

**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
**Bureau of Environmental Cleanup and Brownfields**

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**TITLE:** Land Recycling Program Technical Guidance Manual

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**AUTHORITY:** The Land Recycling and Environmental Remediations Standards Act (Act 2 of 1995) (35 P.S. §§ 6026.101 et seq.) and the regulations issued pursuant to that legislation at 25 Pa. Code Chapter 250.

**POLICY:** It is the policy of the Department of Environmental Protection (DEP or Department) to implement Act 2 in accordance with the regulations contained in 25 Pa. Code Chapter 250 and as described in this guidance manual.

**PURPOSE:** DEP has developed this manual to assist remediators in satisfying the requirements of Act 2 and the regulations published in Chapter 250 of the Pa. Code. The manual provides suggestions and examples of how to best approach site characterization, remediation and demonstration of attainment. This document replaces the “*Land Recycling Program Technical Guidance Manual*” dated June 8, 2002, in its entirety.

**APPLICABILITY:** The guidance in this manual is applicable to any person or persons conducting a site remediation under Act 2 and who wish to receive the liability protection afforded by Chapter 5 of that Act (35 P.S. §§ 6026.501-6026.506).

**DISCLAIMER:** The policies and procedures outlined in this guidance are intended to supplement existing requirements. Nothing in the policies or procedures shall affect regulatory requirements.

The policies and procedures herein are not an adjudication or a regulation. DEP does not intend to give this guidance that weight or deference. This document establishes the framework, within which DEP will exercise its administrative discretion in the future. DEP reserves the discretion to deviate from this policy statement if circumstances warrant.

**PAGE LENGTH:** 509 pages

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## ACRONYMS

|              |                                                                                     |
|--------------|-------------------------------------------------------------------------------------|
| AIHC         | American Industrial Health Council                                                  |
| ANOVA        | Analysis of Variance                                                                |
| AOC          | Area of Concern                                                                     |
| API          | American Petroleum Institute                                                        |
| ASTM         | American Society for Testing and Materials                                          |
| ATSDR        | Agency for Toxic Substances and Disease Registry                                    |
| AUL          | Activity and Use Limitation                                                         |
| BMP          | Best Management Practices                                                           |
| BTAG         | Biological Technical Assistance Group                                               |
| BTGS         | Pennsylvania Bureau of Topographic and Geologic Survey                              |
| BTEX         | Benzene, Toluene, Ethylbenzene, and Xylenes                                         |
| CAP          | Corrective Action Process                                                           |
| CERCLA       | Comprehensive Environmental Response Compensation Liability Act                     |
| CERCLIS      | Comprehensive Environmental Response, Compensation and Liability Information System |
| CO&A         | Consent Order & Agreement                                                           |
| CP           | Cleanup Plan                                                                        |
| CPEC         | Constituents of Potential Ecological Concern                                        |
| CPT          | Cone Penetration Technologies                                                       |
| Csat         | Carbon Saturation                                                                   |
| CSM          | Conceptual Site Model                                                               |
| CSSAB        | Cleanup Standards Scientific Advisory Board                                         |
| DCED         | Department of Community and Economic Development                                    |
| DCNR         | Department of Conservation and Natural Resources                                    |
| DEP or PADEP | Pennsylvania Department of Environmental Protection                                 |
| DNAPL        | Dense Non-Aqueous Phase Liquid                                                      |
| DPT          | Direct Push Technologies                                                            |
| DQA          | Data Quality Analysis                                                               |
| DQO          | Data Quality Objectives                                                             |
| E&S          | Erosion and Sedimentation                                                           |
| EC           | Environmental Covenant                                                              |
| ECB          | Environmental Cleanup and Brownfields                                               |
| EMPR         | Equal Marginal Percent Reduction                                                    |
| EPA or USEPA | U.S. Environmental Protection Agency                                                |
| EQL          | Estimated Quantitation Limit                                                        |
| EZ           | Enterprise Zone                                                                     |
| FR           | Final Report                                                                        |
| FAQ          | Frequently Asked Question                                                           |
| GW           | Groundwater                                                                         |
| GWMP         | Groundwater Management Plan                                                         |
| HEAST        | Health Effects Assessment Summary Tables                                            |
| HHEM         | Human Health Evaluation Manual                                                      |
| HSA          | Hollow Stem Auger                                                                   |
| HSCA         | Hazardous Sites Cleanup Act                                                         |
| HVAC         | Heating, Ventilation, and Air Conditioning                                          |
| IEUBK        | Integrated Exposure Uptake Biokinetic Model                                         |
| IQR          | Interquartile Range                                                                 |

|                      |                                                           |
|----------------------|-----------------------------------------------------------|
| IRIS                 | EPA's Integrated Risk Information Systems                 |
| ISRP                 | Industrial Sites Reuse Program                            |
| ITRC                 | Interstate Technology & Regulatory Council                |
| J&E                  | Johnson and Ettinger                                      |
| KIZ                  | Keystone Innovation Zone                                  |
| KOZ                  | Keystone Opportunity Zone                                 |
| LCSM                 | LNAPL Conceptual Site Model                               |
| LIF                  | Laser-Induced Fluorescence                                |
| LNAPL                | Light Non-Aqueous Phase Liquid                            |
| LNAPL T <sub>n</sub> | LNAPL Transmissivity                                      |
| LOQ                  | Limit of Quantitation                                     |
| LRP                  | Land Recycling Program                                    |
| LSWC                 | Lowest Surface Water Quality Criterion                    |
| MDL                  | Method Detection Limit                                    |
| MEP                  | Maximum Extent Practicable                                |
| MGD                  | Million Gallons per Day                                   |
| MLE                  | Most Likely Exposure                                      |
| MOA                  | Memorandum of Agreement                                   |
| MRF                  | Mutagenic Risk Adjustment Factor                          |
| MSC                  | Medium-Specific Concentration                             |
| MSDS                 | Material Safety Data Sheet                                |
| msl                  | Mean Sea Level                                            |
| NAPL                 | Non-Aqueous Phase Liquid                                  |
| NCEA                 | National Center for Environmental Assessment              |
| ND                   | Nondetect                                                 |
| NFA                  | No Further Action                                         |
| NGVD                 | National Geodetic Vertical Datum                          |
| NIOSH                | National Institute for Occupational Safety and Health     |
| NIR                  | Notice of Intent to Remediate                             |
| NOAA                 | National Oceanic and Atmospheric Administration           |
| NPDES                | National Pollutant Discharge Elimination System           |
| NPL                  | National Priority List                                    |
| NR                   | Non-residential                                           |
| NRCS                 | Natural Resources Conservation Service                    |
| NSZD                 | Natural Source Zone Depletion                             |
| NWI                  | National Wetlands Inventory                               |
| O&M                  | Operation and Maintenance                                 |
| OPP                  | EPA Office of Pesticide Programs                          |
| OSHA                 | Occupational Safety and Health Administration             |
| OSWER                | EPA Office of Solid Waste and Emergency Response          |
| PaGIS                | Pennsylvania Geographic Information Systems Mapping Tools |
| PAH                  | Polyaromatic Hydrocarbons                                 |
| PAPL                 | Pennsylvania Priority List                                |
| PCSM                 | Post-Construction Stormwater Management                   |
| PDB                  | Polyethylene (or passive) Diffusion Bags                  |
| PID                  | Photoionization Detector                                  |
| PNDI                 | Pennsylvania Natural Diversity Inventory                  |
| POA                  | Point of Application                                      |
| POC                  | Point of Compliance                                       |

|        |                                            |
|--------|--------------------------------------------|
| PPE    | Personal Protective Equipment              |
| PPRTV  | Provisional Peer-Reviewed Toxicity Values  |
| PQL    | Practical Quantitation Limit               |
| PRCP   | Postremediation Care Plan                  |
| QA     | Quality Assurance                          |
| QC     | Quality Control                            |
| QD     | Quick Domenico                             |
| RA     | Risk Assessment                            |
| RAR    | Risk Assessment Report                     |
| RACR   | Remedial Action Completion Report          |
| RAGS   | Risk Assessment Guidance for Superfund     |
| RAP    | Remedial Action Plan                       |
| RCRA   | Resource Conservation and Recovery Act     |
| RFD    | Request for Determination                  |
| RIR    | Remedial Investigation Report              |
| RL     | Reporting Limit                            |
| RME    | Reasonable Maximum Exposure                |
| RSL    | EPA Regional Screening Level               |
| RT     | Regulatory Threshold                       |
| SCS    | Soil Classification System                 |
| SDS    | Safety Data Sheet                          |
| SHS    | Statewide Health Standard                  |
| SIA    | Special Industrial Area                    |
| SMCL   | Secondary Maximum Contaminant Level        |
| SMP    | Soil Management Plan                       |
| SOP    | Standard Operating Procedure               |
| SPL    | Separate Phase Liquid                      |
| SPLP   | Synthetic Precipitation Leaching Procedure |
| SQuiRT | Screening Quick Reference Table            |
| SSD    | Sub-slab Depressurization                  |
| SSL    | Soil Screening Level                       |
| SSS    | Site-specific Standard                     |
| SV     | Soil Vapor                                 |
| SVGW   | Groundwater Screening Values               |
| SVIA   | Indoor Air Screening Values                |
| SVNS   | Near-source Soil Gas Screening Values      |
| SVSOIL | Soil Screening Values                      |
| SVSS   | Sub-slab Soil Gas Screening Values         |
| SVOC   | Semi-volatile Organic Compound             |
| SWL5   | SWLOAD5 Spreadsheet                        |
| SWMA   | Solid Waste Management Act                 |
| TC     | Total Concentration                        |
| TCLP   | Toxicity Characteristic Leaching Procedure |
| TDS    | Total Dissolved Solids                     |
| TGM    | Technical Guidance Manual                  |
| TPH    | Total Petroleum Hydrocarbons               |
| TSCA   | Toxic Substances Control Act               |
| UCL    | Upper Confidence Limit                     |
| UECA   | Uniform Environmental Covenants Act        |

|      |                                 |
|------|---------------------------------|
| USGS | United States Geological Survey |
| UST  | Underground Storage Tank        |
| VI   | Vapor Intrusion                 |
| VOC  | Volatile Organic Compound       |
| WRS  | Mann-Wilcoxon Rank Sum          |