Geotech
Computer Systems, Inc.

12150 E. Briarwood Ave. Suite 202
Centennial, CO 80112 USA
Phone: (303)740-1999
FAX: (303)740-1990

Data Management • GIS • Graphics • Internet

www.geotech.com

GLOSSARY OF ENVIRONMENTAL AND COMPUTING TERMS

By Dr. Dave Rich, President, Geotech Computer Systems, Inc.
drdave@geotech.com

The following are some common terms used in the environmental and computing industries. We encourage reader feedback.

A

AA - Atomic absorption. A procedure for inorganic analysis based on the absorption of radiation by mercury vapor (cold vapor), flame, or graphite furnace.

Abscissa - Horizontal or X-axis of a graph.

Absolute coordinates - Coordinates tied to an established reference system such as position on the globe.

Absolute method - A body of procedures and techniques for which measurement is based entirely on physically defined fundamental quantities.

Acceptable quality level - A limit above which quality is considered satisfactory and below which it is not. In sampling inspection, the maximum percentage of defects or failures that can be considered satisfactory as an average.

Acceptable quality range - The interval between specified upper and lower limits of a sequence of values within which the values are considered to be satisfactory.

Acceptable value - An observed or corrected value that falls within the acceptable range. See **Corrected value** and **Observed value**.

Acceptance sampling - The procedure of drawing samples from a lot or population to determine whether to accept or reject a sampled lot or population.

Accepted reference value - A numerical quantity that serves as an agreed-upon basis for comparison, and which is derived as l) a theoretical or established quantity, based on scientific principles, 2) an assigned value, based on experimental work of some recognized organization, or 3) a consensus quantity based on collaborative experimental work under the auspices of a scientific or engineering group.

Access time - Hard disk speed is rated by its access time, given in milliseconds (ms). The shorter the access time, the faster data can be manipulated and stored.

Accreditation - A formal recognition that an organization (e.g., laboratory) is competent to carry out specific tasks or specific types of tests. See also **Certification**.

Accreditation criterion - A requirement that a laboratory must meet to receive authorization and approval to perform a specified task.

Accredited laboratory - A laboratory that has been evaluated and given approval to perform a specified measurement or task, usually for a specific property or analyte and for a specified period of time.

Accuracy - The degree of agreement between an observed value and an accepted reference value. Inaccuracy includes a combination of random error (precision) and systematic error (bias) components which are due to sampling and analytical operations. EPA recommends that this term not be used and that precision and bias be used to convey the information usually associated with accuracy. See **Precision** and **Bias**.

ACIL - American Council of Independent Laboratories. Trade group of independent testing laboratories that fosters communication between laboratories.

ACS - American Chemical Society.

Action limit - See **Control limit**.

ACTS - Environmental management system from ecocion.

Acute toxicity - The effect of high-level, short-term (as opposed to long term or chronic) exposure to a toxic substance.

Adjusted value - The observed value after adjustment for values of a blank or bias of the measurement system.

ADSL - Asymmetrical digital subscriber line broadband communication connection. Download speeds are usually higher than upload speeds.

ADR - Automated Data Review. Software from Laboratory Data Consultants sometimes used on USACE projects.

Adsorption - Adhesion of contaminants to liquids or solids.

Aerobic - Having a high oxygen content, or an organism that lives or is active in the presence of oxygen.

AES - Atomic Emission Spectrometry.

AFCEC - Air Force Civil Engineering Center. Formerly called AFCEE, Air Force Center for Environmental Excellence. Organization responsible for the ERPIMS environmental data system.

AFCEE - See **AFCEC.**

AFE - Authority for Expenditure. A document authorizing expenditure of funds, similar to a purchase order.

Air Quality System - EPA's repository of ambient air quality data.

Algorithm - An algorithm is a numerical method. For example, in mapping, a common algorithm used for creating grids is "weighted moving average".

Aliquant - A subsample derived by a divisor that divides a sample into a number of equal parts but leaves a remainder; a subsample resulting from such a divisor. See **Subsample**.

Aliquot - A subsample derived by a divisor that divides a sample into a number of equal parts and leaves no remainder; a subsample resulting from such a division. In analytical chemistry the term aliquot is generally used to define any representative portion of the sample.

Alpha error - See **Type I error**.

Alternate method - Any body of procedures and techniques of sample collection and/or analysis for a characteristic of interest which is not a reference or approved equivalent method but which has been demonstrated in specific cases to produce results comparable to those obtained from a reference method.

Anaerobic - Having low oxygen content, or an organism that lives or is active in the absence of oxygen.

Analysis (chemical) - The determination of the qualitative and/or quantitative composition of a substance.

Analyte - The substance, a property of which is to be measured by chemical analysis.

Analytical batch - A group of samples, including quality control samples, which are processed together using the same method, the same lots of reagents, and at the same time or in continuous, sequential time periods. Samples in each batch should be of similar composition and share common internal quality control standards.

Analytical blank - See **Reagent blank**.

Analytical limit of discrimination - See **Method detection limit**.

Analytical method - A method used to determine the concentration of a chemical compound or chemical element.

Analytical protocol - See **Statement of Work (SOW)**.

Analytical reagent (AR) - The American Chemical Society's designation for the highest purity of certain chemical reagents and solvents. See **Reagent grade**.

Android - Operating system software from Google. Popular on portable devices such as smartphones and tablets.

ANOVA - Analysis of variance. Statistical test to determine whether two populations have the same mean.

ANSI - American National Standards Institute. This organization develops and publishes standards in a variety of technical areas.

ANVO - Accept No Verbal Orders. All project changes should be in writing.

AOC - Analytical Operations Data Quality Center. The U.S. EPA Center which directs the national Contract Laboratory Program.

Apache - Popular open-source web server software.

API - Application Programming Interface. A system for software applications to talk to each other through a set of defined interfaces.

Append - To append something is to add a block or file to an existing file without removing the contents of the original file. The new material is "tacked on" the end of the existing file.

Application - Software to perform a particular task such as data management or mapping.

APPS - Act to Prevent Pollution from Ships.

AQS - See **Air Quality System**.

Aquaveo - A company and software for surface and subsurface fluid modeling.

Aquifer - An underground geologic unit that can store water and supply it to wells and springs.

Aquitard - An underground geologic unit with a low permeability that inhibits the vertical flow of water. See also **Confining layer**.

ARAR - Applicable or Relevant and Appropriate Requirement. Cleanup or other standards that address problems or situations present at a CERCLA site. They are used to set cleanup goals, select a remedy, and determine how to implement that remedy.

ArcGIS - Well-known geographic information system software from ESRI.

Architecture - The internal electronic configuration of the data pathway on the motherboard is known as the architecture.

Arithmetic mean - The sum of all the values of a set of measurements divided by the number of values in the set; a measure of central tendency. See **Measure of central tendency**.

Aroclor - Polychlorinated biphenyl (also called PCB).

Aromatics - Organic compounds that contain structures of six carbon rings, such as creosote, toluene, and phenol.

Array- Set of values arranged in rows and columns. Also used for a line or grid of sensors, such as geophysical devices.

Array processor - Computing device designed to perform calculations on arrays of data. Used in graphic display, geophysical, and other number-intensive applications.

ASCII - American Standard Code for Information Interchange (pronounced as′-kee); the most common way of representing data for microcomputers and many larger machines as well. Each character is represented by a number, with the numbers ranging from 0 to 127. IBM has extended the ASCII code from 128 to 255 to allow many additional graphics, foreign language, and special characters. Some examples of ASCII codes (in decimal) and their representative meanings are:

ASCII Code	Character
7	(Rings bell)
12	(Advances printer page)
27	(Escape)
38	&
42	*
48	0
49	1
57	9
65	A
90	Z
97	a
122	z

ASP - Application Service Provider. A company that hosts software that users can operate over the Internet.

ASP - Active Server Pages. A Microsoft technology that creates Web pages on the fly based on user requests. Usually the data displayed is coming from a database. The language used is a dialect of Visual Basic.

Aspect ratio - Relative scale of the horizontal and vertical axes, such as on a video screen.

Assignable cause - A factor or an experimental variable shown to significantly change the quality of an effect or a result.

ASTM - American Society for Testing and Materials.

Asynchronous - Not at the same time - refers to communications from a computer to some other computer or peripheral device where the timing of the two devices may be different.

ATA - See **SATA**.

Attribute - Textual or numeric information associated with a graphic object such as a well or a block in a drawing.

Auger - A tool used to drill a hole in the ground using a rotary drilling rig.

Audit - A systematic evaluation to determine the conformance to quantitative specifications of some operational function or activity. See **Audit of data quality**, **Performance evaluation audit**, and **Technical systems audit**, and also **Review** and **Management systems review**.

Audit of data quality (ADQ) - A qualitative and quantitative evaluation of the documentation and procedures associated with environmental measurements to verify that the resulting data are of acceptable quality.

Audit sample - See **Performance evaluation sample**.

Avatar - Graphical image representing something, often a person, such as in a game or social networking site.

Average - A measure of the most "typical" value in a set of data. Types of averages include arithmetic mean, geometric mean, median, and mode.

Axis - A line used for reference, such as the scale lines on a graph.

B

B2B - Business to business. Used mostly to describe Internet commerce transactions.

B2C - Business to consumer. Also used mostly to describe Internet commerce transactions.

Background level - The concentration of a substance in a defined control area during a fixed period of time before, during, or after a data-gathering operation.

Backlit - A display for a portable computer that has a light source behind the screen for increased brightness. Also, some digitizers are backlit allowing them to work with transparent materials.

Backup - When you make copies of a file, diskette, or hard disk, it is called a backup.

Bandwidth - Amount of data that can be transferred at one time. The higher the bandwidth, the faster data moves.

Baseline sampling - Samples taken before some activity, such as mining or drilling an oil or gas well.

BASIC - Beginner's All-Purpose Symbolic Instruction Code. This is a programming language widely used on personal computers. BASICA was an advanced version for IBM brand computers, and GW-BASIC was often found on PC compatibles. The latest version from Microsoft is Visual Basic, either VBA (Visual Basic for Applications) or VB.net.

Batch - A quantity of material produced or processed in one operation, considered to be a uniform discrete unit.

Batch file - A file containing a series of commands that are executed as a group by the operating system.

Batch lot - The samples collected under sufficiently uniform conditions to be processed as a group. See **Batch**, **Batch size**.

Batch sample - One of the samples drawn from a batch.

Batch size - The number of samples in a batch lot.

Baud - Transmission rate of serial devices such as modems is given by baud rate. It roughly translates to bits per second.

BBS - Electronic Bulletin Board System. See **Bulletin board system**.

Bedrock - Solid rock that underlies the soil.

Beer's law - The amount of monochromatic light absorbed by an aqueous solution is proportional to the concentration. This effect is used in colorimetric analysis methods.

Benchmark - A benchmark is a test or series of tests that uses standardized data and/or algorithms to rate hardware and software performance. Most benchmarks are rated on time, although some are compared to a known index.

Beta error - See **Type II error**.

Beta test - When a commercial hardware or software product is tested by selected individuals or companies with "real world" data outside the office of the software author, the process is known as a beta test, and the users are called beta testers.

BHC - Benzene hexachloride.

Bias - The systematic or persistent distortion of a measurement process which deprives the result of representativeness (i.e., the expected sample measurement is different from the sample's true value.) A data quality indicator.

Binary - Some software code and digital communication is in a format known as binary because the code is a series of 1s and 0s. Binary code is a base 2 system where every number is represented by 2n or 2n +1. When binary data appears on the screen it has the appearance of "garbage."

Bioremediation - A treatment process that uses microorganisms such as bacteria, yeast, and fungi to break down hazardous organic substances.

BIOS - Basic Input-Output System; acts as an interface between the hardware and the software, and provides services such as reading and writing to and from memory and disk drives, and so on. It is "burned" into ROM chips using special equipment, and once installed in the computer, it is not usually changed.

Bit - A bit (BInary digiT) is the smallest unit of computer information representing the presence or absence of an electrical charge. It is equivalent to yes/no or on/off.

Bit map - An image represented as an array of pixels.

Blank sample - A clean sample or a sample of matrix processed so as to measure artifacts in the measurement (sampling and analysis) process.

Blank spike - See **Spike**.

Blind sample - A subsample submitted for analysis with a composition and identity known to the submitter but unknown to the analyst, and used to test the analyst's or laboratory's proficiency in the execution of the measurement process. See **Double-blind sample**.

Bluetooth - A wireless technology standard for exchanging data over short distances.

BMP - Best Management Practice. Also Windows bitmap, a format for digital image.

BOD - Biochemical Oxygen Demand.

Boot - Start up a computer. Based on an analogy of pulling oneself up by ones bootstraps. A cold boot is starting the computer by turning it on. A warm boot is restarting the computer with a software or keyboard command.

Borehole - A hole dug in the ground by a drilling rig or other method.

Boring log - A document created for a soil or other boring describing the material encountered, and other information like wellbore construction.

BRAC - Base Realignment and Closure Commission. An agency of the United States federal government that aims to dispose of unnecessary United States Department of Defense (DoD) real estate

Broadband - High speed connection such as DSL or cable modem.

Brownfield - Abandoned, idle, or under-used industrial and commercial facilities where expansion or re-development is complicated by real or perceived environmental contamination. Remediation levels for brownfields are often based on the expected use rather than arbitrary standards.

BTEX - Benzene, Toluene, Ethybenzene, and Xylene.

Bubble map - Map where values are shown as colors. Usually the colors represent ranges of data values. Also called a chloropleth, dot map, or classed post map.

Buffer - In computers, buffers are storage areas that hold all or parts of files for printing or plotting. They also serve as holding areas for fast file access in memory or to disk drives. Buffers can either be hardware or software. In chemistry, a buffer is a solution that tends to maintain a constant value of some parameter such as pH.

Bulk sample - A sample taken from a larger quantity (lot) for analysis or recording purposes.

Bulletin board system (BBS) - Computer configured to answer the telephone and allow users to download and upload software and leave messages. Largely made obsolete by the Internet.

Bus - The bus is the path data takes between the motherboard and adapter cards such as the video display or drive controller cards.

Byte - A byte is equal to 8 bits. The byte is the unit measure of file size and disk and RAM capacity on personal computers.

C

C - Programming language widely used for software development.

C++, C# - Programming languages based on C, but with object-oriented extensions.

CAA - Clean Air Act.

Cable - Assembly of wires and plugs used to connect two devices.

Cable modem - High-speed communication connection for passing data over the lines used by cable TV.

Cache - An area of memory used to store data from a slow device (such as a hard disk or main memory) to speed up the performance of a faster device (such as the main processor).

CAD/CAE/CAM/CIM - Computer-Aided Drafting (or Design), Computer-Aided Engineering, Computer-Aided Manufacturing, Computer-Integrated Manufacturing.

CADRE - Computer Aided Data Review and Evaluation. The CADRE system evaluates QC results against data review criteria appropriate for a specified corresponding analytical method or procedure.

Calibrant - See **Calibration standard**.

Calibrate - To determine, by measurement or comparison with a standard, the correct value of each scale reading on a meter or other device, or the correct value for each setting of a control knob. The levels of the calibration standards should bracket the range of planned measurements. See **Calibration curve**.

Calibration blank - Laboratory reagent water samples analyzed at the beginning, during, and at the end of an analytical run. They verify the calibration of the system and measure instrument contamination or carry-over.

Calibration curve - The graphical relationship between the known values for a series of calibration standards and instrument responses.

Calibration drift - The difference between the instrument response and a reference value after a period of operation without recalibration.

Calibration standard - A substance or reference material used to calibrate an instrument.

Calibration-check - See **Calibrate**.

Calibration-check standard - See **Calibration standard**.

Callout box - A box on a map containing data, usually with a pointer to the appropriate location.

Candidate method - A body of procedures and techniques of sample collection and/or analysis that is submitted for approval as a reference method, an equivalent method, or an alternative method.

Carbonate - In geology, rock or soil made of calcite ($CaCO_3$) or dolomite ($CaMg(CO_3)_2$). In chemistry, the CO_3 ion.

Carcinogen - A substance that causes cancer.

Carrying-agent - Any dilutent or matrix used to entrain, dilute, or to act as a vehicle for a compound of interest.

Cartesian coordinate system - Coordinates in which the X and Y axes are perpendicular and at the same scale. In mapping, examples of Cartesian coordinate systems include state plane coordinates and universal transverse Mercator.

CAS number - Chemical Abstracts Service registry number of elements, chemical compounds, and certain mixtures.

Cat5 - Category 5 cable. Similar to standard telephone wiring, but of higher quality, used for connecting computers and other devices.

CATEX - CATegorical EXclusion. Outcome of the NEPA process where an action is found to have no significant effect on the environment.

Cause-effect diagram - A graphical representation of an effect and possible causes. A popular one is the Ishikawa "fish bone diagram."

CCL - Construction Completions List. A list developed under CERCLA that helps identify successful completion of cleanup activities.

CCS - Contract Compliance Screening. The screening of electronic and hard copy data deliverables for completeness and compliance with the contract. This screening is done under EPA direction by the SMO Contractor.

CCV - See **Continuous Calibration Verification**.

CD-ROM - Compact Disk Read Only Memory. Optical disks which are used to distribute large amounts of data. Can be read but not written to by a personal computer.

CDX - See **Central Data Exchange.**

Ceiling plot - A two-dimensional contour plot that is projected above a three-dimensional mesh or floating contour plot. These plots are usually created in mapping programs.

Central Data Exchange - The point of entry on the Environmental Information Exchange Network (Exchange Network) for environmental data submissions to the Agency.

Central line - The line on a control chart that represents the expected value of the control chart statistic; often the mean. See **Control chart**.

CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act. Initiated in December 1980, CERCLA provided broad federal authority to respond directly to the release or possible release of hazardous substances that may endanger human health or the environment. CERCLA also established a trust fund to provide for cleanup when no responsible party could be identified; hence CERCLA is commonly referred to as "Superfund." This legislation covers environmental issues at non-operating facilities.

CERCLIS - Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS); CERCLIS is the official inventory database of Superfund hazardous waste sites. It contains information about planned and actual site activities and financial information entered by EPA regional offices.

Certification - The process of testing and evaluation against specifications designed to document, verify, and recognize the competence of a person, organization, or other entity to perform a function or service usually for a specified time. See also **Accreditation**.

Certification of Data Quality - The real-time attestation that the activities of an environmental data collection operation's individual elements (e.g., sampling design, sampling, sample handling, chemical analysis, data reduction, etc.) have been carried out in accordance with the operation's requirements and that the results meet the defined quality criteria.

Certified Reference Material (CRM) - A reference material that has one or more of its property values established by a technically valid procedure and is accompanied by, or traceable to, a certificate or other documentation issued by a certifying body. See **Certification** and **Reference Material**.

Certified value - The reported numerical quantity that appears on a certificate for a property of a reference material.

CFC - Chlorofluorocarbon.

CFR - Code of Federal Regulations. The final rules of federal agencies published every year. Environmental regulations are codified in 40 CFR, and often other sections apply to environmental projects as well.

CGA - Color Graphics Adapter. Video adapter introduced with the original IBM-PC with a maximum resolution of 640x200 pixels.

CGI - Common Gateway Interface. A technology that allows access to databases and programming capabilities using Web pages. It is popular on UNIX systems.

Chain of custody - An unbroken trail of accountability that ensures the physical security of samples, data, and records. This is usually accomplished with a paper form that travels with the samples.

Chance cause - An unpredictable, random determinant of variation of a response in a sampling or measurement operation.

Characteristic - See **Property**.

Check sample - An uncontaminated sample matrix spiked with known amounts of analytes usually from the same source as the calibration standards. It is generally used to establish the stability of the analytical system but may also be used to assess the performance of all or a portion of the measurement system. See also **Quality control sample**.

Check standard - A substance or reference material obtained from a source independent from the source of the calibration standard used to prepare check samples.

Chi-square test - A statistical test of the agreement between the observed frequency of events and the frequency expected according to some hypothesis.

Chlorinated - A compound containing chlorine.

Chloropleth map - Map where values are shown as colors. See **Bubble map**.

Chromatograph - An analytical device that separates materials based on their relative rate of movement through a gas or liquid.

Chrome - Open-source web browser from Google.

Chronic toxicity - The effect of low-level, long-term (as opposed to short-term or acute) exposure to a toxic substance.

CLASS - Contract Laboratory Analytical Services Support. The contract that operates the Sample Management Office (SMO) and is awarded and administered by EPA. The contractor-operated SMO provides management, operations, and administrative support to the CLP. The SMO contractor schedules and tracks sample shipments for CLP analytical services requests.

Classed post map - Map where values are shown as colors. See **Bubble map**.

Clastic - Rock, such as sandstone, siltstone, or shale, made of mineral grains.

Clean sample - A sample of a natural or synthetic matrix containing no detectable amount of the analyte of interest and no interfering material.

Clipboard - An area of computer memory for temporarily storing data copied or cut from a document, form, etc. to be pasted somewhere else.

Clock calendar - Device which stores the correct time and date in a computer. This setting is not lost when the computer is turned off. Clock calendars are standard on most computers.

Clock speed - The speed of the microprocessor and related components is known as the clock speed, and is usually expressed in megahertz, or millions of cycles per second.

Cloud or **cloud computing** - Data storage and/or software that is accessed through the Internet. The actual location of the resources is determined by the cloud service provider, and is not important to the end user.

CLP - See **Contract Laboratory Program**.

CMM - Capability Maturity Model. A framework for organizing continuous process improvement into five maturity levels geared toward achieving a mature software process.

CMOS - Complimentary Metal Oxide Semiconductor. A type of memory that can contain its information after the power is turned off.

CMYK - Description of a digital image in terms of the amount of Cyan, Magenta, Yellow, and blacK.

COC - See **Chain of Custody**

COD - Chemical Oxygen Demand.

Coefficient of variation (CV) - a measure of relative dispersion (precision.) It is equal to the ratio of the standard deviation divided by the arithmetic mean. See also **Relative standard deviation**.

Cold boot - see **Boot**.

Collaborative testing - The evaluation of an analytical method by typical or representative laboratories using subsamples prepared from a homogeneous standard sample.

Collocated sample - One of two or more independent samples collected so that each is equally representative for a given variable at a common space and time.

Collocated samplers - Two or more identical sample collection devices, located together in space and operated simultaneously, to supply a series of duplicate or replicate samples for estimating precision of the total measurement system/process.

Comparability - The degree to which different methods, data sets, and/or decisions agree or can be represented as similar; a data quality indicator.

Compatibility - How well a hardware device or program mimics another, usually a better-known one.

Completeness - The amount of valid data obtained compared to the planned amount, and usually expressed as a percentage; a data quality indicator.

Component of variance - A part of the total variance associated with a specified source of variation.

Composite sample - A sample prepared by physically combining two or more samples having some specific relationship and processed to ensure homogeneity. See **Flow-proportioned sample** and **Time-proportioned sample**.

Cone penetrometer - A device driven into the ground to determine soil and rock properties.

Confidence coefficient - The probability statement that accompanies a confidence interval and is equal to unity minus the associated Type I error rate (false positive rate). A confidence coefficient of 0.90 implies that 90% of the intervals resulting from repeated sampling of a population will include the unknown (true) population parameter. See **Confidence interval**.

Confidence interval - The numerical interval constructed around a point estimate of a population parameter, combined with a probability statement (the confidence coefficient) linking it to the population's true parameter value. If the same confidence interval construction technique and assumptions are used to calculate future intervals, they will include the unknown population parameter with the same specified probability. See **Confidence coefficient**.

Confining layer - An underground geologic unit with a low permeability that inhibits the vertical flow of water. See also **Aquitard**.

Connectivity - Communication between computers.

Continuous calibration verification - A process using laboratory standards to ensure that the analysis process is in calibration.

Contour - The shape of a surface. Also a line of equal value on a graph or map.

Contract Laboratory Program - A program that supports the EPA's Superfund effort by providing a range of chemical analytical services to produce environmental data of known quality. This program is directed by the Analytical Operations/Data Quality Center of EPA.

Control chart - A graph of some measurement plotted over time or sequence of sampling, together with control limit(s) and, usually, a central line and warning limit(s). See **Central line**, **Control limit**, and **Warning limit**.

Control limit - A specified boundary on a control chart that, if exceeded, indicates a process is out of statistical control, and the process must be stopped, and corrective action taken before proceeding (e.g., for a Shewhart chart the control limits are the mean plus and minus three standard deviations, i.e., the 99.72% confidence level on either side of the central line.)

Control sample - See **Quality control sample** and **Check sample**.

Control standard - See **Check standard**.

Controlled variable - A variable that is set at a pre-selected level when a controlled experiment is conducted.

Controller - A controller is a piece of hardware that controls a device in a computer such as a disk drive or monitor, or other type of hardware device such as a pump.

Coordinate conversion - Changing coordinates from one system to another such as from latitude-longitude to Universal Transverse Mercator.

Coordinates - A pair of numbers that defines the location of a point, such as a station on a map. Coordinates are related to a coordinate system, which defines the scale and units of the coordinates, such as Cartesian (linear XY) or spherical (latitude-longitude).

Coprocessor - Chip or board that works with the microprocessor to perform some particular function such as mathematical or graphical calculations.

Copy protection - System to prevent unauthorized use of software. May involve hardware keys.

Corrected value - The magnitude of a specific measurement; a variable; a unit of space, time, or quantity; or a datum after correction for a blank value. See **Observed value**.

Correlation - A measure of association between two variables. See also **Correlation coefficient**.

Correlation coefficient - A number between -1 and 1 that indicates the degree of linearity between two variables or sets of numbers. The closer to -1 or +1, the stronger the linear relationship between the two (i.e., the better the correlation). Values close to zero suggest no correlation between the two variables.

Corrosivity - A substance's ability to corrode metals.

Cost recovery - A legal process by which potentially responsible parties who contributed to contamination at a Superfund site can be required to reimburse the Trust Fund for money spent during any cleanup actions by the federal government. Can also refer to a process of recovering funds from a government agency for approved cleanup activities.

COTS - Commercial Off-the-Shelf software.

Coverage - In GIS, data of a specific type such as transportation or drainage, and the area covered by that data. See also **Theme** and **Layer**.

CPU - Central Processing Unit, referring to the computer, or the chip that runs it.

CRDL - Contract Required Detection Limit. Minimum level of detection acceptable under the contract Statement of Work.

Critical-toxicity range - The interval between the highest concentration at which all test organisms survive and the lowest concentration at which all test organisms die within the test period.

Crosstab - Data display showing rows and columns summarizing data. A typical crosstab environmental report might have samples across and parameters down, or vice versa.

CRP - Community Relations Plan.

CRQL - Contract Required Quantitation Limit. Minimum level of quantitation acceptable under the contract Statement of Work.

CRT - Cathode Ray Tube. The TV-like video monitor used with some computers, now mostly replaced by flat panel displays.

Curie - Measurement of an amount of radiation equivalent to the activity of 1 gram of the radium isotope ^{226}Ra.

Cursor - A cursor is a place marker on a monitor, or a pointing device used for digitizers.

Cursor keys - Cursor keys are the arrow keys on the keyboard that move the cursor.

Curve fitting - Using some type of equation to fit a sequence of data. Choosing different equations can lead to different interpretations.

CVAA - Cold Vapor Atomic Absorption.

CWA - Clean Water Act.

CZMA - Coastal Zone Management Act.

D

Daily standard - See **Calibration standard**.

Daisy wheel printer - Impact printers that use a printwheel to generate output. While they cannot print graphics, daisy wheels produce text output of excellent quality but are slow and noisy.

DART - Data Assessment Rapid Transmittal. DART is an active notification system providing up-to-the-minute transmittal of the CCS and CADRE evaluation data to DLP customers.

Data - Facts or figures from which conclusions can be inferred. Also collection of letters, numbers, and other information elements stored in a computer.

Data assessment tool - A software-driven process, which incorporates CCS, CADRE, and DART, designed to produce enhanced CLP deliverables and more usable reports in a standard format.

Data cube - Data structured in multiple dimensions for data mining.

Data mart - Data extracted from the main database with a focus on one particular task such as display.

Data mining - Analysis of a data warehouse using specialized tools to look at the data in various ways for trends and details.

Data model - A description of the structure of a database, including the tables and fields, relationships, etc.

Data normalization -See **Normalization**.

Data quality - The totality of features and characteristics of data that determines their ability to satisfy a given purpose; the sum of the degrees of excellence for factors related to data.

Data quality indicators - Quantitative statistics and qualitative descriptors that are used to interpret the degree of acceptability or utility of data to the user. The principal data quality indicators are bias, precision, accuracy, comparability, completeness, and representativeness.

Data Quality Objective (DQO) - Qualitative and quantitative statements of the overall level of uncertainty that a decision maker is willing to accept in results or decisions derived from environmental data. DQOs provide the statistical framework for planning and managing environmental data operations consistent with the data user's needs.

Data reduction - The process of transforming raw data by arithmetic or statistical calculations, standard curves, concentration factors, etc., and collation into a more useful form.

Data set - All the observed values for the samples in a test or study; a group of data collected under similar conditions and which, therefore, can be analyzed as a whole.

Data turnaround time - See **Turnaround time.**

Data validation - Determination of suitability for use, based on EPA region-defined criteria and limits, professional judgment of the data validator, and (if available) the Quality Assurance Project Plan (QAPP) and Sampling and Analysis Plan (SAP).

Data warehouse - A centralized database with all of the data of a particular type for an organization.

Database - A collection of related information.

Database administrator - A person tasked with maintaining a database system.

Database manager - Software that organizes a database into a usable format.

Daughterboard - A small printed circuit board attached to a larger one, usually to add some additional capability.

DBCP - 1,2-Dibromo-3-chloropropane. Pesticide.

DCE - 1,1-Dichloroethylene. Volatile organic contaminant.

DDT - Dichlorodiphenyltrichloroethane. Pesticide.

Decontamination blank - See **Sampling equipment blank.**

Default - Value used when no other value is specified.

Defensible - The ability to withstand any reasonable challenge related to the veracity or integrity of laboratory documents and derived data.

Degrees of freedom - The total number of items in a sample, minus the number of independent relationships existing among them; the divisor used to calculate a variance term; in the simplest cases, it is one less than the number of observations.

Dependent variable - See **Response variable**.

Detection limit (DL) - The lowest concentration or amount of the target analyte that can be determined to be different from zero by a single measurement at a stated level of probability.

Determination - The application of the complete analytical process of measuring the property of interest in a sample, from selecting or measuring a test portion to the reporting of results.

Device driver - Device drivers are small programs that set up the communication parameters between the computer or software programs and devices such as monitors, disk drives, printers, plotters, or digitizers.

Dilution - Reducing a sample to a lower concentration, usually by adding water. Sometimes necessary to effectively analyze high-concentration samples due to matrix interference.

Digitizer - Input devices that put graphic information into a computer. They consist of a handheld position sensor (stylus or cursor), a tablet, and sophisticated electronics.

Dilutent - A substance added to another to reduce the concentration and resulting in a homogeneous end product without chemically altering the compound of interest.

Dilution factor - The numerical value obtained from dividing the new volume of a diluted substance by its original volume.

DIMM - Dingle Inline Memory Module. A group of RAM chips attached to both sides of a carrier and installed as a unit.

DIP switch - Dual Inline Parallel switch. Commonly used to configure hardware.

Direct push sampling or measurement - Samples or measurements taken by pushing a tool or probe into the ground.

Directory - Group of files kept together by the operating system. Sometimes also called folders. See **Subdirectory**.

Discharge Monitoring Report - A report, usually to a government agency, of the amount and composition of discharge over a specific period of time.

Disk cache - See **Cache**.

Diskette - Floppy disk removable data storage device.

Diskette drive - Largely obsolete device for reading and writing diskettes.

Display adapter - Circuitry that translates the electronic signal from the computer into the signal that feeds the monitor. These adapters come in different resolutions.

DLG - Digital Line Graph is a specialized data format used for geographic, cultural, and other data.

DLL - Dynamic Link Library. A way for programs to link software code at runtime.

DMR - See **Discharge Monitoring Report.**

DNAPL - Dense Non-Aqueous Phase Liquid. A fluid that doesn't mix with water, and sinks because it is dense. Examples include chlorinated hydrocarbons such as TCE, TCA, and PCE, coal tar, creosote, polychlorinated biphenyls, and mercury.

Document control - A systematic procedure for indexing documents by number, date, and revision number for archiving, storage, and retrieval.

Document Type Definition - A set of markup declarations that define a document type for an SGML-family markup language (SGML, XML, HTML).

DoD - Department of Defense.

DoE - Department of Energy. Formerly the Nuclear Regulatory Commission.

DOS - Disk Operating System. More specifically refers to PC-DOS and MS-DOS used by IBM-compatible computers. Largely obsolete, replaced by Microsoft Windows.

DoT - Department of Transportation.

Dot matrix printer - Dot matrix printers are impact printers. They generate output when pins in the printhead strike a ribbon that transfers the information to paper.

Dot pitch - The smallest circle that can be drawn around all of the color dots making up one pixel. The smaller the number, the sharper the appearance on the monitor.

Double-blind sample - A sample submitted to evaluate performance with concentration and identity unknown to the analyst. See **Blind sample**.

Download - Move data from another computer or network to yours. Opposite of **Upload**.

DPI - Dots per Inch; used for describing printer, scanner, and screen resolutions.

DQA - Data Quality Assessment. The third part of the EPA data verification/validation process that determines the credibility of the data.

DQO - Data Quality Objective. Quality targets for a project. The EPA specifies five levels.

DRAM - Dynamic Random Access Memory. The most common type of memory chip used in personal computers.

DRO - Diesel Range Organics.

Drylabbing - Fraudulent laboratory practice of failing to analyze data and then fabricating the results.

DSL - Digital subscriber line broadband communication connection.

DTD - See **Document Type Definition.**

DTS - Data Transfer Standard. Document describing the format for electronic data deliverables.

Duplicate - An adjective describing the taking of a second sample, or performance of a second measurement or determination. Often incorrectly used as a noun and substituted for "duplicate sample." Replicate is to be used if there are more than two items. See **Replicate**.

Duplicate analyses or measurements - The analyses or measurements of the variable of interest performed identically on two subsamples of the same sample. The results from duplicate analyses are used to evaluate analytical or measurement precision but not the precision of sampling, preservation, or storage internal to the laboratory.

Duplicate samples - Two samples taken from and representative of the same population and carried through all steps of the sampling and analytical procedures in an identical manner. Duplicate samples are used to assess variance of the total method including sampling and analysis. See **Collocated sample**.

Dvorak - Keyboard layout invented in 1936 that is not widely used but which puts the most commonly used keys under the fingers for the purpose of improving speed and accuracy.

DW - Drinking Water.

DVD - Digital Video Disk. Also used for data storage.

DXF - Drawing Exchange Files have a .dxf extension and are used to communicate between graphics programs. Although .dxf files were first used by AutoCAD, many graphics packages will handle .dxf directly or through a converter. These files are ASCII text files.

Dynamic blank - A sample-collection material or device (e.g., filter or reagent solution) that is not exposed to the material to be selectively captured but is transported and processed in the same manner as the sample. See **Instrument blank** and **Sampling equipment blank**.

Dynamic calibration - Standardization of both the measurement and collection systems using a reference material similar to the unknown. For example, a series of air-mixture standards containing sulfur dioxide of known concentrations could be used to calibrate a sulfur dioxide bubbler system.

E

EA - See **Environmental Assessment**.

Easting - The east-west direction on a map.

EBCDIC - Extended Binary Coded Decimal Interchange Code. While most computers speak ASCII, a few, especially some IBM mainframes, use EBCDIC. It is a different way of encoding data, and both methods work, but in situations where machines using the two different encoding schemes must be made to talk to each other, the translation required can cause a problem.

ECD - Electron Capture Detector. In pesticide/aroclor analysis, the compounds are detected by an electron capture detector.

EDB - Ethylene dibromide. Volatile organic contaminant.

EDD - Electronic Data Deliverable. This is the file delivered by the laboratory containing the results of its analyses.

Edit - Change the contents of a file such as a document or drawing.

EDMS - Environmental Data Management System. A software program for managing environmental data. See **EMS** and **EMIS**.

EEPROM - Electrically Erasable Programmable Read-Only Memory.

EIMS - Web-based data management system for Locus Technologies.

EIS - See **Environmental Impact Statement**.

ELCD - Electrolytic Conductivity Detector.

EMIS - Environmental Management Information System. A software program to assist with an environmental management system. See **EDMS** and **EMS**.

EMS- Environmental Management System. An administrative system for managing environmental issues at a facility. See **EDMS** and **EMIS**.

Emulator - Hardware or software which is designed to work like or take the place of some other type of device.

Entity-relationship diagram - Diagram showing the tables, fields, and relationships in a relational database.

Enviro Data- Popular environmental data management software from Geotech Computer Systems.

Enviro Insite - Geologic graphics program from HydroAnalysis, Inc.

Enviro Spase - Popular environmental graphics software from Geotech Computer Systems.

Environmental Assessment (EA) - Screening document used to determine whether a full Environmental Impact Statement (EIS) is required. An EA can also result in a Finding of No Significant Impact (FONSI).

Environmental Impact Statement (EIS) - A document prepared to assist with decision making based on the environmental consequences of a specific action.

Environmental Restoration Information System - A web-based database system run by the U.S Army Environmental Center for the storage of Army environmental restoration and range field data.

Environmental sample - A sample of any material that is collected from an environmental source.

Environmentally related measurement - Any assessment of environmental concern generated through or for: field, laboratory, or modeling processes; the value obtained from such an assessment.

EO - Executive Order.

EOX - Extractable Organic Halides.

EPA - United States Environmental Protection Agency.

EPCRA - Emergency Planning and Community Right-to-Know Act of 1986. This law requires industrial facilities to disclose information about chemicals stored onsite.

EPROM - Electronically Programmable Read-Only Memory.

Equipment rinseates - See **Rinseate blank**.

EQuIS - Data management system from Earthsoft.

Equivalent method - Any method of sampling and/or analysis demonstrated to result in data having a consistent and quantitatively known relationship to the results obtained with a reference method under specified conditions, and formally recognized by the EPA.

ERIS - See **Environmental Restoration Information System**.

ERPIMS - Environmental Resources Program Information Management System (formerly IRPIMS). The Air Force system for validation and management of data from environmental projects at all Air Force bases.

ERPTools - Software used with ERPIMS.

Error (measurement) - The difference between an observed or corrected value of a variable and a specified, theoretically correct, or true value.

Error function - The mathematical relationship of the results obtained from the measurement of one or more properties and the error of the applied measurement process. See **Normal distribution**.

ESA - Endangered Species Act.

ESdat - Data management system from Australia.

Ethernet - A system for connecting a number of computer systems to form a local area network, with protocols to control the passing of information.

Ex situ - Out of place, such as occurring out of the ground. Ex-situ treatment processes involve removal of the contaminated material from the ground prior to treatment.

Exchange Network - Environmental Information Exchange Network. A partnership among states, territories, tribes, and the USEPA to exchange environmental information.

Expansion slots - Places in the computer where adapter cards can be inserted to increase the computer's capabilities.

Experimental variable - See **Controlled variable**.

Export - To transfer a file out from one program to another is to export a file.

Extension - The extension is the three-letter (or more) suffix after the period in a file name. Examples of extensions include .doc for Word document files or .dxf for drawing exchange files.

External quality control - The activities that are routinely initiated and performed by persons outside of normal operations to assess the capability and performance of a measurement process.

Extrapolate - Estimate values beyond the limit of the data.

F

False negative decision - See **Type II error**.

False negative result - Estimating (incorrectly) that an analyte is not present when it actually is present.

False positive decision - See **Type I error**.

False positive result - Estimating (incorrectly) that an analyte is present when it actually is not present.

FAT - The File Allocation Table is the data area on a floppy or hard disk that tells the operating system where to find each file on the disk. Because of its importance, there are two FATs on every disk.

Fault - A break in rocks or an error in equipment.

Feasibility study - A description and analysis of potential cleanup alternatives for a site such as one on the National Priorities List. The feasibility study usually recommends selection of a cost-effective alternative. It usually starts as soon as the remedial investigation is under way. Together, they are commonly referred to as the "RI/FS."

FID - Flame Ionization Detector.

Field - Data elements within a database table.

Field blank - A clean sample (e.g., distilled water), carried to the sampling site, exposed to sampling conditions (e.g., bottle caps removed, preservatives added) and returned to the laboratory and treated as an environmental sample. Field blanks are used to check for analytical artifacts and/or background introduced by sampling and analytical procedures. See **Dynamic blank** and **Sampling equipment blank**.

Field duplicates - See **Duplicate samples**.

Field reagent blank - See **Field blank**.

Field sample - See **Sample**.

Field sample spikes - Samples that have been spiked with known amounts of target analytes in the field prior to shipment to the laboratory. These are submitted as double-blind quality control samples to measure the recovery of target analytes for both field and laboratory procedures. The frequency of these spikes is project specific.

FIFRA - Federal Insecticide, Fungicide, and Rodenticide Act of 1972. Provides federal control of pesticide distribution, sale, and use. EPA is authorized to study the consequences of pesticide usage and to require users such as farmers and utility companies to register when purchasing pesticides, and to take exams for certification as applicators of pesticides, and pesticides used in the U.S. must be registered (licensed) by EPA.

File - Cohesive unit of data stored by a computer. Can be either a program or a data file.

Filtering - Removing suspended material by passing through a filter, either in the field or in the laboratory. Results from unfiltered samples are often referred to as "Total" results, and from filtered samples, either filtered, or filtered followed by the coarseness of the filter, such as "Filtered 0.01 μ."

Firefox - Mozilla Firefox is a popular open-source web browser.

FireWire - IEEE 1394 high-speed serial interface for connecting peripherals to computers.

Fixed disk drive - See **Hard disk**.

Flash drive - Small solid state device, usually with a USB interface, for data transfer and storage.

Flat file - A file containing text data in rows and columns.

Flat panel display - Computer monitor or other display with digital components such as LCD or LED technology.

Floaters - See **LNAPL**.

Floating contours - Floating contours are also known as constant Z plots. A topographic map transformed into three-dimensions is an example of a floating contour map.

Floating point number - An approximation of a real number that supports a wide range of values, usually by storing a fixed number of significant digits, called the mantissa, scaled using an exponent.

Floating point processor - Math coprocessor.

FLOPS - FLoating point Operations Per Second; a measure of processor speed.

Flow rate - The quantity-per-unit time of a substance passing a point, plane, or space; for example, the volume or mass of gas or liquid emerging from an orifice, pump, or turbine, or moving through a point in a conduit or channel.

Flow-proportioned sample - A sample or subsample collected from a fluid system at a rate that produces a constant ratio of sample accumulation to matrix flow rate.

Folder - Group of files kept together by the operating system. Sometimes also called directories or subdirectories.

FONSI - Finding of No Significant Impact. One of the possible outcomes of an Environmental Assessment.

Font - Style of character as printed or viewed on the screen, currently meaning the same thing as typeface, although in letterpress printing the typeface referred to the style of the characters, and font also included the point size. Courier, Times Roman, Helvetica, and Arial are examples of different fonts. Individual fonts come in a variety of sizes.

Form R - Form submitted to the EPA for the Toxics Release Inventory to report toxic materials entering the waste stream, recycled or treated at a facility, source reduction practices, and other items.

Format - With disks, preparing the disk to hold data. For data files, the arrangement of data within the file.

Formation - In geology, a mappable lithologic unit.

Fortify - Synonym for spike.

FORTRAN - FORmula TRANslator. Programming language popular for numerical calculations.

FPD - Flame Photometric Detector.

Fracking - Hydraulic fracturing of an oil or gas well to stimulate production.

Fragmentation - When data is broken into parts. Often used to describe files on a hard disk which are not contiguous.

Frame relay - Medium-speed communication connection.

French drain - A trench covered with gravel or rock or containing a perforated pipe that redirects surface and groundwater away from an area. This can be useful for managing contaminated surface or groundwater.

FS - Feasibility study.

FSP - Field Sampling Plan.

FUDS - Formerly Used Defense Sites.

FUDSCHEM - Corps of Engineers database to support the **FUDS** program.

Full-scale response - The maximum output of a measurement instrument in a given range as displayed on a meter or scale.

Function key - The F1, F2, etc. keys on a computer keyboard are the function keys. The functions assigned to these keys vary with software.

Functional analysis - A mathematical evaluation of each component of the measurement system (sampling and analysis) in order to quantify the error for each component. A functional analysis is usually performed prior to a ruggedness test in order to determine which variables should be studied experimentally.

G

Gaussian distribution - See **Normal distribution**.

GC - Gas Chromatograph. The instrument used to separate analytes on a stationary phase within a chromatographic column. Gas chromatography is frequently used with other instruments for analyzing organic compounds.

GC/MS - Gas Chromatograph/Mass Spectrometry.

Geodetic coordinate system - Coordinates where the position is given as location on the globe.

Geometric mean - The antilogarithm of the mean of the logarithms of all the values in a set. A type of average.

GeoTIFF - File storage format for digital images that contains geographic reference data.

Georeference - The process of assigning a map location to an object.

GFAAS - See **Graphite furnace atomic absorption spectrophotometry**.

GIF - Graphic Interchange File**,** a format developed by CompuServe for storing digital image files.

Gigabyte - About one billion bytes, abbreviated as GB.

GINT - Popular log creation program from Bentley Systems, formerly GINT Software.

GIS - Geographic Information Systems are used for identifying and manipulating spatial or other attributes on a map.

GIS/Key - Environmental data management system from GIS/Solutions.

GL - Graphics Language.

GLP - See **Good laboratory practices**.

GML - Geography Markup Language. A protocol for transferring geographic data over the Web.

Good laboratory practices - Either general guidelines or formal regulations for performing basic laboratory operations or activities that are known or believed to influence the quality and integrity of the results.

Goodness-of-fit - The measure of agreement between the data in a data set and the expected or hypothesized values.

Google Maps - Web-based map display system from Google.

GPS - Global Positioning System. A hardware device or component of another device such as phone or camera for determining geologic locations from satellite signals.

Grab sample - A single sample that is collected at one point in time and place.

Grapher - Popular graphing program from Golden Software.

Graphics adapter - See **Video adapter**.

Graphics coprocessor - A chip that takes over graphics operations, freeing the microprocessor to run the computer.

Graphics program - Software for creating graphics. Types include paint programs, graphing and charting programs, and CAD programs.

Graphite furnace atomic absorption spectrophotometry - A type of spectrometry that uses a graphite-coated furnace to vaporize the sample.

Gravimetric analysis - A set of methods in analytical chemistry for the quantitative determination of an analyte based on the mass of a solid.

Gray-scale - Refers to the number of levels of gray which a device can display or print.

Grid - A grid is a mathematical representation of a surface based on data point values. Different algorithms create different grids from the same data points. It can also refer to a sampling technique in which samples are taken at the nodes of a regular grid.

GRO - Gasoline Range Organics.

Gross sample - See **Bulk sample**.

GTTP -Geographic Text Transfer Protocol. A transfer protocol at the same level as HTTP (HyperText Transfer Protocol) for transferring geographic data.

H

Hachure - Tic marks on contour lines or a pattern filling an area usually indicating the low side of the contour.

Halogen - A group of elements that includes fluorine, chlorine, bromine, or iodine. These elements are commonly found in pairs, such as Cl_2.

HAP - Hazardous Air Pollutant.

Hard copy - Paper printout of text or graphic data.

Hard disk - A hard disk is a storage device that consists of one or more metal platters coated with magnetic oxide. Sizes vary from 10 to 100 GB or more.

Hard disk controller - Interface between a computer and a hard disk.

Hardware - The physical components of a computer system.

HASP - Health and Safety Plan.

Hazardous waste site - A site contaminated with substances that can pose a substantial or potential hazard to human health or the environment.

HAZMAT - HAZardous MATerials.

HAZWRAP - HAZardous Waste Remedial Action Plan.

Head - Parts of a disk drive that read and write the data. The more heads, the larger the capacity of the disk drive. Also, pressure exerted by groundwater.

Head crash - Failure of a disk drive where the head contacts the disk. Usually results in loss of data and damage to the drive.

Head parking - The capability of some disk drives to move the heads to an area of the disk that does not contain data when the computer is turned off.

Heavy metal - A group of toxic metallic elements that includes arsenic, cadmium, chromium, copper, lead, mercury, silver, and zinc.

HDMI - High Definition Multimedia Interface. Connection standard for video devices.

Health Insurance Portability and Accountability Act - This act protects health insurance coverage for workers, requires national standards for electronic health care transactions, and regulates the use and disclosure of protected health information. HIPAA must be taken into consideration on projects that involve individual health data.

Heavy metals - A loosely defined subset of elements that exhibit metallic properties, mainly including the transition metals, some metalloids, lanthanides, and actinides.

HECD - Hall Electrolytic Conductivity Detector.

Hexadecimal - Hexadecimal number system is a base-16 system used in many computers. Numbers are represented by the digits 0 to 9 and the letters A to F.

HIPAA - See **Health Insurance Portability and Accountability Act**.

Hits - Results that either were detected (detection hits) or were outside of some limit (exceedence hits).

HMIS - Hazardous Materials Identification System. A system of colored bars that provide health warning information. HMIS labels cover, starting at the top: health, flammability, reactivity, and personal protection. Other areas may be included as well. See also **NFPA**, which is meant primarily for fire fighters and other emergency personnel.

Holding time - Time from sampling to analysis. Different methods have different holding times that may include other times such as extraction.

Homogeneity - The degree of uniformity of structure or composition.

HPGL - Hewlett-Packard Graphics Language is a language to direct pen and paper handling for plotters. It is used by Hewlett-Packard and other manufacturers.

HPLC - High Performance Liquid Chromatography.

HRS - Hazard Ranking System. A numerically based screening system that uses information from initial, limited investigations to assess the relative potential of sites to pose a threat to human health or the environment. HRS is the principal mechanism EPA uses to place uncontrolled waste sites on the National Priorities List (NPL).

HSWA - Hazardous and Solid Waste Amendments. 1984 amendments to RCRA that required phasing out land disposal of hazardous waste.

HTML - HyperText Markup Language. Language used by most Web pages on the Internet.

HW - Hazardous Waste.

Hydrocarbons - Organic compounds containing carbon and hydrogen found in petroleum, natural gas, and coal.

HydroGeo Analyst - Data management and display software from Schlumberger Water Services.

Hydrogeology - The science that studies groundwater, including its origin, occurrence, movement, and quality.

Hydrology - The science that studies the properties, movement, and effects of water found above and below the earth's surface.

Hypertext - A software system that links topics on the screen to related information and graphics.

Hz - Hertz or cycles per second. For monitors, used for the vertical scan rate, or the rate at which the screen is redrawn from top to bottom. A larger number means a more stable looking image (less flicker).

I

Icon - Graphical symbol representing a command or choice in a menu system.

ICP/AES - Inductively Coupled Plasma/Atomic Emission Spectroscopy. A technique for the simultaneous or sequential multi-element determination of elements in solution.

ICP/MS - Inductively Coupled Plasma/Mass Spectrometry.

IDL - Instrument Detection Limit.

IEEE 1394 - See **FireWire**.

Ignitability - Tendency to cause fires.

ILM04.1 - Inorganic analytical protocol.

Import - Transferring a file into a program from another location or format.

In control - A condition indicating that performance of the quality control system is within the specified control limits, i.e., that a stable system of chance is operating and resulting in statistical control. See **Control chart**.

In situ - In place. Cleanup contaminants where they are found, without excavation or pumping.

Independent variable - See **Controlled variable**.

Inkjet printer - A device which prints by shooting droplets of ink at the paper. Currently the most popular type of printer.

Inorganic - Substances that contain elements other than carbon and hydrogen, such as metals and nutrients.

Inspection criterion - The specification(s) and rationale for rejecting and accepting samples in a particular sampling plan.

Institutional controls - Legal or institutional measures that limit activities at a property to ensure protection of human health and the environment.

Instrument blank - A clean sample processed through the instrumental steps of the measurement process; used to determine instrument contamination. See **Dynamic blank**.

Instrument carryover blank - Laboratory reagent water samples that are analyzed after a high-level sample. These blanks measure instrument contamination, and are analyzed as needed when highly concentrated samples are analyzed.

Interference - A positive or negative effect on a measurement caused by a variable other than the one being investigated.

Interference equivalent - The mass or concentration of a foreign substance which gives the same measurement response as one unit of mass or concentration of the substance being measured.

Interlaboratory calibration - The process, procedures, and activities for standardizing a given measurement system to ensure that laboratories participating in the same program can produce comparable data.

Interlaboratory method validation study (IMVS) - The formal study of a sampling and/or analytical method, conducted with replicate, representative matrix samples, following a specific study protocol

and utilizing a specific written method, by a minimum of seven laboratories, for the purpose of estimating interlaboratory precision, bias, and analytical interferences.

Interlaboratory precision - A measure of the variation, usually given as the standard deviation, among the test results from independent laboratories participating in the same test.

Interlaboratory test - A test performed by two or more laboratories on the same material for the purpose of assessing the capabilities of an analytical method or for comparing different methods.

Interlaced - For video displays, interlacing means that alternate scan lines are drawn on each redraw. This allows higher resolution at a lower bandwidth. For interlaced system memory, alternate banks of RAM are accessed successively to minimize wait states for the microprocessor.

Internal quality control - See **Intralaboratory quality control**.

Internal standard - A standard added to a test portion of a sample in a known amount and carried through the entire determination procedure as a reference for calibration and controlling the precision and bias of the applied analytical method.

Interpolate - Establish an intermediate value between two points of known value.

Intralaboratory precision - A measure of the method/sample specific analytical variation within a laboratory; usually given as the standard deviation estimated from the results of duplicate/replicate analyses. See also **Standard deviation** and **Sample variance**.

Intralaboratory quality control - The routine activities and checks, such as periodic calibrations, duplicate analyses, and spiked samples, that are included in normal internal procedures to control the accuracy and precision of measurements.

IO - Input-Output. An IO card is an adapter card that adds one or more input-output ports to the computer.

IO bandwidth - Rate at which a device such as a computer can input and output data.

Ion - An atom that has lost or gained one or more electrons, resulting in a positive or negative charge.

Ion balance - A calculation comparing cations to anions in a solution.

IP address - Internet Protocol address . Set of numbers used to address a device on the Internet, such as 192.65.45.37.

iPad - Tablet computer from Apple.

IPv6 - The latest revision of the Internet Protocol (IP) that includes many more addresses.

IPS - Inches Per Second is a measure of speed. Usually used for plotters and tape drives.

IR - Infrared. Also used for infrared spectrophotometry.

IRDMIS - Installation Restoration Data Management Information System. A system that supports the technical and managerial requirements of the Army's Installation Restoration Program (IRP) and other environmental efforts of the U.S. Army Environmental Center.

IRIS - Integrated Risk Information System. An electronic database of EPA regulatory information about chemical constituents.

ISCO - In-Situ Chemical Oxidation. Use of oxidizing agents such as hydrogen peroxide, catalysts, etc. to remove organic pollutants.

ISO - International Standard Organization. An organization that develops standards. Standards applicable to environmental work include ISO 9001 for quality management systems, ISO 14001 for environmental management systems, ISO 17025 for laboratory testing and calibration, and ISO 17043 addressing environmental competence of organizations performing laboratory testing.

ISO image - A file containing the contents of an optical disc, such as the setup disk for software.

Isopach - A line on a map representing equal thickness, such as of a geologic formation.

Isopleth - A line of equal value (contour) on a graph or map.

IT - Information Technology. Often companies have a group with this name (or IS for Information Solutions or Services) to provide technology solutions for the rest of the company.

J

Java - A programming language from Sun Microsystems often used for web programming. A reduced version is called JavaScript.

Joint and several liability - A legal concept that allows responsibility to be placed regardless of the amount of damage caused by each PRP. One PRP therefore can be held liable for the entire cost of cleanup.

JPG or **JPEG** - Joint Photographic Experts Group. A file format for digital images.

Juicing - Fraudulent laboratory practice of manipulating the sample prior to analysis by fortification with additional analyte.

K

Key field - A data field that identifies a record, and that may also share a relationship with other tables.

Keyboard - A keyboard is the most common input device for all types of computers. The most popular one has a layout similar to that of a typewriter.

kHz - Kilohertz or thousands of cycles per second. For monitors, used for the horizontal scan rate, or the rate at which the horizontal lines of pixels are drawn on the screen. A larger number allows higher resolution.

Kilobyte - About 1000 bytes (actually, 1024), abbreviated KB.

KML - Keystone Markup Language. XML-based language used for providing data to **Google Maps**.

Kruskall-Wallace test - A statistical test that determines the trend of a set of data that works when the data doesn't fit a normal distribution.

Kurtosis - A measure of the peakedness of the probability distribution of a variable, that is, how much the tails are cut off.

L

Laboratory accreditation - See **Accredited laboratory** and **Accreditation**.

Laboratory blank - See **Reagent blank**.

Laboratory control sample - See **Quality control sample**.

Laboratory control standard - See **Quality control sample**.

Laboratory duplicates - Synonym for duplicate analyses.

Laboratory performance check solution - A solution of method and surrogate analytes and internal standards used to evaluate the performance of the instrument system against defined performance criteria.

Laboratory re-analyses - See **Replicate analysis or measurements**.

Laboratory reference file - A file created by data management software to communicate valid values and other data items from the user to the laboratory for consistency checking.

Laboratory replicates - See **Replicate analysis or measurements**.

Laboratory sample - A subsample of a field, bulk, or batch sample selected for laboratory analysis.

Laboratory spiked blank - See **Spiked reagent blank**.

Laboratory spiked sample - See **Spiked sample**.

Lambert projection - Method of representing spherical coordinates (latitude-longitude) on a flat map using a cylinder parallel to the polar axis.

LAN - Local Area Network. A way of connecting several computers together.

Landscape orientation - A device or printout where the horizontal axis is longer than the vertical axis. The opposite of portrait.

Landfill - A land disposal site for solid wastes.

Laptop - Small, battery-operated computer.

Laser printer - Laser printers provide very fast, high-quality output using a laser and a toner cartridge.

Layer - In GIS, data of a specific type such as transportation or drainage. See also **Coverage** and **Theme**.

LC - Liquid Chromatography.

LCD - Liquid crystal display - a type of technology for computer monitors and other displays.

LCS - Laboratory Control Standard or Laboratory Control Sample.

LDAR - Leak Detection and Repair. An EPA program under the Clean Air Act that requires refineries to develop and implement a program to monitor for and repair leaks.

LDC - Legacy Data Center. Older EPA system for managing water quality information.

LDR - Land Disposal Restrictions. The EPA's LDR program works to minimize potential environmental threats resulting from land disposal of hazardous wastes by establishing hazardous waste protocol and treatment requirements that make the waste safe for land disposal.

Leachate - A liquid, possibly containing contaminants, resulting from water moving through material such as hazardous waste or a landfill. Also can be generated from an environmental sample. See **TCLP** and **SPLP**.

Leaching - The chemical and physical process by which chemicals are dissolved and moved through the soil or other matrix by water or other fluids.

Least squares method - A technique for estimating model coefficients which minimizes the sum of the squares of the differences between each observed value and its corresponding predicted value derived from the assumed model.

LED - Light Emitting Diode - a digital device that emits light, sometimes used in computer monitor and other display technology.

Level logger - A tool for measuring water levels.

Light pen - Pen-shaped device for pointing to the screen. Used for drawing and menu selection.

Limit of detection (LOD) - See **Method detection limit**.

Limit of quantification (LOQ) - The concentration of analyte in a specific matrix for which the probability of producing analytical values above the method detection limit is 99%.

LIMS - Laboratory Information Management System. This is software that takes data from laboratory instruments, performs calculations, and creates electronic data deliverables.

Linearity - The degree of agreement between the calibration curve of a method and a straight-line assumption.

Linux - An open-source (pretty much free) version of the UNIX operating system for PCs. Named after Linus Torvalds, who wrote the original version. Linux is increasing in popularity, especially for Internet applications such as Web servers.

LISP - LISt Processor. A programming language sometimes used for artificial intelligence.

LLE - Liquid-Liquid Extraction.

LNAPL - Light Non-Aqueous Phase Liquid. A fluid that doesn't mix with water, and floats because it is less dense. Examples include gasoline and oil.

Logarithm - The exponent to which a number (base) must be raised to produce a given number. Typical values for the base are 10 and *e*, the base of natural logarithms (2.71828…).

Lognormal distribution - Distribution of data values where the logarithm of the values forms a normal distribution.

LogPlot - Log creation program from Rockware.

Lot - A number of units of an article or a parcel of articles offered as one item; commonly, one of the units, such as a sample of a substance under study. See **Batch**.

Lot size - The number of units in a particular lot. See **Batch lot** and **Batch size**.

Lower control limit - See **Control limit**.

Lower warning limit - See **Warning limit**.

LQAP - Laboratory Quality Assurance Plan.

LSE - Liquid-Solid Extraction.

LUFT, LUST - Leaking Underground Fuel Tank, Leaking Underground Storage Tank

M

Macintosh - Family of computers from Apple. All feature a graphical user interface using a mouse. Widely used in graphic arts and prepress, but rarely in technical computing.

Macro - A few keystrokes that represent many keystrokes and/or operations. Many programs provide a macro language to automate operations.

Mainframe - Large computer designed to handle many users and tasks at once.

Maintenance agreement - An agreement with a hardware or software manufacturer where any service is paid for in advance or over time.

Management systems review - The qualitative assessment of a data collection operation and/or organization(s) to establish whether the prevailing quality management structure, practices, and procedures are adequate for ensuring that the type and quality of data needed and expected are obtained. See **Review** and **Audit**.

Management Zone Analyst - Software from the Agricultural Research Service of the U.S. Department of Agriculture. MZA uses quantitative, georeferenced field information to mathematically divide a field into natural clusters or zones and also helps determine the optimum number of management zones for each field.

Mann-Kendall test - A statistical test that determines the trend of a set of data that works when the data doesn't fit a normal distribution. A variety is Seasonal Kendall, where the data set is partitioned into seasons, and the test is run on each set and then combined.

Mapwindow - Popular open-source geographic information system software.

Math coprocessor - A chip that takes over mathematical operations, freeing the microprocessor to run the computer.

Matrix - A specific type of medium (e.g., surface water, drinking water) in which the analyte of interest may be contained. See **Medium**.

Matrix interference - Sample characteristics, such as high concentration of a non-target analyte, that interfere with the test method execution such that reliable data cannot be generated. Often the solution is dilution.

Matrix spike - See **Spiked sample**.

Matrix spike duplicate - A duplicate of a matrix spike, used to measure the laboratory precision between samples. Usually one matrix spike duplicate is analyzed per sample batch. Percent differences between matrix spikes and matrix spike duplicates can be calculated.

Matrix spike duplicate sample analysis - See **Matrix**, **Duplicate analyses**, and **Spiked sample**.

Maximum contaminant level - The highest permissible concentration of a pollutant that may be delivered to any receptor.

Maximum holding time - The length of time a sample can be kept under specified conditions without undergoing significant degradation of the analyte(s) or property of interest.

MCL - Maximum Contaminant Level.

MDL - Method Detection Limit.

Mean - See **Arithmetic mean** and **Geometric mean**.

Measure of central tendency - A statistic that describes the grouping of values in a data set around some common value (e.g., the median, arithmetic mean, or geometric mean).

Measure of dispersion - A statistic that describes the variation of values in a data set around some common value. See **Coefficient of variation**, **Range**, **Sample variance**, and **Standard deviation**.

Measurement range - The range over which the precision and/or recovery of a measurement method is regarded as acceptable. See **Acceptable quality range**.

Measurement standard - A standard added to the prepared test portion of a sample (e.g., to the concentrated extract or the digestate) as a reference for calibrating and controlling measurement or instrumental precision and bias.

Median - The middle value for an ordered set of n values represented by the central value when n is odd or by the mean of the two most central values when n is even.

Medium - A substance (e.g., air, water, soil) that serves as a carrier of the analytes of interest. See **Matrix**.

Medium blank - See **Field blank** and **Reagent blank**.

Megabyte - About one million bytes, abbreviated MB.

Megahertz - Millions of cycles per second. For monitors, computer systems, or microprocessors, the rate at which instructions are executed or data is transferred. A larger number means faster processing, but the processing rate also depends on the type of processor and the number of bits being transferred at one time.

Memory - Chips used in a computer for short-term handling of data. See **RAM**.

Memory cache - See **Cache**.

Menu - Screen that presents a list of choices to the user.

Mesh plot - Graphical display consisting of three-dimensional plots with constant X value and constant Y value lines at specified intervals.

Metadata - Data about data. A description of the content of a data set is the metadata for that data set.

Method - A body of procedures and techniques for performing a task (e.g., sampling, characterization, and quantification) systematically presented in the order in which they are to be executed.

Method blank - A clean sample processed simultaneously with and under the same conditions as samples containing an analyte of interest through all steps of the analytical procedure.

Method check sample - See **Spiked reagent blank**.

Method detection limit (MDL) - The minimum concentration of an analyte that, in a given matrix and with a specific method, has a 99% probability of being identified, qualitatively or quantitatively measured, and reported to be greater than zero. See **Detection limit**.

Method of least squares - See **Least squares method**.

Method of standard addition - Analysis of a series of field samples which are spiked at increasing concentrations of the target analytes. This provides a mathematical approach for quantifying analyte concentrations of the target analyte. It is used when spike recoveries are outside the QC acceptance limits specified by the method.

Method performance study - See **Interlaboratory method validation study**.

Method quantification limit (MQL) - See **Limit of quantification** and also **Method detection limit**.

MFM - Modified Frequency Modulation. One type of hard disk controller.

MHz - See **Megahertz**.

Microcomputer - Computer systems like IBM-compatibles, Macintoshes, and other small computers are collectively known as microcomputers.

Microprocessor - The "guts" of a PC is the microprocessor. Familiar processor designations include the Intel Pentium and the AMD chips.

Microsoft Windows - A graphical user interface for Intel processor and compatible computers. Allows several programs to be active at one time and supports a mouse-based point and shoot interaction with the computer.

Millisecond - See **ms**.

Minicomputer - Computer systems that were intermediate between mainframes and microcomputers were known as minicomputers.

Some models of VAX, Prime, and others were minicomputers.

Minimum detectable level - See **Method detection limit**.

MIPS - Million Instructions Per Second. A rating of speed for computers.

MOC - Two-dimensional Method Of Characteristics groundwater flow and transport model from the U.S. Geological Survey.

Mode - The most frequent value or values in a data set.

Modem - MOdulators-DEModulators were used for communication between different computers over telephone lines. Modems are used much less now that most computers are connected to the Internet via broadband.

MODFLOW - U.S. Geological Survey modular finite-difference flow model, which is a computer code that solves the groundwater flow equation.

Module - In programming, an object containing code.

Monitoring - Observation to determine the level of compliance with regulations or to assess pollutant levels.

Monitoring well - A well drilled specifically for monitoring purposes.

Motherboard - The board inside a personal computer that contains the microprocessor, memory sockets, card slots, and other necessary chips to make the computer work.

Mouse - A mouse is a pointing device used for menu selection and moving the cursor around on the screen.

Mozilla - See **Firefox**.

MS - Mass Spectrometry. In volatile and semivolatile analysis, the compounds are detected by a mass spectrometer.

MS - Matrix Spike. See **Spiked sample**.

ms - Millisecond or 1/1000 second. Hard disk access times are rated in milliseconds.

MSA - See **Method of standard addition**.

MSD - Matrix Spike Duplicate. See **Spiked sample**.

MS-DOS - Microsoft's version of the DOS operating system for PC-compatible computers from manufacturers other than IBM.

MSDS - Material Safety Data Sheet. Documents prepared for each substance by its manufacturer describing the properties and safety issues for that substance.

MSR - See **Management systems review**.

Multifunction card - Adapter card with several features such as serial port, parallel port, game port, clock-calendar, etc.

Multipoint calibration - The determination of correct scale values by measuring or comparing instrument responses at a series of standardized analyte concentrations; used to define the range for generating quantitative data of acceptable quality.

Multitasking - The capability of some computers and operating systems to perform more than one activity at once.

Multi-parameter probe - A device capable of measuring several properties, such as water quality values, at one time.

Multi-user - The capability of some computers and operating systems to be used by more than one person at once.

Mutagenesis -The formation of mutations or changes in genetic material, either in the affected individual or in future generations.

MySQL - Popular open-source relational data management software.

MZA - See **Management Zone Analyst.**

N

N/A - Not applicable.

NAA - Non-Attainment Area.

NAAQS - National Ambient Air Quality Standards.

NAD 27 - The North American Datum of 1927 is a network of triangulation stations and surveys crisscrossing the United States. The purpose of establishing this datum was so surveyors could have access to a system of known reference points for mapping.

NAD 83 - As satellite information and distance measurement equipment became available, surveyors became increasingly frustrated with their surveys failing to agree with the reference points established by NAD 1927. To solve this problem, the U.S. Coast and Geodetic Survey completed the North American Datum of 1983. Changing from NAD 27 to NAD 83 will change the latitude, longitude, and elevation value for many points in North America, some by as much as 100 m.

Nanosecond - See **ns**.

NAPL - Non-Aqueous Phase Liquid. A fluid that doesn't mix with water. NAPLs can be light (LNAPL) and float on water, or dense (DNAPL) and sink.

NAS - Network Attached Storage. A server appliance that can be attached to a network to provide storage independent of a server.

NCP - National Contingency Plan. Criteria and procedures for cleanup of Superfund sites.

NEDD - NIRIS Electronic Data Deliverables. Format for delivering electronic data to **NIRIS**. Loosely based on the USACE/USEPA **SEDD** format.

NEPA - National Environmental Policy Act of 1969.

NESHAP - National Emission Standard for Hazardous Air Pollutants.

.net - A software framework developed by Microsoft that runs primarily on Microsoft Windows.

Netware - Software from Novell for connecting computers together on a network. Largely replaced by Windows networking.

Network - Several computers connected together to share data and applications.

NFG - National Functional Guidelines. Documents designed to offer guidance on inorganic, organic, and organic low concentration CLP analytical data evaluation and review.

NFPA - National Fire Protection Association. A diamond system to denote firefighting hazards for emergency personnel. Corners of the diamond represent (clockwise from left) health hazard, flammability, reactivity, and special hazards. See **HMIS**.

NGVD - National Geodetic Vertical Datum. Reference system for surveyed elevations.

NIOSH - National Institute for Occupational Safety and Health

NIRIS - Naval Installation Restoration Information Solution. Navy database for environmental data. See also **NEDD**.

NIST - National Institute of Standards and Testing.

Node - In networking, a computer or terminal on the network. In mapping, the intersections of the X and Y lines of a grid. In GIS and CAD, the intersections of segments of a polyline or polygon.

Noise - The sum of random errors in the response of a measuring instrument, or a random component of data, as opposed to the desired signal.

Nondetect - The result for a constituent that was analyzed for but not detected because it was below the detection limit of the instrument. Often assigned an analytic flag of "U" for undetected.

Non-interlaced - See **Interlaced**.

Non-parametric test - A statistical test suitable for use on a non-normal distribution. See **Parametric test**.

Non-point source - Sources of pollution that do not have a specific point of origin, such as contamination from an agricultural area.

Normal distribution - An idealized probability density function that approximates the distribution of many random variables associated with measurements of natural phenomena and takes the form of a symmetric "bell-shaped curve."

Normalization - In data management, a process that separates data elements into a logical grouping of tables and fields. Different levels of normalization are referred to as forms. In data analysis, converting data so it can be easily compared.

Northing - The north-south direction on a map.

Novell - See **Netware**.

NPD - Nitrogen-Phosphorus Detector.

NPDES - National Pollutant Discharge Elimination System. A program authorized by the Clean Water Act that controls water pollution by regulating point sources that discharge pollutants into waters of the United States. This is done via an NPDES permit, which is usually administered by authorized states.

NPL - National Priorities List. A list of sites for hazardous waste cleanup under the Superfund program.

NPT - Normal Temperature and Pressure.

NRC - National Response Center. A communications center maintained by the Coast Guard that tracks discharges or releases of hazardous substances into the environment.

NRC - Nuclear Regulatory Commission. Now the Department of Energy.

ns - Nanosecond or 1/1,000,000 second. Backup power supplies are ns-rated for the time it takes for the system to detect and correct a power problem.

NSR/PSD - New Source Review/Prevention of Significant Deterioration. Air rules for new or modified stationary sources.

NTA - NitriloTriacetic Acid. Carcinogenic phosphate substitute banned in the U.S.

NTSC - National Television Standards Committee. Usually refers to a video standard compatible with U.S. broadcast television.

NTU - Nephelometric Turbidity Units. Measurement of cloudiness of a fluid.

Nyquist Rule - Rule in computer gridding and contouring stating that for most algorithms, the average grid block size should allow a data point every 2 to 3 cells.

O

O&F - Operational and Functional. CERCLA status where the remedy for a site is functioning properly and performing as designed, or has been in place for one year.

O&M - Operation and Maintenance. Activities that protect the integrity of a site, including the selected cleanup remedy.

Observation - A fact or occurrence that is recognized and recorded.

Observed value - The magnitude of a specific measurement; a variable; a unit of space, time, or quantity; a datum. The observed value is the value reported before correction for a blank value. See **Corrected value**.

OCX - OLE Control eXtension. A way in **OLE** to develop and use custom user interface elements.

OCR - See **Optical Character Recognition.**

ODBC - Open DataBase Connectivity. A Microsoft protocol for communicating between a database and other applications.

OEM - Original Equipment Manufacturer. Refers to a company that sells hardware or software from another manufacturer under their own label, often with some customization.

OLAP - OnLine Analytical Processing. Analysis of a data warehouse for trends and other intelligence.

OLC02 - Organic low concentration water analytical protocol.

OLE - Object Linking and Embedding. A Microsoft protocol that allows programs to share information. The programming component of this is **OCX**.

OLM04.2 - Organic analytical protocol.

OLTP - On Line Transaction Processing. Interaction with a database in high volume such as processing credit card transactions.

OPA - Oil Pollution Act.

Open source - Software for which the source code is provided or available. May or may not be free.

Operating system - Software that is required by a computer to perform its tasks, but which is concerned with running the computer rather than some particular application. Examples are Windows, iOS, Android, and Linux.

Optical Character Recognition - Process or software to create editable text from an image of the text.

Optical disk - Disk drive system and platter for storing data using an optical or optical-magnetic method. Usually have very high storage capacity. The main types are CD-ROM and DVD, which can be read-only or read/write.

Oracle - Database server software and the company that provides it.

Ordinate - Vertical or Y-axis of a graph.

Organic - Compounds containing carbon, usually with hydrogen and sometimes with oxygen.

Origin - The intersection of the axes in a coordinate system, usually with the coordinates of 0,0.

OS/2 - Operating System 2; OS/2 was an alternative to DOS and Windows from IBM that was not widely accepted.

OSCs - On-Scene Coordinators for the Superfund's Removal Program.

OSHA - Occupational Safety and Health Administration. Administers the Occupational Safety and Health Act of 1970.

OSW - EPA's Office of Solid Waste is responsible for ensuring that currently generated solid waste is managed properly, and that currently operating facilities address any contaminant releases from their operations.

OSWER - Office of Solid Waste and Emergency Response. The EPA office that provides policy, guidance, and direction for the EPA's solid waste and emergency response programs, including Superfund.

Outlier - An observed value that appears to be discordant from the other observations in a sample. One of a set of observations that appears to be discordant from the others. The declaration of an outlier is dependent on the significance level of the applied identification test. See also **Significance level**.

Oxidation - Combine with oxygen, or increase the charge of an ion, such as a change from Na^{+} to Na^{++}.

Ozone - A highly corrosive form of oxygen (O_3) found naturally and also manufactured for use as a disinfectant.

P

PA - Preliminary Assessment. A limited scope investigation performed under CERCLA at each project site. Its purpose is to gather readily available information about the site and its surrounding area to determine the threat posed by the site.

PA/SI - Preliminary Assessment and Site Investigation. A process of collecting and reviewing available information about a known or suspected hazardous waste site or release.

PAHs - Polycyclic Aromatic Hydrocarbons.

PAL - Phase Alternating Line is a signal encoding system for television broadcasts widely used in Europe and Asia. See **NTSC**.

Palette - The range of colors available for display or printing.

Pan - Change the view of a drawing or map by moving horizontally and/or vertically at the same scale.

Parallel port - A connection with peripheral equipment where eight bits are sent at one time. Printers are usually connected to parallel ports.

Parameter - Any quantity such as a mean or a standard deviation characterizing a population. Also a constituent to be measured.

Parametric test - A statistical test based on a normal distribution. See **Non-parametric test**.

PARCC - Precision, Accuracy, Representativeness, Comparability, and Completeness.

Parent-child - Refers to the two tables in a one (parent) to many (child) relationship such as a sample coming from a station.

PARLABEL - ERPIMS term for parameter or characteristic.

Partition - Break up into parts, or the parts themselves. Often used to refer to a hard disk that is configured as more than one logical disk drive.

PC - Personal Computer. While it technically covers all desktop computers with different operating systems, PC is often used to refer to IBM Personal Computers and compatibles.

PCA - 1,1,2,2-Tetrachloroethane. Volatile organic contaminant.

PCBs - PolyChlorinated Biphenyls (also called Aroclor). A group of toxic, persistent chemicals used in electrical transformers and capacitors for insulating purposes, and in gas pipeline systems as a lubricant. The sale and new use of PCBs was banned by law in 1979.

PC-DOS - The version of MS-DOS for IBM brand personal computers.

PCE - Tetrachloroethylene. Also called **PERC**. Volatile organic contaminant.

PDF - A format for documents created by Adobe Systems so that the documents will display or print the same regardless of the device.

PE - Performance evaluation sample. A sample of known composition provided by EPA for contractor analysis. Used by EPA to evaluate contractor performance.

PE sample - See **Performance evaluation sample**.

Peak shaving or **Peak enhancement** - Fraudulent laboratory practice of manipulating the results during analysis such as by reshaping a peak that is subtly out of specification.

PERC - Tetrachloroethylene. Also called **PCE**. Volatile organic contaminant.

Percentage standard deviation - Synonym for **Relative standard deviation**.

Performance evaluation audit - A type of audit in which the quantitative data generated in a measurement system is obtained independently and compared with routinely obtained data to evaluate the proficiency of an analyst or laboratory.

Performance evaluation sample - A sample, the composition of which is unknown to the analyst, which is provided to test whether the analyst/laboratory can produce analytical results within specified performance limits. See **Blind sample** and **Performance evaluation audit**.

Peripheral - Any device that is not necessary for running a computer, or which is outside the system unit, is called a peripheral. Monitors, printers, mice, modems, plotters, and digitizers are all considered peripherals.

PERL - A family of high-level, general-purpose, interpreted, dynamic programming languages. It is probably not an acronym.

Permeability - The ability of a rock or other material to transmit fluid.

Pesticides - Substances intended to repel, kill, or control any species designated a “pest,” including weeds, insects, rodents, fungi, bacteria, and other organisms.

Phenols - A group of oxygen-containing organic compounds that are by-products of petroleum refining and other industrial processes.

PHP - A server-side scripting language designed for web development. Originally stood for Personal Home Page, now considered to mean the recursive phrase PHP: Hypertext Preprocessor.

Picocurie - Measurement of an amount of radiation. 1/trillionth of a Curie.

PID - Photo Ionization Detector.

Pitch - Pitch is the spacing of text letters on a page, as put out by a typewriter or character printer. Common pitches include 10 (Pica), 12 (Elite), and 17 (condensed).

Pivot Table - A type of query where the results are turned sideways, and rows become columns. An example would be a report where constituent names are used as column heads and the values displayed in

columns, in a database where the results are actually records (rows). Also called a cross-tab table.

Pixel - A pixel, a PICture ELement, is the dots in an image, and is also the unit of resolution on monitors.

Planimeter - Device or software for calculating areas.

Plotter - A device that uses pens, ink droplets, or electrostatic charges to make varying sizes of hard copy output, usually in multiple colors. Output media sizes range from 8.5" x 11" up to 36" x 42" or larger.

Plume - An area of contaminant concentration resulting from one or more releases of material.

PO - Purchase Order. A document authorizing expenditure of funds, similar to an **AFE**.

Point source - A specific single location from which pollutants are discharged.

Polyconic projection - Method of representing spherical coordinates (latitude-longitude) on a flat map using an approximation based on a set of cones.

Polygon - Closed group of line segments treated as a unit.

Polyline - Group of line segments treated as a unit.

Population - All possible items or units that possess a variable of interest and from which samples may be drawn.

Port - Interface for connecting devices together. Types of ports include serial (RS-232), parallel, SCSI, firewire, and USB.

Portrait orientation - A device or printout where the horizontal axis is shorter than the vertical axis. The opposite of landscape.

PostgreSQL - Popular open-source data management software.

Potentiometric surface - A surface below the ground that represents the level of the water table at known locations such as wells often interpolated and/or extrapolated with a surface modeling program. It is an indication of the direction and magnitude of groundwater flow.

POX - Purgeable Organic Halides.

PPA- Pollution Prevention Act.

PPB - Parts per Billion.

PPI - Points per Inch. Used to describe the resolution of digitizers and printers.

PPM - Parts per Million.

Precision - The degree to which a set of observations or measurements of the same property, usually obtained under similar conditions, conform to themselves; a data quality indicator. Precision is usually expressed as standard deviation, variance, or range, in either absolute or relative terms. See also **Standard deviation** and **Sample variance**. See **Accuracy**.

Preventative maintenance - An orderly program of activities designed to ensure against equipment failure.

Primary reference standard - See **Primary standard**.

Primary standard - A substance or device, with a property or value that is unquestionably accepted (within specified limits) in establishing the value of the same or related property of another substance or device.

Printer - Device used for generating hard copy output from a computer. Types include dot-matrix, daisy-wheel, inkjet, thermal, and laser.

Probability - A number between zero and one inclusive, reflecting the limiting proportion of the occurrence of an event in an increasingly large number of identical trials, each of which results in either the occurrence or nonoccurrence of the event.

Probability sampling - Sampling in which (a) every member of the population has a known probability of being included in the sample; (b) the sample is drawn by some method of random selection consistent with these probabilities; and (c) the known probabilities of inclusion are used in forming estimates from the sample. The probability of selection need not be equal for members of the population.

Procedure - A set of systematic instructions for performing an operation.

Proficiency testing - A systematic program in which one or more standardized samples is analyzed by one or more laboratories to determine the capability of each participant.

Program - Software which permits the computer to perform some desired action. Also the act of writing software.

Programming language - A language used to write software. Examples are BASIC, FORTRAN and C.

Projection - As used in mapping, projection is the representation of the three-dimensional earth on a two-dimensional map. Depending on how a surface is wrapped around the earth, different projections can be obtained. Common projections include Mercator, Albers equal area, polyconic and Lambert Conformal Conic.

PROM - Programmable Read Only Memory.

Prompt - Message provided by the computer indicating that it is ready for input. A common prompt is the active drive and/or the current subdirectory.

Property - A quality or trait belonging to, and peculiar to, a thing; a response variable is a measure of a property. Synonym for characteristic. Also land or a facility owned by a party or parties.

Protocol - A protocol is a method of doing something, and in the computer world is the format for transferring files. Also a detailed written procedure for a field and/or laboratory operation (e.g., sampling, analysis) which must be strictly adhered to.

PRP - Potentially Responsible Party. PRPs are individuals, companies, or other parties that are potentially liable for payment of Superfund cleanup costs.

Public domain software - Public domain software is free software available from a variety of sources.

PUF - Polyurethane foam.

Pump and treat - A remediation method that involves pumping groundwater to the surface for treatment.

PVC - Polyvinyl chloride.

Q

QA - Quality Assurance. An integrated system of management activities involving planning, implementation, assessment, reporting, and quality improvement to ensure that a process, item, or service is of the type and quality needed and expected by the customer.

QAMS - Quality Assurance Management Staff.

QAPP - See **Quality Assurance Project Plan**.

QATS - Quality Assurance Technical Support laboratory. A contractor-operated facility operated under the QATS contract, awarded and administered by EPA.

QBF - See **Query by form**.

QC - Quality Control. The overall system of technical activities that measures the attributes and performance of a process, item, or service against defined standards to verify that they meet the stated requirements established by the customer; operational techniques and activities that are used to fulfill requirements for quality.

QC check sample - See **Quality control sample**.

QFD - Quality Function Development. A quality control method for product development. See **SQFD**.

Quality - The sum of features and properties or characteristics of a product or service that bear on its ability to satisfy stated needs.

Quality assessment - The evaluation of environmental data to determine if it meets the quality criteria required for a specific application.

Quality assurance (QA) - An integrated system of activities involving planning, quality control, quality assessment, reporting, and quality improvement to ensure that a product or service meets defined standards of quality with a stated level of confidence.

Quality Assurance Narrative Statement - A description of the quality assurance and quality control activities to be followed for a research project.

Quality Assurance Objectives - The limits on bias, precision, comparability, completeness, and representativeness defining the minimal acceptable levels of performance as determined by the data user's acceptable error bounds.

Quality Assurance Program Plan (QAPP) - A formal document describing the management policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an agency, organization, or laboratory for ensuring quality in its products and utility to its users.

Quality Assurance Project Plan (QAPjP) - A formal document describing the detailed quality control procedures by which the quality requirements defined for the data and decisions pertaining to a specific project are to be achieved.

Quality circle - A small group of individuals from an organization or unit who have related interests and meet regularly to consider problems or other matters related to the quality of the product or process.

Quality control (QC) - The overall system of technical activities whose purpose is to measure and control the quality of a product or service so that it meets the needs of users. The aim is to provide quality that is satisfactory, adequate, dependable, and economical.

Quality control chart - See **Control chart**.

Quality control check sample - See **Calibration standard**.

Quality control sample - An uncontaminated sample matrix spiked with known amounts of analytes from a source independent from the calibration standards. It is generally used to establish intralaboratory or analyst-specific precision and bias, or to assess the performance of all or a portion of the measurement system. See also **Check sample**.

Quantiles - Sets of data classified by ranges of values, such as to display colored dots on a map.

Quantitation limits - The maximum or minimum levels or quantities of a target variable that can be quantified with the certainty required by the data user.

Query - Request for data from a database management program. In Microsoft Access and other DBMS programs, a database object used to locate and retrieve specific data.

Query by form - A process of creating a query by filling out a form.

QWERTY - Layout of the keys on a standard keyboard.

R

RA - See **Remedial Action**.

Radar plots - Data diagram similar to a gun sight used to display concentrations and other data.

RAID - Redundant Array of Inexpensive Drives. This is a system for combining several hard disk drives together to increase capacity and reliability. The systems come in different levels based on the number of drives and how they are configured.

RAM - Random Access Memory; refers to the main memory used by a computer for storage and processing. The main feature of RAM is that it can be both written and read at any time by the system, and any part of the RAM can be used at any time. The amount of RAM is usually specified in kilobytes (KB) for smaller systems, and in megabytes (MB) for larger systems. The more RAM that is present, the larger the programs that can be loaded, and sometimes the larger the data sets that can be processed. See also **ROM**.

RAM disk - A portion of RAM set aside that operates as a disk drive is a RAM disk. Because files written to a RAM disk do not have to access a floppy or hard disk, they run very fast. Any work done on a RAM disk is lost when the power is shut off, unless it has been saved first to a mechanical disk.

Random - See **Randomness**.

Random error - The deviation of an observed value from a true value, which behaves like a variable, in that any particular value occurs as though chosen at random from a probability distribution of such errors. The distribution of random error is generally assumed to be normal.

Random sample or subsample - A subset of a population or a subset of a sample, selected according to the laws of chance with a randomization procedure.

Random variable - A quantity that may take any of the values of a specified set with a specified relative frequency or probability. It is defined by a set of possible values, and by an associated probability function giving the relative frequency of occurrence of each possible value.

Randomization - The arrangement of a set of objects in a random order. A set of treatments applied to a set of experimental units is said to be randomized when the treatment applied to any given unit is chosen at random from those available and not already allocated.

Randomness - A basic statistical concept and property implying an absence of a plan, purpose, or pattern, or of any tendency to favor one outcome rather than another.

Range - The difference between the minimum and the maximum of a set of values.

RAR file - A compressed file containing one or more digital files.

RAS - Routine Analytical Service. The standard inorganic, organic, and organic low concentration, high volume, multi-component analyses available through the CLP.

Raster - Data represented as an array of points. Files containing photographs and similar data are raster files. Raster devices include monitors and printers. Differs from vector data, which uses line segments instead of dots to represent the image.

Raster map- A map made up of image pixels. See also **Vector map**.

Raw data - Any original factual information from a measurement activity or study recorded in laboratory worksheets, records, memoranda, notes, or exact copies thereof, and that are necessary for the reconstruction and evaluation of the report of the activity or study. Raw data may include photographs, microfilm or microfiche copies, computer printouts, magnetic media, including dictated observations, and recorded data from automated instruments. If exact copies of raw data have been prepared (e.g., tapes which have been transcribed verbatim, dated, and verified accurate by signature), the exact copy or exact transcript may be substituted.

RCRA - Resource Conservation and Recovery Act. Legislation covering environmental issues at operating facilities.

RD - Remedial Design. The phase of Superfund cleanup where the technical specifications for cleanup remedies and technologies are designed.

RD/RA- Remedial Design/Remedial Action.

RDX - Hexahydro-1,3,5-trinitro-1,3,5-triazine.

Reactivity - The tendency of a compound to burn, explode, or produce toxic fumes.

Reagent - A substance or compound that is added to a system in order to bring about a chemical reaction, or added to see if a reaction occurs

Reagent blank - A sample consisting of reagent(s), without the target analyte or sample matrix, introduced into the analytical procedure at the appropriate point and carried through all subsequent steps to identify sources of error in the observed value caused by the reagents and the involved analytical steps.

Reagent grade - The second highest purity designation for reagents that conform to the current specifications of the American Chemical Society Committee on Analytical Reagents.

Record - Items being stored in a database table.

Records system (or plan) - A written, documented group of procedures describing required records, steps for producing them, storage conditions, retention period, and circumstances for their destruction or other disposition.

Recovery efficiency - In an analytical method, the fraction or percentage of a target analyte extracted from a sample containing a known amount of the analyte.

Referee duplicates - Duplicate samples sent to the referee QA laboratory, if one is specified for the project.

Reference material - A material or substance, one or more properties of which are sufficiently well established to be used for the calibration of an apparatus, the assessment of a measurement method, or assigning values to materials.

Reference method - A sampling and/or measurement method which has been officially specified by an organization as meeting its data quality requirements.

Reference standard - Standard of known analytes and concentration obtained from an independent source other than the standards used for instrument calibration. They are used to verify the accuracy of the calibration standards, and are analyzed after each initial calibration or as per method specifications.

Relational database manager - Software that stores data in several tables and allows the data to be retrieved and related based on the contents of fields in the data tables.

Relationship - Connection between fields in relational database tables.

Relative coordinates - Coordinates tied to a local reference system or based only on internal position rather than a global reference system.

Relative standard deviation - The standard deviation expressed as a percentage of the mean recovery, i.e., the coefficient of variation multiplied by 100.

Reliability - The likelihood that an instrument or device will function under defined conditions for a specified period of time.

Remedial action - The remedial action follows the remedial design and involves the construction or implementation phase of Superfund site cleanup.

Remedial design - A phase of remedial action that follows the remedial investigation/feasibility study, and includes development of engineering drawings and specifications for a site cleanup.

Remedial investigation - An in-depth study designed to gather data needed to determine the nature and extent of contamination at a Superfund site, establish site cleanup criteria, identify preliminary alternatives for remedial action, and support technical and cost analyses of alternatives. The remedial investigation is usually done with the feasibility study. Together they are usually referred to as the "RI/FS."

Remedial response - Long-term action that stops or substantially reduces a release or threat of a release of hazardous substances that is serious but not an immediate threat to public health.

Remediate - Correct contamination with activities such as destroying the contaminants, capping a waste site, excavating and transporting the contaminants to an approved hazardous landfill or any other method that reduces risk at a site.

Repeatability - The degree of agreement between mutually independent test results produced by the same analyst using the same test method and equipment on random aliquots of the same sample within a short period of time.

Replicability - See **Repeatability**.

Replicate - An adjective or verb referring to the taking of more than one sample, or to the performance of more than one analysis. Replicate is to be used when referring to more than two items. See **Duplicate**.

Replicate analyses or measurements - The analyses or measurements of the variable of interest performed identically on two or more subsamples of the same sample within a short time interval. See **Duplicate analyses or measurements**.

Replicate samples - Two or more samples representing the same population characteristic, time, and place, which are independently carried through all steps of the sampling and measurement process in

an identical manner. Replicate samples are used to assess total (sampling and analysis) method variance. Often incorrectly used in place of the term "replicate analysis." See **Duplicate samples** and **Replicate analyses**.

Replication - In database management, the process of creating and managing duplicate versions of a database.

Representative sample - A sample taken so as to reflect the variable(s) of interest in the population as accurately and precisely as specified. To ensure representativeness, the sample may be either completely random or stratified depending upon the conceptualized population and the sampling objective (i.e., upon the decision to be made.)

Representativeness - The degree to which data accurately and precisely represent the frequency distribution of a specific variable in the population; a data quality indicator.

Reproducibility - The extent to which a method, test, or experiment yields the same or similar results when performed on subsamples of the same sample by different analysts or laboratories.

Resolution - For monitors and printers, the number of dots which can be displayed on the screen or printed. For digitizers, the smallest increment of movement that can be detected.

Response variable - A variable that is measured when a controlled experiment is conducted.

Result - The product of a calculation, test method, test, or experiment. The result may be a value, data set, statistic, tested hypothesis, or an estimated effect.

Return on investment - A performance measure used to evaluate the efficiency of an investment or to compare the efficiency of a number of different investments.

Review - The assessment of management/operational functions or activities to establish their conformance to qualitative specifications or requirements. See **Management systems review** and **Audit**.

RGB - Red, Green, and Blue. Used to describe a video system where the signal is sent to the monitor using three or more lines, one each for red, green, and blue. With digital RGB systems the intensity of each line, determined by the voltage, is at discrete levels. With analog RGB systems the voltage range is continuous for each color.

RI - See **Remedial Investigation**.

RI/FS - Remedial Investigation/Feasibility Study. This is the step in the cleanup process that is conducted to gather sufficient information to support the selection of a site remedy.

Rinseate blank - A clean sample (e.g., distilled water or ASTM Type II water) passed through decontaminated sampling equipment before sampling, and returned to the laboratory as a sample. Sampling equipment blanks are used to check the cleanliness of sampling devices. Usually one rinseate sample is collected for each 10 samples of each matrix for each piece of equipment.

Risk - The probability or likelihood of an adverse effect.

Risk (statistical) - The expected loss due to the use of a given decision procedure.

Risk assessment - Characterization of the potential adverse health effects of human exposures to environmental hazards.

Robustness - (In)sensitivity of a statistical test method to departures from underlying assumptions, especially a normal distribution. See **Ruggedness**.

RockWorks - Popular geologic graphics program from RockWare.

ROD - Record of Decision. Administrative order that explains the cleanup method that will be used at a site, and often sets target limits for project cleanup.

ROI - See **Return on investment**.

ROM - Read-Only Memory; differs from RAM in that it takes special equipment to write ROM chips, and once in a computer, they can be read and not written to. They are usually used for low-level program code that does not change, such as the BIOS on IBM-compatible computers. See also **RAM**.

Rounded number - A number, reduced to a specified number of significant digits or decimal places, using defined criteria, that are fewer than those measured.

Routine method - A defined plan of procedures and techniques used regularly to perform a specific task.

RPM - Remedial Project Manager. The EPA or state official responsible for overseeing onsite remedial action. Also Revolutions Per Minute.

RSCC - Regional Sample Control Center. The RSCC coordinates regional sampling efforts.

RSO - Radiation Safety Officer.

Rubber-banding - Indicating an area on the screen by moving a box outlining the area.

Ruggedness - The (in)sensitivity of an analytical test method to departures from specified analytical or environmental conditions. See **Robustness**.

Ruggedness testing - The carefully ordered testing of an analytical method while making slight variations in test conditions (as might be expected in routine use) to determine how such variations affect

test results. If a variation affects the results significantly, the method restrictions are tightened to minimize this variability.

S

S_8 - Molecular sulfur.

SAAS - Software As A Service - Software provided over the Internet, usually within a web browser, and not installed on the local computer.

Sample - Material gathered in the field for analysis from a specific location at a specific time. Also a part of a larger whole or a single item of a group; a finite part or subset of a statistical population. A sample serves to provide data or information concerning the properties of the whole group or population. A single, discrete portion of material to be analyzed, which is contained in single or multiple containers and identified by a unique sample number.

Sample data custody - See **Chain of custody**.

Sample variance (statistical) - A measure of the dispersion of a set of values. The sum of the squares of the difference between the individual values of a set and the arithmetic mean of the set, divided by one less than the number of values in the set. (The square of the sample standard deviation.) See also **Measure of dispersion**.

Sampling - The process of obtaining a representative portion of the material of concern.

Sampling equipment blank - A clean sample that is collected in a sample container with the sample-collection device and returned to the laboratory as a sample. Sampling equipment blanks are used to check the cleanliness of sampling devices. See **Dynamic blank**.

Sampling error - The difference between an estimate of a population value and its true value. Sampling error is due to observing only a limited number of the total possible values and is distinguished from errors due to imperfect selection, bias in response, errors of observation, measurement, or recording, etc. See also **Probability sampling**.

SAN - Storage Area Network. A hardware and software system that allows storage, usually using hard drives, to be attached to the network independent of a server.

SAP - Sampling and Analysis Plan. The Sampling and Analysis Plan provides specific details on the methodologies and locations of sampling events that will take place as part of environmental and other investigations.

SARA - Superfund Amendments and Reauthorization Act. The 1986 amendment to CERCLA.

SATA - Serial AT Attachment standard. Common interface for hard drives.

Saturated zone - A volume of rock or soil in which the pores are filled with fluid, usually water.

SCADA - Supervisory Control and Data Acquisition. Software assistance with data gathering.

Scanner - Optical devices that allow input of continuous tone graphic images, line drawings, and text.

Scanning Electron Microscope. A device in which a beam of electrons is bounced off a specimen, forming an image. SEMs allow a very high magnification.

Scanning frequencies - For monitors, the rate at which the horizontal rows of pixels are drawn on the screen (horizontal scan rate) or the whole screen is redrawn (vertical refresh rate).

Scheduled maintenance - See **Preventative maintenance**.

Schema - Description of the structure of a database, including the tables and fields, relationships, etc.

Scientific notation - Representation of a number with some digits, called the mantissa, and an exponent, usually 10, such as 3.417^{12}.

Screening test - A quick test for coarsely assessing a variable of interest.

Scribe - Software from the USEPA often used for data management for emergency response.

SCSI - Small Computer Systems Interface (pronounced “scuzzy”) is a high-speed parallel interface for attaching devices such as disk drives to microcomputers. The standard allows mass storage devices to be designed to work with any computer and allows several peripherals to be attached to one port.

SD card - Secure Digital card. Data storage for small devices such as phones and cameras. Variants include mini- and micro-SD based on physical size, and enhanced versions such as SDHC with a higher capacity.

SDSL - Symmetrical Digital Subscriber Line. Broadband communication connection. Upload and download speeds are the same.

SDWA- Safe Drinking Water Act.

Secondary standard - A standard whose value is based on comparison with a primary standard.

SEDD - Staged Electronic Data Deliverable. A set of XML-based data transfer standards created by the USEPA and the Army Corps of Engineers.

Selectivity (analytical chemistry) - The capability of a method or instrument to respond to a target substance or constituent in the presence of non-target substances.

SEM - See **Scanning Electron Microscope**.

Semivolatile Organic Compound - A compound containing carbon that does not evaporate as readily as a VOC and has a boiling point greater than 200°C.

Sensitivity - Capability of method or instrument to discriminate between measurement responses representing different levels of a variable of interest.

Serial port - A serial port has a digital signal that is sent one byte at a time, one after another. Largely replaced by **USB** ports.

SFE - Supercritical Fluid Extraction.

Shareware - Shareware software is distributed free or for a small handling fee. If the user likes the software, the user is supposed to send money in the amount the author asks for. The fee often includes registration, software upgrades, and a manual.

Shell - Software that surrounds other software (such as the operating system), usually to make it easier to use.

SI - Site Inspection. A step under CERCLA that provides the data needed for HRS, and identifies sites that enter the NPL site listing process.

Significance level - The magnitude of the acceptable probability of rejecting a true null hypothesis or of accepting a false null hypothesis; the difference between the hypothetical value and the sample result.

Significant digit - Any of the digits 0 through 9, except leading zeros and some trailing zeros, which is used with its place value to denote a numerical quantity to a desired rounded number. See **Rounded number**.

Significant figure - See **Significant digit**.

SIMM - Single Inline Memory Module. A group of RAM chips attached to one side of a carrier and installed as a unit.

Single operator precision - The degree of variation among the individual measurements of a series of determinations by the same analyst or operator, all other conditions being equal.

Sinkers - See **DNAPL**.

Site - The area within boundaries established for a defined activity.

Site blank - See **Field blank**.

Six Sigma - A set of processes designed to improve quality. The target is to limit error to six standard deviations from the mean.

SkyDrive - Cloud storage service from Microsoft.

Skewness - A measure of the extent to which the probability distribution of a variable leans to one side of the mean.

Skype - Computer-based communication technology for voice and video. Free between Skype accounts.

Slurry wall - A barrier made of impenetrable material placed in the ground to stop the flow of (usually contaminated) groundwater.

SM - Standard Methods.

SM&TE - Standard Measuring and Test Equipment.

SMO - Sample Management Office. A contractor-operated facility operated by the Contract Laboratory Analytical Services Support (CLASS) contract, awarded and administered by the EPA.

SOAP - Simple Object Access Protocol. This is an XML-based protocol for information interchange in distributed environments such as the Internet. It describes message contents, data types, processing requirements, and remote procedure calls and responses.

SOC - Synthetic Organic Chemicals.

Social media - Web applications like Facebook, Twitter, and LinkedIn that help people interact in various ways.

Software - Program instructions which cause the computer to do something (hopefully) useful.

Soil boring - A hole dug in the ground from which a soil sample is extracted for chemical, biological, or analytical testing to determine the level of contamination present or other information.

Soil gas - Gaseous elements and compounds in the small spaces between particles of the soil.

Solid state drive - A device containing a set of memory chips configured as a storage device in place of a hard drive.

Solid Waste Management Unit - A location where solid waste has been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste, including any area at a facility at which solid wastes have been routinely and systematically released.

Solubility - Ability of a substance to dissolve in a particular liquid.

Solvent - A liquid capable of dissolving other substances. Water is a solvent, as are many organic compounds.

SOP - Standard Operating Procedure.

SOW - See **Statement of Work**.

Span-drift - The change in the output of a continuous monitoring instrument over a stated time

period during which the instrument is not recalibrated.

Span-gas - A gas of known concentration which is used routinely to calibrate the output level of an analyzer. See **Calibration standard**.

SPE - Solid Phase Extraction.

Specimen - See **Sample**.

Spike - A known mass of target analyte added to a blank or matrix sample or subsample; used to determine recovery efficiency or for other quality control purposes.

Spiked laboratory blank - See **Spiked reagent blank**.

Spiked reagent blank - A specified amount of reagent blank fortified with a known mass of the target analyte; usually used to determine the recovery efficiency of the method.

Spiked sample - A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. Spiked samples are used, for example, to determine the effect of the matrix on a method's recovery efficiency.

Spiked sample duplicate analysis - See **Duplicate analyses** and **Spiked sample**.

Split samples - Two or more representative portions taken from a sample or subsample and analyzed by different analysts or laboratories. Split samples are used to replicate the measurement of the variable(s) of interest.

Split spoon - A device for taking samples, such as soil samples.

SPLP - Synthetic Precipitation Leaching Procedure. A way of determining the mobility of contaminants such as metals in a solid matrix such as soil.

Spreadsheet - Program for manipulating rows and columns of data. Cells in the spreadsheet can contain text, numbers, or formulas.

SQFD - Software Quality Function Development. QFD as applied to software development.

SQL - Structured Query Language. Widely used for retrieving data from relational database managers.

SQL Server - Popular database server software from Microsoft.

SSD - See **Solid state drive** .

Stakeholder - A party with an interest in a remediation project, such as government officials, community members, PRPs, banks, etc.

Standard (measurement) - A substance or material with a property quantified with sufficient accuracy to permit its use to evaluate the same property in a similar substance or material. Standards are generally prepared by placing a reference material in a matrix. See **Reference material**.

Standard addition - The procedure of adding known increments of the analyte of interest to a sample, to cause increases in detection response. The level of the analyte of interest present in the original sample is subsequently established by extrapolation of the plotted responses.

Standard curve - See **Calibration curve**.

Standard deviation - The most common measure of the dispersion or imprecision of observed values expressed as the positive square root of the variance. See **Sample variance**.

Standard material - See **Standard (measurement)** and **Reference material**.

Standard method - An assemblage of techniques and procedures based on consensus or other criteria, often evaluated for its reliability by collaborative testing and receiving organizational approval.

Standard operating procedure - The SOP is a written document that details the method of an operation, analysis, or action whose techniques and procedures are thoroughly prescribed and which is accepted as the method for performing certain routine or repetitive tasks.

Standard reference material - SRM is a certified reference material produced by the U.S. National Institute of Standards and Technology, and characterized for absolute content independent of analytical method.

Standard reference sample - See **Secondary standard**.

Standard solution - A solution containing a known concentration of analytes, prepared and verified by a prescribed method or procedure, and used routinely in an analytical method.

Standardization - The process of establishing the quantitative relationship between a known mass of target material (e.g., concentration) and the response variable (e.g., the measurement system or instrument response). See **Calibration curve** and **Multipoint calibration**.

State plane - Coordinate system within each state for creating a flat map from spherical coordinates (latitude-longitude). The projection and origin used varies from state to state.

Statement of Work - A document that specifies how laboratories analyze samples under a particular CLP analytical program, or how other project work is to be done.**Statistic** - An estimate of a population

characteristic calculated from a data set (observed or corrected values), e.g., the mean or standard deviation.

Stepper motor - Device for positioning the heads in inexpensive disk drives.

Stiff diagram - A water quality diagram with cations on the left and anions on the right, used to identify and compare water populations. First developed by H.A. Stiff in 1951.

Stock solution - A concentrated solution of analyte(s) or reagent(s) prepared and verified by prescribed procedure(s), and used for preparing working standards or standard solutions.

Storage - Refers to the ability of computers to hold data. Usually means the amount of disk storage.

Storage blank - Laboratory reagent water samples stored in the same type of sample containers and in the same storage units as field samples. They are prepared, stored for a defined period of time, and then analyzed to monitor volatile organic contamination derived from sample storage units. Typically one blank is used for each sample batch, or as per method specifications.

Stored procedure - User-defined functionality in a server database that performs certain data manipulation tasks. May be executed by a **Trigger**.

STORET - STOrage and RETrieval. EPA's repository for water quality, biological, and physical data.

STP - Standard Temperature and Pressure.

Strater - Log display program from Golden Software.

Stratification - The division of a target population into subsets or strata that are internally more homogeneous with respect to the characteristic to be studied than the population as a whole.

Stratified sampling - The sampling of a population that has been stratified, part of the sample coming from each stratum. See **Stratification**.

Strict liability - A legal concept under CERCLA that allows the federal government to hold PRPs liable without proving that the PRPs were at fault.

Stylus - A pointing device for a digitizer or screen that looks like a pen.

Subdirectory - Part of a disk used for storing related data. Can be created and manipulated by the user. Called **Folders** on Macintosh and Windows systems.

Subsample - A representative portion of a sample. A subsample may be taken from any laboratory or a field sample. See **Aliquant**, **Aliquot**, **Split sample**, and **Test portion**.

Sublimation - The transition of a substance directly from the solid to the gas phase without passing through an intermediate liquid phase.

Summa canister - A stainless steel vessel which has had the internal surfaces specially passivated using a Summa process, used for capturing and transporting air samples.

Supercomputer - Very powerful computer designed for fast calculations.

Superfund - The program operated under the legislative authority of CERCLA and SARA that funds and carries out EPA removal and remedial activities at hazardous waste sites. These activities include establishing the National Priorities List, investigating sites for inclusion on the list, determining their priority, and conducting and/or supervising cleanup and other remedial actions.

Superseded - A value that has been replaced in importance by another value.

Surface water - Water naturally open to the atmosphere, such as rivers, lakes, and ponds.

Surfer - Popular contouring program from Golden Software.

Surrogate - See **Surrogate analyte**.

Surrogate analyte - A pure substance with properties that mimic the analyte of interest. It is unlikely to be found in environmental samples and is added to them for quality control purposes.

Surrogate spikes - Non-target analytes of known concentration that are added to organic samples prior to sample preparation and instrument analysis. They measure the efficiency of all steps of the sample preparation and analytical method in recovering target analytes from the sample matrix, based on the assumption that non-target surrogate compounds behave the same as the target analytes. They are run with all samples, standards, and associated quality control. Spike recoveries can be calculated from spike concentrations.

Surveillance - The act of maintaining supervision of or vigilance over a well-specified portion of the environment so that detailed information is provided concerning the state of that portion.

SVGA - Super Video Graphics Array. Popular video adapter on PC-compatible computers. Highest standard resolution is 800x600 pixels.

SVOC - See **Semivolatile Organic Compound**.

Switch box - Multiple peripherals (usually 2 or 4) can be hooked into a single parallel or serial port on one computer using a switch box. These boxes can also be used to hook multiple computers into one or more peripherals.

SWMU - See **Solid Waste Management Unit**..

Synthetic sample - A manufactured sample. See **Quality control sample**.

System unit - Box containing the main components of a computer system.

Systematic error - A consistent deviation in the results of sampling and/or analytical processes from the expected or known value. Such error is caused by human and methodological bias.

Systems audit - See **Technical systems audit**.

Systems error - See **Total systems error**.

T

T1 - Medium-speed communication connection.

T3 - High-speed communication connection.

Table - Database storage object containing records and fields.

Tablet - Small device combining a computer and a monitor, usually with a touch screen but without a keyboard.

Tape backup - Device for backing up a hard disk.

Tape drive - Device for reading and writing data on magnetic tape.

TAR file - A compressed file containing one or more digital files.

Target - The chosen object of investigation for which qualitative and/or quantitative data or information is desired, e.g., the analyte of interest.

TAT - See **Turnaround time.**

Taxonomy - The classification of organisms in an ordered system that indicates natural relationships.

TB - See **Trip Blank**.

TBT - Tributyltin.

TCD - Thermal conductivity detector.

TCDD - 2,3,7,8-Tetrachlorodibenzodioxin.

TCE - Trichloroethylene.

TCLP - Toxicity Characterization Leaching Procedure. A method of determining the mobility of toxins in soils.

TDS - See **Total Dissolved Solids**.

Technical systems audit - A thorough, systematic, onsite, qualitative review of facilities, equipment, personnel, training, procedures, record keeping, data validation, data management, and reporting aspects of a total measurement system.

Technique - A principle and/or the procedure of its application for performing an operation.

Tedlar bag - Bags are manufactured from PVF (Tedlar) film used to collect air samples containing solvents, hydrocarbons, and many other classes of compounds.

TEM - See **Transmission Electron Microscope**.

Terabyte - About one trillion bytes, abbreviated as TB.

Teratogen - A substance that causes malformation of an embryo or fetus.

Terrabase - Environmental database management system from Integrate.

Test - A procedure used to identify or characterize a substance or constituent. See **Method**.

Test determination - See **Determination**.

Test method - See **Method**.

Test portion - A subsample of the proper amount for analysis and measurement of the property of interest. A test portion may be taken from the bulk sample directly, but often preliminary operations, such as mixing or further reduction in particle size, are necessary. See **Subsample**.

Test result - A product obtained from performing a test determination. See **Determination**.

Test sample - See **Test portion**.

Test specimen - See **Test portion**.

Test unit - See **Test portion**.

Text editor - Software programs that create and modify ASCII text files. Windows Notepad is an example.

Theme - In GIS, data of a specific type such as transportation or drainage. See also **Coverage** and **Layer**.

Thermal printers - Printers that use a heating element and special paper to place an image on the page.

Thermal transfer printers - Printers that heat a wax-based ink on the ribbon which then flows onto the paper.

TIC - Tentatively Identified Compound.

TIFF - Tagged Image File Format. A format for storing digital images. See also **GeoTIFF**.

Time-proportioned sample - A composite sample produced by combining samples of a specific size, collected at preselected, uniform time intervals.

TM - See **Transverse Mercator**.

TNT - Trinitrotoluene.

TOC - Total Organic Carbon.

Total dissolved solids - Mass of dissolved solids in a specific volume of liquid.

Total measurement error - The sum of all the errors that occur from the taking of the sample through the reporting of results. The difference between the reported result and the true value of the population that was to have been sampled.

Total Quality Management (TQM) - The process whereby an entire organization, led by senior management, commits to focusing on quality as a first priority in every activity. TQM implementation creates a culture in which everyone in the organization shares the responsibility for continuously improving the quality of products and services (i.e., for "doing the right thing, the right way, the first time, on time") in order to satisfy the customer.

Total suspended solids - Mass of suspended solids in a specific volume of liquid.

Total systems error - The combined error due to all components of the system.

Touch screen - A display device such as a flat panel that accepts input by touching the screen.

TOX - Total organic halides.

Toxic - A poisonous or hazardous substance.

Toxics Release Inventory - TRI is published by the U.S. EPA, and is a valuable source of information regarding toxic chemicals that are being used, manufactured, treated, transported, or released into the environment.

Toxicity - A measure of the poisonous or harmful nature of a substance.

Toxicology - The study of adverse effects of chemicals on living organisms.

TPH - Total Petroleum Hydrocarbons.

TQM - See **Total Quality Management**.

Traceability - An unbroken trail of accountability for verifying or validating the chain of custody of samples, data, the documentation of a procedure, or the values of a standard.

Transducer - A component that sends information. In a well, a transducer might transmit pressure. For digitizers, the device, either a stylus or a cursor, that indicates the position on the tablet.

Transmission Electron Microscope -A device in which a beam of electrons is transmitted through an ultra-thin specimen, interacting with the specimen as it passes through, forming an image. TEMs allow a very high magnification.

Transverse Mercator - A map projection in which a cylinder is wrapped around the earth, tangent to the sphere (earth), at a chosen meridian.

Transmissivity - The ability of a rock or other material to transmit fluid.

Treatment (experimental) - An experimental procedure whose effect is to be measured and compared with the effect of other treatments.

TRI - See **Toxics Release Inventory**.

TRIAD - A site investigation approach from the USEPA that emphasizes field screening techniques. The three parts are systematic project planning, dynamic work strategies, and innovative rapid sampling and analytical technologies.

Triangulation - In mapping, a method of creating contours using an array of triangles between the data points. In surveying, a method of determining location based on observation of three angles.

Trip blank - A clean sample of matrix that is carried to the sampling site and transported to the laboratory for analysis without having been exposed to sampling procedures. The most common type of field QC sample.

Trigger - Functionality in a server database that performs certain functions, such as enforcing uniqueness between records, when certain operations occur. Triggers often use **Stored procedures** to perform their tasks.

Trojan horse - Program which masquerades as something useful but which can damage your data.

TSCA - Toxic Substances Control Act.

TSS - See **Total suspended solids**.

Turbidity - A key water quality component, measuring the cloudiness or haziness of a fluid, Measured in **NTU**.

Turnaround time - The maximum length of time allowed for laboratories to provide the results of analyses.

Tuning - The process of adjusting a measurement device or instrument, prior to its use, to ensure that it works properly and meets established performance criteria.

Turnkey - Ready to run, or performed for a fixed price. Refers to a complete solution to an operational or computing need.

Type I error (alpha error) - An (incorrect) decision resulting from the rejection of a true hypothesis. (A false positive decision.)

Type II error (beta error) - An (incorrect) decision resulting from acceptance of a false hypothesis. (A false negative decision.)

U

Ultraviolet spectrophotometry - A technique in chemistry widely used to analyze chemical structure or composition.

Uncertainty - A measure of the total variability associated with sampling and measuring that includes the two major error components: systematic error (bias) and random error.

Universal Transverse Mercator - A coordinate system based in meters, originally used for constructing military maps between 80° South and 84° North, based on the Transverse Mercator projection. (North and south of this zone, the Universal Polar Stereographic coordinate systems are used.) The earth is divided into 60 UTM zones of 6° each. Zones are numbered west to east; a central meridian in each zone serves as the reference point.

UNIX - Operating system from Bell Laboratories that runs on a wide variety of computers including supercomputers, engineering workstations such as Sun SPARCstation computers, and microcomputers. Several different varieties exist. See **Linux**.

Unsaturated zone - The area of unsaturated soil between the ground surface and the water table (also called the vadose zone).

Upgrade - Increase the capability of hardware or software by adding hardware or changing to a newer or better version.

Upload - Move data from a local computer to a server or web site. Opposite of **Download**.

Upper control limit - See **Control limit**.

Upper warning limit - See **Warning limit**.

URL - Universal Resource Locator. A web address like www.geotech.com.

USACE - United States Army Corps of Engineers. USACE is responsible for investigating, developing and maintaining the nation's water and related environmental resources.

USB - Universal Serial Bus. High speed serial interface for connecting peripherals to computers.

User check - An evaluation of a written procedure (e.g., chemical analysis method) for clarity and accuracy in which an independent laboratory analyzes a small number of spiked samples, following the procedure exactly.

User interface - The part of software that interacts with the computer operator.

USGS - United States Geological Survey. The U.S. Geological Survey investigates the occurrence, quantity, quality, distribution, and movement of surface and groundwater, along with much other data, especially geologic and other maps, and provides the data to the public.

USPLS - United States Public Land Survey (also known as Jeffersonian Survey). The USPLS is the township-range location system used in most of the western United States and in Canada. An ideal township is a square consisting of 36 sections of 1 square mile each.

UST - Underground Storage Tank.

UTM - See **Universal Transverse Mercator**.

UV - Ultraviolet. Also used for **Ultraviolet spectrophotometry**.

V

Vadose zone - The area of unsaturated soil between the ground surface and the water table (also called the unsaturated zone).

Valid study - A study conducted in accordance with accepted scientific methodology, the results of which satisfy predefined criteria.

Validated method - A method that has been determined to meet certain performance criteria for sampling and/or measurement operations.

Validation - Confirmation by examination and provision of objective evidence that the particular requirements for a specific use have been fulfilled. Data validation is an analyte- and sample-specific process that extends the evaluation of data beyond method, procedural, or contractual compliance (i.e., data verification) to determine the analytical quality of a specific data set.

Value - The magnitude of a quantity. A single piece of factual information obtained by observation or measurement and used as a basis of calculation.

Vapor - Gaseous phase of any substance that is liquid or solid at atmospheric pressure and temperature.

Vaporize - To go from the liquid to gaseous state.

Variable - An entity subject to variation or change.

Variance - See **Sample variance**.

Vector - A geometric unit that has direction and magnitude. Also refers to graphic images that consist of points and lines rather than raster dots.

Vector map- A map made up of points, lines and polygons. See also **Raster map**.

Verification - Confirmation by examination and provision of objective evidence that specified requirements have been fulfilled. Data verification is the process of evaluating the completeness, correctness, and conformance/compliance of a

specific data set against the method, procedural, or contractual requirements.

Verifiable - The ability to be proven or substantiated.

VGA - Video Graphics Array. Older video adapter on PC-compatible computers. Highest VGA resolution is 640×480 pixels.

Video adapter - A card that translates the digital signal from the computer's motherboard into the monitor is the video adapter. High performance video adapters are particularly important to game players.

View - In a database management system, a view is a stored query accessible as a virtual table composed of the result set of a query.

Virtual machine - An instance of an operating system and applications that runs as if it were a separate computer on a host computer. A computer can host multiple virtual machines.

Virtual private network - A way of connecting two computers across a public network such as the Internet so that they act as if they were on a private network.

Virus - Software that can damage your system and which can spread from computer to computer.

Visual Studio - Software development environment from Microsoft for making **.net** applications.

VM- See **Virtual machine**.

VOA - Volatile Organic Analysis.

VOC - Volatile Organic Compounds. This is a compound containing carbon that evaporates more readily than an SVOC and has a boiling point less than 200°C.

Voice coil - Device for positioning the heads on high-quality disk drives.

Volatile - A substance that has a high vapor pressure, that is, it evaporates easily.

Volumetrics - Calculating volumes for surfaces generated by the computer.

Voxler - 3-D display program from Golden Software.

VPN - See **Virtual private network**.

W

WAN - Wide Area Network. A way of connecting computers that are not at the same location.

Warm boot - See **Boot**.

Warning limit - A specified boundary on a control chart that indicates a process may be going out of statistical control and that certain precautions are required.

Wastewater - Water from a home, community, farm, or industrial facility that contains dissolved or suspended substances.

Water table - The boundary between the saturated and unsaturated zones beneath the ground surface.

Waterloo Barrier - A patented groundwater containment wall formed of sealable steel sheet piling.

Wi-Fi - a local area network using Ethernet protocol that uses high frequency radio signals to transmit and receive data over distances of a few hundred feet.

Wind rose - A circular diagram used to show wind direction and magnitude.

Window - An area of the screen used for input or output of data. See also **Microsoft Windows**.

Windows - See **Microsoft Windows**.

Windows RT - A variant of the Windows 8 operating system designed for mobile devices that utilize the ARM architecture.

Word processor - Software to enter, edit, format, and print text, and sometimes graphics, on a computer.

Working standard - See **Secondary standard**.

Workstation - Refers generally to any computer or terminal where work is done.

WP - Work Plan.

WQC - Water Quality Criteria.

WQS - Water Quality Standards.

WQX - Water Quality eXchange. Interface to the EPA STORET database.

WW - WasteWater.

WYSIWYG - What You See Is What You Get. Refers to word processing and desktop publishing software that displays formatting as well as text during editing.

X

X - An unknown value. Also the east-west axis on a map.

X axis - The horizontal axis on a graph.

XGA - eXtended Graphics Array. Popular video adapter on PC-compatible computers. Typical resolution is 1024x768 pixels, although some go much higher.

XML - eXtensible Markup Language. A self-documenting text-based data transfer format often used for transferring data on the Internet.

XRF - X-Ray Fluorescence. Emission of characteristic X-rays from a material that has been

excited by bombarding with high-energy X-rays or gamma rays. Widely used for elemental analysis and chemical analysis such as metal concentrations.

Y

Y - The north-south axis on a map.

Y axis - The vertical axis on a graph.

Z

Z or **Z axis** - The vertical axis on a map.

Zero drift - The change in instrument output over a stated time period of nonrecalibrated, continuous operation, when the initial input concentration is zero; usually expressed as a percentage of the full scale response.

ZHE - Zero Headspace Extraction.

Zip file - A compressed file containing one or more digital files.

Zoom - Change the viewing scale of a map or drawing