

Designation: D6232 - 16 D6232 - 21

Standard Guide for Selection of Sampling Equipment for Waste and Contaminated Media Data Collection Activities¹

This standard is issued under the fixed designation D6232; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (\$\epsilon\$) indicates an editorial change since the last revision or reapproval.

1. Scope

- 1.1 This guide covers criteria which should be considered when selecting sampling equipment for collecting environmental and waste samples for waste management activities. This guide includes a list of equipment that is used and is readily available. Many specialized sampling devices are not specifically included in this guide. However, the factors that should be weighed when choosing any piece of equipment are covered and remain the same for the selection of any piece of equipment. Sampling equipment described in this guide includes automatic samplers, pumps, bailers, tubes, scoops, spoons, shovels, dredges, eoring and augering coring, augering, passive, and vapor sampling devices. The selection of sampling locations is outside the scope of this guide.
- 1.1.1 Table 1 lists selected equipment and its applicability to sampling matrices, including water (surface and ground), sediments, soils, liquids, multi-layered liquids, mixed solid-liquid phases, and consolidated and unconsolidated solids. The guide does not address-specifically address the collection of samples of any suspended materials from flowing rivers or streams. Refer to Guide D4411 for more information.
- 1.2 Table 2 presents the same list of equipment and its applicability for use based on compatibility of sample and equipment; volume of the sample required; physical requirements such as power, size, and weight; ease of operation and decontamination; and whether it is reusable or disposable.

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- 1.3 Table 3 provides the basis for selection of suitable equipment by the use of an Index.index.
- 1.4 Lists of advantages and disadvantages of selected sampling devices and line drawings and narratives describing the operation of sampling devices are also provided.
- 1.5 <u>Units</u>—The values stated in both inch-pound and-SI units are to be regarded separately as the standard units. The values given in parenthesesas standard. No other units of measurement are included in this standard. All observed and calculated values shall conform to the guidelines for significant digits and rounding established in Practice D6026 are for information only. Reporting of test results in units other than SI shall not be regarded as nonconformance with this standard.
- 1.6 This guide offers an organized collection of information or a series of options and does not recommend a specific course of action. This document cannot replace education or experience and should be used in conjunction with professional judgement-judgment. Not all aspects of this guide may be applicable in all circumstances. This ASTM standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document

¹ This guide is under the jurisdiction of ASTM Committee D34 on Waste Management and is the direct responsibility of Subcommittee D34.01.01 on Planning for Sampling.

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be applied without consideration of a project's many unique aspects. The word "Standard" in the title of this document means only that the document has been approved through the ASTM consensus process.

1.7 This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety-safety, health, and healthenvironmental practices and determine the applicability of regulatory limitations prior to use.

1.8 This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

2. Referenced Documents

2.1 ASTM Standards:²

D653 Terminology Relating to Soil, Rock, and Contained Fluids

D1452 Practice for Soil Exploration and Sampling by Auger Borings

D1586 Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils

D1587 Practice for Thin-Walled Tube Sampling of Fine-Grained Soils for Geotechnical Purposes

D3550 Practice for Thick Wall, Ring-Lined, Split Barrel, Drive Sampling of Soils

D4136 Practice for Sampling Phytoplankton with Water-Sampling Bottles (Withdrawn 2020)³

D4342 Practice for Collecting of Benthic Macroinvertebrates with Ponar Grab Sampler (Withdrawn 2003)³

D4343 Practice for Collecting Benthic Macroinvertebrates with Ekman Grab Sampler (Withdrawn 2003)³

D4348 Practice for Collecting Benthic Macroinvertebrates with Holme (Scoop) Grab Sampler (Withdrawn 2003)³

D4387 Guide for Selecting Grab Sampling Devices for Collecting Benthic Macroinvertebrates (Withdrawn 2003)³

D4411 Guide for Sampling Fluvial Sediment in Motion

D4448 Guide for Sampling Ground-Water Monitoring Wells

D4547 Guide for Sampling Waste and Soils for Volatile Organic Compounds

D4687 Guide for General Planning of Waste Sampling

D4696 Guide for Pore-Liquid Sampling from the Vadose Zone

D4700 Guide for Soil Sampling from the Vadose Zone

D4823 Guide for Core Sampling Submerged, Unconsolidated Sediments

D5013 Practices for Sampling Wastes from Pipes and Other Point Discharges

D5079 Practices for Preserving and Transporting Rock Core Samples (Withdrawn 2017)³

D5088 Practice for Decontamination of Field Equipment Used at Waste Sites

D5283 Practice for Generation of Environmental Data Related to Waste Management Activities: Quality Assurance and Quality Control Planning and Implementation

D5314 Guide for Soil Gas Monitoring in the Vadose Zone (Withdrawn 2015)³ 4b1-63bd6b9fab3a/astm-d6232-21

D5358 Practice for Sampling With a Dipper or Pond Sampler

D5451 Practice for Sampling Using a Trier Sampler

D5495 Practice for Sampling with a Composite Liquid Waste Sampler (COLIWASA)

D5633 Practice for Sampling with a Scoop

D5679 Practice for Sampling Consolidated Solids in Drums or Similar Containers

D5680 Practice for Sampling Unconsolidated Solids in Drums or Similar Containers

D5681 Terminology for Waste and Waste Management

D5730 Guide for Site Characterization for Environmental Purposes With Emphasis on Soil, Rock, the Vadose Zone and Groundwater (Withdrawn 2013)³

D5743 Practice for Sampling Single or Multilayered Liquids, with or Without Solids, in Drums or Similar Containers

D5778 Test Method for Electronic Friction Cone and Piezocone Penetration Testing of Soils

D5781 Guide for Use of Dual-Wall Reverse-Circulation Drilling for Geoenvironmental Exploration and the Installation of Subsurface Water Quality Monitoring Devices

D5782 Guide for Use of Direct Air-Rotary Drilling for Geoenvironmental Exploration and the Installation of Subsurface Water-Quality Monitoring Devices

D5783 Guide for Use of Direct Rotary Drilling with Water-Based Drilling Fluid for Geoenvironmental Exploration and the Installation of Subsurface Water-Quality Monitoring Devices

D5784 Guide for Use of Hollow-Stem Augers for Geoenvironmental Exploration and the Installation of Subsurface Water Quality Monitoring Devices

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ The last approved version of this historical standard is referenced on www.astm.org.



D5875 Guide for Use of Cable-Tool Drilling and Sampling Methods for Geoenvironmental Exploration and Installation of Subsurface Water Quality Monitoring Devices

D5876 Guide for Use of Direct Rotary Wireline Casing Advancement Drilling Methods for Geoenvironmental Exploration and Installation of Subsurface Water-Quality Monitoring Devices

D6001 Guide for Direct-Push Groundwater Sampling for Environmental Site Characterization

D6009 Guide for Sampling Waste Piles

D6044D6026 Guide for Representative Sampling for Management of Waste and Contaminated MediaPractice for Using Significant Digits and Data Records in Geotechnical Data

D6051 Guide for Composite Sampling and Field Subsampling for Environmental Waste Management Activities

D6063 Guide for Sampling of Drums and Similar Containers by Field Personnel

D6151 Practice for Using Hollow-Stem Augers for Geotechnical Exploration and Soil Sampling

D6169 Guide for Selection of Soil and Rock Sampling Devices Used With Drill Rigs for Environmental Investigations

D6282 Guide for Direct Push Soil Sampling for Environmental Site Characterizations

D6286 Guide for Selection of Drilling and Direct Push Methods for Geotechnical and Environmental Subsurface Site Characterization

D6418 D6519 Practice for Using the Disposable En Core Sampler for Sampling and Storing Soil for Volatile Organic Analysis Sampling of Soil Using the Hydraulically Operated Stationary Piston Sampler

D6538 Guide for Sampling Wastewater With Automatic Samplers

D6634 Guide for Selection of Purging and Sampling Devices for Groundwater Monitoring Wells

D6640 Practice for Collection and Handling of Soils Obtained in Core Barrel Samplers for Environmental Investigations

D6699 Practice for Sampling Liquids Using Bailers

D6759 Practice for Sampling Liquids Using Grab and Discrete Depth Samplers

D6771 Practice for Low-Flow Purging and Sampling for Wells and Devices Used for Ground-Water Quality Investigations

D6907 Practice for Sampling Soils and Contaminated Media with Hand-Operated Bucket Augers

D6914 Practice for Sonic Drilling for Site Characterization and the Installation of Subsurface Monitoring Devices

D7353 Practice for Sampling of Liquids in Waste Management Activities Using a Peristaltic Pump

D7758 Practice for Passive Soil Gas Sampling in the Vadose Zone for Source Identification, Spatial Variability Assessment, Monitoring, and Vapor Intrusion Evaluations

D7929 Guide for Selection of Passive Techniques for Sampling Groundwater Monitoring Wells

D8170 Guide for Using Disposable Handheld Soil Core Samplers for the Collection and Storage of Soil for Volatile Organic Analysis

E300 Practice for Sampling Industrial Chemicals

E1391 Guide for Collection, Storage, Characterization, and Manipulation of Sediments for Toxicological Testing and for Selection of Samplers Used to Collect Benthic Invertebrates

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3. Terminology

- 3.1 For definitions of terms used in this standard, refer to Terminologies D653 and D5681.
 - 3.2 Definitions of Terms Specific to This Standard:
- 3.1.1 consolidated, adj—a compact solid not easily compressed or broken into smaller particles.
- 3.1.2 decontamination, n—the process of removing or reducing to a known level undesirable physical or chemical constituents, or both, from a sampling apparatus to maximize the representativeness of physical or chemical analyses proposed for a given sample.
- 3.1.3 data quality objectives (DQOs), n—qualitative or quantitative statement(s) derived from the DQO process describing the problem(s), the decision rule(s) and the uncertainties of the decision(s) stated in the con text of the problem.
- 3.2.1 environmental data, n—defined for use in this document to mean data in support of environmental activities.
- 3.2.2 *matrix*, *n*—the principal constituent(s) or phase(s) of a material.
- 3.1.6 unconsolidated, adj—defined for use in this document to mean uncemented or uncompacted material that is easily separated into smaller portions.
- 3.1.7 representative sample, n—a sample collected in such a manner that it reflects one or more characteristics of interest (as defined by the project objectives) of a population from which it was collected. (D6044)

4. Summary of Guide

- 4.1 This guide discusses important criteria which should be considered when choosing sampling equipment.
- 4.1.1 Criteria discussed in this document include physical and chemical compatibility, sample matrix, sample volume, physical requirements, ease of operation, and decontamination. Costs are considered, where appropriate.
- 4.2 A limited list of sampling equipment is presented in two separate tables. The list attempts to include a variety of different types of equipment. However, this list is in no way all inclusive, as there are many excellent pieces of equipment not included. Table 1 lists matrices (surface and ground water, groundwater, stationary sediment, soil, and mixed phase mixed-phase wastes) and indicates which sampling devices are appropriate for use with these matrices. It also includes ASTM method references (draft standards are not included). Table 2 indicates physical requirements (such as battery), electrical power, and weight; physical and chemical compatibility; effect on matrix; range of volume; ease of operation; decontamination; and reusability. Table 3 provides sampler type selection process based upon the sample type and matrix to be sampled.

5. Significance and Use

- 5.1 Although many technical papers address topics important to efficient and accurate sampling investigations (DQO's,(<u>DQOs,</u> study design, QA/QC, data assessment; see Guides D4687, D5730, D6009, D6051, and Practice D5283), the selection and use of appropriate sampling equipment is assumed or omitted.
 - 5.2 The choice of sampling equipment can be crucial to the task of collecting a sample appropriate for the intended use.
 - 5.3 When a sample is collected, all sources of potential bias should be considered, not only in the selection and use of the sampling device, but also in the interpretation and use of the data generated. Some major considerations in the selection of sampling equipment for the collection of a sample are listed below.
 - 5.3.1 The ability to access and extract from every relevant location in the target population,
 - 5.3.2 The ability to collect a sufficient mass of sample such that the distribution of particle sizes in the population are represented, and

TABLE 1 Equipment Selection—Matrix Guide

Equipment		ater and W ater <u>Wastew</u>		Sediment	Soil			Was	te	
(May be used for discrete sample eellection collection)	Surface Water	Ground Ground- Waterwater	Point Discharge			Liquid	Multi-Layer Liquid	Mixed Phase Solid/Liquid	Consolidated Solid	Unconsolidated Solid
Pumps and Siphons										
Automatic Sampler—Non volatiles	√D6538 ^C	√D6538 ^G		-	N	N	N	-	-	-
	√D6538 ^G	<u> </u>	Ī	Ξ.	Ξ	<u>N</u>	<u>N</u>	Ξ	Ξ	Ξ
Automatic Composite Sampler— Volatiles	V		V	-	-	-	-	-	-	-
Air/Gas Displacement Pump		√D4448 ^G	\checkmark	-	-	-	$\sqrt{}$	-	-	-
Piston Displacement Pump		$\sqrt{D4448^G}$		-	-		N	-	-	-
Bladder Pumps		√D4448 ^G	\checkmark	-	-	N	N	-	-	-
Corrugated Bladder Pumps		D6771 ^P √D6634 ^G		-	-	-	-	-	-	-
Peristaltic Pump	√D6759 ^F	√D4448 ^G	√D6759 ^P	-	_	√ <u>D6759</u> P	√D6759 ^P	N	-	-
,		√D7353 ^P				v				
Centrifugal Submersible Pump	\checkmark	√D4448 ^G	\checkmark	-	-	N	N	-	-	-
One of Dairy and Dairy		√D6771 ^P				N.	N.			
Gear Drive Pump Progressing Cavity Pump	√ 1/	√D6634 ^G √D6634 ^G	$\sqrt{}$	-	-	N N	N N	-	-	-
nertia Lift Pump	√ -	√D0004 √D4448 ^G		-	-	-	-	-	-	-
		v =io								
Dredges										
Ekman Dredge	-	-	-	√D4387 ^G	-	-	-	-	-	-
				D4343 ^P √E1391 ^G						
Petersen Dredge	_	_	_	$\sqrt{D4387^G}$	_	_	_	-	_	-
otoroon Broage				√E1391 ^G						
Ponar Dredge	-	-	-	√D4387 ^G	-		-	-	-	-
				D4342P						
				√E1391 ^G D4342 ^P						
				D4342*						
Discrete Depth Samplers										
Bacon Bomb	√D6759 ^F		<u> </u>	-	-	√D6759 ^P	N		-	-
Kemmerer Sampler	$\sqrt{D4136^{F}}$				4 T	√D6759 ^P	N	-	-	-
2 : 0 .	D6759 ^P		OEU	mei		- /DOZEOP	(D0750P	- /D0750P	-	-
Syringe Sampler	√D5743 ^G D6759 ^P	• -	N	-	-	√D6759 ^P	√D6759 ^P	√D6759 ^P	-	-
Peristaltic Pump	√D6759 ^F	- √D4448 ^G	√ D6759 P	-		√D6759 P	√D6759 P	N	_	-
idded Sludge/Water Sampler	-	-	-	ASTM	D6-230	2 N	N	√D6759 ^P	-	N
Discrete Level Sampler	√D6759 ^F	, V	$\sqrt{\text{D6759}^{\text{P}}}$	· // 0 /	76.2.0	√D6759 ^P	√D6759 ^P	CO1 1C1 0 C 1	10 / 1/	(000 01
HYDRASieeve / standards.iteh.		√D4448 ^G	daras/s	ist/beac	/ Ie 3-80	dccN419	e-8461-(o3bd\u00e9fa	b3a/astm-dt	0232-2 - 1
HYDRASleeve Snap Sampler	N	$\frac{\sqrt{D7929^G}}{\sqrt{D4448^G}}$:			<u>N</u>	<u>N</u>	Ē	Ē	Ē
Snap Sampler		$\sqrt{D7929^{G}}$		-	_	N	N	-	_	Ξ
	-	V	-	-	-	<u> </u>	==	-	_	-
Drive Push Samplers										
Drive/Push/Drill Samplers		. /				N.	_			
Direct Push Water Sampler Direct-Push Water Sampler	-	√	-	-1/	-1/	N N	-	-	_	-
Probe Sampler, Hand Use	-	$\frac{}{2}$	-	<u>-√</u> N	<u>-√</u>	<u>N</u>	-	N N	Ī	-
Probe Sampler, Rig Use	-	-	-	√D4823^G	√	\checkmark	\forall	N	-	Ň
Split Barrel Sampler	-	-	-	· √ √	/D1586 TM	! _	-	H	-	H
				,	√ D4700 G					
Split-Barrel Sampler	Ξ	Ξ	Ξ	$\frac{}{2}$	$\frac{\sqrt{D1586^{T}}}{\sqrt{D6640^{P}}}$; <u>-</u>	Ξ	<u>N</u>	Ξ	<u>N</u>
Continuous Core Sampler	_	_	_		√D6640 √D5784	_	_	₩	_	N
Ring-Lined Barrel Sampler					√D3550 ^P	<u></u>	<u> </u>	$\stackrel{\mathbf{v}}{\checkmark}$	Ξ	<u>N</u>
				-	D6640 ^P	-	-	<u></u>	-	
Thin Walled Tube	-	-	-	√D4823^G	√D1587 ^P	-	-	-	-	\checkmark
Thin-Walled Soil Sampler	_	_	_	√D4823 ^G	D4700G	_	_	_	_	3/
Wanda don damplet	=	Ξ	Ξ	V D4020	$\sqrt{D1367}$ $\sqrt{D6640^P}$. <u>-</u>	Ξ	=	Ē	$\underline{\checkmark}$
Direct-Push Single-Tube Soil Sample	<u>r</u>			7	$\sqrt{D6640^P}$;				
-	-			_	D6282 ^G	•				
					$\sqrt{D6640^P}$					
Direct-Push Dual-Tube Soil Sampler					D6282 ^G					
Direct-Push Dual-Tube Soil Sampler Sonic Drill Soil and Rock Sampler				-	$\sqrt{D6914^P}$				$\underline{\checkmark}$	
Sonic Drill Soil and Rock Sampler Soil Corers				NI	$\sqrt{D6914^P}$. /	$\sqrt{}$. /
Sonic Drill Soil and Rock Sampler Soil Corers Cering Type w/Valve (Hand Use)	-	<u>-</u>	<u>-</u>	N =	$\sqrt{D6914^P}$ $\sqrt{D4823^G}$! <u>-</u>	<u>-</u>	√	<u>√</u> -	√
Sonic Drill Soil and Rock Sampler Soil Corers	-	- - -	- -	N √D4823 ^G	$\sqrt{D6914^P}$		- - -	∀ <u>∀</u>	<u>√</u> - - - -	∀ ⊻ ∀ ⊻

				TABLE	1 Conti	lueu				
Equipment	Water and Waste Water Wastewater			Sediment	Soil		Waste			
(May be used for discrete sample eollectioncollection)	Surface Water	Ground- Materwater	Point Discharge	•		Liquid	Multi-Layer Liquid	Mixed Phase Solid/Liquid	Consolidated Solid	Unconsolidated Solid
Trier (Hand Use)	-	-	-	-	∀	-	-	N	-	√D5451^P √E300^P
Trier	Ξ	Ξ	Ξ	Ξ	$\underline{\vee}$	Ξ	Ξ	<u>N</u>	Ξ	√D5451 ^P √E300 ^P
Miniature Core Sampler (Hand Use)	-	-	-	N	D4700 ^G √D4547 ^G	-	-	-	-	<u>√E300</u> N
Handheld Soil Core Sampler	Ξ	Ξ	Ξ	<u>N</u>	D4700 ^G √D4547 ^G	Ξ	Ξ	Ξ	Ξ	<u>N</u>
Modified Syringe Sampler (Hand Use)	-	-	-	N	√D8170 ^P √D4547 ^G	-	-	-	-	N
Modified Syringe Sampler	Ξ	=	Ξ	<u>N</u>	√D4547 ^G	Ξ	=	-	Ē	<u>N</u>
Rotating Coring Devices									. /	
Screw Auger Screw Auger	-	-	-	-	N	-	-	-	√ √	-
Rotating Corer	Ξ	-	-	√D4823 ^G		-	-	-	$\frac{}{}$	-
Captive Screw Auger	-	-	-	-	-	-	-	-	Ň	\checkmark
Augers Hand Operated Bucket Auger	-	-	-	N	√D1452^P D4700	-	-	-	-	√D1452P
Hand-Operated Bucket Auger	Ξ	Ξ	Ξ	<u>N</u>	$ \frac{\sqrt{D1452^P}}{\frac{D4700^G}{\sqrt{D6907^P}}} $	Ξ	Ξ	Ξ	Ξ	$\frac{\sqrt{D1452^P}}{\sqrt{D6907^P}}$
Solid Stem Flighted Auger	-	-	iTe	h St	√D6907° √D6907° √D1452 ^G √D6286 ^G	dar	ds	-	N	√D6907 ^P N
Solid-Stem Flighted Auger	ξb	44-0	a •=/ / a	44	$\sqrt{D1452^{G}}$	-	itah	o#)	<u>N</u>	<u>N</u>
Hollow Stem Flighted Auger	ĹШ	rrib	5.//) C CC I	√D6286 ^G √D5784 ^G	- CPD	ııten	.aij	N	N
Hollow-Stem Flighted Auger	_	√D5784 ^G	nen	me	√D6151^G √D6169 ^G	PAT	view	-	<u>N</u>	N
Peat Borer	-	-	Jeu -	√ V	√D6151 ^G √	-	-	- -	-	– N
Liquid Profile Devices COLIWASA	-	-	_	<u>ASTM</u>	D6232	√D5495 ^P	√D5495 ^P	-	-	
https://standards.iteh.a	ai/catal		dards/s		7fe3-8c	√D5743 ^G √ D5743^G	D5743 ^G √D5743 ^G			
Reusable Point Sampler	N	-		-		√D5743 ^G	√D5743 ^G	√ √	-	-
Drum Thief	7	-	<u>N</u>	-		√D5743 ^G	√D5743 ^G	$\frac{}{}$	Ξ	Ξ.
Valved Drum Sampler	-	-	-	-		√ D5743 ^G	√D5743^G	√	-	-
Valved Sampler	<u>-</u> N	Ξ	- N	Ξ	= 1	√D5743 ^G √D5743 ^G	√D5743 ^G √D5743 ^G	√ √ D5743 ^G	Ξ	Ξ.
Plunger Type Sampler Plunger-Type Sampler	N 14	-	N N	-		√ D5743° √D5743 ^G	√D5743° √D5743 ^G	√D5743° √D5743 ^G	-	-
Liquids Profiler	N	=	N	Ī	_ :	√D6759P	√D6759 P	√D6759 P	=	=
Liquid Profiler	<u>N</u>	Ξ	<u>N</u>	Ξ	Ξ :	√D6759 ^P	√D6759 ^P	√D6759 ^P	Ī	Ξ
Surface Sampling Devices (Liquids) Bailer		√D4448 ^G	-	-	-	N	N	-	-	-
Point Sampling Bailer	N	√D6699 ^P √D4448 ^G	-	-	-	N	N	-	-	-
Differential Pressure Bailer	_	$\sqrt{D6699^{P}}$ $\sqrt{D6699^{P}}$	-	-	-	- N	- N	-	-	- -
Dipper	√D5358 ^P √D6759 ^P	· - ·	√D5013 ^P	-		√D5358 ^P √D6759 ^P	-	√D5358 ^P √D6759 ^P	-	-
Liquid Grab Sampler	₩	-	N	-	- '	₩	√	₩	-	-
Liquid Grab Sampler	√D6759 ^P	<u>-</u>	N	- N	<u> </u>	√D6759 ^P		√D6759 ^P	Ξ	Ξ
Swing Jar Sampler Swing Jar Sampler	√ √D6759 ^P	- -	N N	N N		√ √D6759 ^P	₩	N <u>N</u>	-	-
		_	_	_				_	-	-
Passive Water Sampling Devices Passive Sampler, Bag Type Passive Sampler, Chamber Type	√ -	$\begin{array}{c} \sqrt{\text{D7929}^{\text{G}}} \\ \sqrt{\text{D7929}^{\text{G}}} \end{array}$	- -	-	- -	- -	-	-	-	-
Surface Sampling Devices (Solids) Multi-Level Sampling Devices										
Impact Devices	-	-	-	-	-	-	-	-	\forall	-
Dedicated Type 1	Ξ	$\underline{\checkmark}$	Ξ	Ξ	<u>N</u>	Ξ	Ξ	Ξ	Ξ	Ē

Equipment		er and W erWastew		Sediment	Soil			Was	ste	
(May be used for discrete samp eollectioncollection)	Surface	Ground Ground- aterwater	Point Discharge	•	-	Liquid	Multi-Layer Liquid	Mixed Phase Solid/Liquid	Consolidated Solid	Unconsolidated Solid
Spoon	N	-	N	-	√D4700 ^G	N	N	-	-	H
Dedicated Type 2	-	$\underline{\checkmark}$	-	-	N	-	-	-	-	-
Scoops and Trowel	Ξ	-	Ξ	Ā	√D4700 ^G	Ā	Ξ	N	Ξ.	₹
Shovels	-	-	-	N	√D4700 ^G	-	-	N	-	*
Portable	Ξ	<u>N</u>	Ξ.	Ξ		-	Ξ	=	Ξ	=
Multi-Level Sampling Devices Surface Sampling Devices (Solid	ds)									
Dedicated Type 1	_	√	-	-	N	-	-	-	-	-
Impact Devices	-	-	-	-	-	-	-	-	√D5679 ^P	-
Spoon	Ñ	-	Ñ	-	$\frac{\bar{N}}{N}$	<u> </u>	Ñ	-	-	<u> </u>
Dedicated Type 2	-	$\overline{\forall}$	-	Ξ	₩	-	-		Ī	-
Scoops and Trowels	-	-	-	N	√D5633 ^P	N	-	N	-	$\underline{\checkmark}$
Portable	Ξ	Ñ	Ξ	-		_	Ξ	Ŧ	Ξ.	-
Shovels	Ξ -	=	· -	<u>N</u>	<u>N</u>	-	Ξ	<u>N</u>	Ξ	$\underline{\checkmark}$
Vadose Zone Pore Sampling De	vices									
Vacuum Lysimeter	-	N	-	N	√D4696 ^G	-	-	-	-	-
Vacuum/Pressure Lysimeter	-	N	-	N	√D4696 ^G	-	-	-	-	-
Gas Adsorber	N	N	-	N	√D5314 ^G	-	_	_	-	-
Passive Soil Gas Sampler	N	N	-	N	√D7758 ^P	-	-	-	-	-
√ = Equipment may be used with G = ASTM Guide TM = ASTM √ = Equipment may be used with	l Test Method	P =	ASTM Prac	etice	e but use is			commended		-
	Test Method		STM Pract		0 501 000 10	POOSIDIO	= 110110	oommonaca		

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- 5.3.3 The ability to collect a sample without the addition or loss of constituents of interest.
- 5.4 The characteristics discussed in 5.3 are particularly important in investigations when the target population is heterogeneous, such as when particle sizes vary, liquids are present in distinct phases, a gaseous phase exists, or material materials from different sources are present in the population. The consideration of these characteristics during the equipment selection process will enable the data user to make appropriate statistical inferences about the target population based on the sampling results.
- 5.5 If samples are to be collected for the determination of per- and poly-fluorinated alkyl substances (PFAS), all sampling equipment should be made of fluorine-free materials. Other considerations for PFAS sampling may exist but are beyond the scope of this standard.

6. Selection Criteria

- 6.1 Refer to Tables 1 and 2 for a summary of matrix compatibility and selection criteria. Refer to Table 3 for an index of sampling equipment based upon sample type and matrix to be sampled.
- 6.2 *Compatibility*—It is important that sampling equipment, other equipment which may come in contact with samples (such as gloves, mixing pans, knives, spatulas, spoons, etc.)etc.), and sample containers be constructed of materials that are compatible with the matrices and analytes of interest. Incompatibility may result in the contamination of the sample and the degradation of the sampling equipment. Appropriate sampling equipment must be compatible chemically and physically compatible.
- 6.2.1 Chemical Compatibility—The effects of a matrix on the sampling equipment is usually considered in the light of the analytes, or groups of analytes of interest. For example, <u>poly-vinyl_poly-vinyl_chloride</u> (PVC) has been found to degrade in the presence of many separate phase organic compounds in water; therefore, it would be preferable to collect ground water groundwater samples for organic analyses using polytetrafluoroethylene (PTFE), <u>fluoropolymer</u>, stainless steel, or glass sampling equipment (1, 2).⁴ Acids, bases, and high chloride ground water high-chloride groundwater in coastal areas, and wastes with high concentrations of

⁴ The boldface numbers in parentheses refer to the list of references at the end of this standard.



TABLE 2 Sampling Equipment Selection Guide

Prijstal Pump Prijstal Prijstal Sample Range Prijstal Operation Decon Reuse Pumps and Siphons			TABLE 2 Sa	mpling Equipr	nent Selection	n Guide			
Pumps and Siphons	Equipment	Chemical	Physical			Physical		Decon	Disposal or Reuse
Pumpa and Siphone	Pumps and Siphon			· · · · · · · · · · · · · · · · · · ·					
Automatic Sampler-Norwaltelion Automatic Sampler-Norwaltelion X	•								
Air/Gas Displacement Pump V X X U P,SW X X R Belledder Pump V X V U P,SW X X R Belledder Pump V X V U P,SW X X R Belledder Pump V X V U P,SW X X R BCorrupted Blooder Pump V X V U P,SW X X R BCorrupted Blooder Pump V X V U P,SW X X R BCorrupted Blooder Pump V X X V U P,SW V X R BCorrupted Blooder Pump X X X U P,SW V X R BCorribted Blooder Pump X X X U P,SW V X R BCorribted Blooder Pump X X X U P,SW V X R BCorribted Blooder Pump X X X U P,SW V X R BCorribted Blooder Pump X X X U P,SW V X R BCorribted Blooder Pump X X X U P,SW V X R BCorribted Blooder Pump X X X U P,SW V X R BCorribted Blooder Pump X X X U P,SW V X R BCorribted Blooder Pump X X X U P,SW V X R BCorribted Blooder Pump X X X U P,SW V X R BCorribted Blooder Pump X X X U P,SW V X R BCorribted Blooder Pump X X X U P,SW V X R BCorribted Blooder Bloode	Automatic Sampler–Nonvolatiles			\checkmark			\checkmark		R
Piston Displacement Pump	Automatic Composite Sampler–Volatiles	X		\checkmark		B/P			R
Bladder Pumps	Air/Gas Displacement Pump	\checkmark							
Compated Bladder Pump	Piston Displacement Pump	\checkmark		X					
Perestatilic Pump		\checkmark		\checkmark					
Centrifugal Submersible Pump									
Sear Drive Pump									
Progressive Cavity Pump									
Internal Lift Pump	•								
Predges Predge									
Element Predegle	іпепіа Lift Ритр	X	X	X	U	B/N	V	V	K
Ekman Dredge	Dredges								
Petersen Diredge	•	√_						×	
Petersen Diredge		$\underline{\checkmark}$	$\underline{\checkmark}$	<u>X</u>		<u>N</u>	<u>X</u>	<u>X</u>	<u>R</u>
Power Driedge	9	√_	√	X			×	×	R
Power Driedge			$\underline{\checkmark}$	<u>X</u>		W	<u>X</u>	<u>X</u>	<u>R</u>
Discrete Depth Samplers		√,	√,	X			X	×	
Baeen Bemb	ronar Dredge	$\underline{\vee}$	$\underline{\vee}$	<u>x</u>	0.5–3.0	<u>vv</u>	<u>X</u>	<u>X</u>	<u> </u>
Bacon Bomb	Discrete Depth Samplers								
Bacon Bomb	Bacon Bomb								
Syrings Sampler	Bacon Bomb	X	<u>X</u>			<u>N</u>		<u>X</u>	<u>R</u>
Syrings Sampler	Kemmerer Sampler	×	×	×			×	×	R
Syrings Sampler	Kemmerer Sampler	$\frac{X}{X}$	X	X			X	<u>X</u>	<u>R</u>
Discrete Level Sampler		₩	\forall				₩	×	R
Discrete Level Sampler	Syringe Sampler	$\sqrt{}$	$\underline{\checkmark}$	$\underline{\checkmark}$			$\underline{\checkmark}$	<u>X</u>	<u>R</u>
Discrete Level Sampler		\checkmark	X	X			X		
Point Sampling Bailer X			X				\checkmark	\checkmark	
Point Sampling Bailer X		$\underline{\checkmark}$	X	$\underline{\checkmark}$			$\underline{\checkmark}$	$\underline{\checkmark}$	
Differential Pressure Bailer Y		X	→				• ∀	→	
Direct D		×	₩				₩	\checkmark	
Claudic Grab Sampler			∀					×	
Swing_Jar-Sampler							√.		
HYDRASleeve		\checkmark	\forall	$m \checkmark n \tau$			√.	√.	
HYDRASleeve							₹.	₹.	
Sap Sampler		₹.	₹.				₹.	₹.	
Sap Sampler		$\underline{\vee}$	$\frac{}{}$	$\frac{}{}$			$\frac{}{}$	$\frac{}{2}$	₽
Drive/Push Sampler V		√,		AST V ID6			√.		
Drivet-Push Nuter-Sampler	Snap Sampler	$\sqrt{}$	$\underline{\vee}$	$\frac{1}{\sqrt{2}}$	0.04-0.35	<u>N</u>	$\frac{}{}$	<u>X</u>	<u>R</u>
Drivet-Push Nuter-Sampler	https://standards.iteh.a// Drive/Push-Samplers								
Split-Barrel Sampler	Drive/Push/Drill Samplers								
Split-Barrel Sampler	Direct Push Water Sampler	√	√				×	X	
Split-Barrel Sampler	Direct-Push Water Sampler	$\underline{\checkmark}$	$\underline{\checkmark}$	$\underline{\checkmark}$			<u>X</u>	<u>X</u>	<u>R</u>
Split-Barrel Sampler	Probe Sampler							\checkmark	
Rotating Coring Devices Serew Auger √ X X 0.1-0.3 N X √ R Screw Auger √ X X 0.1-0.3 N X √ R Rotating Corer √ √ √ X 0.5-1.0 B/P √ √ √		$\sqrt{}$	$\underline{\checkmark}$	X			X		
Rotating Coring Devices Serew Auger √ X X 0.1-0.3 N X √ R Screw Auger √ X X 0.1-0.3 N X √ R Rotating Corer √ √ √ X 0.5-1.0 B/P √ √ √		₹.	₩.	X			X	₩.	
Rotating Coring Devices Serew Auger √ X X 0.1-0.3 N X √ R Screw Auger √ X X 0.1-0.3 N X √ R Rotating Corer √ √ √ X 0.5-1.0 B/P √ √ √		$\sqrt{}$	$\underline{\checkmark}$	X		S/W	<u>X</u> .	$\sqrt{}$	<u>R</u>
Rotating Coring Devices Serew Auger √ X X 0.1-0.3 N X √ R Screw Auger √ X X 0.1-0.3 N X √ R Rotating Corer √ √ √ X 0.5-1.0 B/P √ √ √		₹.	₹.	X			₹.	√,	R
Rotating Coring Devices Serew Auger √ X X 0.1-0.3 N X √ R Screw Auger √ X X 0.1-0.3 N X √ R Rotating Corer √ √ √ X 0.5-1.0 B/P √ √ √		$\sqrt{}$	$\sqrt{}$	X		S/W	$\frac{}{2}$	$\frac{}{}$	<u>R</u>
Rotating Coring Devices Serew Auger √ X X 0.1-0.3 N X √ R Screw Auger √ X X 0.1-0.3 N X √ R Rotating Corer √ √ √ X 0.5-1.0 B/P √ √ √		$\sqrt{}$	$\frac{}{}$	X		S/W	X	$\sqrt{}$	<u> </u>
Rotating Coring Devices Serew Auger √ X X 0.1-0.3 N X √ R Screw Auger √ X X 0.1-0.3 N X √ R Rotating Corer √ √ √ X 0.5-1.0 B/P √ √ √	Direct-Push Dual-Tube Sampler	$\sqrt{}$	$\sqrt{}$	X		<u>S/W</u>	X	$\frac{}{}$	Ŗ
Rotating Coring Devices Serew Auger √ X X 0.1-0.3 N X √ R Screw Auger √ X X 0.1-0.3 N X √ R Rotating Corer √ √ √ X 0.5-1.0 B/P √ √ √		$\frac{}{}$	$\frac{}{}$	<u>X</u> ,			<u>X</u> ,	$\frac{}{}$	₽
Rotating Coring Devices Serew Auger √ X X 0.1-0.3 N X √ R Screw Auger √ X X 0.1-0.3 N X √ R Rotating Corer √ √ √ X 0.5-1.0 B/P √ √ √		₹,	₹,	₹			₹,	₹,	R
Rotating Coring Devices Serew Auger √ X X 0.1-0.3 N X √ R Screw Auger √ X X 0.1-0.3 N X √ R Rotating Corer √ √ √ X 0.5-1.0 B/P √ √ √		$\frac{}{}$	$\frac{}{}$	<u>X</u> ,		N	$\frac{}{}$	$\frac{}{}$	Ë
Rotating Coring Devices Serew Auger √ X X 0.1-0.3 N X √ R Screw Auger √ X X 0.1-0.3 N X √ R Rotating Corer √ √ √ X 0.5-1.0 B/P √ √ √		$\sqrt{}$	$\sqrt{}$	$\frac{}{}$		<u>N</u>	$\frac{}{}$	$\frac{}{}$	₽
Rotating Coring Devices Serew Auger √ X X 0.1-0.3 N X √ R Screw Auger √ X X 0.1-0.3 N X √ R Rotating Corer √ √ √ X 0.5-1.0 B/P √ √ √		₹,	₹,	₹,			√,	\checkmark	H
Rotating Coring Devices Serew Auger √ X X 0.1-0.3 N X √ R Screw Auger √ X X 0.1-0.3 N X √ R Rotating Corer √ √ √ X 0.5-1.0 B/P √ √ √		<u>V</u>	<u>V</u>	$\frac{}{}$		N	$\frac{}{}$	$\frac{}{}$	불
Rotating Coring Devices Serew Auger √ X X 0.1-0.3 N X √ R Screw Auger √ X X 0.1-0.3 N X √ R Rotating Corer √ √ √ X 0.5-1.0 B/P √ √ √		*	₩.	*/			*	**/	H
Rotating Coring Devices Serew Auger √ X X 0.1-0.3 N X √ R Screw Auger √ X X 0.1-0.3 N X √ R Rotating Corer √ √ √ X 0.5-1.0 B/P √ √ √		$\frac{}{}$	$\frac{}{}$	$\frac{\nabla}{\nabla}$			$\frac{\nabla}{\nabla}$	$\frac{}{}$	품
Rotating Coring Devices Serew Auger √ X X 0.1-0.3 N X √ R Screw Auger √ X X 0.1-0.3 N X √ R Rotating Corer √ √ √ X 0.5-1.0 B/P √ √ √		*	*	*			₩	₩	D
Rotating Coring Devices Serew Auger √ X X 0.1-0.3 N X √ R Screw Auger √ X X 0.1-0.3 N X √ R Rotating Corer √ √ √ X 0.5-1.0 B/P √ √ √		<u>V</u>	<u>V</u>	$\frac{\nabla}{\nabla x}$		N N	$\frac{}{}$	$\frac{}{}$	卢
Rotating Coring Devices Serew Auger √ X X 0.1-0.3 N X √ R Screw Auger √ X X 0.1-0.3 N X √ R Rotating Corer √ √ √ X 0.5-1.0 B/P √ √ √		∀ √/	∀ √	$\sqrt{}$			∀ √	* X	D D
Serew Auger \checkmark \times \times 0.1-0.3 N \times \checkmark R Screw Auger \checkmark \times \times 0.1-0.3 N \times \times \checkmark R Retating Gorer \checkmark \checkmark \times \times 0.5-1.0 B/P \checkmark \checkmark R		<u>v</u>	<u></u>	<u>v</u>	0.01 0.00	14	<u>V</u>	<u>~</u>	<u> </u>
Screw Auger \underline{V} \underline{X} \underline{X} $\underline{0.1-0.3}$ \underline{N} \underline{X} \underline{V} \underline{R} Rotating Corer		. /	V	V	0400	N.I.	V	- /	C
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		*	*	*			X		H
Rotating Corer \checkmark \checkmark \checkmark \times $0.5-1.0$ B/P \checkmark \checkmark R Rotating Corer \checkmark \checkmark \checkmark \checkmark \checkmark \checkmark \checkmark $?$ $?$ $?$ $?$ $?$ $?$ $?$ $?$ $?$ $?$		$\frac{}{}$	<u>X</u> ,	X	0.1-0.3	<u>N</u>	<u>X</u> ,	$\frac{}{}$	볼
		₹,	₹,	X	0.5-1.0		√,	₩,	H
Captive Screw Auger X $orall$ X $orall$ Y $orall$ R		$\frac{}{V}$	$\frac{}{}$	X	0.5-1.0	<u>R/L</u>	$\frac{}{}$	$\frac{}{}$	품
	Captive Screw Auger	×	₩	×	1-2	۲	₹	₩	H



			TABLE 2	<u>Continued</u>				
Equipment	Chemical	Physical	Effect on Sample	Volume Range	Physical	Ease of Operation	Decon	Disposal or Reuse
Captive Screw Auger	X	$\underline{\vee}$	X	1-2	<u>P</u>	<u>√</u>	$\underline{\vee}$	<u>R</u>
Augers								
Bucket Auger	√	×	×	0.2-1.0	N	×	√	R
Hand-Operated Bucket Auger		<u>X</u>	<u>X</u>	0.2-1.0	<u>N</u>	<u>X</u>		<u>R</u>
Solid Stem Flighted Auger	×	\checkmark	×	H	P/S/W	×	\checkmark	R
Solid-Stem Flighted Auger	<u>√</u> × × × × ×	<u>×</u> √ √ √ √ √ √	X X X X ∀	$\frac{U}{U}$	P/S/W	X X X X X	<u>√</u> √ √ √ √ ×	R R
Hollow Stem Flighted Auger	×	√	×	H	P/S/W	×	₩	R
Hollow-Stem Flighted Auger	X	$\underline{\checkmark}$	<u>X</u>	<u>U</u> 0.3	P/S/W	<u>X</u>		R R
Peat Borer	×	√	₩		S		×	R
Peat Borer	X	$\underline{\checkmark}$	$\underline{\checkmark}$	0.3	<u>N</u>	$\underline{\checkmark}$	X	<u>R</u>
iquid Profile Devices								
COLIWASA	√	×	₩	0.5-3.0	H	₩	×	D/R
COLIWASA	$\underline{\checkmark}$	<u>X</u>	$\underline{\checkmark}$	0.5-3.0	<u>N</u>	$\underline{\checkmark}$	<u>X</u>	D/R
Reuseable Point Sampler	₩	√	V V	0.2-0.6	N	₩	₩	R
Reusable Point Sampler		$\sqrt{}$	$\sqrt{}$	0.2-0.6	<u>N</u>			<u>R</u>
Orum Thief	\checkmark	×	\checkmark	0.1-0.5		\checkmark	×	D/R
Drum Thief	\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	X ∀ × × × × × × ×	\frac{\frac}}}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac}}}}}}}{\frac}}}}}}}}}{\frac{\fir}}}}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\frac}}}}}}}{\fr	0.1-0.5	N	$\underline{\checkmark}$	X	D/R
/alved Sampler	$\overline{\checkmark}$	$\overline{\checkmark}$	$\overline{\checkmark}$	0.3-1.6	₩	$\overline{\checkmark}$	$\overline{\checkmark}$	D/R
/alved Sampler		\checkmark	\checkmark	0.3-1.6	N			D/R
Plunger Type Sampler	$\overline{\checkmark}$	X	₹	0.2-U	N	$\overline{\checkmark}$	$\overline{\checkmark}$	D/R
Plunger-Type Sampler	V	X	V	0.2-U	N	V	V	D/R
iquids Profiler	X	X	$\overline{\checkmark}$	1.3-4.0	N	$\overline{\checkmark}$	$\overline{\checkmark}$	R
iquid Profiler	X	X	$\frac{1}{}$	1.3-4.0	<u>N</u>	\frac{\frac}}}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac}}}}}}}{\frac}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}	*	<u>R</u>
urface Sampling Devices (Liquids)								
ailer	X	$\sqrt{}$	X	0.5-2.0	N	$\sqrt{}$		D/R
oint Sampling Bailer	X	<u>v</u>	<u></u>	0.5–2.0	N	$\frac{\mathbf{v}}{}$	V	<u> </u>
Differential Pressure Bailer	<u>~</u>	<u>v</u>	$\frac{}{}$	0.04-1.0	N	\(\frac{\sqrt{1}}{\sqrt{1}}\)	X	B
hipper	$\frac{\underline{x}}{\underline{x}}$ $\frac{\underline{y}}{\underline{y}}$ $\frac{\underline{y}}{\underline{x}}$	$\begin{bmatrix} \frac{\vee}{\vee} \\ \frac{\vee}{\vee} \\ \frac{\vee}{\vee} \end{bmatrix}$		0.5-1.0		\frac{\frac}}}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac}}}}}}}}}{\frac}}}}}}}}}}}}{\frac{\	\frac{\frac}}}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac}}}}}}}}}{\frac}}}}}}}}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\fir}}}}}}}}}}}}}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\	R R R R R
iquid Grab Sampler	<u>v</u>			0.5–1.0	$\frac{1}{N}$	<u>v</u>	<u>v</u>	H R
Swing Jar Sampler	$\frac{v}{X}$	<u>v</u>	<u>v</u>	0.5-1.0	N	<u>v</u>	<u>v</u>	Ë
ownig dar dampior		$\mathbf{n} \circ \mathbf{v} / \mathbf{s}$	toto	0.0 1.0	itoh o	<u>v</u>		<u></u>
Passive Water Sampling Devices								
Passive Sampler, Bag Type	₩	\checkmark	\forall	0.1-0.2	H	₩	₩	D/R
Passive Sampler, Bag Type			,	0.1-0.2	N	1/	1/	D/R
Passive Sampler, Chamber Type	$\frac{\checkmark}{\checkmark}$		$\mathbf{M} \stackrel{\vee}{\neq} \mathbf{N}$	1-4	Le W/s	×	$\frac{}{x}$	D/R
Passive Sampler, Chamber Type	$\frac{\vee}{\vee}$	$\frac{V}{V}$	$\frac{V}{V}$	1–4	W/S	X	X	D/R
accive campion, chamber Type	<u>v</u>	<u>V</u>	<u>v</u>	<u></u>	<u> </u>	Δ	<u>~</u>	<u> </u>
Multi-Level Sampling Devices								
Dedicated Type 1	/aatVaa/a	tond Vala/a	ot/boVo7fo	3-8dc u 4f9e-	0 / 1 W/S 2 1	1610£X.2./	X160	2 D/R
Dedicated Type 2	i/catalog/s	tandards/si	SUDE OF / IC	3-84CC-419C-	-84b <mark>W/\$</mark> 3bc	16b9f x 3a/a	ıstm <mark>X</mark> 162	32-2 b
Portable	V	$\sqrt{}$	V	0.01	N	X	Χ	DR
Surface Sampling Devices (Solids)								
mpact Devices	Χ	X	X	N/A	B/P	\checkmark	$\sqrt{}$	R
Spoon	$\sqrt{}$	V	X	N/A	N	v √	1/	R
Scoops and Trowel	√	√	×	0.1-0.6	N	√ √	∀	R
Scoops and Trowels	v 1/	1/		0.1–0.6	N	1/		
Shovels	$\frac{\checkmark}{\checkmark}$	$\frac{\checkmark}{\checkmark}$	X	1.0-5.0	N	√ √	$\frac{\checkmark}{\checkmark}$	R R
shovels	$\stackrel{V}{\underline{\vee}}$	$\stackrel{V}{\underline{\vee}}$	<u>X</u>	1.0-5.0	<u>N</u>	$\stackrel{V}{\checkmark}$	$\frac{\vee}{}$	<u>R</u>
adose Zone Pore Sampling Devices								
	-/	-/	•/	0.1-0.5	NI	-/	•/	D/R
acuum Lysimeter	√	√	₩		N N	√	√	
	$\frac{\checkmark}{\checkmark}$	V	$\frac{\checkmark}{\checkmark}$	0.1-0.5	<u>N</u> S/P	V	$\frac{\checkmark}{\checkmark}$	D/R
	₩	₩.		0.1-0.5		*	*	Ð
/acuum/Pressure Lysimeter	. ,	1 /	$\underline{\vee}$	0.1-0.5	<u>S/P</u>	<u>√</u> √ √	$\frac{\checkmark}{\checkmark}$	D D
/acuum/Pressure Lysimeter /acuum/Pressure Lysimeter	$\stackrel{\cdot}{\checkmark}$	<u>V</u>	,			4_/		↔
/acuum/Pressure Lysimeter /acuum/Pressure Lysimeter Gas Adserber	√ √	\frac{\frac}}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac}}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac}}}}}}}}{\frac}}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac}}}}}}}}}{\frac{\fr	$\frac{}{}$	N/A				
Vacuum/Pressure Lysimeter Vacuum/Pressure Lysimeter Gas Adsorber Passive Soil Gas Samplers	<u>√</u> √ <u>√</u>			N/A	N	<u>V</u>		D
Vacuum/Pressure Lysimeter Vacuum/Pressure Lysimeter Gas Adsorber Passive Soil Gas Samplers C = Significant operational consideration	<u>√</u> √ √		√ me (liters)	N/A Physical Require B = Battery W = P = Power S =	N ments: - Weight Size			D id Reuse: ble
/acuum Lysimeter /acuum/Pressure Lysimeter /acuum/Pressure Lysimeter Gas Adsorber Passive Soil Gas Samplers ← Significant operational consideration ✓ = Not a significant operational consideration	$\frac{\frac{\sqrt}{}}{}$ eration	Range of Volur U = Unlimited N/A = Not Appl	√ ne (liters) icable	N/A Physical Require B = Battery W = P = Power S = N = No limitations	N ments: - Weight Size s		√ Disposal ar R = Reusal D = Single	D nd Reuse: ble Use
Vacuum/Pressure Lysimeter Vacuum/Pressure Lysimeter Gas Adsorber Passive Soil Gas Samplers K = Significant operational consideration V = Not a significant operational consideration	$\frac{}{}$ $$ eration	Range of Volur U = Unlimited N/A = Not Appl	√ ne (liters) icable	N/A Physical Require B = Battery W = P = Power S = N = No limitation Physical Require	N ments: - Weight Size s ments:		Disposal ar Disposal ar	D ad Reuse: ble Use
Vacuum/Pressure Lysimeter Vacuum/Pressure Lysimeter Gas Adsorber Passive Soil Gas Samplers C = Significant operational consideration ✓ = Not a significant operational consideration	$\frac{}{}$ $$ eration	Range of Volur U = Unlimited N/A = Not Appl	veriliters) icable me (liters):	N/A Physical Require B = Battery W = P = Power S = N = No limitation: Physical Require B = Battery W =	N ments: - Weight Size s ments:		√ Disposal ar R = Reusal D = Single	D ad Reuse: ble Use ad Reuse: ble ble

solvents may also degrade many types of sampling equipment over time. The residence or contact time, the time the sample is in contact with the sampling equipment, may be significant in terms of chemical interaction between the sampled matrix and the equipment.



TABLE 3 Index of Sampling Equipment

Media Type	Sampler Type	Section Subsection	Sample Type
Consolidated	Rotating Corer	(7.6.2)	Surface or Depth, Undisturbed
Consolidated Solid	Screw Auger	(7.6.1)	Surface, Disturbed
	Rotating Corer	(7.6.2)	Surface, Undisturbed
	Impact Device	(7.11.1)	Surface, Disturbed
	Impact Devices	(7.11.1)	Surface, Disturbed
	Lidded Sludge	(7.4.4)	Discrete, Composite
Unconsolidated Solid	Lidded Sludge/Water Sampler	(7.4.4)	Discrete, Composite
	Probe Sampler	(7.5.2)	Discrete, Undisturbed
	Split-Barrel Sampler	<u>(7.5.2)</u>	Discrete, Undisturbed
	Split Barrel	(7.5.3)	Discrete, Undisturbed
	Ring-Lined Barrel Sampler	(7.5.3)	Surface, Undisturbed
	Thin-Walled Tube Sampler	$\frac{(7.5.4)}{(7.5.5)}$	Surface or Depth, Undisturbed
	Direct-Push Single-Tube Sampler	(7.5.5)	Surface or Depth, Representative
	Direct-Push Dual-Tube Sampler	(7.5.6) (7.5.7)	Surface or Depth, Representative Continuous, Representative/Disturbed
	Sonic Drill Coring Soil Corers		Surface, Undisturbed
	Coring-Type Sampler w/ Valve	(7.5.8) (7.5.9)	Surface or Depth, Disturbed
	Concentric Tube Thief	(7.5. 3) (7.5.7.1)	Surface, Disturbed, Selective
	Concentric Tube Thief	(7.5.10)	Surface, Disturbed, Selective
	Trier	(7.5.7.2)	Surface, Relatively Undisturbed, Selective
	Trier	(7.5.10)	Surface, Relatively Undisturbed, Selective
Jnconsolidated	Thin Walled Tube	(7.5.5)	Surface or Depth, Undisturbed
J. 100/100/100/100	Handheld Core Sampler	(7.5.11)	Surface, Undisturbed
Solid	Coring Type w/Valve	(7.5.6)	Surface or Depth, Disturbed
	Modified Syringe	(7.5.12)	Surface, Undisturbed
	Captive Screw Auger	(7.6.3)	Discrete, Disturbed
	Hand-Operated Bucket Auger	$\frac{(7.5.5)}{(7.7.1)}$	Surface or Depth, Disturbed
	Solid Stem Flighted Auger	(7.7.2.1)	Surface or Depth, Disturbed
	Solid-Stem Flighted Auger	(7.7.2.1)	Surface or Depth, Disturbed
	Hollow Stem Flighted Auger	(7.7.2.2)	Surface or Depth, Disturbed (if from flights)
	Hollow-Stem Flighted Auger	(7.7.2.3)	Surface or Depth, Disturbed (if from flights)
	Captive Screw Auger	(7.6.3)	Discrete, Disturbed
	Peat Borer	(7.7.3)	Discrete, Relatively Undisturbed
	Spoon	(7.11.2)	Surface, Disturbed, Selective
	Scoops/Trowel	(7.11.3)	Surface, Disturbed, Selective
	Scoops and Trowels	(7.11.3)	Surface, Disturbed, Selective
	Shovel	(7.11.4)	Surface, Disturbed
	Shovels	(7.11.4)	Surface, Disturbed
	Miniature Core	(7.5.8)	Surface, Undisturbed
	Modified Syringe	(7.5.9)	Surface, Undisturbed
	Probe Sampler	(7.5.2)	Discrete, Undisturbed
<u>Soil</u>	Split-Barrel Sampler	(7.5.2)	Discrete, Representative
	Split Barrel	(7.5.3)	Discrete, Undisturbed
	Ring-Lined Barrel Sampler	(7.5.3) 3-8dcc-	Discrete, Representative 59 fab 3a/astm-d6232-21
	Trier	(7.5.7.2)	Surface, Relatively Undisturbed, Selective
	Thin Walled Tube	(7.5.5)	Surface or Depth, Undisturbed
	Thin-Walled Tube Sampler	<u>(7.5.4)</u>	Surface or Depth, Undisturbed
	Direct-Push Single-Tube Sampler	<u>(7.5.5)</u>	Surface or Depth, Representative
	Direct-Push Dual-Tube Sampler	<u>(7.5.6)</u>	Surface or Depth, Representative
	Sonic Drill Coring	(7.5.7)	Subsurface, Representative/Disturbed
	Soil Corers	(7.5.8)	Surface, Disturbed
	Soil Corers Coring Type w/Valve	(7.5.8) (7.5.6)	Surface, Disturbed Surface or Depth, Disturbed
	Soil Corers Cering Type w/Valve Coring-Type Sampler w/ Valve	(7.5.8) (7.5.6) (7.5.9)	Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed
	Soil Corers Coring Type w/Valve Coring-Type Sampler w/ Valve Hand-Operated Bucket Auger	(7.5.8) (7.5.6) (7.5.9) (7.7.1)	Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed
	Soil Corers Coring Type w/Valve Coring-Type Sampler w/ Valve Hand-Operated Bucket Auger Trier	(7.5.8) (7.5.6) (7.5.9) (7.7.1) (7.5.10)	Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface, Relatively Undisturbed, Selective
	Soil Corers Coring Type w/Valve Coring-Type Sampler w/ Valve Hand-Operated Bucket Auger Trier Solid Stem Flighted Auger	(7.5.8) (7.5.6) (7.5.9) (7.7.1) (7.5.10) (7.7.2.1)	Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface, Relatively Undisturbed, Selective Surface or Depth, Disturbed
Poil	Soil Corers Cering Type w/Valve Coring-Type Sampler w/ Valve Hand-Operated Bucket Auger Trier Solid Stem Flighted Auger Solid-Stem Flighted Auger	(7.5.8) (7.5.6) (7.5.9) (7.7.1) (7.7.2.1) (7.7.2.1)	Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface, Relatively Undisturbed, Selective Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed
Seil	Soil Corers Coring Type w/Valve Coring-Type Sampler w/ Valve Hand-Operated Bucket Auger Trier Solid Stem Flighted Auger Solid-Stem Flighted Auger Hollew Stem Flighted Auger	(7.5.8) (7.5.6) (7.5.9) (7.7.1) (7.5.10) (7.7.2.1) (7.7.2.1) (7.7.2.2)	Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface, Relatively Undisturbed, Selective Surface or Depth, Disturbed
Soil	Soil Corers Coring Type w/Valve Coring-Type Sampler w/ Valve Hand-Operated Bucket Auger Trier Solid-Stem Flighted Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger	(7.5.8) (7.5.6) (7.5.9) (7.7.1) (7.5.10) (7.7.2.1) (7.7.2.1) (7.7.2.2) (7.7.2.3)	Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface, Relatively Undisturbed, Selective Surface or Depth, Disturbed (if from flights) Surface or Depth, Disturbed (if from flights)
Soil	Soil Corers Coring Type w/Valve Coring-Type Sampler w/ Valve Hand-Operated Bucket Auger Trier Solid-Stem Flighted Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer	(7.5.8) (7.5.6) (7.5.9) (7.7.1) (7.5.10) (7.7.2.1) (7.7.2.1) (7.7.2.2) (7.7.2.3) (7.7.3)	Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface, Relatively Undisturbed, Selective Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed
Soil	Soil Corers Coring Type w/Valve Coring-Type Sampler w/ Valve Hand-Operated Bucket Auger Trier Solid-Stem Flighted Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Spoon	(7.5.8) (7.5.6) (7.5.9) (7.7.1) (7.5.10) (7.7.2.1) (7.7.2.1) (7.7.2.2) (7.7.2.3) (7.7.3) (7.11.2)	Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface, Relatively Undisturbed, Selective Surface or Depth, Disturbed (if from flights) Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Surface, Disturbed, Selective
S oil	Soil Corers Cering Type w/Valve Coring Type Sampler w/ Valve Hand-Operated Bucket Auger Trier Solid Stem Flighted Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Spoon See	(7.5.8) (7.5.9) (7.5.10) (7.7.2.1) (7.7.2.1) (7.7.2.2) (7.7.2.3) (7.7.3) (7.11.2) (7.11.3)	Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface, Relatively Undisturbed, Selective Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Surface, Disturbed, Selective Surface, Disturbed, Selective
Soil	Soil Corers Cering Type w/Valve Coring-Type Sampler w/ Valve Hand-Operated Bucket Auger Trier Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Spoon Seoops/Trowel Scoops and Trowels	(7.5.8) (7.5.9) (7.5.10) (7.7.2.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.11.2) (7.11.3)	Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface, Relatively Undisturbed, Selective Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Surface, Disturbed, Selective Surface, Disturbed, Selective Surface, Disturbed, Selective Surface, Disturbed, Selective
Soil	Soil Corers Coring-Type w/Valve Coring-Type Sampler w/ Valve Hand-Operated Bucket Auger Trier Solid Stem Flighted Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Spoon Secops/Trowel Scoops and Trowels Shovel	(7.5.8) (7.5.6) (7.5.9) (7.7.1) (7.5.10) (7.7.2.1) (7.7.2.1) (7.7.2.2) (7.7.2.3) (7.7.3) (7.11.2) (7.11.3) (7.11.4)	Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface, Relatively Undisturbed, Selective Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Surface, Disturbed, Selective
Soil	Soil Corers Coring Type w/Valve Coring-Type Sampler w/ Valve Hand-Operated Bucket Auger Trier Solid Stem Flighted Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Spoon Seeops/Trowel Scoops and Trowels Shovels	(7.5.8) (7.5.6) (7.5.9) (7.7.1) (7.5.10) (7.7.2.1) (7.7.2.1) (7.7.2.2) (7.7.2.3) (7.7.3) (7.11.2) (7.11.3) (7.11.4) (7.11.4)	Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface, Relatively Undisturbed, Selective Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Surface, Disturbed, Selective Surface, Disturbed, Selective Surface, Disturbed, Selective Surface, Disturbed Surface, Disturbed Surface, Disturbed
S oil	Soil Corers Coring Type w/Valve Coring-Type Sampler w/ Valve Hand-Operated Bucket Auger Trier Solid-Stem Flighted Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Spoon Seeops/Trowel Scoops and Trowels Shovels Miniature-Core	(7.5.8) (7.5.6) (7.5.9) (7.7.1) (7.5.10) (7.7.2.1) (7.7.2.1) (7.7.2.2) (7.7.2.3) (7.7.3) (7.11.2) (7.11.3) (7.11.4) (7.11.4) (7.11.4) (7.5.8)	Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface, Relatively Undisturbed, Selective Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Surface, Disturbed, Selective Surface, Disturbed, Selective Surface, Disturbed, Selective Surface, Disturbed Surface, Disturbed Surface, Disturbed Surface, Disturbed Surface, Disturbed Surface, Disturbed
S oil	Soil Corers Coring Type w/Valve Coring-Type Sampler w/ Valve Hand-Operated Bucket Auger Trier Solid-Stem Flighted Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Spoon Seeops/Trowel Scoops and Trowels Shevel Shovels Miniature-Core Modified Syringe	(7.5.8) (7.5.6) (7.5.9) (7.7.1) (7.5.10) (7.7.2.1) (7.7.2.1) (7.7.2.2) (7.7.2.3) (7.7.3) (7.11.2) (7.11.3) (7.11.4) (7.11.4) (7.5.8) (7.5.9)	Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface, Relatively Undisturbed, Selective Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Surface, Disturbed, Selective Surface, Disturbed, Selective Surface, Disturbed, Selective Surface, Disturbed Surface, Disturbed Surface, Disturbed Surface, Disturbed Surface, Undisturbed Surface, Undisturbed Surface, Undisturbed
Soil	Soil Corers Cering Type w/Valve Coring Type Sampler w/ Valve Hand-Operated Bucket Auger Trier Solid Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Feat Borer Spoon Seoops/Trowel Scoops and Trowels Shovel Shovel Miniature Core Modified Syringe Vacuum Lysimeter	(7.5.8) (7.5.9) (7.5.10) (7.7.2.1) (7.7.2.1) (7.7.2.2) (7.7.2.3) (7.7.3) (7.11.2) (7.11.3) (7.11.4) (7.11.4) (7.5.8) (7.5.9) (7.12.1)	Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface, Relatively Undisturbed, Selective Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Surface, Disturbed, Selective Surface, Disturbed, Selective Surface, Disturbed, Selective Surface, Disturbed Surface, Disturbed Surface, Undisturbed Surface, Undisturbed Surface, Undisturbed Surface, Undisturbed Surface, Undisturbed Surface to Depth, Pore Liquid
Seil	Soil Corers Cering Type w/Valve Coring-Type Sampler w/ Valve Hand-Operated Bucket Auger Trier Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Feat Borer Spoon Seeops/Trowel Scoops and Trowels Shevel Shovels Miniature Core Modified Syringe Vacuum Lysimeter Vacuum/Pressure Lysimeter	(7.5.8) (7.5.6) (7.5.9) (7.7.1) (7.7.2.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.11.2) (7.11.3) (7.11.4) (7.5.8) (7.5.9) (7.12.1) (7.12.2)	Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface, Relatively Undisturbed, Selective Surface, Relatively Undisturbed, Selective Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Surface, Disturbed, Selective Surface, Disturbed, Selective Surface, Disturbed, Selective Surface, Disturbed Surface, Disturbed Surface, Undisturbed Surface, Undisturbed Surface, Undisturbed Surface to Depth, Pore Liquid Depth, Pore Liquid
Soil	Soil Corers Coring Type w/Valve Coring-Type Sampler w/ Valve Hand-Operated Bucket Auger Trier Solid Stem Flighted Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Spoon Scoops/Trowel Scoops and Trowels Shovels Miniature Core Modified Syringe Vacuum Lysimeter Vacuum/Pressure Lysimeter Gas-Adsorber	(7.5.8) (7.5.6) (7.5.9) (7.7.1) (7.5.10) (7.7.2.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.11.2) (7.11.3) (7.11.4) (7.5.8) (7.5.9) (7.12.1) (7.12.2) (7.12.2)	Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface, Relatively Undisturbed, Selective Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Surface, Disturbed, Selective Surface, Disturbed, Selective Surface, Disturbed, Selective Surface, Disturbed Surface, Disturbed Surface, Undisturbed Surface, Undisturbed Surface, Undisturbed Surface, Undisturbed Surface to Depth, Pore Liquid Depth, Pore Liquid Surface to Depth, Soil Gas
Soil	Soil Corers Coring-Type w/Valve Coring-Type Sampler w/ Valve Hand-Operated Bucket Auger Trier Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Spoon Secops/Trowel Scoops and Trowels Shovels Miniature-Core Modified Syringe Vacuum Lysimeter Vacuum/Pressure Lysimeter Gas Adsorber Passive Soil Gas Samplers	(7.5.8) (7.5.6) (7.5.9) (7.7.1) (7.5.10) (7.7.2.1) (7.7.2.1) (7.7.2.2) (7.7.2.3) (7.11.2) (7.11.3) (7.11.4) (7.11.4) (7.5.8) (7.5.9) (7.12.1) (7.12.2) (7.12.3)	Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface, Relatively Undisturbed, Selective Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Surface, Disturbed, Selective Surface, Disturbed, Selective Surface, Disturbed, Selective Surface, Disturbed Surface, Disturbed Surface, Disturbed Surface, Undisturbed Surface, Undisturbed Surface, Undisturbed Surface to Depth, Pore Liquid Depth, Pore Liquid Surface to Depth, Soil Gas Surface to Depth, Soil Gas
	Soil Corers Coring-Type w/Valve Coring-Type Sampler w/ Valve Hand-Operated Bucket Auger Trier Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Spoon Seeops/Trowel Scoops and Trowels Shovels Miniature Core Modified Syringe Vacuum Lysimeter Vacuum/Pressure Lysimeter Gas Adsorber Passive Soil Gas Samplers AutoSampler, Non V:	(7.5.8) (7.5.6) (7.5.9) (7.5.10) (7.7.2.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.11.2) (7.11.3) (7.11.4) (7.5.8) (7.12.1) (7.12.1) (7.12.2) (7.12.3) (7.12.3)	Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface, Pelatively Undisturbed, Selective Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Surface, Disturbed, Selective Surface, Disturbed, Selective Surface, Disturbed, Selective Surface, Disturbed Surface, Disturbed Surface, Disturbed Surface, Undisturbed Surface, Undisturbed Surface, Undisturbed Surface to Depth, Pore Liquid Depth, Pore Liquid Surface to Depth, Soil Gas Surface to Depth, Soil Gas Shallow, Composite Suspended Solids only
Seil Mixed Solid/Liquid	Soil Corers Coring-Type w/Valve Coring-Type Sampler w/ Valve Hand-Operated Bucket Auger Trier Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Spoon Secops/Trowel Scoops and Trowels Shovels Miniature-Core Modified Syringe Vacuum Lysimeter Vacuum/Pressure Lysimeter Gas Adsorber Passive Soil Gas Samplers	(7.5.8) (7.5.6) (7.5.9) (7.7.1) (7.5.10) (7.7.2.1) (7.7.2.1) (7.7.2.2) (7.7.2.3) (7.11.2) (7.11.3) (7.11.4) (7.11.4) (7.5.8) (7.5.9) (7.12.1) (7.12.2) (7.12.3)	Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface, Relatively Undisturbed, Selective Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Surface, Disturbed, Selective Surface, Disturbed, Selective Surface, Disturbed, Selective Surface, Disturbed Surface, Disturbed Surface, Disturbed Surface, Undisturbed Surface, Undisturbed Surface, Undisturbed Surface to Depth, Pore Liquid Depth, Pore Liquid Surface to Depth, Soil Gas Surface to Depth, Soil Gas



Media Type	Sampler Type	Section Subsection	Sample Type
	Syringe Sampler	(7.4.3)	Shallow, Discrete, Disturbed
	Lidded Sludge/Water	(7.4.4)	Discrete, Composite
	=		·
	Dipper	<u>(7.4.9)</u>	Shallow, Composite
	Liquid Grab Sampler	<u>(7.4.10)</u>	Shallow, Composite, Suspended solids only
	Swing Jar Sampler	<u>(7.4.11)</u>	Shallow, Composite
	Probe Sampler	(7.5.2)	Depth, Discrete, Undisturbed
	Split-Barrel Sampler	(7.5.2)	Depth, Discrete, Undisturbed
	Split Barrel	(7.5.3)	Depth, Discrete, Undisturbed
	•		· · · · · · · · · · · · · · · · · · ·
	Ring-Lined Barrel Sampler	<u>(7.5.3)</u>	Depth, Discrete, Undisturbed
	Peat Borer	(7.7.3)	Discrete, Relatively Undisturbed
	Soil Corers	<u>(7.5.8)</u>	Depth, Discrete, Undisturbed
	Coring-Type Sampler w/ Valve	(7.5.9)	Depth, Disturbed
	Trier	(7.5.7.2)	Surface, Semi-solid only, Selective
	Trier	(7.5.10)	Surface, Semi-solid only, Selective
	Coring Type w/Valve	(7.5.6)	Depth, Disturbed
	= -:		
4	Peat Borer	<u>(7.7.3)</u>	Discrete, Relatively Undisturbed
/lixed-Solid/Liquid	COLIWASA	(7.8.1)	Shallow, Composite, Semi-liquid only
	COLIWASA	<u>(7.8.1)</u>	Shallow, Composite, Semi-liquid only
	Reuseable Point	(7.8.1.2)	Shallow, Discrete
	Reusable Point Sampler	(7.8.1.3)	Shallow, Discrete
	Plunger Type	(7.8.4)	Shallow, Discrete
			Depth, Composite Suspended Solids only
	Liquids Profiler	(7.8.5)	
	Drum Thief	(7.8.2)	Shallow, Composite-Semi-Liquid only
	Drum Thief	<u>(7.8.2)</u>	Shallow, Composite, Semi-liquid only
	Valved	(7.8.3)	Shallow, Composite-Semi-Liquid only
	Valved Sampler	(7.8.3)	Shallow, Composite, Semi-liquid only
	Dipper	(7.4.9)	Shallow, Composite
	* *	, ,	Shallow, Discrete
	Plunger-Type Sampler	(7.8.4) (7.4.10)	· · · · · · · · · · · · · · · · · · ·
	Liquid Grab	(7.4.10)	Shallow, Composite-Suspended Solids only
	<u>Liquid Profiler</u>	<u>(7.8.5)</u>	Depth, Composite, Suspended solids only
	Swing Jar	(7.4.11)	Shallow, Composite
	Scoops/Trowel	(7.11.3)	Shallow, Composite, Semi-solid only
	Scoops and Trowels	(7.11.3)	Shallow, Composite, Semi-solid only
	Shovel	(7.11.4)	Shallow, Composite, Semi-solid only
2 12 1	Shovels	(7.11.4)	Shallow, Composite, Semi-solid only
<u>Sediment</u>	Ekman Dredge	(7.3.1)	Bottom, Surface, Soft only, Disturbed
	Petersen Dredge	(7.3.2)	Bottom, Surface, Rocky or Soft, Disturbed
	Ponar Dredge	(7.3.3)	Bottom, Surface, Rocky or Soft, Disturbed
	Probe Sampler	(7.5.2)	Bottom Surface or Depth, Undisturbed
	Split-Barrel Sampler	(7.5.2)	Discrete, Undisturbed
	Ring-Lined Barrel Sampler	(7.5.3)	Discrete, Undisturbed
		(7.5.4)	Surface or Depth, Undisturbed
	Thin-Walled Tube Sampler		
	Split Barrel AS	(7.5.3) 5252-21	Bottom Surface or Depth, Relatively Undisturbed
	Coring-Type Sampler w/ Valve	= (7.5.9) 3 - 8 d c c - 1	Surface or Depth, Disturbed
	Handheld Core Sampler	(7.5.11)	Exposed Surface only, Undisturbed
Sediments	Thin Walled Tube	(7.5.5)	Bottom Surface or Depth, Undisturbed
	Modified Syringe	(7.5.12)	Exposed Surface only, Undisturbed
	<u></u>		
	Coring Type w/Valve		
	Coring Type w/Valve	(7.5.6)	Bottom Surface or Depth, Disturbed
	Rotating Corer	(7.5.6) (7.6.2)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid
	Rotating Corer Hand-Operated Bucket Auger	(7.5.6) (7.6.2) (7.7.1)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed
	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger	(7.5.6) (7.6.2) (7.7.1) (7.7.1)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed
	Rotating Corer Hand-Operated Bucket Auger	(7.5.6) (7.6.2) (7.7.1)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed
	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger	(7.5.6) (7.6.2) (7.7.1) (7.7.1) (7.7.2.1)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed
	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger	(7.5.6) (7.6.2) (7.7.1) (7.7.1) (7.7.2.1) (7.7.2.3)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights)
	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.3)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed Discrete, Relatively Undisturbed
	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Rotating-Corer	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.6.2)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Bottom Surface, Undisturbed if solid
	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Rotating Corer Seeops, Trowel	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.6.2) (7.11.3)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Bottom Surface, Undisturbed if solid Exposed Surface only, Disturbed, Selective
	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Rotating Corer Seeops, Trowel Scoops and Trowels	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.6.2) (7.11.3)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Bottom Surface, Undisturbed if solid Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed, Selective
	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Rotating Corer Seeops, Trowel Scoops and Trowels Shovel	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.6.2) (7.11.3) (7.11.4)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Bottom Surface, Undisturbed if solid Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed
	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Rotating Corer Seeops, Trowel Scoops and Trowels	(7.5.6) (7.6.2) (7.7.1) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.6.2) (7.11.3) (7.11.4) (7.11.4)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Bottom Surface, Undisturbed if solid Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed, Selective
	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Rotating Corer Seeops, Trowel Scoops and Trowels Shovel	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.6.2) (7.11.3) (7.11.4)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Bottom Surface, Undisturbed if solid Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed
	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Rotating Corer Seeops, Trowel Scoops and Trowels Shovel Shovel Minature Core	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.6.2) (7.11.3) (7.11.4) (7.11.4)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed Surface, Undisturbed Bottom Surface, Undisturbed if solid Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed Exposed Surface only, Disturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed
	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Rotating Corer Secops, Trowel Scoops and Trowels Shovels Minature Core Modified Syringe	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.6.2) (7.11.3) (7.11.4) (7.11.4) (7.5.8) (7.5.9)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed Bottom Surface, Undisturbed if solid Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed Exposed Surface only, Disturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed
Nurface Water	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Rotating Corer Seeops, Trowel Scoops and Trowels Shovels Minature Core Modified Syringe Auto-Splr.—Non-Vols.	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.6.2) (7.11.3) (7.11.4) (7.11.4) (7.5.9) (7.5.9) (7.2.1)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed Bottom Surface, Undisturbed if solid Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed Exposed Surface only, Undisturbed
Surface Water	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Rotating Corer Seeops, Trowel Scoops and Trowels Shovels Minature Core Modified Syringe Auto Splr. Non-Vols. Autosampler, Non-Volatiles	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.6.2) (7.11.3) (7.11.4) (7.11.4) (7.5.8) (7.5.9) (7.2.1)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Bottom Surface, Undisturbed if solid Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed Exposed Surface only, Disturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed 25 ft Lift, Discrete or Composite 7.6 m (25 ft) Lift, Discrete or Composite
Surface Water	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Rotating Corer Secops, Trowel Scoops and Trowels Shovel Shovel Shovels Minature Core Modified Syringe Auto Splr. Non-Vols. Autosampler, Non-Volatiles Auto-Splr. Vols.	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.6.2) (7.11.3) (7.11.4) (7.11.4) (7.5.9) (7.2.1) (7.2.1)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Bottom Surface, Undisturbed if solid Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed Exposed Surface only, Disturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed 25-ft Lift, Discrete or Composite 7.6 m (25 ft) Lift, Discrete or Composite
Surface Water	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Rotating Corer Seeops, Trowel Scoops and Trowels Shovels Minature Core Modified Syringe Auto Splr. Non-Vols. Autosampler, Non-Volatiles	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.6.2) (7.11.3) (7.11.4) (7.11.4) (7.5.8) (7.5.9) (7.2.1) (7.2.1) (7.2.1)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Bottom Surface, Undisturbed if solid Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed Exposed Surface only, Disturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed 25 ft Lift, Discrete or Composite 7.6 m (25 ft) Lift, Discrete or Composite
Surface Water	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Rotating Corer Secops, Trowel Scoops and Trowels Shovel Shovel Shovels Minature Core Modified Syringe Auto Splr. Non-Vols. Autosampler, Non-Volatiles Auto-Splr. Vols.	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.6.2) (7.11.3) (7.11.4) (7.11.4) (7.5.8) (7.5.9) (7.2.1) (7.2.1) (7.2.1)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Bottom Surface, Undisturbed if solid Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed Exposed Surface only, Disturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed 25-ft Lift, Discrete or Composite 7.6 m (25 ft) Lift, Discrete or Composite
Surface Water	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Rotating Corer Seeops, Trowel Scoops and Trowels Shovel Shovels Minature Core Modified Syringe Auto Splr. Non-Volatiles Auto Splr. Volatiles Peristaltic Pump	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.6.2) (7.11.3) (7.11.4) (7.11.4) (7.5.9) (7.5.9) (7.2.1) (7.2.1) (7.2.1) (7.2.5)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed Surface, Undisturbed if from flights) Discrete, Relatively Undisturbed Bottom Surface, Undisturbed if solid Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed Exposed Surface only, Undisturbed Exfosed Surface o
Surface Water	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Rotating Corer Secops, Trowel Scoops and Trowels Shovel Minature Core Modified Syringe Auto Splr.—Non Vols- Autosampler, Non-Volatiles Autosampler, Volatiles Peristaltic Pump Peristaltic Pump	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.6.2) (7.11.3) (7.11.4) (7.11.4) (7.5.8) (7.5.9) (7.2.1) (7.2.1) (7.2.1) (7.2.1) (7.2.5) (7.2.5)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Bottom Surface, Undisturbed if solid Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed Exposed Surface only, Disturbed Exposed Surface only, Undisturbed
Surface Water	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Rotating Corer Seeops, Trowel Scoops and Trowels Shovels Minature Core Modified Syringe Auto-Splr. Non-Vols. Autosampler, Non-Volatiles Autosampler, Volatiles Peristaltic Pump Peristaltic Pump Centrifugal Sub. Pump	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.6.2) (7.11.3) (7.11.4) (7.11.4) (7.5.8) (7.5.9) (7.2.1) (7.2.1) (7.2.1) (7.2.1) (7.2.5) (7.2.5) (7.2.6)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Bottom Surface, Undisturbed if solid Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed Exposed Surface only, Disturbed Exposed Surface only, Undisturbed
Surface Water	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Rotating Corer Seeeps, Trowel Scoops and Trowels Shovels Minature Core Modified Syringe Auto-Splr.—Non-Vols. Autosampler, Non-Volatiles Autosampler, Volatiles Peristaltic Pump Centrifugal Sub-Pump Centrifugal Submersible Pump	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.6.2) (7.11.3) (7.11.4) (7.11.4) (7.5.9) (7.2.1) (7.2.1) (7.2.1) (7.2.1) (7.2.1) (7.2.5) (7.2.6) (7.2.6)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed Bottom Surface, Undisturbed if solid Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed 25-ft Lift, Discrete or Composite 7.6 m (25 ft) Lift, Discrete or Composite 25-ft Lift, Discrete Shallow(25-ft), Discrete Shallow, up to 7.6 m (25 ft) Lift, Discrete Depth, Discrete
	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Rotating Corer Seeops, Trowel Scoops and Trowels Shovels Shovels Minature Core Modified Syringe Auto Splr.—Non-Vols. Autosampler, Non-Volatiles Autosampler, Volatiles Peristaltic Pump Centrifugal Sub-Pump Centrifugal Submersible Pump Gear Drive Pump	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.2.3) (7.7.3) (7.6.2) (7.11.3) (7.11.4) (7.11.4) (7.5.9) (7.2.1) (7.2.1) (7.2.1) (7.2.1) (7.2.5) (7.2.6) (7.2.6) (7.2.7)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Bottom Surface, Undisturbed if solid Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed Exposed Surface only, Undisturbed Exp
	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Rotating Corer Seeeps, Trowel Scoops and Trowels Shovels Minature Core Modified Syringe Auto-Splr.—Non-Vols. Autosampler, Non-Volatiles Autosampler, Volatiles Peristaltic Pump Centrifugal Sub-Pump Centrifugal Submersible Pump	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.6.2) (7.11.3) (7.11.4) (7.11.4) (7.5.9) (7.2.1) (7.2.1) (7.2.1) (7.2.1) (7.2.1) (7.2.5) (7.2.6) (7.2.6)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed Bottom Surface, Undisturbed if solid Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed 25-ft Lift, Discrete or Composite 7.6 m (25 ft) Lift, Discrete or Composite 25-ft Lift, Discrete Shallow(25-ft), Discrete Shallow, up to 7.6 m (25 ft) Lift, Discrete Depth, Discrete
	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Peat Borer Rotating Corer Seeeps, Trowel Scoops and Trowels Shovel Shovel Shovel Minature Core Modified Syringe Auto Splr. Non-Vols. Autosampler, Non-Volatiles Autosampler, Volatiles Peristaltic Pump Peristaltic Pump Centrifugal Sub-Pump Centrifugal Submersible Pump Gear Drive Pump Progressing Cavity Pump	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.6.2) (7.11.3) (7.11.4) (7.11.4) (7.5.8) (7.5.9) (7.2.1) (7.2.1) (7.2.1) (7.2.1) (7.2.5) (7.2.6) (7.2.6) (7.2.7) (7.2.8)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Bottom Surface, Undisturbed if solid Exposed Surface, Undisturbed, Selective Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed 25-ft Lift, Discrete or Composite 7.6 m (25 ft) Lift, Discrete or Composite 25-ft Lift, Discrete T.6 m (25 ft) Lift, Discrete Shallow, up to 7.6 m (25 ft) Lift, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete
	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Hollow-Stem Flighted Auger Peat Borer Rotating Corer Secops, Trowel Scoops and Trowels Shovel Shovels Minature Core Modified Syringe Auto-Splr. Non-Vols: Autosampler, Non-Volatiles Auto-Splr. Vols: Autosampler, Volatiles Peristaltic Pump Peristaltic Pump Centrifugal Sub-Pump Centrifugal Sub-Pump Gear Drive Pump Progressing Cavity Pump Progressing Cavity Pump	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.6.2) (7.11.3) (7.11.4) (7.11.4) (7.5.9) (7.2.1) (7.2.1) (7.2.1) (7.2.1) (7.2.5) (7.2.5) (7.2.6) (7.2.7) (7.2.8) (7.2.8)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Bottom Surface, Undisturbed if solid Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed Exposed Surface only, Undisturbed Exfit, Discrete or Composite 7.6 m (25 ft) Lift, Discrete or Composite Fill, Discrete Shallow, up to 7.6 m (25 ft) Lift, Discrete Bepth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete
Surface Water Surface Water	Rotating Corer Hand-Operated Bucket Auger Hand-Operated Bucket Auger Solid-Stem Flighted Auger Peat Borer Rotating Corer Seeeps, Trowel Scoops and Trowels Shovel Shovel Shovel Minature Core Modified Syringe Auto Splr. Non-Vols. Autosampler, Non-Volatiles Autosampler, Volatiles Peristaltic Pump Peristaltic Pump Centrifugal Sub-Pump Centrifugal Submersible Pump Gear Drive Pump Progressing Cavity Pump	(7.5.6) (7.6.2) (7.7.1) (7.7.2.1) (7.7.2.3) (7.7.3) (7.6.2) (7.11.3) (7.11.4) (7.11.4) (7.5.8) (7.5.9) (7.2.1) (7.2.1) (7.2.1) (7.2.1) (7.2.5) (7.2.6) (7.2.6) (7.2.7) (7.2.8)	Bottom Surface or Depth, Disturbed Bottom, Surface, Undisturbed if solid Bottom Surface, Disturbed Surface or Depth, Disturbed (if from flights) Discrete, Relatively Undisturbed Bottom Surface, Undisturbed if solid Exposed Surface, Undisturbed, Selective Exposed Surface only, Disturbed, Selective Exposed Surface only, Disturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed Exposed Surface only, Undisturbed 25-ft Lift, Discrete or Composite 7.6 m (25 ft) Lift, Discrete or Composite 25-ft Lift, Discrete T.6 m (25 ft) Lift, Discrete Shallow, up to 7.6 m (25 ft) Lift, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete

	IAD	LE 3 Continued	
Media Type	Sampler Type	Section Subsection	Sample Type
	Discrete Level Sampler	(7.4.5)	Depth, Discrete
	Plunger Type	(7.8.4)	Shallow (12-ft), Discrete
	Liquids Profiler	(7.8.5)	Shallow, Composite
	Dipper	(7.4.9)	Shallow (10-ft.), Composite
	Dipper	<u>(7.4.9)</u>	Shallow, 3 m (10 ft), Composite
	Liquid Grab	(7.4.10)	Shallow (6-ft), Composite
	Liquid Grab Sampler	<u>(7.4.10)</u>	Shallow, 1.8 m (6 ft), Composite
	Swing Jar	(7.4.11)	Shallow, (10-ft), Composite
	Swing Jar Sampler	(7.4.11)	Shallow, 3 m (10 ft), Composite
	Plunger-Type Sampler	(7.8.4)	Shallow, 3.65 m (12 ft), Discrete
	Liquid Profiler	(7.8.5)	Shallow, Composite
	Spoon	(7.11.2)	Shallow (1-in.), Composite
	Spoon	(7.11.2)	Shallow, 2.5 cm (1 in.), Composite
Groundwater	Air/Gas Displacement Pump	(7.2.2.1)	Depth, Discrete
<u>and and the control of the control </u>	Piston Displacement Pump	(7.2.2.2)	Depth, Discrete
	Bladder Pump	(7.2.3)	Depth, Discrete
	Corrugated Bladder Pump	(7.2.4)	Depth, Discrete
	Peristaltic Pump	(7.2.5)	25-ft Lift, Discrete
	Peristaltic Pump		
		(7.2.5)	7.6 m (25 ft) Lift, Discrete
	Centrifugal Submaraible Bump	(7.2.6)	Depth, Discrete
	Centrifugal Submersible Pump	(7.2.6)	Depth, Discrete
	Gear Drive Pump	(7.2.7)	Depth, Discrete
	Progressing Cavity Pump	(7.2.8)	Depth, Discrete
Ground Water	Inertia Lift Pump	(7.2.9)	Depth Discrete
	Inertia Lift Pump	<u>(7.2.9)</u>	Depth, Discrete
	Discrete Level Sampler	(7.4.5)	Depth, Discrete
	Direct Push Water Sampler	(7.5.1.1)	Depth, Discrete
	Bailer	(7.4.6)	Depth, Composite
	Point Sampling Bailer	(7.4.7)	Depth, Discrete
	Diff. Pressure Bailer	(7.4.8)	Depth, Discrete
	Differential Pressure Bailer	(7.4.8)	Depth, Discrete
	Direct-Push Water Sampler	$\overline{(7.5.1)}$	Depth, Discrete
	Bag Type Diffusion	(7.9.1)	Depth Discrete
	Passive Sampler, Bag Type	(7.9.1)	Depth, Discrete
	Chamber Type Diffusion	(7.9.2)	Multiple Depths, Discrete
	Passive Sampler, Chamber Type	(7.9.2)	Multiple Depths, Discrete
	Dedicated Multi-Level Type 1	(7.10.1)	Multiple Depths, Discrete
			Multiple Depths, Discrete
	Dedicated Multi-Level Type 2	(7.10.1)	
	Portable Multi-Level	(7.10.2)	Multiple Depths, Discrete, Pore water
Linnin Efficient	AutoSpir. Non Vols.	(7.2.1)	Shallow (25-ft), Discrete or Composite
Liquid Effluent	Autosampler, Non-Volatiles	<u>(7.2.1)</u>	7.6 m (25 ft) Lift, Discrete or Composite
	Auto Spir Vols.	(7.2.1) 6232_21	Shallow (25-ft), Discrete
	Autosampler, Volatiles	(7.2.1)	7.6 m (25 ft) Lift, Discrete
	Peristaltic Pump	(7.2.5) 3-8dcc-4	Shallow (25-ft), Discrete 19 12 3 2/2 stm-d6232-21
	Peristaltic Pump	(7.2.5)	Shallow, up to 7.6 m (25 ft) Lift, Discrete
	Centrifugal Sub. Pump	(7.2.6)	Depth, Discrete
	Centrifugal Submersible Pump	(7.2.6)	Depth, Discrete
	Gear Drive Pump	(7.2.7)	Depth, Discrete
	Progressing Cavity Pump	(7.2.8)	Depth, Discrete
	Bacon Bomb	(7.4.1)	Depth, Discrete
	Kemmerer Sampler	(7.4.2)	Depth, Discrete
	Syringe Sampler	(7.4.3)	Shallow, 2.4 m (8 ft), Discrete
	Discrete Level Sampler	(7.4.5)	Depth, Discrete
	Dipper	(7.4.9)	Shallow, 3 m (10 ft), Composite
	Liquid Grab Sampler	(7.4.10)	Shallow, 1.8 m (6 ft), Composite
	Swing Jar Sampler	(7.4.11)	Shallow, 3 m (10 ft), Composite
			Depth, Discrete
	HYDRASleeve	(7.4.12)	
Liquid Effluent	Snap Sampler	(7.4.13)	Depth, Discrete
Liquid Effluent	Snap Sampler Syringe Sampler	(7.4.13) (7.4.3)	Depth, Discrete Shallow (8-ft), Discrete
Liquid Effluent	Snap Sampler Syringe Sampler Reusable Point Sampler	(7.4.13) (7.4.3) (7.8.1.3)	Depth, Discrete Shallow (8-ft), Discrete Shallow, 2.4 m (8 ft), Discrete
Liquid Effluent	Snap Sampler Syringe Sampler Reusable Point Sampler Discrete Level	(7.4.13) (7.4.3) (7.8.1.3) (7.4.5)	Depth, Discrete Shallow (8-ft), Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete
Liquid Effluent	Snap Sampler Syringe Sampler Reusable Point Sampler Discrete Level Reuseable Point	(7.4.13) (7.4.3) (7.8.1.3) (7.4.5) (7.8.1.2)	Depth, Discrete Shallow (8-ft), Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete Shallow (8-ft), Discrete
Liquid-Effluent	Snap Sampler Syringe Sampler Reusable Point Sampler Discrete Level Reuseable Point Valved Sampler	(7.4.13) (7.4.3) (7.8.1.3) (7.4.5) (7.8.1.2) (7.8.3)	Depth, Discrete Shallow (8-ft), Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete Shallow (8-ft), Discrete Shallow, Discrete Shallow, Discrete
Liquid Effluent	Snap Sampler Syringe Sampler Reusable Point Sampler Discrete Level Reuseable Point Valved Sampler Plunger Type	(7.4.13) (7.4.3) (7.8.1.3) (7.8.1.2) (7.8.1.2) (7.8.1.2) (7.8.4)	Depth, Discrete Shallow (8-ft), Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete Shallow (8-ft), Discrete Shallow, Discrete Shallow, Discrete Shallow (12-ft), Discrete
Liquid Effluent	Snap Sampler Syringe Sampler Reusable Point Sampler Discrete Level Reuseable Point Valved Sampler Plunger Type Plunger-Type Sampler	(7.4.13) (7.4.3) (7.8.1.3) (7.4.5) (7.8.1.2) (7.8.3) (7.8.4) (7.8.4)	Depth, Discrete Shallow (8-ft), Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete Shallow (8-ft), Discrete Shallow, Discrete Shallow, Discrete Shallow, 12-ft), Discrete Shallow, 3.7 m (12 ft), Discrete
Liquid Effluent	Snap Sampler Syringe Sampler Reusable Point Sampler Discrete Level Reuseable Point Valved Sampler Plunger Type	(7.4.13) (7.4.3) (7.8.1.3) (7.8.1.2) (7.8.1.2) (7.8.1.2) (7.8.4)	Depth, Discrete Shallow (8-ft), Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete Shallow (8-ft), Discrete Shallow, Discrete Shallow, Discrete Shallow (12-ft), Discrete
Liquid-Effluent	Snap Sampler Syringe Sampler Reusable Point Sampler Discrete Level Reuseable Point Valved Sampler Plunger Type Plunger-Type Sampler	(7.4.13) (7.4.3) (7.8.1.3) (7.4.5) (7.8.1.2) (7.8.3) (7.8.4) (7.8.4)	Depth, Discrete Shallow (8-ft), Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete Shallow (8-ft), Discrete Shallow, Discrete Shallow, Discrete Shallow, 12-ft), Discrete Shallow, 3.7 m (12 ft), Discrete
Liquid Effluent	Snap Sampler Syringe Sampler Reusable Point Sampler Discrete Level Reuseable Point Valved Sampler Plunger Type Plunger-Type Sampler Liquids Profiler	(7.4.13) (7.4.3) (7.8.1.3) (7.4.5) (7.8.1.2) (7.8.3) (7.8.4) (7.8.4) (7.8.5)	Depth, Discrete Shallow (8-ft), Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete Shallow (8-ft), Discrete Shallow, Discrete Shallow (12-ft), Discrete Shallow, 3.7 m (12 ft), Discrete Shallow, Composite
Liquid Effluent	Snap Sampler Syringe Sampler Reusable Point Sampler Discrete Level Reuseable Point Valved Sampler Plunger Type Plunger-Type Sampler Liquid Profiler Dipper	(7.4.13) (7.4.3) (7.8.1.3) (7.8.1.2) (7.8.1.2) (7.8.3) (7.8.4) (7.8.4) (7.8.5) (7.8.5) (7.4.9)	Depth, Discrete Shallow (8-ft), Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete Shallow (8-ft), Discrete Shallow (12-ft), Discrete Shallow, (12-ft), Discrete Shallow, 3.7 m (12 ft), Discrete Shallow, Composite Shallow, Composite Shallow, Composite Shallow (10-ft), Composite
Liquid Effluent	Snap Sampler Syringe Sampler Reusable Point Sampler Discrete Level Reuseable Point Valved Sampler Plunger Type Plunger-Type Sampler Liquids Profiler Liquid Profiler Dipper Liquid Grab	(7.4.13) (7.4.3) (7.8.1.3) (7.4.5) (7.8.1.2) (7.8.3) (7.8.4) (7.8.4) (7.8.5) (7.8.5) (7.4.0) (7.4.10)	Depth, Discrete Shallow (8-ft), Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete Shallow (8-ft), Discrete Shallow, Oiscrete Shallow, Discrete Shallow, Discrete Shallow, Tip Discrete Shallow, Tip Discrete Shallow, Composite Shallow, Composite Shallow (10-ft), Composite Shallow (10-ft), Composite Shallow (10-ft), Composite
Liquid Effluent	Snap Sampler Syringe Sampler Reusable Point Sampler Discrete Level Reuseable Point Valved Sampler Plunger Type Plunger-Type Sampler Liquid Profiler Liquid Profiler Dipper Liquid Grab Swing Jar	(7.4.13) (7.4.3) (7.8.1.3) (7.4.5) (7.8.1.2) (7.8.3) (7.8.4) (7.8.4) (7.8.5) (7.8.5) (7.4.9) (7.4.10) (7.4.11)	Depth, Discrete Shallow (8-ft), Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete Shallow (8-ft), Discrete Shallow (8-ft), Discrete Shallow, Discrete Shallow, Discrete Shallow, 12-ft), Discrete Shallow, 3.7 m (12 ft), Discrete Shallow, Composite Shallow, Composite Shallow (10-ft), Composite Shallow (6-ft), Composite Shallow (10-ft), Composite
Liquid Effluent	Snap Sampler Syringe Sampler Reusable Point Sampler Discrete Level Reuseable Point Valved Sampler Plunger Type Plunger-Type Sampler Liquids Profiler Liquid Profiler Dipper Liquid Grab Swing Jar Spoon	(7.4.13) (7.4.3) (7.8.1.3) (7.8.1.2) (7.8.3) (7.8.4) (7.8.4) (7.8.5) (7.4.0) (7.4.10) (7.4.11) (7.11.2)	Depth, Discrete Shallow (8-ft), Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete Shallow (8-ft), Discrete Shallow (10-ft), Discrete Shallow, Discrete Shallow, Discrete Shallow, Discrete Shallow, Discrete Shallow, Discrete Shallow, Composite Shallow, Composite Shallow (10-ft), Composite
Liquid-Effluent	Snap Sampler Syringe Sampler Reusable Point Sampler Discrete Level Reuseable Point Valved Sampler Plunger Type Plunger-Type Sampler Liquids Profiler Liquid Profiler Dipper Liquid Grab Swing Jar Spoon	(7.4.13) (7.4.3) (7.8.1.3) (7.8.1.2) (7.8.3) (7.8.4) (7.8.5) (7.8.5) (7.4.10) (7.4.10) (7.4.11) (7.11.2)	Depth, Discrete Shallow (8-ft), Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete Shallow (8-ft), Discrete Shallow (8-ft), Discrete Shallow, Discrete Shallow, Discrete Shallow, 12-ft), Discrete Shallow, 3.7 m (12 ft), Discrete Shallow, Composite Shallow, Composite Shallow (10-ft), Composite Shallow (1-in.), Composite Shallow, 2.5 cm (1-in.), Composite
	Snap Sampler Syringe Sampler Reusable Point Sampler Discrete Level Reuseable Point Valved Sampler Plunger Type Plunger-Type Sampler Liquids Profiler Liquid Profiler Dipper Liquid Grab Swing Jar Spoon Air-Displacement Pump	(7.4.13) (7.4.2) (7.8.1.3) (7.4.5) (7.8.1.2) (7.8.4) (7.8.4) (7.8.5) (7.8.5) (7.4.0) (7.4.10) (7.4.11) (7.4.11) (7.11.2) (7.2.2.1)	Depth, Discrete Shallow (8-ft), Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete Shallow (8-ft), Discrete Shallow (8-ft), Discrete Shallow, Discrete Shallow, Discrete Shallow, Discrete Shallow, Discrete Shallow, 12-ft), Discrete Shallow, 12-ft), Discrete Shallow, 3.7 m (12 ft), Discrete Shallow, Composite Shallow, Composite Shallow (10-ft), Composite Shallow (10-ft), Composite Shallow (1-ft), Composite Shallow (1-in-), Composite Shallow, 2.5 cm (1 in.), Composite Depth, Discrete
Liquid-Effluent	Snap Sampler Syringe Sampler Reusable Point Sampler Discrete Level Reuseable Point Valved Sampler Plunger Type Plunger-Type Sampler Liquids Profiler Liquid Profiler Dipper Liquid Grab Swing Jar Spoon	(7.4.13) (7.4.3) (7.8.1.3) (7.8.1.2) (7.8.3) (7.8.4) (7.8.5) (7.8.5) (7.4.10) (7.4.10) (7.4.11) (7.11.2)	Depth, Discrete Shallow (8-ft), Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete Shallow (8-ft), Discrete Shallow (8-ft), Discrete Shallow, Discrete Shallow, Discrete Shallow, 12-ft), Discrete Shallow, 3.7 m (12 ft), Discrete Shallow, Composite Shallow, Composite Shallow (10-ft), Composite Shallow (1-in.), Composite Shallow, 2.5 cm (1-in.), Composite

Media Type Sampler Bladder F Corrugate Peristaltic Peristaltic	Tune		
Bladder F Corrugate Peristaltic	туре	Section Subsection	Sample Type
Corrugate Peristalti e		(7.2.3)	Depth, Discrete
Peristaltic	ed Bladder Pump	(7.2.4)	Depth, Discrete
			·
Peristatti		(7.2.5)	Shallow (25-ft), Discrete
0 1:6		(7.2.5)	Shallow, 7.6 m (25 ft), Discrete
ĕ	jal Sub. Pump	(7.2.6)	Depth, Discrete
	jal Submersible Pump	<u>(7.2.6)</u>	Depth, Discrete
Gear Driv	ve Pump	(7.2.7)	Depth, Discrete
Progress	sing Cavity Pump	(7.2.8)	Depth, Discrete
Syringe S	Sampler	(7.4.3)	Shallow (8-ft), Discrete
Syringe S	Sampler	(7.4.3)	Shallow, 2.4 m (8 ft), Discrete
Lidded S	lludge/Water	(7.4.4)	Shallow (8-ft), Discrete
	Sludge/Water	(7.4.4)	Shallow, 2.4 m (8 ft), Discrete
	Level Sampler	(7.4.5)	Depth, Discrete
Bailer	Level <u>Sampler</u>	(7.4.6)	Depth, Discrete
	mpling Bailer	$\frac{(7.4.0)}{(7.4.7)}$	Depth, Discrete
			
	ial Pressure Bailer	(7.4.8)	Depth, Discrete
Dipper		(7.4.9)	Shallow, 3 m (10 ft), Composite
	rab Sampler	<u>(7.4.10)</u>	Shallow, 1.8 m (6 ft), Composite
Swing Ja	ar Sampler	<u>(7.4.11)</u>	Shallow, 3 m (10 ft), Composite
Liquid Direct Pu	ush Water Sampler	(7.5.1.1)	Depth, Discrete
Direct-Pu	ush Water Sampler	(7.5.1)	Depth, Discrete
COLIWA		(7.8.1)	Shallow (4-ft), Composite
COLIWA		(7.8.1)	Shallow, 1.2 m (4 -ft), Composite
Reuseab		(7.8.1.2)	Shallow (8-ft), Discrete
	e Point Sampler	(7.8.1.3)	Shallow, 2.4 m (8- ft), Discrete
Plunger T	71	(7.8.4)	Shallow, (12-ft), Discrete
Liquids P		(7.8.5)	Shallow, Composite
Drum Thi		(7.8.2)	Shallow (3-ft), Composite
<u>Drum Thi</u>		<u>(7.8.2)</u>	Shallow, 0.9 m (3 ft), Composite
Valved S	ampler	(7.8.3)	Shallow (8-ft), Composite
Valved S	ampler	(7.8.3)	Shallow, 2.4 m (8 ft), Composite
Bailer		(7.4.6)	Depth, Discrete
Plunger-	Type Sampler	(7.8.4)	Shallow, 3.7 m (12 ft), Discrete
	mpling Bailer	(7.4.7)	Depth, Discrete
	ssure Bailer	(7.4.8)	Depth, Discrete
Dipper	2005.//Sta	(7.4.9)	Shallow (10-ft), Composite
Liquid Gr	rob	(7.4.10)	Shallow (6-ft), Composite
·		'	
Liquid Pr		(7.8.5)	Shallow, Composite
Swing Ja		(7.4.11)	Shallow, (10-ft), Composite
Spoon		(7.11.2)	Shallow (1-in.), Composite
<u>Spoon</u>		<u>(7.11.2)</u>	Shallow, 2.5 cm (1 in.), Composite
Scoops 8	₹ Trowel	(7.11.3)	Challey (1 in) Composite
	and Trowels	74	Shallow, (1-in.), Composite
		(7.11.3)	Shallow, 2.5 cm (1 in.), Composite
Scoops a	acement Pump	(7.11.3) (7.2.2.1)	Shallow, 2.5 cm (1 in.), Composite
Scoops a		(7.2.2.1) 8 dcc-4	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete
Scoops a Air Displa Multi-Layer Liquid Air/Gas I	Displacement Pump	(7.2.2.1) (7.2.2.1) 8dcc-4	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete
Scoops a Air Displa Multi-Layer Liquid Air/Gas I Piston Di	Displacement Pump isplacement Pump	(7.2.2.1) (7.2.2.1) (7.2.2.2)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth Discrete
Scoops a Air Displa Multi-Layer Liquid Air/Gas I Piston Di Bladder F	Displacement Pump isplacement Pump Pump	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth Discrete Depth, Discrete Depth, Discrete
Scoops a Air Displa Multi-Layer Liquid Multi-Layer Liquid Air/Gas I Piston Di Bladder F Corrugate	Displacement Pump isplacement <u>Pump</u> Pump ed Bladder Pump	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete
Scops a Air Displa Multi-Layer Liquid Multi-Layer Liquid Piston Di Bladder F Corrugat Peristaltia	Displacement Pump isplacement Pump Pump ed Bladder Pump e Pump	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow(25-ft), Discrete
Scoops a Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Piston Di Bladder F Corrugata Peristaltic Peristaltic	Displacement Pump isplacement Pump Pump ed Bladder Pump e Pump c Pump	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.5)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow(25-ft), Discrete Shallow, 7.6 m (25 ft), Discrete
Scops a Air Displa Air/Gas E Piston Di Bladder F Corrugate Peristaltic Centrifug	Displacement Pump isplacement Pump Pump ed Bladder Pump e-Pump c-Pump c Pump gal Sub. Pump	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.5) (7.2.6)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth Discrete Depth, Discrete Depth, Discrete Shallow(25-ft), Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete
Scoops a Air Displa Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Air/Gas L Piston Di Bladder F Corrugate Peristallic Peristallic Centrifug Centrifug	Displacement Pump isplacement Pump Pump ed Bladder Pump e Pump c Pump pal Sub. Pump gal Submersible Pump	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.5) (7.2.6) (7.2.6)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow(25-ft), Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete Depth, Discrete
Scoops a Air Displa Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Air/Gas L Piston Di Bladder F Corrugate Peristallic Peristallic Centrifug Centrifug Gear Driv	Displacement Pump isplacement Pump Pump ed Bladder Pump e-Pump c Pump jal Sub. Pump jal Submersible Pump ve Pump	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.5) (7.2.6) (7.2.6) (7.2.7)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow(25-ft), Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete
Scoops a Air Displa Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Air/Gas L Piston Di Bladder F Corrugate Peristallic Peristallic Centrifug Centrifug Gear Driv	Displacement Pump isplacement Pump Pump ed Bladder Pump e-Pump c Pump jal Sub. Pump jal Submersible Pump ve Pump	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.5) (7.2.6) (7.2.6)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow(25-ft), Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete Depth, Discrete
Scops a Air Disple Alir/Gas I Piston Di Bladder F Corrugate Peristaltic Peristaltic Centrifug Gear Driv Progress	Displacement Pump isplacement Pump Pump ed Bladder Pump e- Pump c- Pump jal Sub- Pump jal Submersible Pump ve Pump	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.5) (7.2.6) (7.2.6) (7.2.7) (7.2.8)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete
Scoops a Air Disple Air/Cas I Piston Di Bladder F Corrugate Peristaltic Peristaltic Centrifug Gear Driv Progress Multi-Layer Syringe-S	Displacement Pump isplacement Pump Pump ed Bladder Pump e-Pump c Pump gal Sub- Pump jal Submersible Pump ve Pump sing Cavity Pump Sampler	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.5) (7.2.6) (7.2.7) (7.2.8) (7.2.8) (7.4.3)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete
Scoops a Air Disple Air/Cas L Piston Di Bladder F Corrugate Peristaltic Centrifug Gear Driv Progress Multi-Layer Syringe S Syringe S	Displacement Pump isplacement Pump Pump ed Bladder Pump e-Pump c Pump gal Sub. Pump gal Submersible Pump ve Pump sing Cavity Pump Sampler Sampler	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.5) (7.2.6) (7.2.6) (7.2.7) (7.2.8) (7.4.3)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete Shallow (8-ft), Discrete Shallow (8-ft), Discrete Shallow, 2.4 m (8 ft), Discrete
Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Multi-Layer Multi-Layer Syringe Soyringe Soyring	Displacement Pump isplacement Pump Pump ed Bladder Pump e-Pump c Pump gal Sub. Pump gal Submersible Pump ve Pump Sampler Sampler Level	(7.2.2.1) (7.2.2.2) (7.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.6) (7.2.6) (7.2.7) (7.2.8) (7.4.3) (7.4.3) (7.4.5)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth Discrete Depth, Discrete Depth, Discrete Shallow, 2.5 ft), Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete Shallow (8-ft), Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete
Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Piston Di Bladder F Corrugate Peristaltic Centrifug Centrifug Gear Driv Progress Multi-Layer Syringe S Syringe S Syringe S Discrete Discrete	Displacement Pump isplacement Pump Pump ed Bladder Pump e-Pump c Pump gal Sub. Pump gal Submersible Pump ve Pump sing Cavity Pump Sampler Sampler	(7.2.2.1) (7.2.2.2) (7.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.6) (7.2.6) (7.2.7) (7.2.8) (7.4.3) (7.4.3) (7.4.5) (7.4.5)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth Discrete Depth, Discrete Depth, Discrete Shallow, 2.5 ft), Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete
Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Piston Di Bladder F Corrugative Peristaltive Centrifug Centrifug Gear Driv Progress Syringe S Syringe S Syringe S Discrete Discrete Bailer	Displacement Pump isplacement Pump Pump ed Bladder Pump e-Pump c Pump c Pump gal Sub-Pump gal Submersible Pump we Pump iring Cavity Pump Sampler Sampler Level Sampler	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.5) (7.2.6) (7.2.6) (7.2.7) (7.2.8) (7.4.3) (7.4.3) (7.4.5) (7.4.5) (7.4.6)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow (25-ft), Discrete Shallow (7.6 m (25 ft), Discrete Depth, Discrete
Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Mu	Displacement Pump isplacement Pump Pump ed Bladder Pump e-Pump c Pump c Pump gal Sub. Pump gal Submersible Pump ve Pump iring Cavity Pump Sampler Sampler Level Sampler mpling Bailer	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.5) (7.2.6) (7.2.7) (7.2.8) (7.4.3) (7.4.3) (7.4.5) (7.4.5) (7.4.6) (7.4.7)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete
Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Multi-Layer Multi-Layer Multi-Layer Multi-Layer Syringe Syringe Syringe Syringe Spiecrete Discrete Bailler Point Sar Differentii	Displacement Pump isplacement Pump Pump ed Bladder Pump e-Pump c Pump c Pump gal Sub-Pump gal Submersible Pump we Pump iring Cavity Pump Sampler Sampler Level Sampler	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.5) (7.2.6) (7.2.7) (7.2.8) (7.4.3) (7.4.3) (7.4.5) (7.4.5) (7.4.6) (7.4.7) (7.4.8)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete
Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Multi-Layer Multi-Layer Multi-Layer Multi-Layer Multi-Layer Syringe Solyringe	Displacement Pump isplacement Pump Pump ed Bladder Pump e-Pump c Pump gal Sub-Pump gal Submersible Pump ve Pump cing Cavity Pump Sampler Sampler Level Level Sampler ial Pressure Bailer	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.5) (7.2.6) (7.2.6) (7.2.7) (7.2.8) (7.4.3) (7.4.3) (7.4.5) (7.4.5) (7.4.5) (7.4.5) (7.4.7) (7.4.8) (7.4.9)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete
Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Multi-Layer Multi-Layer Multi-Layer Multi-Layer Multi-Layer Syringe Solyringe	Displacement Pump isplacement Pump Pump ed Bladder Pump e-Pump c Pump gal Sub-Pump gal Submersible Pump ve Pump cing Cavity Pump Sampler Sampler Level Level Sampler ial Pressure Bailer	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.5) (7.2.6) (7.2.6) (7.2.7) (7.2.8) (7.4.3) (7.4.5) (7.4.5) (7.4.6) (7.4.7) (7.4.8) (7.4.9) (7.4.9) (7.4.10)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth, Discrete Depth Discrete Depth, Discrete Depth, Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete Shallow, 3 m (10 ft), Composite Shallow, 1.8 m (6 ft), Composite
Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Multi-Layer Multi-Layer Multi-Layer Multi-Layer Syringe Syringe Syringe Syringe Syringe Syringe Suringe S	Displacement Pump isplacement Pump Pump ed Bladder Pump e-Pump c Pump gal Sub-Pump gal Submersible Pump ve Pump cing Cavity Pump Sampler Sampler Level Level Sampler ial Pressure Bailer	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.5) (7.2.6) (7.2.6) (7.2.7) (7.2.8) (7.4.3) (7.4.3) (7.4.5) (7.4.5) (7.4.5) (7.4.5) (7.4.7) (7.4.8) (7.4.9)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete
Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Multi-Layer Multi-Layer Multi-Layer Multi-Layer Syringe Syringe Syringe Syringe Syringe Suringe S	Displacement Pump isplacement Pump Pump ed Bladder Pump ed Bladder Pump c Pump c Pump gal Sub- Pump gal Submersible Pump ve Pump cing Cavity Pump Sampler Level Level Sampler mpling Bailer ial Pressure Bailer rab Sampler	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.5) (7.2.6) (7.2.6) (7.2.7) (7.2.8) (7.4.3) (7.4.5) (7.4.5) (7.4.6) (7.4.7) (7.4.8) (7.4.9) (7.4.9) (7.4.10)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth, Discrete Depth Discrete Depth, Discrete Depth, Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete Shallow, 3 m (10 ft), Composite Shallow, 1.8 m (6 ft), Composite
Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Multi-Layer Multi-Layer Multi-Layer Multi-Layer Syringe Syringe Syringe Syringe Syringe Syringe Syringe Suringe Syringe Syrin	Displacement Pump isplacement Pump Pump ed Bladder Pump ee Bladder Pump c Pump c Pump gal Sub. Pump gal Submersible Pump eve Pump sing Cavity Pump Sampler Level Level Sampler fal Pressure Bailer ar Sampler	(7.2.2.1) (7.2.2.2) (7.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.6) (7.2.6) (7.2.7) (7.2.8) (7.4.3) (7.4.3) (7.4.5) (7.4.5) (7.4.5) (7.4.7) (7.4.8) (7.4.9) (7.4.10) (7.4.11)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete
Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Corrugate Peristaltic Peristaltic Centrifug Gear Driv Progress Syringe S Syringe S Syringe S Discrete Bailer Point Sar Differentic Dipper Liquid Gr Swing Ja Direct-Pu Direct-Pu Direct-Pu	Displacement Pump isplacement Pump Pump ed Bladder Pump e-Pump c Pump c Pump gal Sub-Pump gal Submersible Pump we Pump iring Cavity Pump Sampler Level Sampler Level Sampler al Pressure Bailer rab Sampler ar Sampler ush Water Sampler ush Water Sampler	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.5) (7.2.6) (7.2.7) (7.2.8) (7.4.3) (7.4.3) (7.4.5) (7.4.5) (7.4.6) (7.4.7) (7.4.8) (7.4.9) (7.4.10) (7.4.11) (7.5.1.1)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete
Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Multi-Layer Multi-Layer Multi-Layer Multi-Layer Syringe-S	Displacement Pump isplacement Pump Pump Pump ed Bladder Pump e-Pump c Pump jal Sub-Pump jal Submersible Pump ve Pump ising Cavity Pump Sampler Level Level Sampler ial Pressure Bailer rab Sampler ar Sampler ush Water Sampler ush Water Sampler SA	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.6) (7.2.6) (7.2.7) (7.2.8) (7.4.3) (7.4.3) (7.4.5) (7.4.5) (7.4.6) (7.4.7) (7.4.8) (7.4.10) (7.4.11) (7.5.1.1) (7.5.1.1) (7.5.1)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete
Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Multi-Lay	Displacement Pump isplacement Pump Pump ed Bladder Pump ee Bladder Pump c Pump c Pump gal Sub- Pump gal Sub- Pump gal Submersible Pump ve Pump sing Cavity Pump Sampler Level Level Sampler mpling Bailer ial Pressure Bailer rab Sampler ush Water Sampler ush Water Sampler SA SA	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.6) (7.2.6) (7.2.6) (7.2.8) (7.4.3) (7.4.3) (7.4.5) (7.4.5) (7.4.6) (7.4.7) (7.4.8) (7.4.9) (7.4.10) (7.4.11) (7.5.1.1) (7.5.1.1) (7.8.1) (7.8.1)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete Shallow, 3 m (10 ft), Composite Shallow, 1.8 m (6 ft), Composite Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow (4-ft), Composite Shallow, 1.2 m (4 ft), Composite
Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Multi-Layer Multi-Layer Multi-Layer Multi-Layer Syringe Syringe Syringe Syringe Syringe Syringe Syringe Signer Point Sau Differenti. Dipper Liquid Gr Swing Ja Direct-Pu GOLIWA: COLIWA: Reuseab	Displacement Pump isplacement Pump Pump ed Bladder Pump ee Bladder Pump c Pump c Pump gal Sub- Pump gal Submersible Pump ve Pump ising Cavity Pump Sampler Level Level Sampler mpling Bailer ial Pressure Bailer rab Sampler ush Water Sampler sh Water Sampler SA SA	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.5) (7.2.6) (7.2.6) (7.2.7) (7.2.8) (7.4.3) (7.4.5) (7.4.5) (7.4.5) (7.4.6) (7.4.7) (7.4.8) (7.4.9) (7.4.10) (7.4.11) (7.5.1.1) (7.5.1) (7.8.1) (7.8.1) (7.8.1.2)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete Shallow, 3 m (10 ft), Composite Shallow, 3 m (10 ft), Composite Shallow, 3 m (10 ft), Composite Shallow, 1.2 m (4 ft), Composite Shallow (4-ft), Composite Shallow (8-ft), Discrete
Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Peristaltic Centrifug Gear Driv Progress Syringe S Syringe S Syringe S Syringe S Discrete Bailer Point Sar Differenti Dipper Liquid Gr Swing Ja Direct-Pu COLIWA:	Displacement Pump isplacement Pump Pump ed Bladder Pump ee Bladder Pump c Pump c Pump gal Sub. Pump gal Submersible Pump ve Pump sing Cavity Pump Sampler Level Level Sampler and Pressure Bailer ara Sampler ar Sampler sish Water Sampler ssh Water Sampler SA SA lie Point e Point Sampler	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.5) (7.2.6) (7.2.7) (7.2.8) (7.4.3) (7.4.5) (7.4.5) (7.4.6) (7.4.7) (7.4.8) (7.4.9) (7.4.10) (7.4.11) (7.5.1.1) (7.8.1.1) (7.8.1.2) (7.8.1.3)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow, 2.5 ft), Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete Shallow, 1.8 m (6 ft), Composite Shallow, 3 m (10 ft), Composite Depth, Discrete Shallow, 1.2 m (4 ft), Composite Shallow, 1.2 m (4 ft), Composite Shallow, 8 ft), Discrete Shallow, 8 ft), Discrete Shallow, 8 ft), Discrete
Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Multi-Layer Multi-Layer Multi-Layer Multi-Layer Syringe Syringe Syringe Syringe Syringe Syringe Syringe Syringe Suringe Surin	Displacement Pump isplacement Pump Pump ed Bladder Pump ee Bladder Pump c Pump c Pump gal Sub. Pump gal Submersible Pump ve Pump sing Cavity Pump Sampler Level Level Sampler and Pressure Bailer ara Sampler ar Sampler sish Water Sampler ssh Water Sampler SA SA lie Point e Point Sampler	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.5) (7.2.6) (7.2.6) (7.2.7) (7.2.8) (7.4.3) (7.4.5) (7.4.5) (7.4.5) (7.4.6) (7.4.7) (7.4.8) (7.4.9) (7.4.10) (7.4.11) (7.5.1.1) (7.5.1) (7.8.1) (7.8.1) (7.8.1.2)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete Shallow, 2.4 m (8 ft), Discrete Depth, Discrete Shallow, 3 m (10 ft), Composite Shallow, 3 m (10 ft), Composite Shallow, 3 m (10 ft), Composite Shallow, 1.2 m (4 ft), Composite Shallow (4-ft), Composite Shallow (8-ft), Discrete
Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Peristaltic Centrifug Gear Driv Progress Syringe S Syringe S Syringe S Syringe S Discrete Bailer Point Sar Differenti Dipper Liquid Gr Swing Ja Direct-Pu COLIWA:	Displacement Pump isplacement Pump Pump ed Bladder Pump ee Bladder Pump c Pump c Pump gal Sub. Pump gal Submersible Pump ve Pump ve Pump sing Cavity Pump Sampler Level Level Sampler dal Pressure Bailer ar Sampler ar Sampler ush Water Sampler ssA SsA le Point e Point Sampler Type	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.5) (7.2.6) (7.2.7) (7.2.8) (7.4.3) (7.4.5) (7.4.5) (7.4.6) (7.4.7) (7.4.8) (7.4.9) (7.4.10) (7.4.11) (7.5.1.1) (7.8.1.1) (7.8.1.2) (7.8.1.3)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow, 2.5 ft), Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete Shallow, 1.8 m (6 ft), Composite Shallow, 3 m (10 ft), Composite Depth, Discrete Shallow, 1.2 m (4 ft), Composite Shallow, 1.2 m (4 ft), Composite Shallow, 8 ft), Discrete Shallow, 8 ft), Discrete Shallow, 8 ft), Discrete
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Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Liquid Multi-Layer Multi-Layer Multi-Layer Multi-Layer Multi-Layer Syringe S	Displacement Pump isplacement Pump Pump Pump ed Bladder Pump e-Pump c Pump gal Sub-Pump sampler Sampler gal Pressure Bailer gar Sampler gar Sampler gar Sampler gash Water Sampler gash	(7.2.2.1) (7.2.2.1) (7.2.2.2) (7.2.3) (7.2.4) (7.2.5) (7.2.6) (7.2.6) (7.2.7) (7.2.8) (7.4.3) (7.4.3) (7.4.5) (7.4.5) (7.4.6) (7.4.7) (7.4.8) (7.4.9) (7.4.10) (7.4.11) (7.5.1.1) (7.8.1) (7.8.1) (7.8.1.3) (7.8.4)	Shallow, 2.5 cm (1 in.), Composite Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Depth, Discrete Shallow, 7.6 m (25 ft), Discrete Depth, Discrete Shallow, 1 m (6 ft), Composite Depth, Discrete Depth, Discrete Depth, Discrete Shallow, 1.2 m (4 ft), Composite Shallow (4-ft), Discrete Shallow, 2.4 m (8 ft), Discrete Shallow, (12-ft), Discrete Shallow, (12-ft), Discrete Shallow, Composite

Media Type	Sampler Type	Section Subsection	Sample Type
	Valved Sampler	(7.8.3)	Shallow, 2.4 m (8 ft), Composite
	Bailer	(7.4.6)	Depth, Discrete
	Plunger-Type Sampler	(7.8.4)	Shallow, 3.7 m (12 ft), Discrete
	Point Sampling Bailer	(7.4.7)	Depth, Discrete
	Diff. Pressure Bailer	(7.4.8)	Depth, Discrete
	Dipper	(7.4.9)	Shallow (10-ft), Composite
	Liquid Grab	(7.4.10)	Shallow (6-ft), Composite
	Liquid Profiler	(7.8.5)	Shallow, Composite
	Swing Jar	(7.4.11)	Shallow (10-ft), Composite

- 6.2.1.1 The choice of materials used in the construction of sampling devices should be based upon a knowledge of what constituents may be present in the sampling environment because the constituents and materials may interact chemically or be incompatible. Consult available chemical compatibility charts.
- 6.2.1.2 If samples are to be collected for the determination of per- and poly-fluorinated alkyl substances (PFAS), all sampling equipment should be made of fluorine-free materials. Other considerations for PFAS sampling may exist but are beyond the scope of this standard.
- 6.2.2 *Physical Compatibility*—The sampling equipment should also be compatible with the physical characteristics of the matrices to be sampled. Equipment used to dig or core (shovels, augers, eoring type coring-type samplers) should be constructed of material that will not deform during use; use or be abraded by the material being sampled. Equipment abrasion may result in the contribution of contaminants to the sample being collected. For example, plastic or glass would not be appropriate for difficult to access difficult-to-access matrices, and stainless steel equipment may contribute small amounts of metals if significantly abraded by the matrix.

Note 1—Information on sample containers and equipment used in sampling that is not used in the actual collection of the sample is not within the scope of this guide.

- 6.3 Equipment Effects on the Matrix:
- 6.3.1 Equipment Design—Samples collected using inappropriate sampling equipment may not provide representative samples (1, 3). An example of equipment design influencing sample results is a sampler which excludes certain sized particles from a soil matrix or waste pile sample. The shape of some scoops may influence the distribution of particle sizes collected from a sample (1). Dredges used to collect river or estuarine stationary sediments may also exclude certain sized particles, particularly the fines fraction which may contain a significant percentage of some contaminants such as polynuclear aromatic hydrocarbons (PAHs).
- 6.3.2 Equipment Use—Inappropriate use of sampling equipment can influence analytical results:results (1, 3). For example, if a pump is used to purge a well and the intake is placed below the well screen, sediment in the sump can be put into suspension and become part of the water sample (4). Excessive vacuum generated by sampling pumps can cause loss of volatile constituents or change valence states of some ions. The use of bailers for well purging and sample collection may also cause increased turbidity levels in ground water samples. groundwater samples and result in elevated organic and inorganic target analyte concentrations in the sample. When sampling containerized liquids, insertion of a COLIWASA sampler at too fast a rate may prevent it from collecting a representative, depth integrated sample.
 - 6.4 Sample Volume Capabilities—Most sampling devices will provide adequate sample volume. However, the sampling equipment volumes should be compared to the volume necessary for all required analyses including the additional amount necessary for quality control (QC), split, and repeatreplicate samples (4, 5). Sampling devices which may not provide an adequate volume would be small-diameter glass tubes, tubes and triers. In this case, the investigator must consider the following options:
 - 6.4.1 A similar device with an increased capacity,
 - 6.4.2 An alternate device with an increased capacity, or
 - 6.4.3 Modification of an existing device (often difficult or impractical).



- 6.4.4 If these alternatives are not acceptable or available, then the investigator must consider the collection of multiple aliquots to fulfill the sample volume requirement. The effect of multiple aliquots on the data quality objectives should be considered.
- 6.5 Physical Requirements—Sampling equipment selection should always consider factors such as the size and weight of the equipment, power requirements (battery/110V), and ancillary equipment required (drill rig for split barrel samplers). (for example, drill rig for direct-push technologies such as split-barrel samplers and augers). Most sampling equipment used in the collection of environmental samples is relatively easy to transport and use in the field. The use of equipment with significant physical requirements may impede the progress of a sampling investigation.
- 6.6 Ease of Operation—Much of the equipment used for environmental sampling is rather simple to employ. Samples may be collected easily as long as properly selected equipment is used with adequate consideration of the matrix of interest. Sampling errors may occur as a result of inadequate consideration of matrix effects, and poor collection techniques (1, 3). Training requirements should focus on the proper use of equipment in varying environmental matrices.
- 6.7 Decontamination and Reuse of Equipment:
- 6.7.1 *Decontamination (see Practice D5088)*—Inadequate decontamination of sampling equipment can result in significant errors in analytical results. When choosing sampling equipment, ease of decontamination must be a consideration. Pumps, automatic samplers, Kemmerer samplers, and dredges require more effort to decontaminate than does a bailer or split-barrel sampler. The investigator should consider decontamination requirements prior to the study to avoid significant delays.
- 6.7.2 Reuse—Due to the expense of materials associated with modern sampling equipment (stainless steel, PTFE), most equipment is reusable following proper decontamination. Some equipment such as bailers may be disposed of after use or dedicated to a sampling point to save time during extensive field investigations. Drum thieves and COLIWASA samplers are typically not reused, particularly when waste samples have been collected.
- 6.8 *Cost*—Detailed information on the cost of sampling equipment is not contained within this guide. Cost is usually a major consideration in the process of sampling equipment selection. In general, the cost of PTFE and stainless steel equipment will be greater than equipment made of glass, PVC, or other plastics. However, the life expectancy for PTFE or stainless steel equipment is usually longer. In addition, labor costs for decontamination of reusable equipment versus the disposal costs of single use single-use equipment are also relevant considerations. Comments on costs are included in the "Advantages and Limitations" tables, where appropriate.

7. Sampling Equipment

- 7.1 Presented below are brief descriptions of some sampling equipment used in waste management and in the collection of environmental samples as they relate to waste management activities (6). This is by no means an inclusive list of the sampling equipment which is available to investigators. There are many pieces of equipment that have been designed for specific sampling needs. In addition, investigators may design their own pieces of equipment for a specific project. In all these instances, an investigator must keep in mind the criteria for sampling equipment selection which have been discussed previously in this guide.
- 7.2 *Pumps and Siphons (see Guide D4448)*—Pumps used for the collection of waste and environmental liquid samples for waste management include automatic samplers and displacement, bladder, peristaltic₂ and centrifugal pumps.
- 7.2.1 Automatic Samplers (see Guide D6538)—Automatic samplers may be used when samples are to be collected at frequent intervals (see Figs. 1 and 2). They are frequently used in waste water wastewater collection systems and treatment plants, but they can also be used during stream sampling investigations. They may be used to collect time composite or flow proportional samples. In the flow proportional sampling mode, the samplers are activated by a compatible flow meter. Peristaltic and vacuum pumps are commonly employed as the sampling mechanism. Automatic samplers designed specifically for the collection of samples for volatile organic analyses are available. See Table 4 for advantages and limitations.
- Note 2—Flow proportional samples can also be collected using a discrete sampler and a flow recorder and manually compositing the individual aliquots in flow proportional amounts.
- 7.2.2 Displacement Pumps (see Guide D4448, Practice D6771)—Displacement pumps are designed for ground water groundwater