

## TRACE METALS

## SAMPLING CONTAINERS &amp; HOLDING TIMES



| Parameter                       | Matrix | Prep Method                    | Analytical Method    | Holding Time <sup>2</sup> | Minimum Volume | Water Sampling |                           |
|---------------------------------|--------|--------------------------------|----------------------|---------------------------|----------------|----------------|---------------------------|
|                                 |        |                                |                      |                           |                | Container      | Preservative <sup>3</sup> |
| Cations                         | Water  | EPA 3010                       | EPA 6010             | 6 mo                      | 100 mL         | 250mL P        | HNO <sub>3</sub>          |
|                                 |        | EPA 200.7                      | EPA 200.7            | 6 mo                      | 100 mL         | 250mL P        | HNO <sub>3</sub>          |
|                                 |        | EPA 200.8                      | EPA 6020             | 6 mo                      | 100 mL         | 250mL P        | HNO <sub>3</sub>          |
|                                 |        | EPA 200.8                      | EPA 200.8            | 6 mo                      | 100 mL         | 250mL P        | HNO <sub>3</sub>          |
|                                 | Soil   | EPA 3050                       | EPA 6010             | 6 mo                      | 2 g            |                |                           |
|                                 |        | EPA 3050                       | EPA 6020             | 6 mo                      | 2 g            |                |                           |
| ICP Metals                      | Water  | EPA 3010                       | EPA 6010             | 6 mo                      | 100 mL         | 250mL P        | HNO <sub>3</sub>          |
|                                 |        | EPA 200.7                      | EPA 200.7            | 6 mo                      | 100 mL         | 250mL P        | HNO <sub>3</sub>          |
|                                 | Soil   | EPA 3050                       | EPA 6010             | 6 mo                      | 2 g            |                |                           |
| ICP-MS Metals                   | Water  | EPA 200.8                      | EPA 6020             | 6 mo                      | 100 mL         | 250mL P        | HNO <sub>3</sub>          |
|                                 |        | EPA 200.8                      | EPA 200.8            | 6 mo                      | 100 mL         | 250mL P        | HNO <sub>3</sub>          |
|                                 | Soil   | EPA 3050                       | EPA 6020             | 6 mo                      | 2 g            |                |                           |
| Hexavalent Chromium             | Water  | METHOD <sup>1</sup>            | EPA 7196A            | 24 hr                     | 100 mL         | 500 mL P       | None                      |
|                                 |        | METHOD <sup>1</sup>            | EPA 7199             | 24 hr                     | 50 mL          | 250 mL P       | None                      |
|                                 | Soil   | METHOD <sup>1</sup>            | EPA 7196A            | 30 days                   | 40 g           |                |                           |
| Lead                            | Water  | EPA 3010                       | EPA 6010             | 6 mo                      | 100 mL         | 250mL P        | HNO <sub>3</sub>          |
|                                 |        | EPA 200.7                      | EPA 200.7            | 6 mo                      | 100 mL         | 250mL P        | HNO <sub>3</sub>          |
|                                 |        | EPA 200.8                      | EPA 6020             | 6 mo                      | 100 mL         | 250mL P        | HNO <sub>3</sub>          |
|                                 |        | EPA 200.8                      | EPA 200.8            | 6 mo                      | 100 mL         | 250mL P        | HNO <sub>3</sub>          |
|                                 | Soil   | EPA 3050                       | EPA 6010             | 6 mo                      | 2 g            |                |                           |
|                                 |        | EPA 3050                       | EPA 6020             | 6 mo                      | 2 g            |                |                           |
| Lead in High Volume Air Filters | Air    | METHOD <sup>1</sup>            | EPA 7420             | NS                        | Varies         |                |                           |
| Mercury                         | Water  | METHOD <sup>1</sup>            | EPA 7470             | 28 days                   | 100 mL         | 250mL P        | HNO <sub>3</sub>          |
|                                 |        | METHOD <sup>1</sup>            | EPA 245.1            | 28 days                   | 100 mL         | 250mL P        | HNO <sub>3</sub>          |
|                                 | Soil   | METHOD <sup>1</sup>            | EPA 7471             | 28 days                   | 0.5 g          |                |                           |
| Organic Lead                    | Water  | CA LUFT <sup>1</sup>           | CA LUFT <sup>1</sup> | 14 days                   | 100 mL         | 500mL G        | None                      |
|                                 | Soil   | CA LUFT <sup>1</sup>           | CA LUFT <sup>1</sup> | 14 days                   | 50 g           |                |                           |
| Priority Pollutant Metals       | Water  | EPA 3010/ Method <sup>1</sup>  | EPA 6010/ 7470       | 6 mo/ 28d <sup>4</sup>    | 100 mL         | 500mL P        | HNO <sub>3</sub>          |
|                                 |        | EPA 200.8/ Method <sup>1</sup> | EPA 6020/ 7470       | 6 mo/ 28d <sup>4</sup>    | 100 mL         | 500mL P        | HNO <sub>3</sub>          |

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| Parameter                     | Matrix | Prep Method                    | Analytical Method | Holding Time <sup>2</sup> | Minimum Volume     | Water Sampling |                           |
|-------------------------------|--------|--------------------------------|-------------------|---------------------------|--------------------|----------------|---------------------------|
|                               |        |                                |                   |                           |                    | Container      | Preservative <sup>3</sup> |
| Priority Pollutant Metals     | Soil   | EPA 3050/ Method <sup>1</sup>  | EPA 6010/ 7471    | 6 mo/ 28d <sup>4</sup>    | 5 g                |                |                           |
|                               |        | EPA 3050/ Method <sup>1</sup>  | EPA 6020/ 7471    | 6 mo/ 28d <sup>4</sup>    | 5 g                |                |                           |
| RCRA (8) Metals               | Water  | EPA 3010/ Method <sup>1</sup>  | 6010/ 6020/ 7470  | 6 mo/ 28d <sup>4</sup>    | 100 mL             | 500mL P        | HNO <sub>3</sub>          |
|                               | Soil   | EPA 3050/ Method <sup>1</sup>  | 6010/ 6020/ 7471  | 6 mo/ 28d <sup>4</sup>    | 5 g                |                |                           |
| STLC Extraction for CA-W.E.T. | Soil   | CCR T22-66261                  | 6010/ 6020/ 7470  | 6 mo/ 28d <sup>4</sup>    | 50 g               |                |                           |
| SPLP Extraction for Metals    | Soil   | EPA 1312                       | 6010/ 6020/ 7470  | 6 mo/ 28d <sup>4</sup>    | 100 g <sup>5</sup> |                |                           |
| TCLP Extraction for Metals    | Soil   | EPA 1311                       | 6010/ 6020/ 7470  | 6 mo/ 28d <sup>4</sup>    | 100 g <sup>5</sup> |                |                           |
| TCLP Extraction for SVOC      | Soil   | EPA 1311                       | Various           | 14 days                   | 100 g <sup>5</sup> |                |                           |
| TCLP-ZHE Extraction for VOC   | Soil   | EPA 1311                       | Various           | 14 days                   | 25 g               |                |                           |
| CA Title 22 Metals (CAM 17)   | Water  | EPA 3010/ Method <sup>1</sup>  | EPA 6010/ 7400    | 6 mo/ 28d <sup>4</sup>    | 100 mL             | 500mL P        | HNO <sub>3</sub>          |
|                               |        | EPA 200.8/ Method <sup>1</sup> | EPA 6020/ 7400    | 6 mo/ 28d <sup>4</sup>    | 100 mL             | 500mL P        | HNO <sub>3</sub>          |
|                               | Soil   | EPA 3050/ Method <sup>1</sup>  | EPA 6010/ 7400    | 6 mo/ 28d <sup>4</sup>    | 5 g                |                |                           |
|                               |        | EPA 3050/ Method <sup>1</sup>  | EPA 6020/ 7400    | 6 mo/ 28d <sup>4</sup>    | 5 g                |                |                           |
| Tributyl Tin ("Organotin")    | Water  | EPA 3520                       | GC/ FPD           | 7 days                    | 1 L                | 1L G           | None                      |
|                               | Soil   | EPA 3550                       | GC/ FPD           | 14 days                   | 10 g               |                |                           |

**Notes:**

- "Method" indicates that the prep method is an integral part of the referenced analytical method.  
"NS" indicates that no holding time is specified in the regulations.
- Holding time specified in 40CFR136 Table 2 (Clean Water Act/ NPDES 2012) and SW-846 Table fc2-36 (1996)  
Requires submission of two polyethylene bottles, one preserved with HCl and one with HNO<sub>3</sub>.
- Samples should be kept at ≤ 6°C from time of collection until analysis. Containers can be supplied by C&T.  
HCL: Hydrochloric Acid to pH < 2  
HNO<sub>3</sub>: Nitric Acid to pH < 2  
H<sub>2</sub>SO<sub>4</sub>: Sulfuric Acid to pH < 2  
NaOH: Sodium Hydroxide to pH > 12  
ZnAc: Zinc Acetate
- 28 day holding time for Mercury; 6 month holding time for all ICP and ICP-MS metals.
- 100g minimum for TCLP or SPLP Extraction. 50g required for each analysis.

**Legend:**

- mg/L milligrams per liter (ppm)  
 µg/L micrograms per liter (ppb)  
 mg/Kg milligrams per kilogram (ppm)  
 µg/Kg micrograms per kilogram (ppb)  
 VOA 40mL Amber VOA Vial  
 G Amber Glass  
 P Polyethylene