex and clear away any grass, weeds, or rocks from the first sampling location. Then clear away the first inch or so of soil if there are roots in it. Prepare a circle about 8 inches across so it is clear of grass, weeds, and roots. Then use a steel trowel or small shovel to dig out the soil until you have a hole that is about 6 inches deep at the deepest. The top of the hole should be about as wide as the hole is deep. As you dig the hole, place the soil into a clean steel bucket.
7. Dig the other holes like you did the first one. Put the dirt from the other holes into the same bucket with the dirt from the first hole.
8. Mix the soil from all the holes in the first composite area together. Mix thoroughly for a couple of minutes, using the trowel or your hands (with gloves on).
9. Take a handful of soil from the middle of the bucket, and put it into the sampling container. Then take a handful from somewhere around the edge of the bucket and put it in the container. Take more handfuls from around the edges of the bucket, until you have 5 handfuls in the container. Then seal the container.
10. Use the soil that is left in the bucket to fill in the holes.
11. Wash the inside of the bucket and the trowel or shovel with dishwashing liquid and water. Wash the latex gloves if you intend to re-use them, or else put them in your trash can and get a new pair. Everything that is washed should be thoroughly rinsed with clean water.
12. Repeat Steps 3 through 11 for each of the remaining composite areas of your yard. When you are done, you should have one sampling container of dirt for each composite sampling area of your property. Remember, before working on a new sampling area, you MUST wash and rinse the bucket and shovel. Wash your gloves or get new ones before starting on the next area. You do not want to carry over potential contaminants from one sampling area to the next as it will influence the test results. After you are done, thoroughly wash your hands with soap and water. Be sure to wash your hands if you stop for a break to eat or do other activities (like smoking). Save your map to turn into the City.
13. Composite samples should then be prepared for shipment and laboratory analysis as directed by the laboratory (verify all requirements with lab).
    - Samples should be placed in appropriate decontaminated containers provided or required by the analytical laboratory and labeled with the following: date, sample identification (property address in most cases), sampler’s name.
    - Containers should be protected from breakage by adding packing material to the shipping container to prevent shifting of samples during transportation.

- Each sample sent to the laboratory should be identified on a Chain of Custody (COC) form, placed in the shipping container. An example of a completed COC is attached along with a generic blank form. The COC not only details the soil transaction but also states the analysis to be performed by the lab.

14. Submit the samples to the lab in the manner directed by them.
15. Laboratory analyses will be out-of-pocket expenses to property owners. Costs charged by laboratories vary, so ask for the cost per sample to analyze for total lead, cadmium and arsenic concentrations using ICP methods in accordance with the EPA SW-846 methods and report the results as mg/Kg ppm units. Below are the residential remediation levels for the National Zinc Overlay District.

    Residential Remediation Levels for NZOD
    925 mg/Kg for lead
    100 mg/Kg of cadmium
    60 mg/Kg of arsenic

16. When lab results are available, the Chain of Custody record and the laboratory analysis should be filed with the Department of Community Development as part of the permanent NZOD database.

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**Commercial Property Testing:**

Commercial Sampling procedures are basically the same as residential and will use the same residential remediation levels as long as any portion of the property abuts a residentially zoned area. If a commercial property is completely surrounded by commercial/industrial zoned properties then the following remediation levels can be used for determining if remediation is required:

Commercial/Industrial Remediation Levels for NZOD
2000 mg/Kg for lead
200 mg/Kg of cadmium
600 mg/Kg of arsenic

LAB SAMPLE COVER LETTER

RE: Soil sample from National Zinc Overlay District in Bartlesville, Oklahoma

To Whom It May Concern,

Enclosed please find the soil sample(s) that was taken from the National Zinc Overlay District (NZOD) in Bartlesville, Oklahoma. Please analyze this sample for total levels in mg/Kg parts per million for the following metals: Arsenic, cadmium, and lead.

If the testing results exceed any of the following (Check Residential or Commercial Box below), please conduct a Toxicity Characteristic Leaching Procedure (TCLP) on the sample provided:

| | **Limits for Residential** ☐ | **Limits for Commercial** ☐<br>ONLY USE IF NO RESIDENTIAL ZONING ABUTS PROPERTY |
|---|---|---|
| Metal | mg/Kg | mg/Kg |
| Arsenic | 60 ppm | 600 ppm |
| Cadmium | 100 ppm | 200 ppm |
| Lead | 925 ppm | 2000 ppm |

Enclosed is a check to cover the cost of analysis for total metal concentrations. Should you have to conduct a TCLP analysis, please call to inform me of the additional cost and I will send payment as soon as possible.

I have also enclosed a copy of the instruction sheet I followed when taking the sample, should you have any questions about the manner in which the sample was obtained. Thank you for your assistance in this matter. Please mail these soil sample results directly to the following address:

Sincerely,

# CHAIN OF CUSTODY

| REPORT TO: | | | INVOICE TO: | | | |
|---|---|---|---|---|---|---|
| CLIENT: | | | CLIENT: Same | | | LAB PROJECT ID |
| ADDRESS: | | | ADDRESS: | | | |
| CITY: | STATE: | ZIP | CITY: | STATE: | ZIP: | Quotation #: |
| PHONE: | | | PHONE: | | | Email: |
| ATTN: | | | ATTN: | | | |

**PROJECT REFERENCE**

**Matrix Codes:**

| | | | | | | |
|---|---|---|---|---|---|---|
| **AQ** - Aqueous Liquid | **WA** - Water | **DW** - Drinking Water | **SO** - Soil | **SD** - Solid | **WP** - Wipe | **OL** - Oil |
| **NQ** - Non-Aqueous Liquid | **WG** - Groundwater | **WW** - Wastewater | **SL** - Sludge | **PT** - Paint | **CK** - Caulk | **AR** - Air |

**REQUESTED ANALYSIS**

| DATE COLLECTED | TIME COLLECTED | COMPOSITE | GRAB | SAMPLE IDENTIFIER | MATRIX CODES | NUMBER OF CONTAINERS | | | | | | | | | | | REMARKS | LAB SAMPLE NUMBER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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| Turnaround Time | | Report Supplements | | | |
|---|---|---|---|---|---|
| Availability contingent upon lab approval; additional fees may apply. | | | | | |
| **Standard 5 day** | ☐ | None Required | ☐ | None Required | ☐ |
| 10 day | ☐ | Batch QC | ☐ | Basic EDD | ☐ |
| Rush 3 day | ☐ | Category A | ☐ | NYSDEC EDD | ☐ |
| Rush 2 day | ☐ | Category B | ☐ | | |
| Rush 1 day | ☐ | | | | |
| Other | ☐ | Other | ☐ | Other EDD | ☐ |
| please indicate date needed: | | please indicate package needed: | | please indicate EDD needed : | |
| _____ | | _____ | | _____ | |

**Sampled By** **Date/Time**

**Relinquished By** **Date/Time**

**Received By** **Date/Time**

**Received @ Lab By** **Date/Time**

Total Cost:

P.I.F.