Central 70

Formerly the I-70 East Project

Rev September 12, 2017

Beneficial Reuse and Materials Management Plan

CDOT Central 70 Project
I-25 to Chambers Road
Denver, Colorado

Prepared For:

Colorado Department of Public Health and Environment
Materials Management Unit
4300 Cherry Creek Drive South
Denver, Colorado 80246

Prepared By:

Colorado Department of Transportation
2000 South Holly Street
Denver, Colorado 80222

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Central 70 Resident Engineer

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Acronyms

ACM	Asbestos Containing Material
APEN	Air Pollution Emission Notice
APCD	Air Pollution Control Division
BMP	Best Management Practices
BRMMP	Beneficial Reuse and Materials Management Plan
CABI	Certified Asbestos Building Inspector
CCR	Colorado Code of Regulations
CDPHE	Colorado Department of Health and Environment
CDOT	Colorado Department of Transportation
CFR	Code of Federal Regulations
CM	Compliance Manager
COC	Contaminants of Concern
EC	Environmental Covenant
ESA	Environmental Site Assessment
DRO	Diesel Range Organics
GIS	Geographic Information Systems
GPS	Global Positioning System
GPV	Groundwater Protection Value
GRO	Gasoline Range Organics
GWS	Colorado Basic Standards for Groundwater
HAZWOPER	Hazardous Waste Operations and Emergency Response
I-25	Interstate 25
I-70	Interstate 70
mg/kg	Milligram Per Kilogram
MT	Monitoring Technician
NEUR	Notice of Environmental Use Restriction
OPS	Colorado Department of Labor, Division of Oil and Public Safety
ORO	Oil Range Organics
OSHA	Occupational Safety and Health Administration
PAH	Polycyclic Aromatic Hydrocarbons
PAL	Predetermined Action Levels
PCB	Polychlorinated biphenyl
PCE	Tetrachloroethylene
PID	Photo-ionization Detector
PPM	Parts Per Million
QPM	Qualified Project Monitor
RACS	Regulated Asbestos Containing Soil
RBSL	Risk-Based Screening Level
RCRA	Resource Conservation Recovery Act
RCRA 8	Eight Resource Conservation Recovery Act Metals
RSL	Regional Screening Level
RSL-I	Regional Screening Level – Industrial
RSL-R	Regional Screening Level – Residential
SPLP	Synthetic Precipitation Leach Procedure
SVOC	Semi-Volatile Organic Compounds

TAL	Target Analyte List
TCE	Trichloroethylene
TCLP	Toxicity Characteristic Leaching Procedure
TPH	Total Petroleum Hydrocarbons
USEPA	United States Environmental Protection Agency
VB/I70	Vazquez Boulevard/Interstate 70 Superfund Site
VOC	Volatile Organic Compounds

1. Introduction

This Beneficial Reuse and Materials Management Plan (BRMMP) has been prepared by the Colorado Department of Transportation (CDOT) for the Central 70 Project between Interstate 25 (I-25) and Chambers Road in Denver, Colorado (Figure 1; Project). The BRMMP has been prepared in general conformance with Section 8.6 of the Regulations Pertaining to Solid Waste Sites and Facilities, 6 Colorado Code of Regulations (CCR) 1007-2, pertaining to beneficial use. The BRMMP defines material reuse criteria, screening and sampling protocols, and documentation requirements that will be utilized during soil disturbing activities (e.g., excavation) within the limits of the Project during construction. Following substantial completion of the Project, CDOT plans to establish an Environmental Covenant (EC) or a Notice of Environmental Use Restriction (NEUR), which will provide use restrictions for the Project, the purpose of which is to limit potential exposure scenarios to site workers and incidental non-worker contact. The EC will be limited to those locations on CDOT property within the Project area where soil not meeting the unrestricted reuse criteria (Section 4) are deposited. The EC will meet the requirements of Colo. Rev. Stat. §§ 25-15-317 to -325. This BRMMP will be incorporated into the EC by reference.

This BRMMP has been designed for implementation by CDOT and any contractors ("Contractors") performing work within the Project area covered by the EC. Following substantial completion of the Project, this BRMMP will be provided to the holders of record of any leases, licenses, rights-of-way, easements or other instruments granting a right to use the Property ("Holders") within the Project area. Further, to the extent feasible, CDOT will assist the Holders in complying with this BRMMP, as well as recommend Best Management Practices (BMPs) for implementation of the BRMMP. CDOT will work together with Contractors and Holders to ensure compliance with the BRMMP. Failure to comply with this BRMMP may result in non-compliance and enforcement action from CDPHE.

1.1 Project Description

The Project consists of the following improvements (Figure 2):

- Restriping Interstate 70 (I-70) from I-25 to Brighton Boulevard to accommodate one Tolled Express Lane in each direction;
- Complete reconstruction of I-70, from Brighton Boulevard to Sand Creek, including the addition of one Tolled Express Lane in each direction;
- Removal of the 50-year-old viaduct and lowering the interstate between Brighton and Colorado Boulevards;
- Construction of a new 4-acre cover over the interstate between Clayton and Columbine Streets; and
- Widening I-70 from Sand Creek to Chambers Road to accommodate one Tolled Express Lane in each direction.

As a result of the lowered section, Project activities west of Colorado Boulevard will result in substantial cutting and excavation of material. Whereas, reconstruction activities east of Colorado Boulevard will require filling activities to obtain the desired grade. However, overall it is anticipated that the Project activities will result in an overall net "cut" or removal of material from the Project area.

1.2 Purpose of BRMMP

The purpose of this BRMMP is to define reuse criteria for the Project thereby streamlining material management, reducing construction delays, and minimizing off-site disposal of low-risk media. When implemented properly, this BRMMP will provide the means and methods to ensure that work activities are completed in such a way as to minimize worker exposure to potentially impacted soil, prevent releases to the environment, and ensure proper management or disposal of contaminated materials. Further, this BRMMP has been prepared to minimize potential delays, and to develop approved standard procedures that will be implemented as needed in the event that potentially impacted soil is encountered during soil disturbing activities. The BRMMP also establishes procedures for post-project handling of impacted soil.

It is the responsibility of Project personnel to adhere to the BRMMP, follow all applicable regulations, obtain the proper permits, and have qualified field personnel to identify potentially impacted soil. Wastes will be managed according to one of the following categories:

1. Hazardous waste, as defined under the Resource Conservation and Recovery Act (RCRA), requiring off-site disposal and/or off-site treatment at CDPHE-approved sites
2. Contaminated soils requiring off-site disposal
3. Soils to be stockpiled for further characterization
4. Soils with concentrations of constituents of concern below the applicable values, that can be reused within the Project boundary in accordance with Section 4
5. Soil with concentrations of constituents of concern below the United States Environmental Protection Agency (USEPA) Regional Screening Levels (RSLs) for residential use (RSL-R) that can be reused within the Project area or off-site without restriction
6. Waste material to be contained for further characterization
7. Regulated Asbestos-Contaminated Soil (RACS) will be managed in accordance with CDOTs Regulated Asbestos-Contaminated Soil Management Standard Operating Procedure (October 18, 2016), which has been approved by CDPHE (Appendix A)

1.3 Key Parties and Responsibilities

It will be the responsibility of CDOT, Contractors, and Holders, conducting soil disturbing activities within the Project area, to provide personnel qualified to follow and implement this BRMMP, including, but not limited to material sampling, selection of analytical parameters, data evaluation, and decisions regarding final disposition of displaced material. At a minimum, all parties working in the Project area will designate a BRMMP Compliance Manager (CM) who meets at least one of the following criteria:

- Hold a current certification/license as a Professional Geologist issued by a state licensing body, the American Institute of Professional Geologists, or the National Association of State Boards of Geology;
- Hold a current certification/license as a Professional Engineer issued by the State of Colorado or a reciprocal state licensing agency;
- Hold a current certification as an Environmental Professional issued by the Academy of Board Certified Environmental Professionals; or

- Hold a current designation as a Registered Environmental Professional by the Colorado Department of Labor and Employment, Division of Oil and Public Safety.

Additionally, the CM must have the following qualifications:

- Completed the Occupational Safety and Health Administration (OSHA) 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training and current eight-hour annual refresher;
- Completed the OSHA eight-hour Supervisory training; and
- Be a Qualified Project Monitor (QPM) as defined by Section 5.5.3 of 6 CCR 1007-2, Part 1, or have completed two-hour asbestos in soil awareness training and have direct access to a QPM.

The CM will be responsible for ensuring:

- Delineation of vertical horizons as described in Section 2.4;
- Field screening of soils is completed in adherence with Section 3.1;
- All necessary samples are collected to characterize potential contaminants of concern (COC) as described in Section 3.2;
- Daily logs are maintained, when onsite, thoroughly detailing site activities;
- Cradle-to-grave tracking disposition of the seven types of soil listed in Section 1.2; and
- Adherence to this BRMMP through documentation as described in Section 5.

The CM may delegate the responsibilities noted above to Monitoring Technicians (MTs) who have the following minimum qualifications:

- A bachelor's degree from an accredited institution in geology, engineering, environmental science, or another related field;
- Completed the OSHA 40-hour HAZWOPER training and current eight-hour annual refresher;
- Be a State and EPA-Colorado Asbestos Building Inspector (CABI) and meet the criteria of a QPM; and
- Be properly trained in standard methods for soil screening, sample collection, and sample handling.

The CM and MTs will be responsible for the evaluation and monitoring of materials during soil disturbing activities within the Project area. One CM or MT will be utilized at each soil disturbing face such that all excavated material can be screened in accordance with this BRMMP. Within the Central 70-East Project Area, a CM or MT is not required to be onsite at each soil disturbing face if the CM determines no impacted materials will likely be encountered; if impacted materials are encountered during construction, work shall stop until a CM or MT is onsite to complete the screening and sampling required in Sections 3.1 and 3.2. While the CM may delegate responsibilities to MTs, the CM will retain responsibility for adherence to this BRMMP. As referenced throughout the remainder of this BRMMP, "CM" refers to the CM and/or the CM's delegate (MT).

2. Background Information

2.1 Existing Conditions

The Project area is surrounded by residential, commercial and industrial site uses. Numerous environmental investigations have been completed within and surrounding the Central I-70 corridor, including Phase I Environmental Site Assessments (ESAs) and limited subsurface investigations, in order to evaluate the location, extent and magnitude of COCs that may be encountered during Project activities. In general, the following standards and cleanup thresholds were used during previous investigations:

- USEPA Toxicity Characteristic Maximum Concentration of Contaminants (Appendix B).
- USEPA RSLs for soil. It should be noted that the most current values were published in June 2017 (USEPA, 2017); however, The above-referenced reports may have used previous versions or other regulatory values (e.g., the Colorado Soil Evaluation Values, which are no longer applicable). The RSLs are health-based values for various chemicals (or analytes), and are based on specific exposures and/or scenarios. These levels assign numerical contaminant concentrations as preliminary cleanup goals.
- OPS Risk-Based Screening Levels (RBSLs) including the threshold of 500 milligrams per kilogram (mg/kg) for Total Petroleum Hydrocarbons (TPH) in soil.

The following is a summary of environmental conditions in the Project area, based on a review of available documents and information obtained during previous soil and groundwater investigations (Pinyon, 2016):

- Polycyclic aromatic hydrocarbons (PAHs), including benzo(a)pyrene, were detected in soil samples at concentrations exceeding the regulatory standards in multiple soil samples collected from Project area.
- Arsenic in soil was detected at concentrations exceeding the regulatory values for residential land use throughout all project areas; however, the concentrations were generally below the CDPHE background value for naturally occurring arsenic in Colorado (CDPHE, 2014a).
- Lead was detected in soil throughout the Project area that exceeded regulatory values.
- Gasoline range organics (GRO), diesel range organics (DRO), and oil range organics (ORO) have been documented in the soils in the Project area.
- Cadmium, arsenic, manganese, iron, chloroform, tetrachloroethylene (PCE), trichloroethylene (TCE), and hexavalent chromium were detected above the groundwater standards in the Project area.
- Groundwater samples throughout the Project area indicated potential dewatering permit exceedances of total, potential and dissolved metals, as well as some volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). Sampling also indicated pH levels outside of the range allowed by typical dewatering permits.

2.2 Project Areas

The Project area will be subdivided into two main areas, defined by the predominant current land use and planned construction activities, as follows:

- Central 70 – West: Bound to the east by Colorado Boulevard and to the west by I-25, predominantly heavy industrial areas with a moderate to high potential for Project activities to encounter contaminated soil and/or groundwater. The majority of construction activities in this area will involve excavation or a net cut of soil rather than emplacement (e.g., net cut).

- Central 70 – East: Bound to the east by Chambers Road and to the west by Colorado Boulevard. Predominantly light to heavy industrial areas with a low to moderate potential for Project activities to encounter contaminated soil and/or groundwater resulting from historical and current uses. The majority of construction activities in this area will involve emplacement or a net fill of soil rather than excavation.

2.3 Soil Evaluation Values

The EC restricts or will restrict in the future any development of the area defined in the EC to industrial or commercial uses, which limits potential exposure of impacted material to roadway and utility workers only. The EC also triggers procedures for post-project handling of impacted soil established in Section 6.

With the exception of arsenic, decisions regarding reuse of excavated material from the Project area will be based on the USEPA RSL for Residential and Industrial landuse (RSL-R and RSL-I respectively) (USEPA, 2017) (Appendix C). Arsenic reuse values have been derived from the remediation values presented in the Vazquez Boulevard/Interstate 70 Superfund site (VB/I70) standard. The non-impacted/unrestricted reuse value for arsenic has been set at 11 milligrams per kilogram (mg/kg), while the impacted/restricted reuse value has been set at 35 mg/kg.

For the purpose of this BRMMP and for beneficial use of material displaced during construction of the project, predetermined action levels (PALs) have been developed and are further discussed in Section 4.

2.4 Vertical Horizons

The Project area has been a roadway since approximately 1964, suggesting that the potential for releases of hazardous substances or petroleum products that may have impacted soil and/or groundwater is generally limited to sources outside of the Project area. Given the planned depth of construction and anticipated volume of soil to be displaced, the following vertical horizons have been developed to facilitate materials management during construction:

- Asphalt and Concrete Surfacing – Generally limited to existing roadways and parking lots

- Road Base – Engineered fill material placed specifically for the purpose of establishing a stable base layer beneath asphalt and concrete surfacing

- Near Surface Soil – From ground surface or immediately beneath existing road base to a depth of one foot below the road base interface or existing grade in areas where no asphalt or concrete is present.

- Shallow Unsaturated Soil – From the base of the Near Surface Soil interval to a depth of five feet below existing ground surface or the native soil interface, whichever is greater.
- Unsaturated Native Soil – From the bottom of the Shallow Unsaturated Soil interval to the groundwater interface.
- Saturated Soil – All soil below the groundwater interface.

Material handling procedures for each of these vertical horizons are discussed further in Section 4.

3. Soil Evaluation

3.1 Field Screening

The CM will be responsible for evaluating disturbed material throughout the Project area, taking into consideration historical site uses and potential sources of impacts. The most prevalent contaminants within the Project are PAHs and the RCRA 8 metals. In general, these contaminants cannot be easily screened using field instrumentation. Therefore, field screening will follow visual and olfactory indicators for contamination (i.e., "looks bad, smells bad" parameters), as outlined below, in addition to standard use of a photoionization detector (PID), using the headspace technique, with confirmation through analytical testing (Section 3.2).

Field screening will, at a minimum, include the following "looks bad, smells bad" parameters:

- Visual staining, including greying (gray material, indicating reducing subsurface conditions), or dark coloration;
- Presence of non-soil materials (e.g., debris, sludge, powders, coal-based fill);
- Presence of distinguishable odor; and/or,
- Discrete layers in soil cross section that generally appear out of place.

Handling and transportation of screened material which may be potentially impacted will be minimized, to the extent feasible, until a reuse determination can be made. However, when handling is required, the following precautions will be used:

- Whenever possible, handling will be completed by mechanical means, including the use of mechanized excavation equipment;
- All potentially impacted soil will be placed on 6-millimeter plastic sheeting until additional assessment has been completed by the CM;
- Soil stockpiles of potentially contaminated soil or other materials will be limited in volume to what can be reasonably managed, within 90 days, by CDOT, Contractors, or Holders;
- Stormwater BMPs will be installed around stockpiles of potentially contaminated material to prevent water runoff;
- Stockpiles will be evaluated for potential windblown impact and mitigated, in accordance with local, state, and federal requirements;
- Stockpile areas will be clearly delineated to prevent contact with unauthorized personnel;
- Suspicious materials will be further evaluated by the CM in accordance with Section 4 of this BRMMP;
- When additional assessment of this material indicates that the material exceeds applicable regulatory requirements, the CM will coordinate with the Contractor to coordinate beneficial reuse or proper off-site disposal of the material (Section 3.2.3); and,

- Any contaminated soils that are generated will be managed in accordance with applicable local, state and federal regulations, including, but not limited to, obtaining the applicable Air Pollution Emission Notice (APEN) from the CDPHE Air Pollution Control Division (APCD). The CM shall include documentation of APEN compliance in the BRMMP records.

The CM will complete all necessary waste profiling activities for materials that will require off-site disposal at an approved disposal site, based on laboratory analytical results. Additionally, the CM will maintain all necessary waste manifests. Waste profiles and manifests must be signed by a representative authorized by CDOT.

3.2 Sampling Analysis Protocol

When potentially contaminated soil is encountered, as identified through field screening and/or location-specific data from previous investigations (Appendix D), the CM will be responsible for sampling, preparation of waste profiles, and applicable notifications. The CM will be responsible for evaluating potentially contaminated materials (for disposal purposes) in accordance with Colorado Hazardous Waste Regulations (6 CCR 1007-3), and in accordance with all other applicable federal, state and local regulations Information regarding the reuse or disposal of contaminated media are presented in Sections 2.3 and 4.1.

3.2.1 Confirmation Sampling Frequency

In the absence of any visual or olfactory indication that contamination may be present in excavated soil, in general, the collection of confirmation samples (Section 3.2) will be based on vertical horizons in the Project area as follows for a continuous excavation:

- Asphalt, Concrete, and Road Base – These materials may be recycled and reused in accordance with CDOT standard specifications and the current CDPHE Beneficial Use criteria (CDPHE, 2016a).

- Near Surface Soil – West of Colorado Boulevard, soil from existing ground surface to a total depth of one foot will be excavated, characterized, and transported for off-site disposal at a CDPHE-approved landfill facility. Waste characterization samples will be collected and analyzed in accordance with the requirements of the receiving landfill. East of Colorado Boulevard the Near Surface Soil can be managed in the same manner as the Shallow Unsaturated Soil interval.

- Shallow Unsaturated Soil – Confirmation samples will be collected at the following frequency for a continuous excavation (an excavation that is not interrupted by unexcavated material within the same vertical horizon):

    1. One 10-point composite sample for every 500 cubic yards (cy) for the first 10,000 cy (20 composite samples).

    2. Provided the Non-impacted/Unrestricted or Impacted/Restricted Reuse criteria are met, and on-site reuse of the soil, sampling frequency can then be reduced to one 10-point composite for every 2,000 cy.

    3. Provided the Non-impacted/Unrestricted Reuse criteria are met, and planned reuse off-site, sampling frequency can be reduced to one 10-point composite for every 1,000 cy to a total

excavated volume of 100,000 cy. Then the sampling frequency can be further reduced to one 10-point composite for every 2,000 cy.

4. In the event that a material change in the soil type is observed, the excavation enters a site of concern noted in Appendix D, or potential contamination is identified during screening/sampling, the sampling frequency will return to the highest frequency described herein.

- Unsaturated Native Soil – Confirmation sampling is not necessary, except for parcels identified as Sites of Concern as outlined in Appendix D of this BRMMP, or parcels with potential impacts identified by the CM, in which case sampling will be in the same manner as Shallow Unsaturated Soil.

- Saturated Soil – Saturated Soil will be sampled in the same manner as Shallow Unsaturated Soil.

3.2.2 Sampling and Analytical Parameters

At a minimum, the following TAL will be utilized; however, the CM may supplement this list if historical, olfactory, visual, or prior sampling results deem it necessary:

- PAHs by USEPA Method 8270SIM;

- RCRA 8 metals by USEPA Method 6010B/7041;

- VOCs by USEPA Method 8260B; and

- Individual COCs will be further analyzed by the Toxicity Characteristic Leachate Procedure (TCLP), as discussed in Sections 3.2.3 and 4.1.

The results of the analysis will be compared to the RSLs (USEPA, 2017) and TCLP (USEPA, 2006)criteria, as applicable, followed by state and federal standards. All excavation spoils with COC concentrations below the RSL-I will be deemed suitable for reuse on-site, within Project area boundaries, in accordance with Section 4. All excavation spoils exceeding RSL-I and TCLP limits will be immediately managed as a hazardous waste and disposed off-site as a hazardous waste.

3.2.3 Waste Characterization

All excavation spoils with COC concentrations below the RSL-I will be deemed suitable for reuse on-site, within the Project boundary. If analytical results indicate that material is not suitable for reuse on-site, additional analysis may be necessary for waste characterization purposes. The receiving landfill should be consulted regarding their waste characterization requirements; however, at minimum, this testing should include the following:

- TCLP analysis for individual compounds exceeding the 20-times rule
- Flash Point by USEPA Method SW1010
- pH by USEPA Method SW9045C – Soil with free liquid only
- Paint Filter by USEPA Method 9095 – Soil with free liquid only
- Poly-chlorinated biphenyls (PCBs) – Evaluate based on site history or laboratory analysis

3.2.3.1 The 20-Times Rule

Licensed Subtitle-D landfills may accept solid material where concentrations, resulting from total concentration analysis, are less than 20 times the hazardous listing for characteristic waste (20-Times Rule), except for PCBs. USEPA TCLP Maximum Concentrations of Contaminants (USEPA, 2006) are presented as Appendix B. As an example, the regulatory level of lead is 5.0 parts per million (ppm). The acceptable limit for landfill disposal, using total metals analysis and the 20-Times Rule, would then be less than 100 ppm. If concentrations of any contaminant exceed the 20-Times Rule, then analysis by TCLP for that compound will be required. If the TCLP results exceed the toxicity characteristic maximum concentration, then the material would require disposal at a hazardous waste disposal facility in accordance with Section 4.1.4.

If final analytical results are below the 20-Times Rule concentrations, the material then may be eligible for transport and disposal at a licensed Subtitle-D landfill as non-hazardous solid waste, provided the material meets the waste acceptance criteria of the receiving landfill. The material may also be reused on-site, depending on the PAL designation of the material (Section 4.1.1, 4.1.2, and 4.1.3). Often, the RSL-I are less conservative than the landfill disposal requirements, so the on-site reuse of the material may be a more practical alternative (e.g. lead).

All wastes which are identified as hazardous waste shall be removed from the site for disposal at a facility permitted to received hazardous waste in accordance with local, state, and federal requirements.

4. Material Handling Procedure

All excavation spoils generated from within the Project area will be evaluated based on the procedures outlined in Section 3. In general, displaced soils that do not fail the "looks bad, smells bad" parameters or exceed the RSL-I, will be deemed suitable for reuse in accordance with Section 4.1.1 and 4.1.2.

4.1 Predetermined Action Levels

PALs will be used to determine if the soil is acceptable for reuse within the project area, off-site reuse, or requires disposal at an appropriate landfill. The PALs are based on the USEPA RSLs. For excavation spoils generated from the project area, the following exposures/scenarios will be considered:

- **Groundwater Protection** – These are often the most protective, or stringent values, and were developed to protect groundwater where a chemical compound in soil may leach into groundwater. If concentrations in soil exceed the groundwater protection value (GPV) on the CDPHE Groundwater Protection Soil Cleanup table (CDPHE, 2014b), indicating that the soil has the potential to impact water quality, individual compounds will be further analyzed using TCLP methodology. Additionally, TCLP analysis will be required for TALs that do not have an associated GPV (e.g., metals) and the material may be placed within five feet of the groundwater interface if TALs do not exceed GPVs or have TCLP concentrations exceeding the Colorado Basic Standards for Groundwater (GWS) (CDPHE, 2016b).

  TALs with TCLP concentrations exceeding the GWS will not be placed within five vertical feet of the groundwater table or will be properly disposed off-site.

- **Residential Protection** – These are the next most stringent values based on the USEPA RSL-Rs (USEPA, 2017), and are typically the concentrations where soil can be reused without restriction on any site, including residential property (except where values do not meet groundwater protection values, as described above).

- **Worker Protection** – These values are based on the RSL-I (USEPA, 2017) and are considered appropriate for commercial and industrial properties, and can be managed and/or reused at commercial/industrial locations within the Project area without restriction (except where values do not meet groundwater protection values, as described above).

The application of these values for making material handling decisions is discussed in the following sections.

4.1.1 Non-Impacted/Unrestricted Reuse

Soils with chemical concentrations at or below their applicable RSL-Rs may be reused at any site within the Project area or off-site location, assuming the groundwater protection values have been met. If groundwater protection values have not been met, the soil must be tested using TCLP (USEPA, 2006). If the TCLP values exceed the GWS, the material must be managed as Impacted – Restricted Reuse in accordance with Section 4.1.2.

4.1.2 Impacted/Restricted Reuse

Soil with chemical concentrations above the RSL-Rs (Resident Risk-Based Screening Level), as set forth in Appendix C, but below the applicable RSL-Is, may be reused in the Project area without limitation, provided placement is a minimum of five feet above the groundwater interface, and provided CDOT has or will be able to grant an EC for the area where these soils are placed. Soil that will be placed within five feet of groundwater must meet the groundwater protection criteria discussed in Section 4.1.

Soil with or without chemical concentrations above RSL-Rs, below RSL-Is (Composite Worker Risk-Based Screening Level), as set forth in Appendix C, and which contain some amount of debris (and therefore is considered by CDPHE as a "solid waste") without evidence of associated ACMs, may be reused in the Project area without restriction, provided placement is a minimum of five feet above the groundwater interface, and provided CDOT has or will be able to grant an EC for the area where these soils are placed. Soil that will be placed within five feet of groundwater must meet the groundwater protection criteria discussed in Section 4.1.

Soil meeting the Impacted/Restricted Reuse criteria, but not the Non-Impacted/Unrestricted Reuse, which is used as fill within the project area will be covered with at least one of the following:

- Asphalt or concrete meeting CDOT specifications for the planned land use
- Six-inches (compacted) of clean imported fill or soil meeting the Non-Impacted/Unrestricted Reuse criteria

CDOT and Contractors will map where soils meeting the Impacted/Restricted Use criteria are placed and may limit the EC to these areas. If CDOT and Contractors fail to or cannot map where such soils are placed, the EC will apply to the entire Project Area.

4.1.3 Health Risk/Disposal

Excavated soil that will not be reused on-site and that does not meet the RSL-Rs will be characterized and transported off-site for disposal at a facility appropriately licensed in accordance with local, state, and federal regulations.

4.1.4 Hazardous Waste

If sample analysis indicates that the soil is designated as hazardous waste, within 72 hours of receipt of TCLP results, the soil will be containerized in a lined container of appropriate size, labeled, and transported to a designated temporary storage area on-site for up to 90 days pending off-site disposal at a hazardous waste disposal facility appropriately licensed in accordance with local, state, and federal regulations. These wastes will be manifested and transported to the disposal facility in accordance with state and federal regulations.

Transportation and manifesting of these waste materials on public highways, streets, or roadways will be in accordance with 49 Code of Federal Regulations and any applicable state requirements.

4.2 Soil Segregation Procedures

If the construction Contractor identifies soil that meets any "looks bad, smells bad" parameters or that is classified as potentially impacted by the CM, the material will be segregated by criteria such as type of impact,

likely contaminants, soil type, and the stockpiles will be limited to a size that can be reasonably managed in accordance with this plan and applicable regulations, taking into consideration the stockpile location. Segregated material will be handled in accordance with procedures described in Section 3.1.

CDOT and the CM will compare the analytical results to the PALs, and appropriate disposal or reuse determinations will be made.

5. Reporting

Any entity conducting ground disturbing activities within the Project area, or following substantial completion of the Project, within any area restricted by an EC, including CDOT, Contractors, and Holders will be required to provide and maintain the documentation to justify and document how the material met the specific use criteria (on-site or off-site disposal) and the final disposition of the material. The CM is responsible for maintaining the following documentation, at a minimum, for all material that is handled under this BRMMP, which shall be updated at least daily during active construction:

- Property description (where the material was generated);
- Work description;
- Copies of all field logs which detail daily operations;
- Summary of field screening/observation results (may be included in the daily field logs);
- Summary of analytical results (if any);
- Summary of final disposition of the material (specific on-site location and associated cover material, if applicable or off-site location);
- Copies of all analytical reports (if any);
- Copies of all waste manifests (if any);
- Maps showing the locations of pertinent site features related to implementation of this BRMMP, including: sample locations, location of constructed sumps, locations of potential hazardous and/or special wastes, areas where fill, with concentrations above the RSL-R, was placed, and any other important features identified during the course implementation of this BRMMP;
- Global Positioning System (GPS) coordinates of the excavations, sample areas, subsurface features, and so on will be recorded whenever possible;
- Representative site photographs detailing work performed;
- For material reused on-site above the RSL-Rs, the material shall be mapped in accordance with the CDPHE GIS Mapping Requirements for Environmental Covenants (Appendix E).
- Any other documentation detailing important features related to this project; and
- Where no COCs are encountered, a simple Memorandum stating such will be provided.

This documentation must be made available to CDOT as stipulated in contract or easement documents and summary documentation will be provided to CDPHE on a monthly basis during active excavation within the Project area.

6. Post-Construction Material Handling Procedure

Soil meeting the Impacted/Restricted Use criteria but not the Non-Impacted/Unrestricted Reuse criteria that is beneficially reused within the Project area will be subject to an EC. These soils must be managed during any future excavation, drilling, grading, digging or tilling activities, even if such soil was blended during placement with soils meeting the Non-Impacted/Unrestricted Reuse criteria.

Wherever CDOT, Contractors, or Holders excavate, drill, grade, dig or till in areas where soils meeting the Impacted/Restricted Use criteria were placed, that party will restore site conditions in a manner consistent Section 4.1.2, i.e. Impacted soils are not placed within five feet of groundwater and are covered with asphalt, concrete, or six inches of compacted clean fill. Any Impacted soil that is not replaced must be sent to a licensed Subtitle-D landfill.

7. References

CDPHE, 2014a. "Risk Management Guidance for Evaluating Arsenic Concentrations in Soil," CDPHE, reviewed/revised July 2014.

CDPHE, 2014b. "Groundwater Protection Soil Cleanup Table," Colorado Department of Public Health and Environment, Denver, Colorado, March 2014.

CDPHE, 2016a. "Compliance Bulletin, Asphalt, Brick and Concrete, Recycling and Beneficial Use", Colorado Department of Public Health and Environment, Denver, Colorado, February 2016.

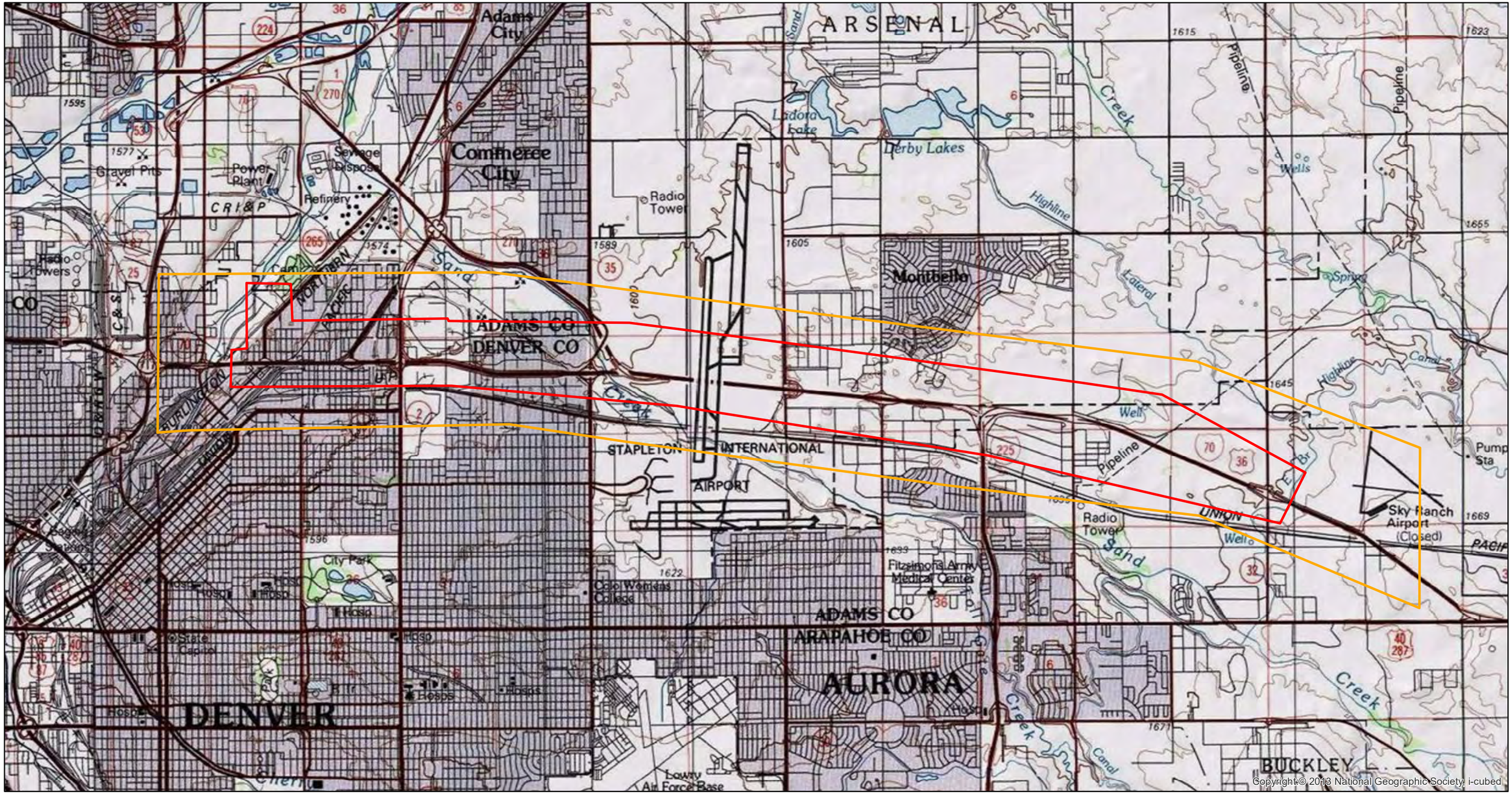
CDPHE, 2016b. "Regulation No. 41 – The Basic Standards for Groundwater, 5 CCR 1002-41," Colorado Department of Public Health and Environment, Water Quality Control Commission, Denver, Colorado December 30, 2016.

USEPA, 2006. "Table 1 - Maximum Concentration of Contaminants for the Toxicity Characteristic," 40 CFR 261.24, amended April 2006.

USEPA, 2017. "Regional Screening Level Calculator for Chemical Contaminants at Superfund Sites," United States Environmental Protection Agency, (September 9, 2017). https://semspub.epa.gov/work/03/2245073.pdf.

Pinyon, 2016. "Limited Subsurface and Groundwater Investigation Report, CDOT I-70 East Project," Prepared by Pinyon Environmental Inc., Revision, June 14, 2016.

Figures



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Legend

- Project Boundary
- Project Location

0 2,500 5,000 Feet

Pinyon Environmental, Inc.

SITE LOCATION

CDOT I-70 Central Project
Denver, Colorado

Site Location: Denver, Colorado	Drawn By: MJS / Figure 1
Pinyon Project Number: 1/12-790-04.8026.2	Reviewed By: RMT / Date: 8/4/2016

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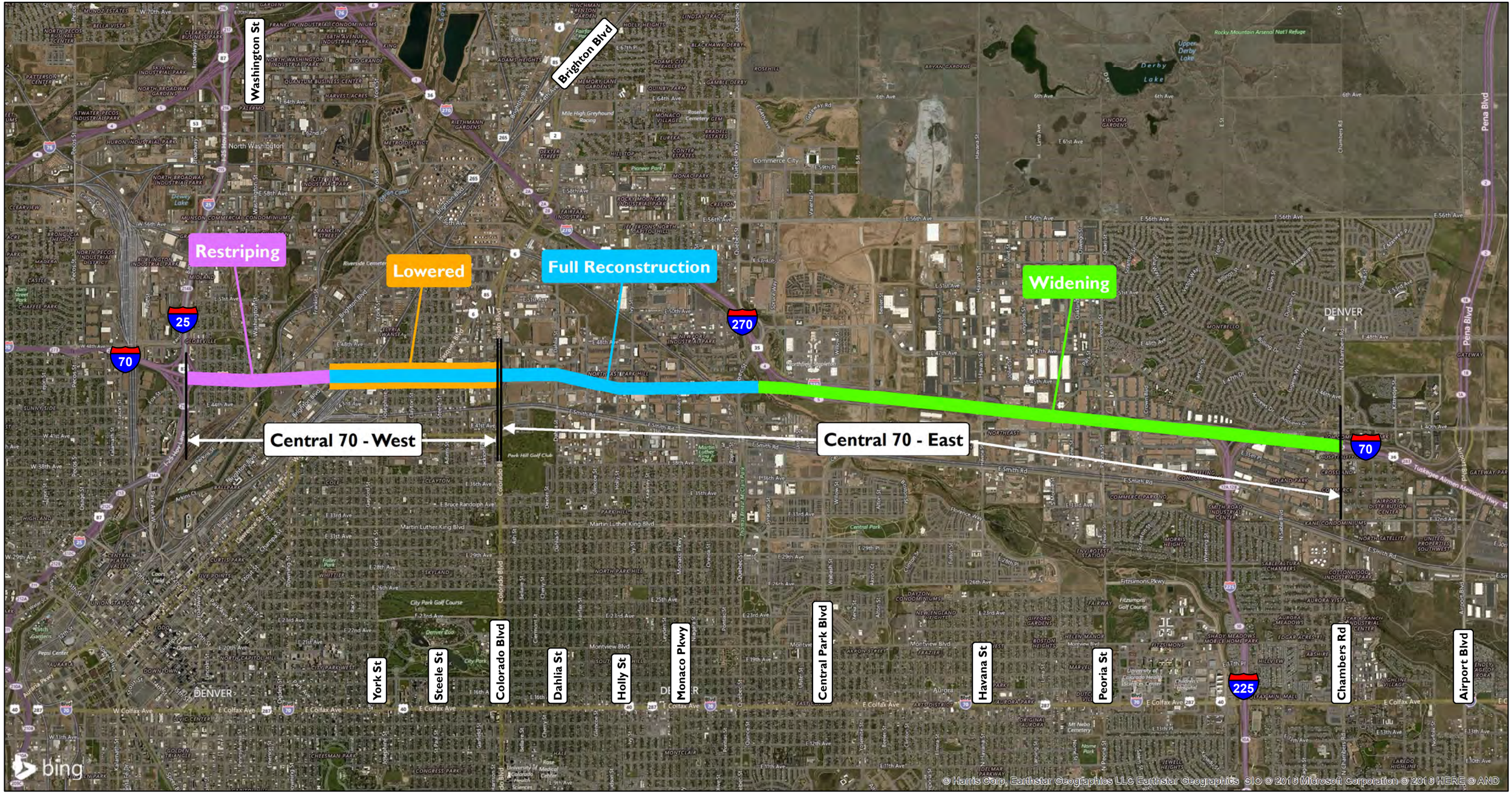


N

Legend

- Restriping
- Widening
- Full Reconstruction
- Lowered

0 2,000 4,000 Feet

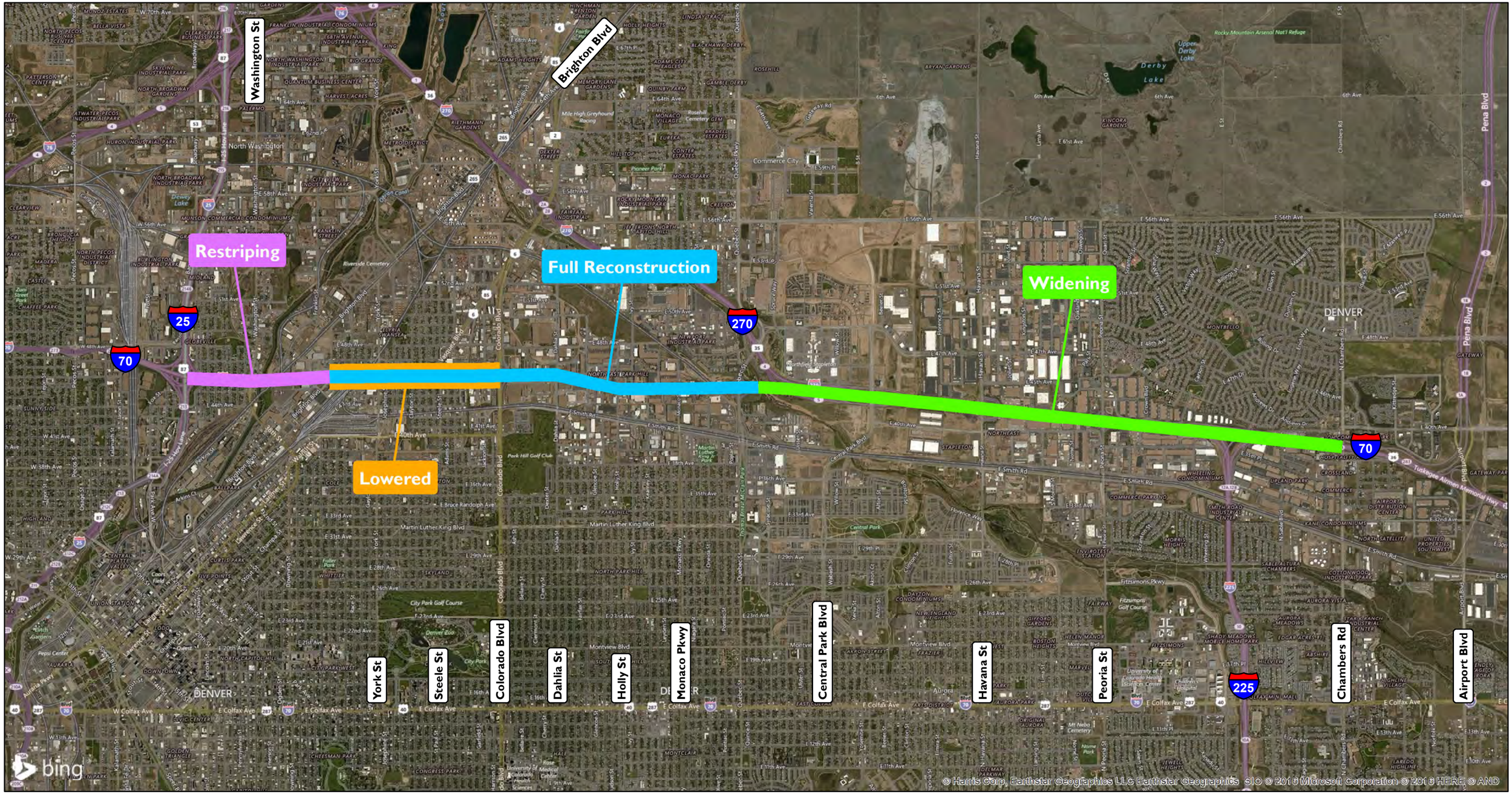
Pinyon Environmental, Inc.

PROJECT OVERVIEW

CDOT I-70 Central Project
Denver, Colorado

Site Location: Denver, Colorado	Drawn By: MJS	Figure 2
Pinyon Project Number: 1/12-790-04.8026.2	Reviewed By: RMT	Date: 8/29/2016

Document Path: C:\Users\Santo\Desktop\Figure 2 - Project Overview.mxd



N

Legend

- Restriping
- Widening
- Full Reconstruction
- Lowered

0 2,000 4,000 Feet

Pinyon Environmental, Inc.

PROJECT OVERVIEW

CDOT I-70 Central Project
Denver, Colorado

Site Location: Denver, Colorado	Drawn By: MJS	Figure 3
Pinyon Project Number: 1/12-790-04.8026.2	Reviewed By: RMT	Date: 8/4/2016

Document Path: D:\PROJECTS\2012\11279004 I-70 East DEIS\Figures\ArcMap\MXDs\Figure 3 - Project Overview.mxd

Appendix A CDOT Regulated Asbestos-Contaminated Soil Management Standard Operating Procedure

COLORADO
Department of Transportation
Office of the Chief Engineer

REGULATED ASBESTOS-CONTAMINATED SOIL MANAGEMENT STANDARD OPERATING PROCEDURE

October 18, 2016

Prepared by:
CDOT
Property Management Section
Hazardous Waste Unit
15285 South Golden Road, Building 47

Golden, CO 80401

Phillip T. Kangas
Asbestos Program Manager
Certified Building Inspector #1831

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ATTACHMENTS

1.0 PURPOSE AND SCOPE

This Standard Operating Procedure (SOP) provides written standard operating procedures that are the minimum requirements for the proper training, handling, packaging, and disposal of regulated asbestos-contaminated soil (RACS) or asbestos-containing material (ACM) during soil disturbing activities for Colorado Department of Transportation (CDOT) properties. This SOP shall be followed whenever soil excavation or disturbance will occur in areas where asbestos is known or suspected to exist. This SOP satisfies the current Section 5.5 Regulations (Management of Regulated Asbestos Contaminated Soil (RACS) of the Colorado Solid Waste Regulation (6 CCR 1007-2, Part 1).

When using this SOP for a specific project, appropriate notification shall be provided to Colorado Department of Public Health and Environment, Hazardous Materials and Waste Management Division (CDPHE) using the CDPHE notification forms attached to this SOP (Attachment 1). Note that for existing projects, where project information has already been provided to CDPHE, notification shall be provided to the established CDPHE contact, and use of the forms in Attachment 1 may not be necessary. Specific project notification under this SOP should include the following supplemental information:

1) A general project description,
2) A description of the area that work will take place,
3) Maps of the project area,
4) Project specific contact information (phone and email) including the general contractor, the excavation contractor (if not the general), the General Asbestos Contractor (GAC)(if applicable), and the environmental consultant,
5) Types of debris/contamination (either confirmed or assumed)that have been encountered,
6) Any interim steps that have been taken,
7) Any deviations from the approved SOP (with notation that any deviations will have to be approved by the CDOT and CDPHE before being implemented).

The SOP should be used as a guideline for implementing appropriate management and disposal practices, and may be supplemented with additional site specific management plans, including amended Material Management Plans for other regulated material, and/or Health and Safety Plans for site-specific safe work practices. Site specific Material Management and/or Health and Safety Plans will be appended to this SOP, and submitted to the CDPHE using the same CDPHE notification requirements noted above.

2.0 PRIMARY CONTACTS, ROLES AND RESPONSIBILITIES

Organization	Role/Responsibility	Contact Information
Colorado Department of Transportation (CDOT)	Property Management Section, Hazardous Waste Management Unit Supervisor	Theresa Santangelo-Dreiling Phone: 303.512-5524 Mobile: 303.917-6528 Email: Theresa.santangelo@ state.co.us
	Asbestos Program Project Manager	Phil Kangas, Phone: 303.512-5519 Mobile: 303.325-6123 Email: phillip.kangas@ state.co.us
	Project Management	CDOT Project Engineer
Contractors	Site excavation and as needed management of RACS in accordance with this SOP	To be provided per Project specific notification
Environmental Consultant	Soil characterization, soil removal oversight, soil spotting, air monitoring	To be provided per Project specific notification

3.0 DEFINITIONS AND ABBREVIATIONS

3.1 Abbreviations

ACM	Asbestos-containing materials
AHERA	Asbestos Hazard Emergency Response Act
AIHA	American Industrial Hygiene Association
AMS	Asbestos Air Monitoring Specialist, CDPHE Certified
APD	Asbestos Project Designer
AQCC	Air Quality Control Commission
CABI	Certified Asbestos Project Designer
CCR	Code of Colorado Regulations
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Public Health and Environment
DOT	US Department of Transportation
EPA	US Environmental Protection Agency
f/cc	fibers per cubic centimeter
GIS	Geographic information system
GPS	Geographic positioning system
HASP	Health and Safety Plan
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NIOSH	National Institute of Occupational Safety and Health
NIST	National Institute of Standards and Technology
NVLAP	National Voluntary Lab Accreditation Program
OSHA	Occupational Safety and Health Administration
PCM	Phase Contrast Microscope
PLM	Polarized Light Microscopy
PPE	Personal Protective Equipment
QPM	Qualified Project Monitor
RACS	Regulated Asbestos-Contaminated Soil
RWA	Regulated Work Area
SOP	Standard Operating Procedure document
TEM	Transmission Electron Microscopy

3.2 Definitions

"Air Monitoring Specialist" means a person who performs air monitoring who is certified to perform air monitoring in accordance with Air Regulation No. 8, Part B.

"Adequately wet" means sufficiently mix or penetrate with liquid to completely prevent the release of particulate material and fibers into the ambient air. If visible emissions are observed

coming from asbestos-contaminated soil or asbestos-containing material, then the material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wet. Guidance on determining when a material is adequately wet can be found in EPA's *Asbestos NESHAP Adequately Wet Guidance*, EPA 340/1-90-019 (December 1990).

"Asbestos" means the asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), amosite (cummingtonite-grunerite), anthophyllite, and actinolite-tremolite.

"Regulated Asbestos Contaminated Soil" ("RACS") means soil, ash, or debris (plus six (6) inches in all directions of surrounding soil or other matrix material) containing:

1) **Friable asbestos-containing materials (ACM) as determined in the field by a Certified Asbestos Building Inspector (CABI) through a RACS determination;**
2) **Previously non-friable ACM(s) that have been rendered friable as determined in the field by a CABI(s) through a RACS determination;**
3) **Non-friable ACM(s) that have a high probability of releasing fibers based on the forces expected to act upon the material during soil disturbance as determined in the field buy a CABI(s) through a RACS determination;**
4) **Deteriorated non-friable ACM(s) that are in poor condition resulting in a high probability to release fibers due to weathering, historical mechanical impact, fire damage (by evidence of ACM within an ash layer) or other factors as determined in the field by a CABI(s) through a RACS determination;**
5) **The following broken, resized, or damaged ACM(s) are RACS:**
    a. **Asbestos cement materials**
    b. **Plaster**
    c. **Brittle caulking, glazing and sealants**
    d. **Powdery Concrete Masonry Unit (CMU) sealant**
    e. **Powdery floor leveling compound**
    f. **Drywall/wallboard and associated joint compound material**
    g. **Firebrick**
    h. **Other material as determined by the Department, at the request of the owner or person disturbing debris, to have a high probability to release fibers.**
6) **Soil or ash known to contain non-visible asbestos fibers based on documented evidence.**

"Non-Regulated Asbestos Contaminated Soil" (Non-RACS)" means soil or debris that contains only:

1) Intact non-damaged, non-friable ACM; or,
2) Damaged non-friable ACM(s) that do not have a high probability to release fibers based on the forces expected to act upon the material during disturbance as determined in the field by a CABI(s) through a "RACS Determination". The following ACM(s) are predetermined to be Non-RACS:

i. Resin based materials including but not limited to phenolic-plastic (Bakelite), used in electrical and mechanical parts;
j. Resilient flooring (vinyl, asphalt, rubber) excluding non-tar impregnated friable felt backing on sheet vinyl flooring (linoleum);
k. Tar impregnated or asphaltic materials in good condition that have not become brittle;
l. Elastic, pliable, or rubberized materials, including but not limited to:
  i. Pliable duct sealant(s);
  ii. Pliable fiberglass insulation sealant;
  iii. Pliable fire-stop caulking/sealants;
  iv. Pliable window and door caulking
m. Extremely hard materials, coatings and sealants including but not limited to:
  i. Laboratory countertops and sinks;
  ii. Epoxy type CMU coatings;
  iii. Epoxy type panel adhesive;
  iv. Duct sealant;
  v. Ceiling tile adhesive

n. Other ACM(s) as approved by the CDPHE at the request of the owner or person disturbing debris, to not have a high probability to release fibers.

"Asbestos Supervisor" means a person who has been certified as an asbestos Supervisor in accordance with Air Regulation No. 8, Part B.

"Asbestos Project Designer" or **"Project Designer"** means a person who has been certified as an asbestos Project Designer in accordance with Air Regulation No. 8, Part B.

"Asbestos waste" means any asbestos-containing material whether it contains friable or non-friable asbestos, that is not intended for further use. This term includes but is not limited to asbestos mill tailings, asbestos from pollution control devices, and containers that contain asbestos.

"Asbestos-containing material" means any material that contains more than one percent (1%) asbestos by weight, area or volume.

"Certified Asbestos Building Inspector" (CABI) means a person certified in accordance with Air Regulation No. 8, Part B, to perform asbestos inspection and sampling (asbestos inspector).

"Debris" means the remains of any non-earthen material that has been discarded, broken down, destroyed, or burned.

"Facility Component" means any component associated with a structure, installation, or building and includes buried utilities, tanks, structures or other installations.

"Friable" means that the material, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure, and includes previously non-friable material after such previously non-friable material becomes damaged to the extent that when dry it may be crumbled, pulverized, or reduced to powder by hand pressure.

"Fugitive Dust" means visible dust leaving the work area boundary.

"Leak tight" means that solids, liquids, or gases cannot escape or spill out. It also means dust tight.

"Mechanical" means operated or produced by mechanism or machine. This may include, but shall not be limited to, an excavator, backhoe, grader and/or tiller.

"Non-friable" means material which, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

"Qualified Project Monitor" (QPM) means an individual who has the training and/or experience necessary to identify materials suspected of containing asbestos and who has the authority to make prompt decisions to the management of such materials, and who meets the training requirements in Colorado Solid Waste regulations Section 5.5.3.

"RACS Determination" means a determination conducted in the field by a CABI, of the friability of ACM and the probability of non-friable ACM to release fibers based on the condition of the material and the forces that are expected to act on it during disturbance. Determinations of friability shall be based on the requirements for such determination set forth in Air Quality Control Commission Regulation No. 8 (5 CCR 1001-10, Part B). Determinations of the probability for non-friable ACM to release fibers during disturbance shall be based on the following:

1) **The condition of the material prior to disturbance, based on observations of weathering, the integrity of the material, historical mechanical impact, or fire damage;**
2) **The potential for the material to be broken, resized or damaged during planned disturbance;**
3) **The material shall be considered RACS if the planned disturbance includes any of the following:**
   a. Augers;
   b. Rotary style trenchers;
   c. Driving on ACM lying on the surface (vehicles or equipment);
   d. Blasting or other detonation;
   e. Intentional burning;
   f. Other types of direct mechanical impact which are:
      i. In direct contact with ACM or result in observation of ACM after disturbance, and,
      ii. Causing damage to the ACM

"Regulated Work Area (RWA)" means the area where soil disturbing activities involving RACS are occurring. For RACS disturbance, Regulated Work Area also means the regulated/controlled area boundary.

"Site" means the area or areas where soil-disturbing activities are occurring or will occur.

"Staging" for the purposes of Section 5.5 and this SOP, means the accumulation of RACS in the RWA for twelve (12) hours or less.

Stockpiling" for the purposes of Section 5.5 and this SOP, means the accumulation of RACS that will exist for more than 12 hours, up to and including ten (10) calendar days.

"Storage" for the purposes of Section 5.5 and this SOP, means the accumulation of RACS greater than ten (10) days, but not exceeding six (6) months.

"Soil-disturbing activities" means excavation, grading, tilling, or any other mechanical activity used to disturb the soil.

"Visible emissions" means any emissions which are visually detectable without the aid of instruments, coming from material containing asbestos, asbestos waste, asbestos-contaminated soil, or from handling and disposal of asbestos waste, material containing asbestos or asbestos-contaminated soil.

4.0 PERSONNEL QUALIFICATIONS AND OUTREACH

Community outreach shall be conducted for projects involving mechanical disturbance of RACS containing friable ACM with an adjacent receptor present. In addition, ancillary worker awareness briefing(s) shall be conducted through the dissemination of fact sheets and/or informational meetings that discuss the presence of RACS that includes friable ACM and the measures being taken to prevent emissions and cross contamination.

Personnel overseeing, directing, inspecting and/or handling soil (known or suspected of containing asbestos) shall have, at a minimum and as appropriate to the work activity, the following training and experience:

1) Projects involving the disturbance of debris or soil/ash containing debris shall include at least one onsite QPM during active disturbance;
2) Personnel inside the RWA during the disturbance of RACS shall have annual awareness training. This training requirement applies to equipment operators and drivers of trucks carrying contaminated material for offsite disposal or reuse. Truck drivers who do not complete this training are ancillary workers. Soil disturbing activities must cease if the truck driver is present in the RWA unless the driver remains in the cab of the truck, the truck windows and doors remain closed, and the air handling system remains off while the truck is in the RWA. This training shall cover information necessary to comply with Solid Waste Regulation 5.5 including:
    - General asbestos awareness; including health effects; and
    - Overview of the requirements of Section 5.5; and
    - Overview of suspect ACM that requires further evaluation by a CABI; and
    - Overview of RACS and Non-RACS; and
    - Worker protection, including levels of personal protection equipment (PPE) required for various activities and conditions; and
    - Decontamination requirements for equipment and personnel; and
    - Engineering controls to prevent the release of asbestos outside the RWA; and
    - Overview of RACS handling procedures. The training shall be conducted by a CABI who is familiar with the site specific plan and/or the Minimum Requirements in Solid Waste Regulation Section 5.5.7. Records of this training shall be retained, by the trained individual, and be available for inspection, for a minimum of one year from the date of the training.
3) Per-project site-specific awareness training for disturbing RACS. This training shall cover site-specific information necessary to comply with Solid Waste Regulation Section

5.5 and the selected management approach for the project (this SOP or the minimum requirements of Solid Waste Regulation Section 5.5.7, including project chain-of-command and identification of authorized personnel with stop work authority, and identification of QPM(s), and hands on training specific to the soil disturbing activities involving RACS the individual will be performing. This training shall be provided by a CABI. Records of this training shall be retained, and be available for inspection, for the duration of the project for which the training was conducted. Individuals performing abatement of facility components, in accordance with Section 5.5.1 (B) of the Colorado Solid Waste Regulation, shall be Colorado Certified Asbestos Workers and/or Supervisors (Air Quality Control Commission (AQCC), Regulation No. 8, Part B,). If trigger levels of facility components are exceeded (see Section 6.3.7), then AQCC Regulation No. 8, will be followed with a Certified Project Designer, developing the abatement plan and submitting the permit request;

4) Qualified Project Monitors shall have, at a minimum:

- Annual awareness training and site specific awareness training under Solid Waste Regulation Section 5.5.3 (A) and (B); and
- Training from a CABI on identifying debris, exempted materials under Section 5.5.1 (A)(3), and the assumption of debris to be RACS as outlined in Section 5.5.1; and
- Training from a CABI on how to implement the minimum requirement under Section 5.5.7 and how to perform the duties that a QPM may perform in lieu of a CABI; and
- Training from a CABI on how to implement the provisions of this SOP or minimum requirements of Solid Waste Regulation Section 5.5.7 and how to perform the duties that a QPM may perform in lieu of a CABI; and
- 40 verifiable hours of direct experience on projects conducted under Solid Waste Regulation 5.5.

5) Inspection and identification of RACS shall be conducted by a CABI (certified in accordance with AQCC Regulation No. 8 (5 CCR 1001-10, Part B)), with 40 verifiable hours of on the job asbestos in soils experience on a minimum of three (3) different asbestos in soils jobs, conducted under either AQCC Regulation No. 8 or Section 5.5. The CABI shall be independent of the general contractor (GC) and/or abatement contractor unless the CABI and the GC or abatement contractor are both direct employees of the property owner. However, the GC or abatement contractor may hire a subcontractor CABI, but the CABI shall not be a direct employee of the GC or abatement contractor.

6) Individuals performing air monitoring in accordance with Solid Waste Regulation Section 5.5 must have a current Air Monitoring Specialist (AMS) certification in accordance with AQCC Regulation No. 8 (5 CCR 1001-10, Part B).

All personnel working on the site shall be advised and directed to not disturb areas (unless conducting asbestos inspections under Section 6.0) where suspected or known asbestos is present. Personnel driving onto the site shall be notified of suspect or known asbestos locations and directed to not drive on or otherwise disturb those areas.

5.0 MATERIALS AND EQUIPMENT

The following materials may be needed during the course of discovery, inspection or excavation of ACM or RACS:

1) Appropriate field monitoring instruments (low flow air sampling pumps, personnel pumps, wind meters, Phase Contrast Microscopy (PCM) microscopes, etc);
2) Camera (35 millimeter or digital), field logbooks;
3) Personal Protective Equipment (PPE) and cold weather gear as required;
4) Tape measure and pin flags;
5) Garden trowels and/or rakes;
6) Shovels, wheelbarrow;
7) Garden sprayers;
8) Marked labels stating "Caution - Contains Asbestos. Avoid opening or breaking bag or container. Breathing asbestos may cause serious bodily harm;"
9) 6-mil thickness polyethylene disposal bags;
10) Sample bags, generator labels, and manifests;
11) 6-mil, or greater, polyethylene sheeting;
12) Soil sampling supplies (sample containers or plastic bags, labels, chains-of-custody, coolers, collection bowl, decontamination supplies);
13) Suitable lab/sample reading area; and,
14) Documentation forms.

Larger investigation or excavation projects may require additional equipment such as a backhoe, trailer-mounted sprayers, or water trucks for more extensive dust control measures, and investigation-derived waste (IDW) containers such as roll-off bins or drums with single or double plastic liner, depending on the friability of the asbestos.

6.0 PROCEDURES

6.1 Unexpected Asbestos Discovery

It is possible that RACS and/or ACM may be unexpectedly encountered during any CDOT excavation project. Upon initial discovery of any unexpected asbestos (RACS or ACM) field personnel who are not CABIs shall immediately stop work and notify CDOT. **Notification to CDOT shall include notification to the CDOT Project Engineer and the CDOT Asbestos Program Project Manager as provided in Section 2.0 of this SOP.** The Contractor shall notify and receive approval from the CDOT Asbestos Program Project Manager prior to any work completion in any areas of unexpected RACS or ACM discovery.

Field personnel shall take actions necessary to assure that the suspect material is not disturbed while waiting for appropriately trained personnel to arrive on site. Field personnel shall stake, flag, demarcate or measure and/or mark on a map the suspect materials and warn crews to avoid that area until directed otherwise. Field personnel shall establish and take measures to manage RACS in accordance with Section 5.5 and this SOP including: taking measures to prevent access to the RWA by unauthorized persons; conducting interim surface soil stabilization to reduce emissions including:

a. Polyethylene sheeting with daily inspection, and inspection after storm events, and repair/replacement of sheeting as necessary to maintain stabilization; or
b. Chemical stabilization demonstrated to be effective in the stabilization of RACS (e.g. magnesium chloride) with weekly inspection, and inspection after storm events, and re-application of chemical stabilizer as necessary to maintain stabilization; or
c. Minimum of 3 inches of soil appropriate for unrestricted use; or
d. Other means of stabilization as approved by the CDPHE and CDOT.
e. Stabilization is not required if RACS is kept adequately wet. Verification of adequately wet conditions shall be conducted at least every two hours, or RACS shall be stabilized.

Equipment that was being used when encountering the suspect material is to be held unused for proper decontamination by wet or HEPA vacuum methods per Solid Waste Regulation 5.5.7 (I) until the suspect material is confirmed by lab analysis as asbestos or not.

In addition, the CDPHE will be notified within 24 hours of an unexpected RACS and/or ACM discovery. The Contractor or Consultant may notify CDPHE on the behalf of CDOT. The CDPHE can be notified by using the Notification Form attached to this plan, and mailed to: Colorado Department of Public Health and Environment, HMWMD-B2, Solid Waste Compliance Assurance Unit, 4300 Cherry Creek Drive South, Denver, CO 80246-1530, Attn: Brian Long or emailed to briant.long@state.co.us. Notification forms are provided in Attachment 1 to this plan. **For emergency repair projects to utilities, etc, notification will be**

provided to CDPHE by the next business day. Note that for existing projects, where project information has already been provided to CDPHE, notification shall be provided to the established CDPHE contact, and use of the forms in Attachment 1 may not be necessary.

The appropriately trained CDOT CABI (see Section 4.0) shall handle activities beyond initial discovery, including but not limited to the following:

1) Conducting inspections to assess the presence and extent of asbestos;
2) Documenting, collecting, packaging, and transporting suspect asbestos; and,
3) Directing qualified personnel to conduct items mentioned above.

At a minimum, appropriate PPE must be worn when doing asbestos inspections or otherwise accessing an area suspected or known to contain asbestos. At a minimum, CABIs performing the inspection and/or pickup of Non-RACS (just the ACM) must wear disposable booties and rubber gloves, which should then be discarded as asbestos waste prior to exiting the site.

Personnel completing the pickup of RACS (the piece and 6 inches in all directions of associated soil and/or debris or other matric material) plus an additional 6 inches, in all directions, of soil and/or debris or other matrix material from the last occurrence of visible RACS (Sections 6.2 and 6.3), must wear disposable outer protective clothing, booties and rubber gloves, which should then be discarded as asbestos waste prior to exiting the site. Additional PPE requirements may be required as determined by the Contractor's Health and Safety Officer. Refer to Section 9.0 of this SOP for personnel and equipment decontamination procedures.

If the RACS and/or ACM is pervasive throughout the excavation area, other protective measures, such as additional wetting and wind fencing, shall be employed. The CABI, in consultation with the CDOT Asbestos Program Project Manager, is allowed to make judgment calls on the initiation of additional protective measures and the amount of soil to be removed (the amounts of soil to be removed listed above are minimums, CDOT may elect to remove additional soils)(Sections 6.2 and/or 6.3).

6.1.1 Sampling RACS and/or ACM, Unexpected Asbestos Discovery

Unexpected suspect ACM encountered during a project must either be sampled and laboratory analyzed for asbestos or assumed to be asbestos containing. At the request and discretion of CDOT, the CABI may collect for analysis representative samples of each type of the unexpected material(s) encountered. Sampling of suspect RACS and/or ACM will include:

1) Adequately wet the suspect material to be sampled and the immediately surrounding soil. Collect the suspect asbestos material and place it in appropriate sample containers such as sample bags or jars;
2) Submit the material(s) for analysis to a certified asbestos lab for PLM analysis using proper chain-of-custody protocol; and,

3) Take digital photographs of the suspect RACS and/or ACM. Complete a photographic log for each type of suspect RACS or ACM sampled. The photographic log shall contain the location, date and time of each sample, a description of the suspect RACS or ACM, degree of friability, and the laboratory results.

Once identified as known RACS and/or ACM, and if the material(s) does not meet the criteria for Limited Quantity Unexpected Asbestos Discovery and Management as described in Section 6.1.3, the RACS and/or ACM will be then be managed, handled, packaged, disposed of and/or left in place as described in the applicable portions of Sections 6.2 through 11.0.

6.1.2 Assumed RACS and/or ACM, Unexpected Asbestos Discovery

As an alternative to sampling, the suspect RACS and/or ACM may be assumed to contain asbestos, with no material sample collection or laboratory analysis conducted. Assuming that suspect RACS and/or ACM contains asbestos will be at the discretion of CDOT. If suspect RACS and/or ACM is assumed to contain asbestos, the CABI will

1) Take digital photographs of the suspect RACS and/or ACM; and,
2) Complete a photographic log for each type of suspect RACS or ACM identified. The photographic log shall contain the location, date and time of each sample, a description of the suspect RACS or ACM, and degree of friability.

Once suspect RACS and/or ACM is assumed to contain asbestos, and if does not meet the criteria for Limited Quantity Unexpected Asbestos Discovery and Management as described in Section 6.1.3, the RACS and/or ACM will be then be managed, handled, packaged, disposed of and/or left in place as described in the applicable portions of Sections 6.2 through 11.0.

6.1.3 Limited Quantity Unexpected Asbestos Discovery and Management

If soil in an area not known or suspected to have asbestos contamination is determined to contain positively identified (through sampling) or assumed RACS which has less than 25 separate pieces of asbestos **in a single location that is less than 10 cubic feet** (with multiple pieces of asbestos within a few inches of each other to be treated as one piece of asbestos), the CABI may, at the request and discretion of CDOT, remove these pieces of asbestos using the procedures listed below:

1) Use amended water (surfactant consisting of one ounce of a solution of 50% polyoxyethylene ester and 50% polyoxyethylene ether or equivalent in a 0.16 percent solution (1 ounce to 5 gallons of water) or as per manufacturer recommendations for the wetting of asbestos available to adequately wet the material and surrounding soil. This requirement may be waived by the CDPHE for emergency situations where the work must occur immediately and wetting agents are not available;
2) For Non-RACS, wet, gather and place the material in 6 mil bags;
3) For RACS, wet, gather and place material and 6 inches in all directions of associated soil and/or debris or other matric material plus an additional 6 inches, in all directions, of soil

and/or debris or other matrix material (total of 12 inches of removal in all directions) from the last occurrence of visible RACS in 6 mil bags (double bags). Continue work with extra attention to possible additional asbestos in that vicinity;

4) Stage waste bags in a lined drum or roll-off container. Document waste as solid waste, which contains asbestos, on CDOT Field Documentation Forms (Attachment 2);

5) Conduct a follow-up visual inspection of the area by repeating procedures 1 through 4 above;

6) If no more visible asbestos material is discovered, and at the request and discretion of CDOT, the CABI may proceed with area clearance by collecting a 10-point composite soil sample over the area (maximum area of 1,250 SF). Aliquot locations shall be representative of the entire area; however, aliquots must be placed where any visible friable asbestos material was found. Sampling shall be performed by following these procedures:

   i. Calculate the volume of sample material to be collected at each increment sample to ensure the necessary amount of composite sample shall be obtained. For a given composite sample, the volume of each incremental sample shall be approximately one (1) tablespoon and must equal 1/10 of the required composite sample volume of between ¼ cup and 1 cup.;

   ii. Use a decontaminated stainless steel spoon to collect a surface soil sample. A stainless steel pick may be used as needed to loosen the soil. To the extent possible, eliminate gravel-size or large particles and debris based on visual observation;

   iii. Decontaminate the sampling equipment in accordance with Section 9.0; and,

   iv. Submit the material(s) for analysis using proper chain-of-custody protocol.

7) All samples shall be analyzed using accepted PLM methodology for asbestos bulk samples by laboratories accredited according to the provisions set forth in AQCC Regulation No. 8. Proper chain-of-custody protocols for all samples submitted shall be followed. All samples will be prepared by the laboratory in accordance with Solid Waste Regulation Section 5.5 Appendix 5A Analytical Requirements prior to sample analysis.; and,

8) Dispose of waste in marked 6 mil bags with affixed generator labels. Waste shall be double-bagged if picked up during inspection. All waste must be disposed in accordance with Section 5 of the Colorado Solid Waste Regulations.

If no asbestos fibers are detected in the composite sample, the area will be classified as non-RACS and the area will remain classified as no reason to know or suspect RACS. If asbestos fibers are detected in the composite soil sample, the area will be classified as known RACS. The known RACS will then be managed, handled, packaged, disposed of and/or left in place as described in the applicable portions of Sections 6.2 through 11.0. Following any discovery of

RACS and/or ACM subsequent soil disturbing activities should be conducted with the understanding that further encounters with RACS are possible and that Solid Waste Regulation 5.5 will be implemented. If soil disturbing activities will last longer than two (2) days then air monitoring procedures will be performed per Section 5.5.7 (E).

6.2 Excavation and Earthmoving, Known RACS (Planned Encounter)

This section applies to soil disturbing activities in areas at which RACS have been identified.

Establishment and control of Regulated Work Area (RWA)

1) Requirements for establishment and control of a RWA are applicable to all projects subject to Solid Waste Regulation Section 5.5 and this SOP including Section 6.1.3 work stated above:
    a) Establish a RWA that is identifiable to all persons. Haul roads between RWAs, where RACS is not present, are considered to be outside the RWA)s); however, equipment decontamination and spill responses procedures shall be followed; and
    b) Stop all soil disturbing activities in the RWA if ancillary workers or members of the public are present within the RWA. Truck drivers who do not complete the asbestos awareness training are ancillary workers. Soil disturbing activities must cease if the truck driver is present in the RWA unless the driver remains in the cab of the truck, the truck windows are closed and the air handling system remains off while the truck is in the RWA; and
    c) Post labeling and signage to demarcate RWA(s). The RWA shall be demarcated with a visual means that fully defines the extent of the RWA. Labeling and signage shall indicate the presence of asbestos, and that the area is off limits to unauthorized personnel.
2) Additional Requirements for Projects Disturbing RACS Containing Friable ACM. Establish a secured work site (e.g., fencing/locks/zip-ties/chains). Security firms, personnel, or staff subcontracted/assigned to this duty, may be used to secure the RWA in lieu of fencing. If the RWA is located within a larger secure facility fencing of the RWA is not necessary as long as the RWA is secured.

The CDPHE will be notified at least 10-days prior to any planned soil-disturbing activity in areas of known RACS and/or ACM. The CDPHE can be notified by using the Notification Form attached to this plan, and mailed to: Colorado Department of Public Health and Environment, HMWMD-B2 Attn: Brian Long, Solid Waste Compliance Assurance Unit, 4300 Cherry Creek Drive S., Denver, CO 80246-1530 or emailed to briant.long@state.co.us. The CDPHE Notification form is provided in Attachment 1 to this plan. **For emergency repair projects to utilities etc., notification will be provided to CDPHE by the next business day. Note that for existing projects, where project information has already been provided to CDPHE, notification shall be provided to the established CDPHE contact, and use of the forms in Attachment 1 may not be necessary.**

Dust control measures shall be increased significantly during soil disturbing activities in areas of known RACS. Dust control during soil disturbing activities shall be continually assessed and modified as needed to best accommodate changing site conditions. Visible dust emissions shall not be generated at any time during any soil disturbing activities.

Important: Unless specified in the CDOT construction documents and Contractor's Health and Safety Plans, personnel shall not enter an excavation without the proper safety precautions. Substantial local, state, and federal regulations and site-specific health and safety requirements apply for entry into excavations. CDOT and/or the Contractor's Health and Safety Officer must be notified prior to any activity involving entry of personnel into excavations.

1) The air monitoring requirements specified under Section 7.0 shall be followed during soil disturbing activities;
2) Wind speed measurements will be taken with a hand held wind meter at least every 30 minutes, and during wind gusts, throughout the duration of soil removal or disturbance activities. All inspection and excavation procedures within 100 feet of friable RACS or ACM, including non-friable that have been or have the potential to be rendered friable, in this SOP must cease when any of the following wind stoppage criteria are met, in order to limit potential exposure to workers and airborne emissions of asbestos from the site. The following wind stoppage criteria shall be followed:
    i. Any wind gust reaches or exceeds 20 miles per hour (mph) as determined by a hand-held meter;
    ii. Sustained wind speeds reach or exceed 12 mph averaged over a period of 10 minutes;
    iii. Winds produce visible emissions or create movement of dust or debris in or near the work area; or,
    iv. Winds impact the ability of engineering controls to work as designed.
3) Soil removal/disturbance operations may resume after all of the following four conditions have been met:
    i. All wind gust readings, for a period of 10 minutes, drop below 20 miles per hour as determined by hand-held instruments;
    ii. Sustained wind speeds are below 12 miles per hour averaged over a period of 10 minutes;
    iii. Winds are no longer producing visible emissions or creating movement of dust or debris in or near the removal/disturbance area; and,
    iv. Winds are not impacting the ability of engineering controls to work as designed.

4) All water used in the following procedure shall be amended water (as described in Section 6.1.3.1);

5) Excavation shall be conducted as specified in the CDOT construction documents. Prior to soil disturbance, the contractor shall adequately wet the first lift of soil to prevent visible emissions. During excavation, the contractor shall use a mister on the track hoe and/or hand-operated misters/sprayers to ensure that the soil and any suspect asbestos material are adequately wet to prevent visible emissions. Use of both is size of excavation and condition (weather and/or asbestos potential) dependent;

6) Carefully excavate layers of soil remaining by limiting the quantity of soil so that it can be adequately wetted and contained within each scoop of the backhoe. The CABI shall conduct a subsurface visual inspection for asbestos material as excavation proceeds and inspect the soil during removal by the Contractor;

7) All excavated RACS, not direct loaded into trucks or roll-offs for disposal, shall be placed on 6-mil, or greater, polyethylene sheeting. Staging (12 hours or less), stockpiling (more than 12 hours and up to 10 calendar days) and storage (exceeding 10 calendar days not to exceed 6 months) of RACS onsite (if applicable) will be in accordance with Solid Waste Regulation 5.5.7 (H)

8) During loading, the excavator or front-end loader or equivalent, moving the soils into the haul truck or roll-off shall have the sprayer bar operating to wet the material being loaded. A ground based sprayer shall also spray/wet the bucket as it is unloaded into the truck;

9) The truck, or disposal container, shall be placed on 10-mil polyethylene sheeting while being loaded so that any over-spill can be picked up. Any over-spill material shall be cleaned up before the truck is allowed to leave the loading area to prevent possible cross-contamination. Additionally, the 10-mil polyethylene sheeting in the loading area shall be decontaminated (in accordance with Section 9.1) or changed as needed to prevent possible cross-contamination. The excavator operator, the person operating the spray unit, the CABI, and any other personnel in the area immediately helping the soil operation shall be in Tyvek®, respirator, and air pumps. This requirement does not apply to haul truck drivers as long as they are directed to keep their windows rolled up and shut-off all air delivery systems (fans on air conditioning and heating systems) until they leave the area of active soil disturbance;

10) The anticipated total depth of excavation will be specified in the CDOT construction documents. If asbestos material is still present at the total planned depth of the excavation, the Contractor shall notify CDOT. Although not required by Section 5.5 Regulation, at CDOT's discretion, based on project and site specific conditions such as type of ACM(s) encountered and assumed limited vertical extent, the Contractor may continue excavating in 1 foot lifts to a depth where visible asbestos is no longer observed. If it appears that the ACM has a larger areal and vertical extent, the CABI, after

consulting with CDOT, shall then direct activities to be conducted in accordance with **Section 11** of this document;

11) If no more visible RACS is discovered at the conclusion of excavation and/or earthmoving activities, and if required and at the discretion of CDOT, soil samples for asbestos analysis shall be collected by the CABI from each excavation as follows:

    i. The CABI shall collect a separate 10-point composite soil sample from each sidewall and from the floor for every 1,250 square feet of excavation. Aliquots shall be one (1) tablespoon each but must include any locations of observed friable asbestos, after this material has been removed;

    ii. The CABI shall label and handle the sample containers using proper chain-of-custody protocol and decontaminate all non-disposable sampling equipment between samples in accordance with Section 9; and,

    iii. All samples shall be analyzed using accepted PLM methodology for asbestos bulk samples by laboratories accredited according to the provisions set forth in AQCC Regulation No. 8. All samples will be prepared by the laboratory in accordance with Solid Waste Regulation Section 5.5 Appendix 5A Analytical Requirements prior to sample analysis.

12) If at the conclusion of excavation and/or earthmoving activities, and at the request and/or discretion of CDOT, known or suspect RACS and/or ACM is to be left in place, the remaining RACS and/or ACM will be handled as described in **Section 11.0**;

13) Excavated RACS and ACM shall be placed in designated containers labeled for asbestos in accordance with the Colorado Solid Waste Regulations. The RACS and ACM shall be loaded using all necessary procedures to prevent visible emissions. These include misting/wetting during the loading process, keeping the bucket as close as possible to the interior of the container before dumping, and slow dumping to allow adequate wetting. Use of leak tight containers and other disposal requirements shall be in accordance with Section 5.5.8 of the Colorado Solid Waste Regulations (e.g., burrito wrap, single or double liner);

14) If trucks are used, soil with visible non-friable ACM, or RACS with no visible asbestos debris, shall be loaded in to single lined trucks. Soil with visible friable ACM shall be loaded into double lined trucks;

15) If the excavation will be left open overnight, access to the area must be restricted and any exposed portions of the excavation or soil piles containing known or suspect visible asbestos or RACS must be covered or otherwise stabilized; and,

16) All RACS that are stockpiled or placed in roll-offs shall be covered with 10-mil polyethylene sheeting and/or treated with a chemical stabilizing agent and inspected daily to ensure sheeting is intact.

17) It should be noted that while both covering with polyethylene sheeting and treating with a chemical stabilizing agent are acceptable options for stabilization, the chemical stabilization is preferential because of the fact that windy conditions can create problems with stabilization through the use of polyethylene sheeting (e.g. wind blowing poly. sheeting off stabilized materials, wind creating bellowing effect with poly. sheeting that may lead to asbestos fiber release, etc.)

6.3 Excavation and Earthmoving, Suspect RACS (Possible Encounter)

This section applies to soil disturbing work in areas at which RACS is suspected.

The CDPHE will be notified at least 10-days prior to any planned soil-disturbing activity in areas of suspected RACS. The HMWMD can be notified by using the Notification Form attached to this plan, and mailed to: Colorado Department of Public Health and Environment, HMWMD-B2 Attn: Brian Long, Solid Waste Compliance Assurance Unit, 4300 Cherry Creek Drive S., Denver, CO 80246-1530, or emailed to briant.long@state.co.usNotification forms are provided in Attachment 1 to this plan. **For emergency repair projects to utilities, etc, notification will be provided to CDPHE by the next business day. Note that for existing projects, where project information has already been provided to CDPHE, notification shall be provided to the established CDPHE contact, and use of the forms in Attachment 1 may not be necessary.**

The CDOT CABI must be present during all soil disturbing activities in areas where there is a reasonable suspicion that RACS may be encountered. As the excavation advances, the CABI shall inspect the bucket for asbestos debris as the soils are removed from the excavation, and if not direct loaded, in the staging area. If the CABI discovers asbestos the following procedure shall be followed:

1) The air monitoring requirements specified under Section 7.0 shall be followed;
2) The wind stoppage criteria under Section 6.2 shall be followed;
3) All water used in the following procedure shall be amended water (Section 6.1.3.1)
4) If RACS are observed, and if does not meet the requirements for Limited Quantity Unexpected Asbestos Discovery and Management (Section 6.1.3), the CABI shall closely observe the excavation and bag (or direct load) the RACS. The excavator shall start using the sprayer bar with amended water on the excavation face. Alternatively wetting may be conducted by personnel on the ground with spraying equipment;
5) If in the excavation process, a significant quantity of RACS is encountered, such that hand removal of the debris and surrounding soil is not feasible (Section 6.1.3), the excavated soils from this excavation area shall be treated as described in Section 6.2. All excavated soils shall be covered by 6-mil or greater polyethylene sheeting and/or treated with a chemical stabilizing agent, unless direct loaded or containerized. These activities can be stopped when no additional asbestos is observed within a 3 linear feet, in the

direction of excavation, from the last visible asbestos debris. These soils shall be disposed as non-friable RACS, as described in Section 10.0;

6) If RACS is observed, and not related to steam lines or other facility components which are subject to AQCC Regulation No. 8 (Section 6.3.7, below), the RACS or visible RACS shall be segregated on 10-mil polyethylene sheeting, unless direct loaded or containerized. The segregation shall continue for 3 linear feet, in the direction of excavation, after the last occurrence of RACS. As soon as friable ACM is encountered, wetting may be conducted by personnel on the ground with spraying equipment or the spray bar on the excavator shall be activated. Extra wetting support may be required by ground based personnel on the working face, as necessary to ensure that there are no visible emissions. The excavator operator, the CABI, and personnel handling the spray on the working face shall don Tyvek®, respirator, and personal air pumps for air monitoring (excluding truck drivers, as noted in Section 6.2.9). Unless direct loaded or containerized, the soils shall be placed on 6-mil or greater polyethylene sheeting, and as soon as possible tightly covered with 6-mil or greater polyethylene sheeting, and/or treated with a chemical stabilizing agent, to prevent wind dispersion of the soils. The wetting, PPE, and air monitoring shall continue until no additional asbestos is observed for 3 linear feet, in the direction of excavation, beyond the last occurrence of visible asbestos debris. The excavator bucket shall be decontaminated over the soil pile and standard excavation protocols may resume. However, if excavation equipment is driven onto RACS, more thorough decontamination, in accordance with Section 9.0, shall be conducted;

7) Removal of ACM on a facility component with asbestos quantities above the following trigger levels is subject to the notification, permit, and abatement requirements of AQCC Regulation No. 8, and shall not be conducted under this SOP:

   i. 260 linear feet on pipes,

   ii. 160 square feet on other surfaces, or,

   iii. The volume equivalent of a 55-gallon drum.

   However, removal of asbestos-containing material on a facility component, that is below the AQCC Regulation No. 8 trigger levels, and that is located on or in soil, shall be conducted under this SOP in accordance with work practices in AQCC Regulation No. 8, Part B, Section III.O. This removal is not subject to the notification or permit requirements of Air Regulation No. 8; and,

8) RACS shall be removed for disposal, or place in lined roll offs, no longer than 3 days after excavation. When loading soils with friable asbestos for disposal, the soils shall be loaded into double lined roll offs or dump trucks, or a second liner can be added to a non-friable load which already has a single liner, manifested, and disposed at a landfill permitted to accept this material. In the event that a second liner has been added, the entire load will be considered friable asbestos. The excavator or front-end loader or

equivalent, moving the soils into the haul truck/roll-off shall have the sprayer bar operating to wet the material being loaded and/or a ground based sprayer shall spray/wet the bucket as it is unloaded into the truck. The truck shall be placed on 10-mil polyethylene sheeting while being loaded so that any over-spill can be picked up. The excavator operator, the person operating the spray unit, the CABI, and any other personnel in the area immediately helping the soil operation shall be in Tyvek®, respirator, and air pumps (excluding truck drivers, as noted in Section 6.2.9). This soil shall be disposed as friable RACS, as described in Section 10.0.

6.4 RACS SPILL RESPONSE

1) Areas where RACS is spilled are RWAs until cleanup is completed.
2) Spilled material shall be cleaned up immediately and not allowed to dry out or accumulate on any surface. The CDPHE Hazardous Materials and Waste Management Division shall be notified, through the spill reporting hotline, in the event that spills of RACS cannot be cleaned up within 24 hours of spill identification.
3) Where there are breaches in ground coverings that have the potential to allow RACS or asbestos contaminated water to impact the material below the covering, a minimum of 3 inches of soil, or other matrix material, shall be removed from beneath the breached ground coverings. Visual or measured (e.g. survey) confirmation that 3 inches of soil/or other matrix material from beneath the breached covering has been removed shall be conducted. If ground coverings are placed on top of a durable surface such as concrete or asphalt, the surface shall be decontaminated using wet methods, followed by CBI inspection that all soil and debris has been removed from the surface.
4) Rinsate, runoff, or any other water that has come into contact with RACS shall be considered to be asbestos contaminated water and shall be collected and filtrated to less than 5 microns and discharged to a sanitary sewer of re-applied to RACS that will be managed under this SOP.
5) Surfaces that are contacted by asbestos contaminated water shall be managed as RACS as per 5.5.7 (J)(3) or permanently stabilized as per 5.5.7 (K) of the Solid Waste Regulations.
6) If work practices in an RWA are causing an ongoing spill outside the RWA, the work practices shall cease or be modified to prevent additional releases.

7.0 AIR MONITORING REQUIREMENTS

During the removal or disturbance of RACS, the AMS will collect personnel air monitoring samples to assist in determining the adequacy of engineering and environmental controls employed at the site. The air monitoring specialist will maintain a daily air monitoring log. Depending on the size of the work area and the type of soil being removed, air monitoring may include personnel air monitoring only, or personnel monitoring and perimeter air monitoring for large open areas. In general, personnel air monitoring only (i.e., no perimeter monitoring) shall be used when RACS disturbance will not exceed a duration of two (2) days.

Perimeter monitoring shall be used when disturbing RACS during projects over 2 days in duration. In addition, if the work area is proximate to occupied buildings or areas of public access, perimeter air monitoring may be necessary to demonstrate that no asbestos fibers have left the work area.

7.1 Personal Air Monitoring

Personal air monitoring shall be performed in accordance with all OSHA requirements during all disturbance of known and suspect asbestos in soils. In addition to OSHA requirements, for all RACS excavation activities, at least two (2) different workers or 25 percent of the workers, whichever is greater, and who are expected to have the worst-case exposure to asbestos during excavation, shall be monitored to assist in determining the adequacy of engineering and environmental controls employed at the site.

7.2 Perimeter Air Monitoring for Asbestos

Perimeter monitoring shall be performed during all excavations of RACS that exceed a duration of two (2) days. Perimeter monitoring will consist of four (4) air monitoring points located at the points of the compass. Additionally, two (2) downwind floater samples shall be collected during mechanical disturbance of RACS containing friable ACM (to be moved based on prevailing wind direction and adjacent receptors). Additional perimeter monitoring points shall be added if the active area of soil disturbance is larger than approximately 1 acre in size. As general rule of thumb, one additional monitoring point should be added for each additional 200 linear feet of the active disturbance area perimeter (approximately 1 sample per additional ¼ acre increase in area). The AMS should place downwind floating samples such that they are at least 50 feet from any other sample point.

7.3 Air Sample Analysis and Response to Detected Asbestos Fibers

All the air samples shall be analyzed for total fibers using PCM analysis by submitting to an AIHA Proficiency Analytical Testing (PAT) and NIST NVLAP accredited laboratory at the end of each work day. The two samples (or 25% of the PCM samples; whichever is greater) with the highest fiber concentrations by PCM will be analyzed by TEM for asbestos fibers. In addition,

any sample with fiber counts greater than 0.01 f/cc, detected by PCM analysis, shall be analyzed by TEM to determine if asbestos is present. Verbal results shall be made available to the Contractor and AMS by the start of the next business day or as soon as practical after the start of the next business day, and written results shall be made available on-site within 24 hours from the time the verbal result is received.

For active areas of soil disturbance greater than 1 acre, additional samples shall be analyzed by TEM at a rate of at least 25% of the total number of samples collected. The additional samples selected for TEM analysis should be those with the next highest PCM results; however, TEM analysis is not required if the PCM results are non-detect (based on fiber count). If asbestos is detected by TEM analysis, engineering controls shall be reviewed and appropriately changed.

After five (5) days of monitoring the same type of field operation with no asbestos detection by TEM analysis, the frequency of TEM analysis of the two highest samples (or 25% of the PCM samples; whichever is greater) can be reduced to once every 5 days with the remaining samples being analyzed by PCM. The samples submitted shall be either the first occurrence of: 1) high winds exceeding wind shut down criteria, or 2) visible emissions. In the absence of either the selected day for TEM analysis may be random as determined by the AMS. However, any sample with fiber counts greater than 0.01 f/cc, detected by PCM analysis, shall be analyzed by TEM to determine if asbestos is present.

If conditions or engineering controls change substantially or if there are any TEM detections of asbestos, the initial air monitoring procedures shall be repeated for three additional days or until air monitoring results demonstrate that the new or modified engineering controls are adequate.

The Contractor and AMS shall review the TEM analysis of personnel air monitoring samples with positive TEM Results. CDPHE shall be immediately notified should any air sample show any concentration of airborne asbestos fibers. In the event asbestos fibers are detected, the following shall occur:

1) Excavation shall immediately cease;
2) The source(s) of emissions identified;
3) Engineering controls will be reevaluated to ensure that additional fiber releases do not occur; and,
4) If asbestos fibers are detected in samples collected on subsequent days:
    i. All soil-disturbing activities shall immediately cease,
    ii. The source(s) of emissions shall be identified;

iii. An emission control plan, in accordance with Section 5.5.7(E)(2)(f)_of the Solid Waste Regulations shall be derived and submitted to CDOT and the CDPHE for review; and,

iv. Soil disturbance shall not continue until CDPHE provides verbal and/or written authorization to proceed.

v. If there are three (3) TEM detections on consecutive analysis events or ten (10) detections for a single project, consultation with CDPHE is required in accordance with Section 5.5.7(E)(2)(g) of the Solid Waste Regulations.

8.0 DOCUMENTATION

All asbestos discoveries, excavation, handling, and disposal shall be communicated with CDPHE from discovery through completion in addition to the normal site channels.

The CABI is responsible for documenting all asbestos inspection observations and sampling activities. **Detailed, complete, and accurate record shall be documented on all applicable Forms contained in this SOP during the field activities (Attachment 2) and shall include documentation as required in Section 5.5.7 (L) of the Colorado Solid Waste Regulation.**

The CABI/QPM shall also be responsible for maintaining the photographic log and the project field logbook. The purpose of the field logbook is to document a semi-narrative record of the field conditions, activities, and events relevant to the field program on a daily basis. Information to be documented in the logbook includes air monitoring, wind stoppage events, decontamination procedures, ACM and/or RACS handling, sample collection, and any other pertinent information not already contained on the inspection and Sampling Forms in this SOP.

9.0 EQUIPMENT AND WORKER DECONTAMINATION PROCEDURES

The purpose of this protocol is to specify decontamination procedures that must be followed when performing asbestos inspections, excavations and other soil disturbing activities.

IN GENERAL, EVERY EFFORT SHALL BE TAKEN TO AVOID DRIVING IN CORRIDORS OR AREAS THAT ARE KNOWN TO CONTAIN ASBESTOS OR HAVE THE POTENTIAL TO CONTAIN ASBESTOS.

9.1 Equipment Decontamination

To minimize decontamination requirements, areas of asbestos contaminated soil may be covered prior to vehicle access. Covering may consist of either 6 inches of clean fill (crushed concrete, gravel, soil, or similar type material) or 10-mil polyethylene sheeting. For haul trucks being loaded with RACS for offsite disposal, the truck may be driven onto 10-mil, or greater, polyethylene sheeting and loaded with care being taken to minimize spillage. After loading, all soil and debris that has spilled onto the polyethylene sheeting must be removed prior to the truck being allowed to roll forward. Removal of soil and debris (which should already be adequately wet) will be conducted with shovels, brooms, or squeegees. If necessary, the polyethylene sheeting may be replaced or hosed down, however, care should be taken to ensure that decontamination water does not leave the immediate work area, or that it is collected and filtered as described in 8) below. The polyethylene sheeting must be visually clean, or replaced, before the next haul truck enters the loading area.

In cases where vehicles or larger equipment (such as backhoes) must be used at the site to conduct subsurface excavations or earthmoving activities access is subject to the following conditions:

1) No driving is allowed on any area of known or suspect RACS during the excavation or earthmoving activities;
2) The CABI may do a limited clearance of an area to allow vehicle crossing. For areas containing friable asbestos, the area must be confirmed clean by soil sampling prior to allowing access;
3) Prior to driving in the area, the established access route must be clearly demarcated in the field using flagging, tape, stakes, signs, etc.;
4) Rubber-tired vehicles shall be used to the maximum extent feasible;
5) Vehicles entering the area shall avoid causing the release of fugitive dust. Vehicle operators shall be observant by driving in a slow, cautious manner.
6) The CABI must be in front of the vehicle to guide the vehicle from driving across any visible asbestos material. Should the CABI observe any suspect or known asbestos materials, the operator/driver shall alter course to avoid them;
7) Vehicle access routes may be required to be wetted as needed to make the ground surface damp so that fugitive dust is not generated when driven on. Determination if wetting is required is based on a case-by-case basis between the CABI and CDOT;

8) For the purposes of decontamination, the wheels of vehicles exiting the area shall be thoroughly rinsed as each vehicle exits the area determined to have asbestos present on the surface. The driver shall then drive onto a polyethylene tarp and re-rinse the wheels. A 60-mil or greater liner may be used multiple times, or 10-mil polyethylene sheeting may be used for a single decontamination event. If 10-mil polyethylene sheeting is used, care must be used to prevent it from tearing. All water must be collected, filtered with 5-micron filter, and then disposed in a sanitary sewer. Subject to CDOT site-specific approval, the rinsate may be collected and placed on a known asbestos area that will be managed under this SOP (this area must be kept adequately wet or stabilized until it is managed). The water must not run-off an asbestos area onto a non-contaminated area or toward any surface water feature. The 60-mil or greater liners may be decontaminated for reuse and one-time use 10-mil polyethylene sheeting shall be disposed as asbestos waste; and,

9) Also for the purposes of decontamination and to the extent feasible, the excavator/front end loader or equivalent shall operate on clean areas. 10-mil polyethylene sheeting or liner material can be used to drive onto contaminated areas. When moving from one location to another, the bucket that came into contact with the RACS shall be wrapped in 10-mil polyethylene sheeting to prevent spreading fibers to non-contaminated areas. When it is finished loading, the bucket shall be decontaminated over the last dump truck prior to closing the 10-mil polyethylene sheeting liner/burrito wrap. If the excavator, or other large pieces of equipment, was required to work on contaminated soil, the piece of equipment will be decontaminated as described in 8) above.

Sampling equipment, backhoe buckets, wheelbarrows, vehicles, and other equipment that comes in contact with soil known to contain, or potentially contain asbestos shall be decontaminated in accordance with water or by wet wiping between each sample, hole, or excavation to avoid potential cross-contamination, and before leaving the site. The rinsate shall be managed as stated above.

Another option to wet methods described above is to use HEPA vacuums followed by CABI inspection and verification of equipment decon before it leaves the decontamination area. All wet decon of equipment will be followed by CABI inspection and verification of equipment decontamination before it leaves the decontamination area.

9.2 Worker Decontamination

During all soil-disturbing activities in areas with friable asbestos, a fully functioning decontamination unit or trailer shall be available onsite for worker decontamination. The decontamination unit will be centrally located between the investigation areas. The decontamination unit will consist of three (3) chambers and has fully operational hot and cold running water for the shower.

At the beginning of each day, or each time the RWA is to be entered, workers that will be in the area of active RACS disturbance will don disposable protective suites (Tyvek®), disposable gloves and disposable boot covers (excluding truck drivers, as noted in Section 6.2.9). Worker decontamination shall be conducted each time a worker leaves the RWA. For most projects, worker decontamination may consist of removal of Tyvek® suites, gloves and boot covers, which should then be containerized and disposed as asbestos waste. Any non-disposable personnel items must be decontaminated with water or by wet wiping. Rinsate from the boot wash station shall be collected, filtered to less than 5 microns (or applicable local requirement) and discharged to a sanitary sewer or other CDPHE approved disposal facility, or re-applied to RACS that will be managed under this SOP (this area must be kept adequately wet or stabilized until it is managed).

The decontamination unit, as indicated in the Contractors Health and Safety Plan, may be utilized by the workers each time they exit the work area. All contaminated disposable personnel protective equipment shall be containerized and disposed as asbestos waste. Water from the decontamination unit will be filtered to 5 micron and disposed as described above.

10.0 Disposal

Disposal of RACS shall be conducted in accordance with the following requirements, in accordance with Section 5.5.8 of the Colorado Solid Waste Regulations:

1) RACS containing visible friable asbestos will be disposed of in a leak tight container as friable asbestos waste in accordance with the requirements of Section 5.3 of the Solid Waste Regulations. Documentation stating that the asbestos-contaminated soil originating from the site shall not be used as daily cover or sold as clean fill accompany each load of asbestos-contaminated soil removed from the site;
2) RACS containing only visible non-friable asbestos that has not been rendered friable will be packaged in a leak tight container and disposed of as non-friable asbestos in accordance with Section 5.2 of the Solid Waste Regulations. Documentation stating that the asbestos-contaminated soil originating from the site shall not be used as daily cover or sold as clean fill accompany each load of asbestos-contaminated soil removed from the site;
3) RACS containing no visible asbestos shall be packaged in a leak tight container and disposed as non-friable asbestos waste, as described in Section 5.2 of the Solid Waste Regulations. Documentation stating that the asbestos-contaminated soil originating from the site shall not be used as daily cover or sold as clean fill accompany each load of asbestos-contaminated soil removed from the site;
4) Soils that are not asbestos-contaminated, based on analysis showing no detectable amounts of asbestos, may be replaced into the disturbed area as needed, used as fill, or disposed of as solid waste; and,
5) The use of soils containing solid waste may be approved for reuse onsite or offsite if the soil and solid waste meet the suitability requirements of Section 5.5.8 of the Regulations and if the constituents of the solid waste are acceptable. The receipt of a beneficial reuse determination from the Materials Management Unit of the Division may also be required depending on the constituents of the solid waste. If the solid waste consists of RACS an environmental covenant may also be required prior to reuse.

11.0 Remaining RACS

In the event that RACS is left in place following the conclusion of excavation or earthmoving activities, the Contractor shall:

1) Document the condition and location of remaining RACS. Documentation will be at the discretion of CDOT, but may include GPS, land survey, photographic documentation, etc.
2) The remaining RACS will be treated with a soil stabilizer;
3) The remaining RACS will be covered with an appropriate engineered fabric; and,
4) The remaining RACS will be covered with geofabric, followed by 18-inches of fill suitable for unrestricted use and vegetation, or cover RACS with geofabric followed by six (6) inches of clean fill and concrete or asphalt; or, cover RACS with geofabric followed by clean fill to grade or six (6) inches, whichever is greater, for vertical excavation faces or trenches; or, alternate cover designs as approved by the CDPHE and CDOT.

The specific soil stabilizer and engineered fabric used will be dependent on site-specific information, and will be approved of by CDOT prior to application.

As noted previously (Section 6.3), the excavation and removal of ACM on a facility component below the AQCC Regulation No. 8 trigger levels is permitted under this SOP. However, in those instances when ACM on a facility component is left in place following partial excavation and removal, the Contractor shall:

1) Document the condition and location of the facility component and remaining ACM. Documentation will be at the discretion of CDOT, but may include ACM type, GPS, land survey, and photographic documentation.

12.0 Reporting

At the request and discretion of CDOT, Contractor shall periodically prepare a report documenting the RACS and/or ACM work completed. The frequency of the reporting shall be determined by CDOT. The report may include the following:

1) Description of known, suspect or unexpected discovery of RACS;
2) Description of field operations;
3) Containment logs (where appropriate);
4) Air monitoring procedures and laboratory results;

5) Description of RACS work completed, including inspection procedures, sampling procedures and analytical results if any;
6) Disposal manifests;
7) Description of the condition and location of remaining RACS, including GPS, land survey, photographic documentation, (see Section 11.0);
8) Photographs, if any, taken prior to, during and/or after RACS work completed; and,
9) Accreditation and Certification documentation for activities covered under this SOP.

ATTACHMENT 1

CDPHE ASBESTOS-CONTAMINTED SOIL NOTIFICATION FORMS

COLORADO
Department of Public Health & Environment
Dedicated to protecting and improving the health and environment of the people of Colorado

NOTIFICATION OF REGULATED ASBESTOS CONTAMINATED SOIL (RACS) DISTURBANCE

A map, figure, or drawing, to a recognizable engineering scale, depicting the project area(s) must be submitted with this form.
The form, plan (if applicable), and depiction of the project area, can be emailed to: briant.long@state.co.us; or, mailed to: Colorado Department of Public Health and Environment, HMWMD-B2 Attn: Brian Long, Solid Waste Compliance Assurance Unit, see address below.

Date and time reported:	
☐ Planned management Start date: Estimated duration:	☐ Unexpected discovery (submit within 24 hours of discovery) Discovery date and time: Estimated duration:
Description of planned soil-disturbing activities:	Description of activities resulting in RACS discovery/disturbance:
Description of any access and/or emission control measures already implemented at the site:	Description of type and quantity of RACS discovered/disturbance:
☐ This is an EMERGENCY management event (submit this form within 24 hours of RACS discovery, and comply with the Minimum Standards to the extent possible during initial management, and fully comply within 48 hours) Detail the nature of the emergency (e.g., repair to an active utility line):	

Check the box to indicate which management approach will be utilized on this project:

☐ Project Specific RACS Mgmt. Plan Submit PSRMP for Division review and approval with this form at least 10 working days prior to commencing RACS disturbing activities. RACS disturbance shall not commence until the PSRMP is approved. However, the standard requirements from Section 5.5.7 of the Solid Waste Regulation may be used in the interim after the required notice.	☐ Standard Operating Procedures Has the Division approved SOPs for this project? ☐ Yes, include the name of the SOP here: Notification shall be submitted to the Division prior to commencing RACS disturbing activities. ☐ No, submit SOPs for Division review and approval with this form at least 30 calendar days prior to commencing RACS disturbing activities.	☐ Remediation Plan Submit remediation plan for Division review and approval at least 45 calendar days prior to commencing RACS disturbing activities. Remediation shall not commence prior to plan approval.
☐ Standard Requirements The standard requirements of RACS management are found in Section 5.5.7 of the Solid Waste Regulations. Notification shall be submitted to the Division prior to commencing RACS disturbing activities.		☐ Risk Based Approach Submit a site-specific risk assessment work plan for Division review and approval with this form prior to commencing RACS disturbing activities. RACS disturbance shall not commence until the plan is approved.

Please indicate which program this project will take place under: ☐ Solid Waste (general) / ☐ Voluntary Cleanup Program (VCUP) / ☐ Hazardous Waste Corrective Action (RCRA) / ☐ Federal Facilities or CERCLA / ☐ Don't Know

Contact person for entity performing soil-disturbing activity:			
Organization, company or agency:			
Email:	Phone:		
Name of property owner/operator:			
Owner/operator contact (if different):			
Email:	Phone:		Ext:
Location of property: (Street address or other location description)	Street Address:		
	County:	City:	Zip:
General site description:			

Received by:_____ Date:_____

ATTACHMENT 2

CDOT FIELD DOCUMENTATION FORMS

CDOT FIELD DOCUMENT FORM – UNEXPECTED ASBESTOS DISCOVERY

Date:			**Time of Discovery:**	
Contractor that Encountered Asbestos				
Name: Company: Address: Phone Number:				
Location of Discovery: (Address, Survey Marker, Mile Marker, etc.)			**Sketch of Area with Asbestos Location Depicted**	
General Description of Area:				
Field Activity that Caused the Encounter:				
Type(s) of Material Identified:				
Samples Collected ID:	**Time:**	**Date:**	**Description:**	**Results:**
Description of SOP Implementation Procedures:				

Phil Kangas of CDOT Hazardous Waste Unit, Asbestos Program Project Manager must be notified by phone immediately. This form must be submitted and received by Mr. Kangas within 24 hrs. of unexpected discovery.
Office: 303-512-5519 Cell: 303-325-6123 Fax: 303-512-5550 Email: phillip.kangas@.state.co.us

Appendix B USEPA Toxicity Characteristic Maximum Concentration of Contaminants

§ 261.24 Toxicity characteristic.

(a) A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, test Method 1311 in ‘‘Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,’’ EPA Publication SW–846, as incorporated by reference in § 260.11 of this chapter, the extract from a representative sample of the waste contains any of the contaminants listed in table 1 at the concentration equal to or greater than the respective value given in that table. Where the waste contains less than 0.5 percent filterable solids, the waste itself, after filtering using the methodology outlined in Method 1311, is considered to be the extract for the purpose of this section.

(b) A solid waste that exhibits the characteristic of toxicity has the EPA Hazardous Waste Number specified in Table I which corresponds to the toxic contaminant causing it to be hazardous.

TABLE 1—MAXIMUM CONCENTRATION OF CONTAMINANTS FOR THE TOXICITY CHARACTERISTIC
2

Contaminant	CAS No.	Regulatory Level (mg/L)
D004 Arsenic	7440–38–2	5.0
D005 Barium	7440–39–3	100.0
D018 Benzene	71–43–2	0.5
D006 Cadmium	7440–43–9	1.0
D019 Carbon tetrachloride	56–23–5	0.5
D020 Chlordane	57–74–9	0.03
D021 Chlorobenzene	108–90–7	100.0
D022 Chloroform	67–66–3	6.0
D007 Chromium	7440–47–3	5.0
D023 o-Cresol	95–48–7 4	200.0
D024 m-Cresol	108–39–4	[4] 200.0
D025 p-Cresol	106–44–5	[4] 200.0
D026 Cresol		[4] 200.0
D016 2,4-D	94–75–7	10.0
D027 1,4-Dichlorobenzene	106–46–7	7.5
D028 1,2-Dichloroethane	107–06–2	0.5
D029 1,1-Dichloroethylene	75–35–4	0.7
D030 2,4-Dinitrotoluene	121–14–2	[3] 0.13
D012 Endrin	72–20–8	0.02
D031 Heptachlor (and its epoxide)	76–44–8	0.008
D032 Hexachlorobenzene	118–74–1	[3] 0.13
D033 Hexachlorobutadiene	87–68–3	0.5
D034 Hexachloroethane	67–72–1	3.0
D008 Lead	7439–92–1	5.0
D013 Lindane	58–89–9	0.4

D009 Mercury	7439–97–6	0.2
D014 Methoxychlor	72–43–5	10.0
D035 Methyl ethyl ketone	78–93–3	200.0
D036 Nitrobenzene	98–95–3	2.0
D037 Pentrachlorophenol	87–86–5	100.0
D038 Pyridine	110–86–1	[3] 5.0
D010 Selenium	7782–49–2	1.0
D011 Silver	7440–22–4	5.0
D039 Tetrachloroethylene	127–18–4	0.7
D015 Toxaphene	8001–35–2	0.5
D040 Trichloroethylene	79–01–6	0.5
D041 2,4,5-Trichlorophenol	95–95–4	400.0
D042 2,4,6-Trichlorophenol	88–06–2	2.0
D017 2,4,5-TP (Silvex)	93–72–1	1.0
D043 Vinyl chloride	75–01–4	0.2

[1] Hazardous waste number.
[2] Chemical abstracts service number.
[3] Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.
[4] If o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/l.
[55 FR 11862, Mar. 29, 1990, as amended at 55 FR 22684, June 1, 1990; 55 FR 26987, June 29, 1990; 58 FR 46049, Aug. 31, 1993]

Green Font denotes DNAPL chemical

Appendix C USEPA Regional Screening Levels

Key: I = IRIS; P = PPRTV; D = DWSHA; O = OPP; A = ATSDR; C = Cal EPA; X = APPENDIX PPRTV SCREEN (See FAQ #29); H = HEAST; F = See FAQ; E = see user guide Section 2.3.5; L = see user guide on lead; M = mutagen; S = see user guide Section 5; V = volatile; R = RBA applied (See User Guide for Arsenic notice) ; c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = Concentration may exceed ceiling limit (See User Guide); s = Concentration may exceed Csat (See User Guide)

Toxicity and Chemical-specific Information																Contaminant		Screening Levels												Protection of Ground Water SSLs		
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	volatile	muta-gen	GIABS	ABS	C_{sat} (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air (ug/m^3)	key	Industrial Air (ug/m^3)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
				1.2E-03	O					1	0.1		Acephate	30560-19-1	7.6E+01	n	9.8E+02	n					2.4E+01	n		5.3E-03	n		
		2.2E-06	I			9.0E-03	I	V		1		1.1E+05	Acetaldehyde	75-07-0	1.1E+01	c**	4.9E+01	c**	1.3E+00	c**	5.6E+00	c**	2.6E+00	c**		5.2E-04	c**		
				2.0E-02	I					1	0.1		Acetochlor	34256-82-1	1.3E+03	n	1.6E+04	n					3.5E+02	n		2.8E-01	n		
				9.0E-01	I	3.1E+01	A	V		1		1.1E+05	Acetone	67-64-1	6.1E+04	n	6.7E+05	nms	3.2E+04	n	1.4E+05	n	1.4E+04	n		2.9E+00	n		
						2.0E-03	X			1	0.1		Acetone Cyanohydrin	75-86-5	2.8E+06	nm	1.2E+07	nm	2.1E+00	n	8.8E+00	n							
						6.0E-02	I	V		1		1.3E+05	Acetonitrile	75-05-8	8.1E+02	n	3.4E+03	n	6.3E+01	n	2.6E+02	n	1.3E+02	n		2.6E-02	n		
				1.0E-01	I			V		1		2.5E+03	Acetophenone	98-86-2	7.8E+03	ns	1.2E+05	nms					1.9E+03	n		5.8E-01	n		
3.8E+00	C	1.3E-03	C							1	0.1		Acetylaminofluorene, 2-	53-96-3	1.4E-01	c	6.0E-01	c	2.2E-03	c	9.4E-03	c	1.6E-02	c		7.2E-05	c		
				5.0E-04	I	2.0E-05	I	V		1		2.3E+04	Acrolein	107-02-8	1.4E-01	n	6.0E-01	n	2.1E-02	n	8.8E-02	n	4.2E-02	n		8.4E-06	n		
5.0E-01	I	1.0E-04	I	2.0E-03	I	6.0E-03	I		M	1	0.1		Acrylamide	79-06-1	2.4E-01	c	4.6E+00	c	1.0E-02	c	1.2E-01	c	5.0E-02	c		1.1E-05	c		
				5.0E-01	I	1.0E-03	I	V		1		1.1E+05	Acrylic Acid	79-10-7	9.9E+01	n	4.2E+02	n	1.0E+00	n	4.4E+00	n	2.1E+00	n		4.2E-04	n		
5.4E-01	I	6.8E-05	I	4.0E-02	A	2.0E-03	I	V		1		1.1E+04	Acrylonitrile	107-13-1	2.5E-01	c*	1.1E+00	c*	4.1E-02	c*	1.8E-01	c*	5.2E-02	c*		1.1E-05	c*		
						6.0E-03	P			1	0.1		Adiponitrile	111-69-3	8.5E+06	nm	3.6E+07	nm	6.3E+00	n	2.6E+01	n							
5.6E-02	C			1.0E-02	I					1	0.1		Alachlor	15972-60-8	9.7E+00	c*	4.1E+01	c					1.1E+00	c	2.0E+00	8.7E-04	c	1.6E-03	
				1.0E-03	I					1	0.1		Aldicarb	116-06-3	6.3E+01	n	8.2E+02	n					2.0E+01	n	3.0E+00	4.9E-03	n	7.5E-04	
				1.0E-03	I					1	0.1		Aldicarb Sulfone	1646-88-4	6.3E+01	n	8.2E+02	n					2.0E+01	n	2.0E+00	4.4E-03	n	4.4E-04	
										1	0.1		Aldicarb sulfoxide	1646-87-3											4.0E+00			8.8E-04	
1.7E+01	I	4.9E-03	I	3.0E-05	I			V		1			Aldrin	309-00-2	3.9E-02	c*	1.8E-01	c	5.7E-04	c	2.5E-03	c	9.2E-04	c		1.5E-04	c		
				5.0E-03	I	1.0E-04	X	V		1		1.1E+05	Allyl Alcohol	107-18-6	3.5E+00	n	1.5E+01	n	1.0E-01	n	4.4E-01	n	2.1E-01	n		4.2E-05	n		
2.1E-02	C	6.0E-06	C			1.0E-03	I	V		1		1.4E+03	Allyl Chloride	107-05-1	7.2E-01	c**	3.2E+00	c**	4.7E-01	c**	2.0E+00	c**	7.3E-01	c**		2.3E-04	c**		
				1.0E+00	P	5.0E-03	P			1			Aluminum	7429-90-5	7.7E+04	n	1.1E+06	nm	5.2E+00	n	2.2E+01	n	2.0E+04	n		3.0E+04	n		
				4.0E-04	I					1			Aluminum Phosphide	20859-73-8	3.1E+01	n	4.7E+02	n					8.0E+00	n			n		
				9.0E-03	I					1	0.1		Ametryn	834-12-8	5.7E+02	n	7.4E+03	n					1.5E+02	n		1.6E-01	n		
2.1E+01	C	6.0E-03	C							1	0.1		Aminobiphenyl, 4-	92-67-1	2.6E-02	c	1.1E-01	c	4.7E-04	c	2.0E-03	c	3.0E-03	c		1.5E-05	c		
				8.0E-02	P					1	0.1		Aminophenol, m-	591-27-5	5.1E+03	n	6.6E+04	n					1.6E+03	n		6.1E-01	n		
				4.0E-03	X					1	0.1		Aminophenol, o-	95-55-6	2.5E+02	n	3.3E+03	n					7.9E+01	n		3.0E-02	n		
				2.0E-02	P					1	0.1		Aminophenol, p-	123-30-8	1.3E+03	n	1.6E+04	n					4.0E+02	n		1.5E-01	n		
				2.5E-03	I					1	0.1		Amitraz	33089-61-1	1.6E+02	n	2.1E+03	n					8.2E+00	n		4.2E+00	n		
						5.0E-01	I	V		1			Ammonia	7664-41-7					5.2E+02	n	2.2E+03	n							
				2.0E-01	I					1			Ammonium Sulfamate	7773-06-0	1.6E+04	n	2.3E+05	nm					4.0E+03	n			n		
						3.0E-03	X	V		1		1.4E+04	Amyl Alcohol, tert-	75-85-4	8.2E+01	n	3.4E+02	n	3.1E+00	n	1.3E+01	n	6.3E+00	n		1.3E-03	n		
5.7E-03	I	1.6E-06	C	7.0E-03	P	1.0E-03	I			1	0.1		Aniline	62-53-3	9.5E+01	c**	4.0E+02	c*	1.0E+00	n	4.4E+00	n	1.3E+01	c*		4.6E-03	c*		
4.0E-02	P			2.0E-03	X					1	0.1		Anthraquinone, 9,10-	84-65-1	1.4E+01	c**	5.7E+01	c*					1.4E+00	c*		1.4E-02	c*		
				4.0E-04	I					0.15			Antimony (metallic)	7440-36-0	3.1E+01	n	4.7E+02	n					7.8E+00	n	6.0E+00	3.5E-01	n	2.7E-01	
				5.0E-04	H					0.15			Antimony Pentoxide	1314-60-9	3.9E+01	n	5.8E+02	n					9.7E+00	n			n		
				4.0E-04	H					0.15			Antimony Tetroxide	1332-81-6	3.1E+01	n	4.7E+02	n					7.8E+00	n			n		
						2.0E-04	I			0.15			Antimony Trioxide	1309-64-4	2.8E+05	nm	1.2E+06	nm	2.1E-01	n	8.8E-01	n							
1.5E+00	I	4.3E-03	I	3.0E-04	I	1.5E-05	C			1	0.03		Arsenic, Inorganic	7440-38-2	6.8E-01	c*R	3.0E+00	cR	6.5E-04	c*	2.9E-03	c*	5.2E-02	c	1.0E+01	1.5E-03	c	2.9E-01	
				3.5E-06	C	5.0E-05	I			1			Arsine	7784-42-1	2.7E-01	n	4.1E+00	n	5.2E-02	n	2.2E-01	n	7.0E-02	n			n		
				3.6E-02	O					1	0.1		Asulam	3337-71-1	2.3E+03	n	3.0E+04	n					7.2E+02	n		1.8E-01	n		
2.3E-01	C			3.5E-02	I					1	0.1		Atrazine	1912-24-9	2.4E+00	c	1.0E+01	c					3.0E-01	c	3.0E+00	2.0E-04	c	1.9E-03	
8.8E-01	C	2.5E-04	C							1	0.1		Auramine	492-80-8	6.2E-01	c	2.6E+00	c	1.1E-02	c	4.9E-02	c	6.7E-02	c		6.1E-04	c		
				4.0E-04	I					1	0.1		Avermectin B1	65195-55-3	2.5E+01	n	3.3E+02	n					8.0E+00	n		1.4E+01	n		
				3.0E-03	A	1.0E-02	A			1	0.1		Azinphos-methyl	86-50-0	1.9E+02	n	2.5E+03	n	1.0E+01	n	4.4E+01	n	5.6E+01	n		1.7E-02	n		
1.1E-01	I	3.1E-05	I					V		1			Azobenzene	103-33-3	5.6E+00	c	2.6E+01	c	9.1E-02	c	4.0E-01	c	1.2E-01	c		9.3E-04	c		
				1.0E+00	P	7.0E-06	P			1	0.1		Azodicarbonamide	123-77-3	8.6E+03	n	4.0E+04	n	7.3E-03	n	3.1E-02	n	2.0E+04	n		6.8E+00	n		
				2.0E-01	I	5.0E-04	H			0.07			Barium	7440-39-3	1.5E+04	n	2.2E+05	nm	5.2E-01	n	2.2E+00	n	3.8E+03	n	2.0E+03	1.6E+02	n	8.2E+01	
5.0E-01	C	1.5E-01	C	2.0E-02	C	2.0E-04	C		M	0.025			Barium Chromate	10294-40-3	3.0E-01	c	6.2E+00	c	6.8E-06	c	8.2E-05	c	4.1E-02	c			c		
				5.0E-03	O			V		1			Benfluralin	1861-40-1	3.9E+02	n	5.8E+03	n					2.8E+01	n		9.4E-01	n		
				5.0E-02	I					1	0.1		Benomyl	17804-35-2	3.2E+03	n	4.1E+04	n					9.7E+02	n		8.5E-01	n		
				2.0E-01	I					1	0.1		Bensulfuron-methyl	83055-99-6	1.3E+04	n	1.6E+05	nm					3.9E+03	n		1.0E+00	n		
				3.0E-02	I					1	0.1		Bentazon	25057-89-0	1.9E+03	n	2.5E+04	n					5.7E+02	n		1.2E-01	n		
4.0E-03	P			1.0E-01	I			V		1		1.2E+03	Benzaldehyde	100-52-7	1.7E+02	c*	8.2E+02	c					1.9E+01	c		4.1E-03	c		
5.5E-02	I	7.8E-06	I	4.0E-03	I	3.0E-02	I	V		1		1.8E+03	Benzene	71-43-2	1.2E+00	c*	5.1E+00	c*	3.6E-01	c*	1.6E+00	c*	4.6E-01	c*	5.0E+00	2.3E-04	c*	2.6E-03	
1.0E-01	X			3.0E-04	X					1	0.1		Benzenediamine-2-methyl sulfate, 1,4-	6369-59-1	5.4E+00	c**	2.3E+01	c*					7.8E-01	c**		2.2E-04	c**		
				1.0E-03	P			V		1		1.3E+03	Benzenethiol	108-98-5	7.8E+01	n	1.2E+03	n					1.7E+01	n		1.1E-02	n		
2.3E+02	I	6.7E-02	I	3.0E-03	I				M	1	0.1		Benzidine	92-87-5	5.3E-04	c	1.0E-02	c	1.5E-05	c	1.8E-04	c	1.1E-04	c		2.8E-07	c		
				4.0E+00	I					1	0.1		Benzoic Acid	65-85-0	2.5E+05	nm	3.3E+06	nm					7.5E+04	n		1.5E+01	n		
1.3E+01	I							V		1		3.2E+02	Benzotrichloride	98-07-7	5.3E-02	c	2.5E-01	c					3.0E-03	c		6.6E-06	c		
				1.0E-01	P					1	0.1		Benzyl Alcohol	100-51-6	6.3E+03	n	8.2E+04	n					2.0E+03	n		4.8E-01	n		
1.7E-01	I	4.9E-05	C	2.0E-03	P	1.0E-03	P	V		1		1.5E+03	Benzyl Chloride	100-44-7	1.1E+00	c*	4.8E+00	c*	5.7E-02	c*	2.5E-01	c*	8.9E-02	c*		9.8E-05	c*		
		2.4E-03	I	2.0E-03	I	2.0E-05	I			0.007			Beryllium and compounds	7440-41-7	1.6E+02	n	2.3E+03	n	1.2E-03	c*	5.1E-03	c*	2.5E+01	n	4.0E+00	1.9E+01	n	3.2E+00	
				9.0E-03	P					1	0.1		Bifenox	42576-02-3	5.7E+02	n	7.4E+03	n					1.0E+02	n		7.6E-01	n		
				1.5E-02	I					1	0.1		Biphenthrin	82657-04-3	9.5E+02	n	1.2E+04	n					3.0E+02	n		1.4E+03	n		
8.0E-03	I			5.0E-01	I	4.0E-04	X	V		1			Biphenyl, 1,1'-	92-52-4	4.7E+01	n	2.0E+02	n	4.2E-01	n	1.8E+00	n	8.3E-01	n		8.7E-03	n		
				4.0E-02	I			V		1		1.0E+03	Bis(2-chloro-1-methylethyl) ether	108-60-1	3.1E+03	ns	4.7E+04	ns					7.1E+02	n		2.6E-01	n		
				3.0E-03	P					1	0.1		Bis(2-chloroethoxy)methane	111-91-1	1.9E+02	n	2.5E+03	n					5.9E+01	n		1.3E-02	n		
1.1E+00	I	3.3E-04	I					V		1		5.1E+03	Bis(2-chloroethyl)ether	111-44-4	2.3E-01	c	1.0E+00	c	8.5E-03	c	3.7E-02	c	1.4E-02	c		3.6E-06	c		
2.2E+02	I	6.2E-02	I					V		1		4.2E+03	Bis(chloromethyl)ether	542-88-1	8.3E-05	c	3.6E-04	c	4.5E-05	c	2.0E-04	c	7.2E-05	c		1.7E-08	c		
				5.0E-02	I					1	0.1		Bisphenol A	80-05-7	3.2E+03	n	4.1E+04	n					7.7E+02	n		5.8E+01	n		
				2.0E-01	I	2.0E-02	H			1			Boron And Borates Only	7440-42-8	1.6E+04	n	2.3E+05	nm	2.1E+01	n	8.8E+01	n	4.0E+03	n		1.3E+01	n		
				2.0E+00	P	2.0E-02	P	V		1			Boron Trichloride	10294-34-5	1.6E+05	nm	2.3E+06	nm	2.1E+01	n	8.8E+01	n	4.2E+01	n			n		
				4.0E-02	C	1.3E-02	C	V		1			Boron Trifluoride	7637-07-2	3.1E+03	n	4.7E+04	n	1.4E+01	n	5.7E+01	n	2.6E+01	n			n		
7.0E-01	I			4.0E-03	I					1			Bromate	15541-45-4	9.9E-01	c	4.7E+00	c					1.1E-01	c	1.0E+01	8.5E-04	c	7.7E-02	
2.0E+00	X	6.0E-04	X					V		1		2.4E+03	Bromo-2-chloroethane, 1-	107-04-0	2.6E-02	c	1.1E-01	c	4.7E-03	c	2.0E-02	c	7.4E-03	c		2.1E-06	c		
				8.0E-03	I	6.0E-02	I	V		1		6.8E+02	Bromobenzene	108-86-1	2.9E+02	n	1.8E+03	ns	6.3E+01	n	2.6E+02	n	6.2E+01	n		4.2E-02	n		

Key: I = IRIS; P = PPRTV; D = DWSHA; O = OPP; A = ATSDR; C = Cal EPA; X = APPENDIX PPRTV SCREEN (See FAQ #29); H = HEAST; F = See FAQ; E = see user guide Section 2.3.5; L = see user guide on lead; M = mutagen; S = see user guide Section 5; V = volatile; R = RBA applied (See User Guide for Arsenic notice) ; c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = Concentration may exceed ceiling limit (See User Guide); s = Concentration may exceed Csat (See User Guide)

Toxicity and Chemical-specific Information													Contaminant		Screening Levels										Protection of Ground Water SSLs		
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	volatile	muta-gen	GIABS	ABS	C_{sat} (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air (ug/m^3)	key	Industrial Air (ug/m^3)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
				4.0E-02	X	V		1			4.0E+03	Bromochloromethane	74-97-5	1.5E+02	n	6.3E+02	n	4.2E+01	n	1.8E+02	n	8.3E+01	n		2.1E-02	n	
6.2E-02	I	3.7E-05	C	2.0E-02	I	V		1			9.3E+02	Bromodichloromethane	75-27-4	2.9E-01	c	1.3E+00	c	7.6E-02	c	3.3E-01	c	1.3E-01	c	8.0E+01(F)	3.6E-05	c	2.2E-02
7.9E-03	I	1.1E-06	I	2.0E-02	I	V		1			9.2E+02	Bromoform	75-25-2	1.9E+01	c*	8.6E+01	c	2.6E+00	c	1.1E+01	c	3.3E+00	c	8.0E+01(F)	8.7E-04	c	2.1E-02
				1.4E-03	I	5.0E-03	I	V		1	3.6E+03	Bromomethane	74-83-9	6.8E+00	n	3.0E+01	n	5.2E+00	n	2.2E+01	n	7.5E+00	n		1.9E-03	n	
				5.0E-03	H	V		1				Bromophos	2104-96-3	3.9E+02	n	5.8E+03	n					3.5E+01	n		1.5E-01	n	
1.0E-01	O			1.5E-02	O			1		0.1		Bromoxynil	1689-84-5	5.3E+00	c	2.2E+01	c					6.1E-01	c		5.2E-04	c	
				1.5E-02	O	V		1				Bromoxynil Octanoate	1689-99-2	1.2E+03	n	1.8E+04	n					1.0E+02	n		9.0E-01	n	
3.4E+00	C	3.0E-05	I			2.0E-03	I	V		1	6.7E+02	Butadiene, 1,3-	106-99-0	5.8E-02	c*	2.6E-01	c*	9.4E-02	c*	4.1E-01	c*	1.8E-02	c		9.9E-06	c	
				3.0E-02	O			1		0.1		Butanoic acid, 4-(2,4-dichlorophenoxy)-	94-82-6	1.9E+03	n	2.5E+04	n					4.5E+02	n		4.2E-01	n	
				1.0E-01	I	V		1			7.6E+03	Butanol, N-	71-36-3	7.8E+03	ns	1.2E+05	nms					2.0E+03	n		4.1E-01	n	
				2.0E+00	P	3.0E+01	P	V		1	2.1E+04	Butyl alcohol, sec-	78-92-2	1.3E+05	nms	1.5E+06	nms	3.1E+04	n	1.3E+05	n	2.4E+04	n		5.0E+00	n	
				5.0E-02	I	V		1				Butylate	2008-41-5	3.9E+03	n	5.8E+04	n					4.6E+02	n		4.5E-01	n	
2.0E-04	C	5.7E-08	C					1		0.1		Butylated hydroxyanisole	25013-16-5	2.7E+03	c	1.1E+04	c	4.9E+01	c	2.2E+02	c	1.5E+02	c		2.9E-01	c	
3.6E-03	P			3.0E-01	P			1		0.1		Butylated hydroxytoluene	128-37-0	1.5E+02	c	6.4E+02	c					3.4E+00	c		1.0E-01	c	
				5.0E-02	P	V		1			1.1E+02	Butylbenzene, n-	104-51-8	3.9E+03	ns	5.8E+04	ns					1.0E+03	n		3.2E+00	n	
				1.0E-01	X	V		1			1.5E+02	Butylbenzene, sec-	135-98-8	7.8E+03	ns	1.2E+05	nms					2.0E+03	n		5.9E+00	n	
				1.0E-01	X	V		1			1.8E+02	Butylbenzene, tert-	98-06-6	7.8E+03	ns	1.2E+05	nms					6.9E+02	n		1.6E+00	n	
				2.0E-02	A			1		0.1		Cacodylic Acid	75-60-5	1.3E+03	n	1.6E+04	n					4.0E+02	n		1.1E-01	n	
		1.8E-03	I	1.0E-03	I	1.0E-05	A			0.025	0.001	Cadmium (Diet)	7440-43-9	7.1E+01	n	9.8E+02	n										
		1.8E-03	I	5.0E-04	I	1.0E-05	A			0.05	0.001	Cadmium (Water)	7440-43-9					1.6E-03	c**	6.8E-03	c**	9.2E+00	n	5.0E+00	6.9E-01	n	3.8E-01
5.0E-01	C	1.5E-01	C	2.0E-02	C	2.0E-04	C		M	0.025		Calcium Chromate	13765-19-0	3.0E-01	c	6.2E+00	c	6.8E-06	c	8.2E-05	c	4.1E-02	c			c	
				5.0E-01	I	2.2E-03	C			1	0.1	Caprolactam	105-60-2	3.1E+04	n	4.0E+05	nm	2.3E+00	n	9.6E+00	n	9.9E+03	n		2.5E+00	n	
1.5E-01	C	4.3E-05	C	2.0E-03	I			1		0.1		Captafol	2425-06-1	3.6E+00	c*	1.5E+01	c	6.5E-02	c	2.9E-01	c	4.0E-01	c*		7.1E-04	c*	
2.3E-03	C	6.6E-07	C	1.3E-01	I			1		0.1		Captan	133-06-2	2.4E+02	c*	1.0E+03	c	4.3E+00	c	1.9E+01	c	3.1E+01	c*		2.2E-02	c*	
				1.0E-01	I			1		0.1		Carbaryl	63-25-2	6.3E+03	n	8.2E+04	n					1.8E+03	n		1.7E+00	n	
				5.0E-03	I			1		0.1		Carbofuran	1563-66-2	3.2E+02	n	4.1E+03	n					9.4E+01	n	4.0E+01	3.7E-02	n	1.6E-02
				1.0E-01	I	7.0E-01	I	V		1	7.4E+02	Carbon Disulfide	75-15-0	7.7E+02	ns	3.5E+03	ns	7.3E+02	n	3.1E+03	n	8.1E+02	n		2.4E-01	n	
7.0E-02	I	6.0E-06	I	4.0E-03	I	1.0E-01	I	V		1	4.6E+02	Carbon Tetrachloride	56-23-5	6.5E-01	c	2.9E+00	c	4.7E-01	c	2.0E+00	c	4.6E-01	c	5.0E+00	1.8E-04	c	1.9E-03
						1.0E-01	P	V		1	5.9E+03	Carbonyl Sulfide	463-58-1	6.7E+01	n	2.8E+02	n	1.0E+02	n	4.4E+02	n	2.1E+02	n		5.1E-01	n	
				1.0E-02	I			1		0.1		Carbosulfan	55285-14-8	6.3E+02	n	8.2E+03	n					5.1E+01	n		1.2E+00	n	
				1.0E-01	I			1		0.1		Carboxin	5234-68-4	6.3E+03	n	8.2E+04	n					1.9E+03	n		1.0E+00	n	
						9.0E-04	I			1		Ceric oxide	1306-38-3	1.3E+06	nm	5.4E+06	nm	9.4E-01	n	3.9E+00	n						
				1.0E-01	I			V		1		Chloral Hydrate	302-17-0	7.8E+03	n	1.2E+05	nm					2.0E+03	n		4.0E-01	n	
				1.5E-02	I					1	0.1	Chloramben	133-90-4	9.5E+02	n	1.2E+04	n					2.9E+02	n		7.0E-02	n	
4.0E-01	H									1	0.1	Chloranil	118-75-2	1.3E+00	c	5.7E+00	c					1.8E-01	c		1.5E-04	c	
3.5E-01	I	1.0E-04	I	5.0E-04	I	7.0E-04	I	V		1	0.04	Chlordane	12789-03-6	1.7E+00	c*	7.7E+00	c*	2.8E-02	c*	1.2E-01	c*	2.0E-02	c*	2.0E+00	2.7E-03	c*	2.7E-01
1.0E+01	I	4.6E-03	C	3.0E-04	I					1	0.1	Chlordecone (Kepone)	143-50-0	5.4E-02	c	2.3E-01	c	6.1E-04	c	2.7E-03	c	3.5E-03	c		1.2E-04	c	
				7.0E-04	A					1	0.1	Chlorfenvinphos	470-90-6	4.4E+01	n	5.7E+02	n					1.1E+01	n		3.1E-02	n	
				9.0E-02	O					1	0.1	Chlorimuron, Ethyl-	90982-32-4	5.7E+03	n	7.4E+04	n					1.8E+03	n		6.0E-01	n	
				1.0E-01	I	1.5E-04	A	V		1	2.8E+03	Chlorine	7782-50-5	1.8E-01	n	7.8E-01	n	1.5E-01	n	6.4E-01	n	3.0E-01	n		1.4E-04	n	
				3.0E-02	I	2.0E-04	I	V		1		Chlorine Dioxide	10049-04-4	2.3E+03	n	3.4E+04	n	2.1E-01	n	8.8E-01	n	4.2E-01	n			n	
				3.0E-02	I					1		Chlorite (Sodium Salt)	7758-19-2	2.3E+03	n	3.5E+04	n					6.0E+02	n	1.0E+03		n	
						5.0E+01	I	V		1	1.2E+03	Chloro-1,1-difluoroethane, 1-	75-68-3	5.4E+04	ns	2.3E+05	nms	5.2E+04	n	2.2E+05	n	1.0E+05	n		5.2E+01	n	
		3.0E-04	I	2.0E-02	H	2.0E-02	I	V		1	7.9E+02	Chloro-1,3-butadiene, 2-	126-99-8	1.0E-02	c	4.4E-02	c	9.4E-03	c	4.1E-02	c	1.9E-02	c		9.8E-06	c	
4.6E-01	H									1	0.1	Chloro-2-methylaniline HCl, 4-	3165-93-3	1.2E+00	c	5.0E+00	c					1.7E-01	c		1.5E-04	c	
1.0E-01	P	7.7E-05	C	3.0E-03	X					1	0.1	Chloro-2-methylaniline, 4-	95-69-2	5.4E+00	c*	2.3E+01	c	3.6E-02	c	1.6E-01	c	7.0E-01	c*		4.0E-04	c*	
2.7E-01	X							V		1	1.2E+04	Chloroacetaldehyde, 2-	107-20-0	2.6E+00	c	1.2E+01	c					2.9E-01	c		5.8E-05	c	
										1	0.1	Chloroacetic Acid	79-11-8											6.0E+01			1.2E-02
						3.0E-05	I			1	0.1	Chloroacetophenone, 2-	532-27-4	4.3E+04	n	1.8E+05	nm	3.1E-02	n	1.3E-01	n						
2.0E-01	P			4.0E-03	I					1	0.1	Chloroaniline, p-	106-47-8	2.7E+00	c*	1.1E+01	c					3.7E-01	c		1.6E-04	c	
				2.0E-02	I	5.0E-02	P	V		1	7.6E+02	Chlorobenzene	108-90-7	2.8E+02	n	1.3E+03	ns	5.2E+01	n	2.2E+02	n	7.8E+01	n	1.0E+02	5.3E-02	n	6.8E-02
				1.0E-01	X					1	0.1	Chlorobenzene sulfonic acid, p-	98-66-8	6.3E+03	n	8.2E+04	n					2.0E+03	n		4.7E-01	n	
1.1E-01	C	3.1E-05	C	2.0E-02	I					1	0.1	Chlorobenzilate	510-15-6	4.9E+00	c	2.1E+01	c	9.1E-02	c	4.0E-01	c	3.1E-01	c		1.0E-03	c	
				3.0E-02	X					1	0.1	Chlorobenzoic Acid, p-	74-11-3	1.9E+03	n	2.5E+04	n					5.1E+02	n		1.3E-01	n	
				3.0E-03	P	3.0E-01	P	V		1	2.9E+02	Chlorobenzotrifluoride, 4-	98-56-6	2.1E+02	n	2.5E+03	ns	3.1E+02	n	1.3E+03	n	3.5E+01	n		1.2E-01	n	
				4.0E-02	P			V		1	7.3E+02	Chlorobutane, 1-	109-69-3	3.1E+03	ns	4.7E+04	ns					6.4E+02	n		2.6E-01	n	
						5.0E+01	I	V		1	1.7E+03	Chlorodifluoromethane	75-45-6	4.9E+04	ns	2.1E+05	nms	5.2E+04	n	2.2E+05	n	1.0E+05	n		4.3E+01	n	
				2.0E-02	P			V		1	1.1E+05	Chloroethanol, 2-	107-07-3	1.6E+03	n	2.3E+04	n					4.0E+02	n		8.1E-02	n	
3.1E-02	C	2.3E-05	I	1.0E-02	I	9.8E-02	A	V		1	2.5E+03	Chloroform	67-66-3	3.2E-01	c	1.4E+00	c	1.2E-01	c	5.3E-01	c	2.2E-01	c	8.0E+01(F)	6.1E-05	c	2.2E-02
						9.0E-02	I	V		1	1.3E+03	Chloromethane	74-87-3	1.1E+02	n	4.6E+02	n	9.4E+01	n	3.9E+02	n	1.9E+02	n		4.9E-02	n	
2.4E+00	C	6.9E-04	C					V		1	9.3E+03	Chloromethyl Methyl Ether	107-30-2	2.0E-02	c	8.9E-02	c	4.1E-03	c	1.8E-02	c	6.5E-03	c		1.4E-06	c	
3.0E-01	P			3.0E-03	P	1.0E-05	X			1	0.1	Chloronitrobenzene, o-	88-73-3	1.8E+00	c	7.7E+00	c	1.0E-02	n	4.4E-02	n	2.4E-01	c		2.2E-04	c	
6.0E-02	P			7.0E-04	P	2.0E-03	P			1	0.1	Chloronitrobenzene, p-	100-00-5	9.0E+00	c**	3.8E+01	c*	2.1E+00	n	8.8E+00	n	1.2E+00	c*		1.1E-03	c*	
				5.0E-03	I			V		1	2.7E+04	Chlorophenol, 2-	95-57-8	3.9E+02	n	5.8E+03	n					9.1E+01	n		8.9E-02	n	
						4.0E-04	C	V		1	6.2E+02	Chloropicrin	76-06-2	2.0E+00	n	8.2E+00	n	4.2E-01	n	1.8E+00	n	8.3E-01	n		2.5E-04	n	
3.1E-03	C	8.9E-07	C	1.5E-02	I					1	0.1	Chlorothalonil	1897-45-6	1.8E+02	c**	7.4E+02	c*	3.2E+00	c	1.4E+01	c	2.2E+01	c*		5.0E-02	c*	
				2.0E-02	I			V		1	9.1E+02	Chlorotoluene, o-	95-49-8	1.6E+03	ns	2.3E+04	ns					2.4E+02	n		2.3E-01	n	
				2.0E-02	X			V		1	2.5E+02	Chlorotoluene, p-	106-43-4	1.6E+03	ns	2.3E+04	ns					2.5E+02	n		2.4E-01	n	
2.4E+02	C	6.9E-02	C							1	0.1	Chlorozotocin	54749-90-5	2.3E-03	c	9.6E-03	c	4.1E-05	c	1.8E-04	c	3.2E-04	c		7.1E-08	c	
				5.0E-02	O					1	0.1	Chlorpropham	101-21-3	3.2E+03	n	4.1E+04	n					7.1E+02	n		6.4E-01	n	
				1.0E-03	A					1	0.1	Chlorpyrifos	2921-88-2	6.3E+01	n	8.2E+02	n					8.4E+00	n		1.2E-01	n	
				1.0E-02	H					1	0.1	Chlorpyrifos Methyl	5598-13-0	6.3E+02	n	8.2E+03	n					1.2E+02	n		5.4E-01	n	
				2.0E-02	O					1	0.1	Chlorsulfuron	64902-72-3	1.3E+03	n	1.6E+04	n					3.9E+02	n		3.3E-01	n	
				1.0E-02	I					1	0.1	Chlorthal-dimethyl	1861-32-1	6.3E+02	n	8.2E+03	n					1.2E+02	n		1.5E-01	n	
				8.0E-04	H					1	0.1	Chlorthiophos	60238-56-4	5.1E+01	n	6.6E+02	n					2.8E+00	n		7.3E-02	n	
				1.5E+00	I					0.013		Chromium(III), Insoluble Salts	16065-83-1	1.2E+05	nm	1.8E+06	nm					2.2E+04	n		4.0E+07	n	

Key: I = IRIS; P = PPRTV; D = DWSHA; O = OPP; A = ATSDR; C = Cal EPA; X = APPENDIX PPRTV SCREEN (See FAQ #29); H = HEAST; F = See FAQ; E = see user guide Section 2.3.5; L = see user guide on lead; M = mutagen; S = see user guide Section 5; V = volatile; R = RBA applied (See User Guide for Arsenic notice) ; c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = Concentration may exceed ceiling limit (See User Guide); s = Concentration may exceed Csat (See User Guide)

Toxicity and Chemical-specific Information												Contaminant		Screening Levels														Protection of Ground Water SSLs		
SFO (mg/kg-day)$^{-1}$	key	IUR ($\mu g/m^3$)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	volatile	muta-gen	GIABS	ABS	C_{sat} (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air ($\mu g/m^3$)	key	Industrial Air ($\mu g/m^3$)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
5.0E-01	C	8.4E-02	S	3.0E-03	I	1.0E-04	I		M	0.025			Chromium(VI)	18540-29-9	3.0E-01	c	6.3E+00	c	1.2E-05	c	1.5E-04	c	3.5E-02	c		6.7E-04	c	
										0.013			Chromium, Total	7440-47-3											1.0E+02			1.8E+05
				1.3E-02	I					1	0.1		Clofentezine	74115-24-5	8.2E+02	n	1.1E+04	n					2.3E+02	n		1.4E+01	n	
		9.0E-03	P	3.0E-04	P	6.0E-06	P			1			Cobalt	7440-48-4	2.3E+01	n	3.5E+02	n	3.1E-04	c*	1.4E-03	c*	6.0E+00	n		2.7E-01	n	
		6.2E-04	I					V	M	1			Coke Oven Emissions	8007-45-2					1.6E-03	c	2.0E-02	c						
				4.0E-02	H					1			Copper	7440-50-8	3.1E+03	n	4.7E+04	n					8.0E+02	n	1.3E+03	2.8E+01	n	4.6E+01
				5.0E-02	I	6.0E-01	C			1	0.1		Cresol, m-	108-39-4	3.2E+03	n	4.1E+04	n	6.3E+02	n	2.6E+03	n	9.3E+02	n		7.4E-01	n	
				5.0E-02	I	6.0E-01	C			1	0.1		Cresol, o-	95-48-7	3.2E+03	n	4.1E+04	n	6.3E+02	n	2.6E+03	n	9.3E+02	n		7.5E-01	n	
				1.0E-01	A	6.0E-01	C			1	0.1		Cresol, p-	106-44-5	6.3E+03	n	8.2E+04	n	6.3E+02	n	2.6E+03	n	1.9E+03	n		1.5E+00	n	
				1.0E-01	A					1	0.1		Cresol, p-chloro-m-	59-50-7	6.3E+03	n	8.2E+04	n					1.4E+03	n		1.7E+00	n	
				1.0E-01	A	6.0E-01	C			1	0.1		Cresols	1319-77-3	6.3E+03	n	8.2E+04	n	6.3E+02	n	2.6E+03	n	1.5E+03	n		1.3E+00	n	
1.9E+00	H			1.0E-03	P			V		1		1.7E+04	Crotonaldehyde, trans-	123-73-9	3.7E-01	c	1.7E+00	c					4.0E-02	c		8.2E-06	c	
				1.0E-01	I	4.0E-01	I	V		1		2.7E+02	Cumene	98-82-8	1.9E+03	ns	9.9E+03	ns	4.2E+02	n	1.8E+03	n	4.5E+02	n		7.4E-01	n	
2.2E-01	C	6.3E-05	C							1	0.1		Cupferron	135-20-6	2.5E+00	c	1.0E+01	c	4.5E-02	c	1.9E-01	c	3.5E-01	c		6.1E-04	c	
8.4E-01	H			2.0E-03	H					1	0.1		Cyanazine	21725-46-2	6.5E-01	c	2.7E+00	c					8.8E-02	c		4.1E-05	c	
													Cyanides															
				1.0E-03	I					1			~Calcium Cyanide	592-01-8	7.8E+01	n	1.2E+03	n					2.0E+01	n			n	
				5.0E-03	I					1			~Copper Cyanide	544-92-3	3.9E+02	n	5.8E+03	n					1.0E+02	n			n	
				6.0E-04	I	8.0E-04	S	V		1		9.5E+05	~Cyanide (CN-)	57-12-5	2.3E+01	n	1.5E+02	n	8.3E-01	n	3.5E+00	n	1.5E+00	n	2.0E+02	1.5E-02	n	2.0E+00
				1.0E-03	I			V		1			~Cyanogen	460-19-5	7.8E+01	n	1.2E+03	n					2.0E+01	n			n	
				9.0E-02	I			V		1			~Cyanogen Bromide	506-68-3	7.0E+03	n	1.1E+05	nm					1.8E+03	n			n	
				5.0E-02	I			V		1			~Cyanogen Chloride	506-77-4	3.9E+03	n	5.8E+04	n					1.0E+03	n			n	
				6.0E-04	I	8.0E-04	I	V		1		1.0E+07	~Hydrogen Cyanide	74-90-8	2.3E+01	n	1.5E+02	n	8.3E-01	n	3.5E+00	n	1.5E+00	n		1.5E-02	n	
				2.0E-03	I					1			~Potassium Cyanide	151-50-8	1.6E+02	n	2.3E+03	n					4.0E+01	n			n	
				5.0E-03	I					0.04			~Potassium Silver Cyanide	506-61-6	3.9E+02	n	5.8E+03	n					8.2E+01	n			n	
				1.0E-01	I					0.04			~Silver Cyanide	506-64-9	7.8E+03	n	1.2E+05	nm					1.8E+03	n			n	
				1.0E-03	I					1			~Sodium Cyanide	143-33-9	7.8E+01	n	1.2E+03	n					2.0E+01	n	2.0E+02		n	
				2.0E-04	P					1			~Thiocyanates	E1790664	1.6E+01	n	2.3E+02	n					4.0E+00	n			n	
				2.0E-04	X			V		1			~Thiocyanic Acid	463-56-9	1.6E+01	n	2.3E+02	n					4.0E+00	n			n	
				5.0E-02	I					1			~Zinc Cyanide	557-21-1	3.9E+03	n	5.8E+04	n					1.0E+03	n			n	
						6.0E+00	I	V		1		1.2E+02	Cyclohexane	110-82-7	6.5E+03	ns	2.7E+04	ns	6.3E+03	n	2.6E+04	n	1.3E+04	n		1.3E+01	n	
2.0E-02	X			2.0E-02	X					1	0.1		Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	87-84-3	2.7E+01	c*	1.1E+02	c					2.8E+00	c		1.6E-02	c	
				5.0E+00	I	7.0E-01	P	V		1		5.1E+03	Cyclohexanone	108-94-1	2.8E+04	ns	1.3E+05	nms	7.3E+02	n	3.1E+03	n	1.4E+03	n		3.4E-01	n	
				5.0E-03	P	1.0E+00	X	V		1		2.8E+02	Cyclohexene	110-83-8	3.1E+02	ns	3.1E+03	ns	1.0E+03	n	4.4E+03	n	7.0E+01	n		4.6E-02	n	
				2.0E-01	I			V		1		2.9E+05	Cyclohexylamine	108-91-8	1.6E+04	n	2.3E+05	nm					3.8E+03	n		1.0E+00	n	
				2.5E-02	I					1	0.1		Cyfluthrin	68359-37-5	1.6E+03	n	2.1E+04	n					1.2E+02	n		3.1E+01	n	
				1.0E-03	O					1	0.1		Cyhalothrin	68085-85-8	6.3E+01	n	8.2E+02	n					2.0E+01	n		1.4E+01	n	
				6.0E-02	O					1	0.1		Cypermethrin	52315-07-8	3.8E+03	n	4.9E+04	n					1.2E+03	n		1.9E+02	n	
				1.5E-02	O					1	0.1		Cyromazine	66215-27-8	9.5E+02	n	1.2E+04	n					3.0E+02	n		7.6E-02	n	
2.4E-01	I	6.9E-05	C							1	0.1		DDD	72-54-8	2.3E+00	c	9.6E+00	c	4.1E-02	c	1.8E-01	c	3.2E-02	c		7.5E-03	c	
3.4E-01	I	9.7E-05	C					V		1			DDE, p,p'-	72-55-9	2.0E+00	c	9.3E+00	c	2.9E-02	c	1.3E-01	c	4.6E-02	c		1.1E-02	c	
3.4E-01	I	9.7E-05	I	5.0E-04	I					1	0.03		DDT	50-29-3	1.9E+00	c*	8.5E+00	c*	2.9E-02	c	1.3E-01	c	2.3E-01	c*		7.7E-02	c*	
				3.0E-02	I					1	0.1		Dalapon	75-99-0	1.9E+03	n	2.5E+04	n					6.0E+02	n	2.0E+02	1.2E-01	n	4.1E-02
1.8E-02	C	5.1E-06	C	1.5E-01	I					1	0.1		Daminozide	1596-84-5	3.0E+01	c	1.3E+02	c	5.5E-01	c	2.4E+00	c	4.3E+00	c		9.5E-04	c	
7.0E-04	I			7.0E-03	I					1	0.1		Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'- (BDE-209)	1163-19-5	4.4E+02	n	3.3E+03	c**					1.1E+02	c**		6.2E+01	c**	
				4.0E-05	I					1	0.1		Demeton	8065-48-3	2.5E+00	n	3.3E+01	n					4.2E-01	n			n	
1.2E-03	I			6.0E-01	I					1	0.1		Di(2-ethylhexyl)adipate	103-23-1	4.5E+02	c*	1.9E+03	c					6.5E+01	c	4.0E+02	4.7E+00	c	2.9E+01
6.1E-02	H									1	0.1		Diallate	2303-16-4	8.9E+00	c	3.8E+01	c					5.4E-01	c		8.0E-04	c	
				7.0E-04	A					1	0.1		Diazinon	333-41-5	4.4E+01	n	5.7E+02	n					1.0E+01	n		6.5E-02	n	
				1.0E-02	X			V		1			Dibenzothiophene	132-65-0	7.8E+02	n	1.2E+04	n					6.5E+01	n		1.2E+00	n	
8.0E-01	P	6.0E-03	P	2.0E-04	P	2.0E-04	I	V	M	1		9.8E+02	Dibromo-3-chloropropane, 1,2-	96-12-8	5.3E-03	c	6.4E-02	c	1.7E-04	c	2.0E-03	c	3.3E-04	c	2.0E-01	1.4E-07	c	8.6E-05
				4.0E-04	X			V		1		1.6E+02	Dibromobenzene, 1,3-	108-36-1	3.1E+01	n	4.7E+02	ns					5.3E+00	n		5.1E-03	n	
				1.0E-02	I			V		1			Dibromobenzene, 1,4-	106-37-6	7.8E+02	n	1.2E+04	n					1.3E+02	n		1.2E-01	n	
8.4E-02	I			2.0E-02	I			V		1		8.0E+02	Dibromochloromethane	124-48-1	8.3E+00	c	3.9E+01	c					8.7E-01	c	8.0E+01(F)	2.3E-04	c	2.1E-02
2.0E+00	I	6.0E-04	I	9.0E-03	I	9.0E-03	I	V		1		1.3E+03	Dibromoethane, 1,2-	106-93-4	3.6E-02	c	1.6E-01	c	4.7E-03	c	2.0E-02	c	7.5E-03	c	5.0E-02	2.1E-06	c	1.4E-05
						4.0E-03	X	V		1		2.8E+03	Dibromomethane (Methylene Bromide)	74-95-3	2.4E+01	n	9.9E+01	n	4.2E+00	n	1.8E+01	n	8.3E+00	n		2.1E-03	n	
				3.0E-04	P					1	0.1		Dibutyltin Compounds	E1790660	1.9E+01	n	2.5E+02	n					6.0E+00	n			n	
				3.0E-02	I					1	0.1		Dicamba	1918-00-9	1.9E+03	n	2.5E+04	n					5.7E+02	n		1.5E-01	n	
		4.2E-03	P					V		1		5.5E+02	Dichloro-2-butene, 1,4-	764-41-0	2.1E-03	c	9.4E-03	c	6.7E-04	c	2.9E-03	c	1.3E-03	c		6.6E-07	c	
		4.2E-03	P					V		1		5.2E+02	Dichloro-2-butene, cis-1,4-	1476-11-5	7.4E-03	c	3.2E-02	c	6.7E-04	c	2.9E-03	c	1.3E-03	c		6.2E-07	c	
		4.2E-03	P					V		1		7.6E+02	Dichloro-2-butene, trans-1,4-	110-57-6	7.4E-03	c	3.2E-02	c	6.7E-04	c	2.9E-03	c	1.3E-03	c		6.2E-07	c	
5.0E-02	I			4.0E-03	I					1	0.1		Dichloroacetic Acid	79-43-6	1.1E+01	c*	4.6E+01	c*					1.5E+00	c*	6.0E+01	3.1E-04	c*	1.2E-02
				9.0E-02	I	2.0E-01	H	V		1		3.8E+02	Dichlorobenzene, 1,2-	95-50-1	1.8E+03	ns	9.3E+03	ns	2.1E+02	n	8.8E+02	n	3.0E+02	n	6.0E+02	3.0E-01	n	5.8E-01
5.4E-03	C	1.1E-05	C	7.0E-02	A	8.0E-01	I	V		1			Dichlorobenzene, 1,4-	106-46-7	2.6E+00	c	1.1E+01	c	2.6E-01	c	1.1E+00	c	4.8E-01	c	7.5E+01	4.6E-04	c	7.2E-02
4.5E-01	I	3.4E-04	C							1	0.1		Dichlorobenzidine, 3,3'-	91-94-1	1.2E+00	c	5.1E+00	c	8.3E-03	c	3.6E-02	c	1.3E-01	c		8.2E-04	c	
				9.0E-03	X					1	0.1		Dichlorobenzophenone, 4,4'-	90-98-2	5.7E+02	n	7.4E+03	n					7.8E+01	n		4.7E-01	n	
				2.0E-01	I	1.0E-01	X	V		1		8.5E+02	Dichlorodifluoromethane	75-71-8	8.7E+01	n	3.7E+02	n	1.0E+02	n	4.4E+02	n	2.0E+02	n		3.0E-01	n	
5.7E-03	C	1.6E-06	C	2.0E-01	P			V		1		1.7E+03	Dichloroethane, 1,1-	75-34-3	3.6E+00	c	1.6E+01	c	1.8E+00	c	7.7E+00	c	2.8E+00	c		7.8E-04	c	
9.1E-02	I	2.6E-05	I	6.0E-03	X	7.0E-03	P	V		1		3.0E+03	Dichloroethane, 1,2-	107-06-2	4.6E-01	c*	2.0E+00	c*	1.1E-01	c*	4.7E-01	c*	1.7E-01	c*	5.0E+00	4.8E-05	c*	1.4E-03
				5.0E-02	I	2.0E-01	I	V		1		1.2E+03	Dichloroethylene, 1,1-	75-35-4	2.3E+02	n	1.0E+03	n	2.1E+02	n	8.8E+02	n	2.8E+02	n	7.0E+00	1.0E-01	n	2.5E-03
				2.0E-03	I			V		1		2.4E+03	Dichloroethylene, 1,2-cis-	156-59-2	1.6E+02	n	2.3E+03	n					3.6E+01	n	7.0E+01	1.1E-02	n	2.1E-02
				2.0E-02	I			V		1		1.9E+03	Dichloroethylene, 1,2-trans-	156-60-5	1.6E+03	n	2.3E+04	ns					3.6E+02	n	1.0E+02	1.1E-01	n	3.1E-02
				3.0E-03	I					1	0.1		Dichlorophenol, 2,4-	120-83-2	1.9E+02	n	2.5E+03	n					4.6E+01	n		2.3E-02	n	
				1.0E-02	I					1	0.05		Dichlorophenoxy Acetic Acid, 2,4-	94-75-7	7.0E+02	n	9.6E+03	n					1.7E+02	n	7.0E+01	4.5E-02	n	1.8E-02
3.7E-02	P	3.7E-05	P	4.0E-02	P	4.0E-03	I	V		1		1.4E+03	Dichloropropane, 1,2-	78-87-5	2.8E-01	c*	1.2E+00	c*	7.6E-02	c*	3.3E-01	c*	1.4E-01	c*	5.0E+00	4.7E-05	c*	1.7E-03
				2.0E-02	P			V		1		1.5E+03	Dichloropropane, 1,3-	142-28-9	1.6E+03	ns	2.3E+04	ns					3.7E+02	n		1.3E-01	n	

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Toxicity and Chemical-specific Information												Contaminant		Screening Levels														Protection of Ground Water SSLs		
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	volatile	muta-gen	GIABS	ABS	C_{sat} (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air (ug/m^3)	key	Industrial Air (ug/m^3)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
				3.0E-03	I					1	0.1		Dichloropropanol, 2,3-	616-23-9	1.9E+02	n	2.5E+03	n					5.9E+01	n		1.3E-02	n		
1.0E-01	I	4.0E-06	I	3.0E-02	I	2.0E-02	I	V		1		1.6E+03	Dichloropropene, 1,3-	542-75-6	1.8E+00	c*	8.2E+00	c*	7.0E-01	c*	3.1E+00	c*	4.7E-01	c*		1.7E-04	c*		
2.9E-01	I	8.3E-05	C	5.0E-04	I	5.0E-04	I			1	0.1		Dichlorvos	62-73-7	1.9E+00	c*	7.9E+00	c*	3.4E-02	c*	1.5E-01	c*	2.6E-01	c*		8.1E-05	c*		
				7.0E-05	O					1	0.1		Dicrotophos	141-66-2	4.4E+00	n	5.7E+01	n					1.4E+00	n		3.3E-04	n		
				8.0E-02	P	3.0E-04	X	V		1		2.6E+02	Dicyclopentadiene	77-73-6	1.3E+00	n	5.4E+00	n	3.1E-01	n	1.3E+00	n	6.3E-01	n		2.2E-03	n		
1.6E+01	I	4.6E-03	I	5.0E-05	I					1	0.1		Dieldrin	60-57-1	3.4E-02	c*	1.4E-01	c	6.1E-04	c	2.7E-03	c	1.8E-03	c		7.1E-05	c		
		3.0E-04	C			5.0E-03	I			1	0.1		Diesel Engine Exhaust	E17136615					9.4E-03	c	4.1E-02	c							
				2.0E-03	P	2.0E-04	P			1	0.1		Diethanolamine	111-42-2	1.3E+02	n	1.6E+03	n	2.1E-01	n	8.8E-01	n	4.0E+01	n		8.1E-03	n		
				3.0E-02	P	1.0E-04	P			1	0.1		Diethylene Glycol Monobutyl Ether	112-34-5	1.9E+03	n	2.4E+04	n	1.0E-01	n	4.4E-01	n	6.0E+02	n		1.3E-01	n		
				6.0E-02	P	3.0E-04	P			1	0.1		Diethylene Glycol Monoethyl Ether	111-90-0	3.8E+03	n	4.8E+04	n	3.1E-01	n	1.3E+00	n	1.2E+03	n		2.4E-01	n		
				1.0E-03	P			V		1		1.1E+05	Diethylformamide	617-84-5	7.8E+01	n	1.2E+03	n					2.0E+01	n		4.1E-03	n		
3.5E+02	C	1.0E-01	C							1	0.1		Diethylstilbestrol	56-53-1	1.6E-03	c	6.6E-03	c	2.8E-05	c	1.2E-04	c	5.1E-05	c		2.8E-05	c		
				8.3E-02	O					1	0.1		Difenzoquat	43222-48-6	5.2E+03	n	6.8E+04	n					1.7E+03	n		2.6E+02	n		
				2.0E-02	I					1	0.1		Diflubenzuron	35367-38-5	1.3E+03	n	1.6E+04	n					2.9E+02	n		3.3E-01	n		
						4.0E+01	I	V		1		1.4E+03	Difluoroethane, 1,1-	75-37-6	4.8E+04	ns	2.0E+05	nms	4.2E+04	n	1.8E+05	n	8.3E+04	n		2.8E+01	n		
4.4E-02	C	1.3E-05	C					V		1			Dihydrosafrole	94-58-6	9.9E+00	c	4.5E+01	c	2.2E-01	c	9.4E-01	c	3.0E-01	c		1.9E-04	c		
						7.0E-01	P	V		1		2.3E+03	Diisopropyl Ether	108-20-3	2.2E+03	n	9.4E+03	ns	7.3E+02	n	3.1E+03	n	1.5E+03	n		3.7E-01	n		
				8.0E-02	I			V		1		5.3E+02	Diisopropyl Methylphosphonate	1445-75-6	6.3E+03	ns	9.3E+04	ns					1.6E+03	n		4.5E-01	n		
				2.2E-02	O					1	0.1		Dimethipin	55290-64-7	1.4E+03	n	1.8E+04	n					4.4E+02	n		9.6E-02	n		
				2.2E-03	O					1	0.1		Dimethoate	60-51-5	1.4E+02	n	1.8E+03	n					4.4E+01	n		9.9E-03	n		
1.6E+00	P									1	0.1		Dimethoxybenzidine, 3,3'-	119-90-4	3.4E-01	c	1.4E+00	c					4.7E-02	c		5.8E-05	c		
1.7E-03	P			6.0E-02	P					1	0.1		Dimethyl methylphosphonate	756-79-6	3.2E+02	c*	1.4E+03	c*					4.6E+01	c*		9.6E-03	c*		
4.6E+00	C	1.3E-03	C							1	0.1		Dimethylamino azobenzene [p-]	60-11-7	1.2E-01	c	5.0E-01	c	2.2E-03	c	9.4E-03	c	5.0E-03	c		2.1E-05	c		
5.8E-01	H									1	0.1		Dimethylaniline HCl, 2,4-	21436-96-4	9.4E-01	c	4.0E+00	c					1.3E-01	c		1.2E-04	c		
2.0E-01	P			2.0E-03	X					1	0.1		Dimethylaniline, 2,4-	95-68-1	2.7E+00	c*	1.1E+01	c					3.7E-01	c		2.1E-04	c		
2.7E-02	P			2.0E-03	I			V		1		8.3E+02	Dimethylaniline, N,N-	121-69-7	2.6E+01	c**	1.2E+02	c*					2.5E+00	c*		9.0E-04	c*		
1.1E+01	P									1	0.1		Dimethylbenzidine, 3,3'-	119-93-7	4.9E-02	c	2.1E-01	c					6.5E-03	c		4.3E-05	c		
				1.0E-01	P	3.0E-02	I	V		1		1.1E+05	Dimethylformamide	68-12-2	2.6E+03	n	1.5E+04	n	3.1E+01	n	1.3E+02	n	6.1E+01	n		1.2E-02	n		
				1.0E-04	X	2.0E-06	X	V		1		1.7E+05	Dimethylhydrazine, 1,1-	57-14-7	5.7E-02	n	2.4E-01	n	2.1E-03	n	8.8E-03	n	4.2E-03	n		9.3E-07	n		
5.5E+02	C	1.6E-01	C					V		1		1.9E+05	Dimethylhydrazine, 1,2-	540-73-8	8.8E-04	c	4.1E-03	c	1.8E-05	c	7.7E-05	c	2.8E-05	c		6.5E-09	c		
				2.0E-02	I					1	0.1		Dimethylphenol, 2,4-	105-67-9	1.3E+03	n	1.6E+04	n					3.6E+02	n		4.2E-01	n		
				6.0E-04	I					1	0.1		Dimethylphenol, 2,6-	576-26-1	3.8E+01	n	4.9E+02	n					1.1E+01	n		1.3E-02	n		
				1.0E-03	I					1	0.1		Dimethylphenol, 3,4-	95-65-8	6.3E+01	n	8.2E+02	n					1.8E+01	n		2.1E-02	n		
4.5E-02	C	1.3E-05	C					V		1		4.7E+02	Dimethylvinylchloride	513-37-1	1.1E+00	c	4.8E+00	c	2.2E-01	c	9.4E-01	c	3.3E-01	c		1.1E-04	c		
				8.0E-05	X					1	0.1		Dinitro-o-cresol, 4,6-	534-52-1	5.1E+00	n	6.6E+01	n					1.5E+00	n		2.6E-03	n		
				2.0E-03	I					1	0.1		Dinitro-o-cyclohexyl Phenol, 4,6-	131-89-5	1.3E+02	n	1.6E+03	n					2.3E+01	n		7.7E-01	n		
				1.0E-04	P					1	0.1		Dinitrobenzene, 1,2-	528-29-0	6.3E+00	n	8.2E+01	n					1.9E+00	n		1.8E-03	n		
				1.0E-04	I					1	0.1		Dinitrobenzene, 1,3-	99-65-0	6.3E+00	n	8.2E+01	n					2.0E+00	n		1.8E-03	n		
				1.0E-04	P					1	0.1		Dinitrobenzene, 1,4-	100-25-4	6.3E+00	n	8.2E+01	n					2.0E+00	n		1.8E-03	n		
				2.0E-03	I					1	0.1		Dinitrophenol, 2,4-	51-28-5	1.3E+02	n	1.6E+03	n					3.9E+01	n		4.4E-02	n		
6.8E-01	I									1	0.1		Dinitrotoluene Mixture, 2,4/2,6-	E1615210	8.0E-01	c	3.4E+00	c					1.1E-01	c		1.5E-04	c		
3.1E-01	C	8.9E-05	C	2.0E-03	I					1	0.102		Dinitrotoluene, 2,4-	121-14-2	1.7E+00	c*	7.4E+00	c	3.2E-02	c	1.4E-01	c	2.4E-01	c		3.2E-04	c		
1.5E+00	P			3.0E-04	X					1	0.099		Dinitrotoluene, 2,6-	606-20-2	3.6E-01	c*	1.5E+00	c					4.9E-02	c		6.7E-05	c		
				2.0E-03	S					1	0.006		Dinitrotoluene, 2-Amino-4,6-	35572-78-2	1.5E+02	n	2.3E+03	n					3.9E+01	n		3.0E-02	n		
				2.0E-03	S					1	0.009		Dinitrotoluene, 4-Amino-2,6-	19406-51-0	1.5E+02	n	2.3E+03	n					3.9E+01	n		3.0E-02	n		
4.5E-01	X			9.0E-04	X					1	0.1		Dinitrotoluene, Technical grade	25321-14-6	1.2E+00	c*	5.1E+00	c					1.0E-01	c		1.4E-04	c		
				1.0E-03	I					1	0.1		Dinoseb	88-85-7	6.3E+01	n	8.2E+02	n					1.5E+01	n	7.0E+00	1.3E-01	n	6.2E-02	
1.0E-01	I	5.0E-06	I	3.0E-02	I	3.0E-02	I	V		1		1.2E+05	Dioxane, 1,4-	123-91-1	5.3E+00	c	2.4E+01	c	5.6E-01	c*	2.5E+00	c*	4.6E-01	c		9.4E-05	c		
													Dioxins																	
6.2E+03	I	1.3E+00	I							1	0.03		~Hexachlorodibenzo-p-dioxin, Mixture		1.0E-04	c	4.7E-04	c	2.2E-06	c	9.4E-06	c	1.3E-05	c		1.7E-05	c		
1.3E+05	C	3.8E+01	C	7.0E-10	I	4.0E-08	C	V		1	0.03		~TCDD, 2,3,7,8-	1746-01-6	4.8E-06	c*	2.2E-05	c*	7.4E-08	c	3.2E-07	c	1.2E-07	c	3.0E-05	5.9E-08	c	1.5E-05	
				3.0E-02	I					1	0.1		Diphenamid	957-51-7	1.9E+03	n	2.5E+04	n					5.3E+02	n		5.2E+00	n		
				8.0E-04	X					1	0.1		Diphenyl Sulfone	127-63-9	5.1E+01	n	6.6E+02	n					1.5E+01	n		3.6E-02	n		
				1.0E-01	O					1	0.1		Diphenylamine	122-39-4	6.3E+03	n	8.2E+04	n					1.3E+03	n		2.3E+00	n		
8.0E-01	I	2.2E-04	I							1	0.1		Diphenylhydrazine, 1,2-	122-66-7	6.8E-01	c	2.9E+00	c	1.3E-02	c	5.6E-02	c	7.8E-02	c		2.5E-04	c		
				2.2E-03	I					1	0.1		Diquat	85-00-7	1.4E+02	n	1.8E+03	n					4.4E+01	n	2.0E+01	8.3E-01	n	3.7E-01	
7.1E+00	C	1.4E-01	C							1	0.1		Direct Black 38	1937-37-7	7.6E-02	c	3.2E-01	c	2.0E-05	c	8.8E-05	c	1.1E-02	c		5.3E+00	c		
7.4E+00	C	1.4E-01	C							1	0.1		Direct Blue 6	2602-46-2	7.3E-02	c	3.1E-01	c	2.0E-05	c	8.8E-05	c	1.1E-02	c		1.7E+01	c		
6.7E+00	C	1.4E-01	C							1	0.1		Direct Brown 95	16071-86-6	8.1E-02	c	3.4E-01	c	2.0E-05	c	8.8E-05	c	1.2E-02	c		1.6E-01	c		
				4.0E-05	I					1	0.1		Disulfoton	298-04-4	2.5E+00	n	3.3E+01	n					5.0E-01	n		9.4E-04	n		
				1.0E-02	I			V		1			Dithiane, 1,4-	505-29-3	7.8E+02	n	1.2E+04	n					2.0E+02	n		9.7E-02	n		
				2.0E-03	I					1	0.1		Diuron	330-54-1	1.3E+02	n	1.6E+03	n					3.6E+01	n		1.5E-02	n		
				2.0E-02	O					1	0.1		Dodine	2439-10-3	1.3E+03	n	1.6E+04	n					4.0E+02	n		2.1E+00	n		
				5.0E-02	O			V		1			EPTC	759-94-4	3.9E+03	n	5.8E+04	n					7.5E+02	n		4.0E-01	n		
				6.0E-03	I			V		1			Endosulfan	115-29-7	4.7E+02	n	7.0E+03	n					1.0E+02	n		1.4E+00	n		
				2.0E-02	I					1	0.1		Endothall	145-73-3	1.3E+03	n	1.6E+04	n					3.8E+02	n	1.0E+02	9.1E-02	n	2.4E-02	
				3.0E-04	I					1	0.1		Endrin	72-20-8	1.9E+01	n	2.5E+02	n					2.3E+00	n	2.0E+00	9.2E-02	n	8.1E-02	
9.9E-03	I	1.2E-06	I	6.0E-03	P	1.0E-03	I	V		1		1.1E+04	Epichlorohydrin	106-89-8	1.9E+01	n	8.2E+01	n	1.0E+00	n	4.4E+00	n	2.0E+00	n		4.5E-04	n		
						2.0E-02	I	V		1		1.5E+04	Epoxybutane, 1,2-	106-88-7	1.6E+02	n	6.7E+02	n	2.1E+01	n	8.8E+01	n	4.2E+01	n		9.2E-03	n		
				4.0E-02	P					1	0.1		Ethanol, 2-(2-methoxyethoxy)-	111-77-3	2.5E+03	n	3.3E+04	n					8.0E+02	n		1.6E-01	n		
				5.0E-03	I					1	0.1		Ethephon	16672-87-0	3.2E+02	n	4.1E+03	n					1.0E+02	n		2.1E-02	n		
				5.0E-04	I					1	0.1		Ethion	563-12-2	3.2E+01	n	4.1E+02	n					4.3E+00	n		8.5E-03	n		
				1.0E-01	P	6.0E-02	P	V		1		2.4E+04	Ethoxyethanol Acetate, 2-	111-15-9	2.6E+03	n	1.4E+04	n	6.3E+01	n	2.6E+02	n	1.2E+02	n		2.5E-02	n		
				9.0E-02	P	2.0E-01	I	V		1		1.1E+05	Ethoxyethanol, 2-	110-80-5	5.2E+03	n	4.7E+04	n	2.1E+02	n	8.8E+02	n	3.4E+02	n		6.8E-02	n		
				9.0E-01	I	7.0E-02	P	V		1		1.1E+04	Ethyl Acetate	141-78-6	6.2E+02	n	2.6E+03	n	7.3E+01	n	3.1E+02	n	1.4E+02	n		3.1E-02	n		
				5.0E-03	P	8.0E-03	P	V		1		2.5E+03	Ethyl Acrylate	140-88-5	4.7E+01	n	2.1E+02	n	8.3E+00	n	3.5E+01	n	1.4E+01	n		3.2E-03	n		

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Toxicity and Chemical-specific Information													Contaminant		Screening Levels												Protection of Ground Water SSLs			
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	volatile	muta-gen	GIABS	ABS	C_{sat} (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air (ug/m^3)	key	Industrial Air (ug/m^3)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
						1.0E+01	I	V		1		2.1E+03	Ethyl Chloride (Chloroethane)	75-00-3	1.4E+04	ns	5.7E+04	ns	1.0E+04	n	4.4E+04	n	2.1E+04	n		5.9E+00	n		
				2.0E-01	I			V		1		1.0E+04	Ethyl Ether	60-29-7	1.6E+04	ns	2.3E+05	nms					3.9E+03	n		8.8E-01	n		
						3.0E-01	P	V		1		1.1E+03	Ethyl Methacrylate	97-63-2	1.8E+03	ns	7.6E+03	ns	3.1E+02	n	1.3E+03	n	6.3E+02	n		1.5E-01	n		
				1.0E-05	I					1	0.1		Ethyl-p-nitrophenyl Phosphonate	2104-64-5	6.3E-01	n	8.2E+00	n					8.9E-02	n		2.8E-03	n		
1.1E-02	C	2.5E-06	C	1.0E-01	I	1.0E+00	I	V		1		4.8E+02	Ethylbenzene	100-41-4	5.8E+00	c	2.5E+01	c	1.1E+00	c	4.9E+00	c	1.5E+00	c	7.0E+02	1.7E-03	c	7.8E-01	
				7.0E-02	P					1	0.1		Ethylene Cyanohydrin	109-78-4	4.4E+03	n	5.7E+04	n					1.4E+03	n		2.8E-01	n		
				9.0E-02	P			V		1		1.9E+05	Ethylene Diamine	107-15-3	7.0E+03	n	1.1E+05	nm					1.8E+03	n		4.1E-01	n		
				2.0E+00	I	4.0E-01	C			1	0.1		Ethylene Glycol	107-21-1	1.3E+05	nm	1.6E+06	nm	4.2E+02	n	1.8E+03	n	4.0E+04	n		8.1E+00	n		
				1.0E-01	I	1.6E+00	I			1	0.1		Ethylene Glycol Monobutyl Ether	111-76-2	6.3E+03	n	8.2E+04	n	1.7E+03	n	7.0E+03	n	2.0E+03	n		4.1E-01	n		
3.1E-01	C	3.0E-03	I			3.0E-02	C	V	M	1		1.2E+05	Ethylene Oxide	75-21-8	2.0E-03	c	2.5E-02	c	3.4E-04	c	4.1E-03	c	6.7E-04	c		1.4E-07	c		
4.5E-02	C	1.3E-05	C	8.0E-05	I					1	0.1		Ethylene Thiourea	96-45-7	5.1E+00	n	5.1E+01	c**	2.2E-01	c	9.4E-01	c	1.6E+00	n		3.6E-04	n		
6.5E+01	C	1.9E-02	C					V		1		1.5E+05	Ethyleneimine	151-56-4	2.7E-03	c	1.2E-02	c	1.5E-04	c	6.5E-04	c	2.4E-04	c		5.2E-08	c		
				3.0E+00	I					1	0.1		Ethylphthalyl Ethyl Glycolate	84-72-0	1.9E+05	nm	2.5E+06	nm					5.8E+04	n		1.3E+02	n		
				2.5E-04	I					1	0.1		Fenamiphos	22224-92-6	1.6E+01	n	2.1E+02	n					4.4E+00	n		4.3E-03	n		
				2.5E-02	I					1	0.1		Fenpropathrin	39515-41-8	1.6E+03	n	2.1E+04	n					6.4E+01	n		2.9E+00	n		
				2.5E-02	I					1	0.1		Fenvalerate	51630-58-1	1.6E+03	n	2.1E+04	n					5.0E+02	n		3.2E+02	n		
				1.3E-02	I					1	0.1		Fluometuron	2164-17-2	8.2E+02	n	1.1E+04	n					2.4E+02	n		1.9E-01	n		
				4.0E-02	C	1.3E-02	C			1			Fluoride	16984-48-8	3.1E+03	n	4.7E+04	n	1.4E+01	n	5.7E+01	n	8.0E+02	n		1.2E+02	n		
				6.0E-02	I	1.3E-02	C			1			Fluorine (Soluble Fluoride)	7782-41-4	4.7E+03	n	7.0E+04	n	1.4E+01	n	5.7E+01	n	1.2E+03	n	4.0E+03	1.8E+02	n	6.0E+02	
				8.0E-02	I					1	0.1		Fluridone	59756-60-4	5.1E+03	n	6.6E+04	n					1.4E+03	n		1.6E+02	n		
				1.5E-02	O					1	0.1		Flurprimidol	56425-91-3	9.5E+02	n	1.2E+04	n					2.6E+02	n		1.2E+00	n		
				2.0E-03	O					1	0.1		Flusilazole	85509-19-9	1.3E+02	n	1.6E+03	n					3.1E+01	n		5.1E+00	n		
				5.0E-01	O					1	0.1		Flutolanil	66332-96-5	3.2E+04	n	4.1E+05	nm					7.9E+03	n		4.2E+01	n		
				1.0E-02	I					1	0.1		Fluvalinate	69409-94-5	6.3E+02	n	8.2E+03	n					2.0E+02	n		2.9E+02	n		
				9.0E-02	O					1	0.1		Folpet	133-07-3	5.7E+03	n	7.4E+04	n					1.6E+03	n		3.9E-01	n		
				2.5E-03	O					1	0.1		Fomesafen	72178-02-0	1.6E+02	n	2.1E+03	n					4.8E+01	n		1.6E-01	n		
				2.0E-03	I					1	0.1		Fonofos	944-22-9	1.3E+02	n	1.6E+03	n					2.4E+01	n		4.7E-02	n		
		1.3E-05	I	2.0E-01	I	9.8E-03	A	V		1		4.2E+04	Formaldehyde	50-00-0	1.7E+01	c*	7.3E+01	c*	2.2E-01	c*	9.4E-01	c*	4.3E-01	c*		8.7E-05	c*		
				9.0E-01	P	3.0E-04	X	V		1		1.1E+05	Formic Acid	64-18-6	2.9E+01	n	1.2E+02	n	3.1E-01	n	1.3E+00	n	6.3E-01	n		1.3E-04	n		
				2.5E+00	O					1	0.1		Fosetyl-AL	39148-24-8	1.6E+05	nm	2.1E+06	nm					5.0E+04	n		6.6E+02	n		
													Furans																	
				1.0E-03	X			V		1	0.03		~Dibenzofuran	132-64-9	7.3E+01	n	1.0E+03	n					7.9E+00	n		1.5E-01	n		
				1.0E-03	I			V		1	0.03	6.2E+03	~Furan	110-00-9	7.3E+01	n	1.0E+03	n					1.9E+01	n		7.3E-03	n		
				9.0E-01	I	2.0E+00	I	V		1	0.03	1.7E+05	~Tetrahydrofuran	109-99-9	1.8E+04	n	9.4E+04	n	2.1E+03	n	8.8E+03	n	3.4E+03	n		7.5E-01	n		
3.8E+00	H									1	0.1		Furazolidone	67-45-8	1.4E-01	c	6.0E-01	c					2.0E-02	c		3.9E-05	c		
				3.0E-03	I	5.0E-02	H	V		1		1.0E+04	Furfural	98-01-1	2.1E+02	n	2.6E+03	n	5.2E+01	n	2.2E+02	n	3.8E+01	n		8.1E-03	n		
1.5E+00	C	4.3E-04	C							1	0.1		Furium	531-82-8	3.6E-01	c	1.5E+00	c	6.5E-03	c	2.9E-02	c	5.1E-02	c		6.8E-05	c		
3.0E-02	I	8.6E-06	C							1	0.1		Furmecyclox	60568-05-0	1.8E+01	c	7.7E+01	c	3.3E-01	c	1.4E+00	c	1.1E+00	c		1.2E-03	c		
				6.0E-03	O					1	0.1		Glufosinate, Ammonium	77182-82-2	3.8E+02	n	4.9E+03	n					1.2E+02	n		2.6E-02	n		
						8.0E-05	C			1	0.1		Glutaraldehyde	111-30-8	1.1E+05	nm	4.8E+05	nm	8.3E-02	n	3.5E-01	n							
				4.0E-04	I	1.0E-03	H	V		1		1.1E+05	Glycidyl	765-34-4	2.3E+01	n	2.1E+02	n	1.0E+00	n	4.4E+00	n	1.7E+00	n		3.3E-04	n		
				1.0E-01	I					1	0.1		Glyphosate	1071-83-6	6.3E+03	n	8.2E+04	n					2.0E+03	n	7.0E+02	8.8E+00	n	3.1E+00	
				1.0E-02	X			V		1			Guanidine	113-00-8	7.8E+02	n	1.2E+04	n					2.0E+02	n		4.5E-02	n		
				2.0E-02	P					1	0.1		Guanidine Chloride	50-01-1	1.3E+03	n	1.6E+04	n					4.0E+02	n			n		
				3.0E-02	X					1	0.1		Guanidine Nitrate	506-93-4	1.9E+03	n	2.5E+04	n					6.0E+02	n		1.5E-01	n		
				5.0E-05	I					1	0.1		Haloxyfop, Methyl	69806-40-2	3.2E+00	n	4.1E+01	n					7.6E-01	n		8.4E-03	n		
4.5E+00	I	1.3E-03	I	5.0E-04	I			V		1			Heptachlor	76-44-8	1.3E-01	c	6.3E-01	c	2.2E-03	c	9.4E-03	c	1.4E-03	c	4.0E-01	1.2E-04	c	3.3E-02	
9.1E+00	I	2.6E-03	I	1.3E-05	I			V		1			Heptachlor Epoxide	1024-57-3	7.0E-02	c*	3.3E-01	c*	1.1E-03	c	4.7E-03	c	1.4E-03	c*	2.0E-01	2.8E-05	c*	4.1E-03	
				3.0E-04	X	4.0E-01	P	V		1		5.8E+01	Heptane, N-	142-82-5	2.2E+01	n	2.9E+02	ns	4.2E+02	n	1.8E+03	n	6.0E+00	n		4.8E-02	n		
				2.0E-03	I			V		1			Hexabromobenzene	87-82-1	1.6E+02	n	2.3E+03	n					4.0E+01	n		2.3E-01	n		
				2.0E-04	I					1	0.1		Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153)	68631-49-2	1.3E+01	n	1.6E+02	n					4.0E+00	n			n		
1.6E+00	I	4.6E-04	I	8.0E-04	I			V		1			Hexachlorobenzene	118-74-1	2.1E-01	c	9.6E-01	c	6.1E-03	c	2.7E-02	c	9.8E-03	c	1.0E+00	1.2E-04	c	1.3E-02	
7.8E-02	I	2.2E-05	I	1.0E-03	P			V		1		1.7E+01	Hexachlorobutadiene	87-68-3	1.2E+00	c*	5.3E+00	c	1.3E-01	c	5.6E-01	c	1.4E-01	c*		2.7E-04	c*		
6.3E+00	I	1.8E-03	I	8.0E-03	A					1	0.1		Hexachlorocyclohexane, Alpha-	319-84-6	8.6E-02	c	3.6E-01	c	1.6E-03	c	6.8E-03	c	7.2E-03	c		4.2E-05	c		
1.8E+00	I	5.3E-04	I							1	0.1		Hexachlorocyclohexane, Beta-	319-85-7	3.0E-01	c	1.3E+00	c	5.3E-03	c	2.3E-02	c	2.5E-02	c		1.5E-04	c		
1.1E+00	C	3.1E-04	C	3.0E-04	I					1	0.04		Hexachlorocyclohexane, Gamma- (Lindane)	58-89-9	5.7E-01	c*	2.5E+00	c	9.1E-03	c	4.0E-02	c	4.2E-02	c*	2.0E-01	2.4E-04	c*	1.2E-03	
1.8E+00	I	5.1E-04	I							1	0.1		Hexachlorocyclohexane, Technical	608-73-1	3.0E-01	c	1.3E+00	c	5.5E-03	c	2.4E-02	c	2.5E-02	c		1.5E-04	c		
				6.0E-03	I	2.0E-04	I	V		1		1.6E+01	Hexachlorocyclopentadiene	77-47-4	1.8E+00	n	7.5E+00	n	2.1E-01	n	8.8E-01	n	4.1E-01	n	5.0E+01	1.3E-03	n	1.6E-01	
4.0E-02	I	1.1E-05	C	7.0E-04	I	3.0E-02	I	V		1			Hexachloroethane	67-72-1	1.8E+00	c*	8.0E+00	c*	2.6E-01	c	1.1E+00	c	3.3E-01	c*		2.0E-04	c*		
				3.0E-04	I					1	0.1		Hexachlorophene	70-30-4	1.9E+01	n	2.5E+02	n					6.0E+00	n		8.0E+00	n		
1.1E-01	I			3.0E-03	I					1	0.015		Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	6.1E+00	c*	2.8E+01	c					7.0E-01	c*		2.7E-04	c*		
						1.0E-05	I	V		1		3.4E+03	Hexamethylene Diisocyanate, 1,6-	822-06-0	3.1E+00	n	1.3E+01	n	1.0E-02	n	4.4E-02	n	2.1E-02	n		2.1E-04	n		
				4.0E-04	P					1	0.1		Hexamethylphosphoramide	680-31-9	2.5E+01	n	3.3E+02	n					8.0E+00	n		1.8E-03	n		
						7.0E-01	I	V		1		1.4E+02	Hexane, N-	110-54-3	6.1E+02	ns	2.5E+03	ns	7.3E+02	n	3.1E+03	n	1.5E+03	n		1.0E+01	n		
				2.0E+00	P					1	0.1		Hexanedioic Acid	124-04-9	1.3E+05	nm	1.6E+06	nm					4.0E+04	n		9.9E+00	n		
				5.0E-03	I	3.0E-02	I	V		1		3.3E+03	Hexanone, 2-	591-78-6	2.0E+02	n	1.3E+03	n	3.1E+01	n	1.3E+02	n	3.8E+01	n		8.8E-03	n		
				3.3E-02	I					1	0.1		Hexazinone	51235-04-2	2.1E+03	n	2.7E+04	n					6.4E+02	n		3.0E-01	n		
				2.5E-02	I					1	0.1		Hexythiazox	78587-05-0	1.6E+03	n	2.1E+04	n					1.1E+02	n		5.0E-01	n		
				1.7E-02	O					1	0.1		Hydramethylnon	67485-29-4	1.1E+03	n	1.4E+04	n					3.4E+02	n		1.2E+05	n		
3.0E+00	I	4.9E-03	I			3.0E-05	P	V		1			Hydrazine	302-01-2	2.3E-01	c	1.1E+00	c	5.7E-04	c*	2.5E-03	c*	1.1E-03	c*			c*		
3.0E+00	I	4.9E-03	I							1			Hydrazine Sulfate	10034-93-2	2.3E-01	c	1.1E+00	c	5.7E-04	c	2.5E-03	c	2.6E-02	c			c		
						2.0E-02	I	V		1			Hydrogen Chloride	7647-01-0	2.8E+07	nm	1.2E+08	nm	2.1E+01	n	8.8E+01	n	4.2E+01	n			n		
				4.0E-02	C	1.4E-02	C	V		1			Hydrogen Fluoride	7664-39-3	3.1E+03	n	4.7E+04	n	1.5E+01	n	6.1E+01	n	2.8E+01	n			n		
						2.0E-03	I	V		1			Hydrogen Sulfide	7783-06-4	2.8E+06	nm	1.2E+07	nm	2.1E+00	n	8.8E+00	n	4.2E+00	n			n		
6.0E-02	P			4.0E-02	P					1	0.1		Hydroquinone	123-31-9	9.0E+00	c	3.8E+01	c					1.3E+00	c		8.7E-04	c		
6.1E-02	O			2.5E-03	O					1	0.1		Imazalil	35554-44-0	8.9E+00	c*	3.8E+01	c*					9.0E-01	c*		1.5E-02	c*		

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Toxicity and Chemical-specific Information											Contaminant		Screening Levels												Protection of Ground Water SSLs		
SFO (mg/kg-day)$^{-1}$	key	IUR (μg/m^3)$^{-1}$	key	RfD$_o$ (mg/kg-day)	key	RfC$_i$ (mg/m^3)	key	volatile	muta-gen	GIABS	ABS	C$_{sat}$ (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air (μg/m^3)	key	Industrial Air (μg/m^3)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
				2.5E-01	I					1	0.1		Imazaquin	81335-37-7	1.6E+04	n	2.1E+05	nm					4.9E+03	n		2.4E+01	n	
				2.5E+00	O					1	0.1		Imazethapyr	81335-77-5	1.6E+05	nm	2.1E+06	nm					4.7E+04	n		4.1E+01	n	
				1.0E-02	A					1			Iodine	7553-56-2	7.8E+02	n	1.2E+04	n					2.0E+02	n		1.2E+01	n	
				4.0E-02	I					1	0.1		Iprodione	36734-19-7	2.5E+03	n	3.3E+04	n					7.4E+02	n		2.2E-01	n	
				7.0E-01	P					1			Iron	7439-89-6	5.5E+04	n	8.2E+05	nm					1.4E+04	n		3.5E+02	n	
				3.0E-01	I			V		1		1.0E+04	Isobutyl Alcohol	78-83-1	2.3E+04	ns	3.5E+05	nms					5.9E+03	n		1.2E+00	n	
9.5E-04	I			2.0E-01	I	2.0E+00	C			1	0.1		Isophorone	78-59-1	5.7E+02	c*	2.4E+03	c*	2.1E+03	n	8.8E+03	n	7.8E+01	c*		2.6E-02	c*	
				1.5E-02	I			V		1			Isopropalin	33820-53-0	1.2E+03	n	1.8E+04	n					4.0E+01	n		9.2E-01	n	
				2.0E+00	P	2.0E-01	P	V		1		1.1E+05	Isopropanol	67-63-0	5.6E+03	n	2.4E+04	n	2.1E+02	n	8.8E+02	n	4.1E+02	n		8.4E-02	n	
				1.0E-01	I					1	0.1		Isopropyl Methyl Phosphonic Acid	1832-54-8	6.3E+03	n	8.2E+04	n					2.0E+03	n		4.3E-01	n	
				5.0E-02	I					1	0.1		Isoxaben	82558-50-7	3.2E+03	n	4.1E+04	n					7.3E+02	n		2.0E+00	n	
						3.0E-01	A	V		1			JP-7	E1737665	4.3E+08	nm	1.8E+09	nm	3.1E+02	n	1.3E+03	n	6.3E+02	n			n	
				8.0E-03	O					1	0.1		Lactofen	77501-63-4	5.1E+02	n	6.6E+03	n					1.0E+02	n		4.6E+00	n	
													Lead Compounds															
5.0E-01	C	1.5E-01	C	2.0E-02	C	2.0E-04	C		M	0.025			~Lead Chromate	7758-97-6	3.0E-01	c	6.2E+00	c	6.8E-06	c	8.2E-05	c	4.1E-02	c			c	
8.5E-03	C	1.2E-05	C							1			~Lead Phosphate	7446-27-7	8.2E+01	c	3.8E+02	c	2.3E-01	c	1.0E+00	c	9.1E+00	c			c	
8.5E-03	C	1.2E-05	C							1	0.1		~Lead acetate	301-04-2	6.4E+01	c	2.7E+02	c	2.3E-01	c	1.0E+00	c	9.2E+00	c		1.8E-03	c	
										1			~Lead and Compounds	7439-92-1	4.0E+02		8.0E+02	L	1.5E-01	L			1.5E+01	L	1.5E+01		L	1.4E+01
8.5E-03	C	1.2E-05	C							1	0.1		~Lead subacetate	1335-32-6	6.4E+01	c	2.7E+02	c	2.3E-01	c	1.0E+00	c	9.2E+00	c		2.0E-03	c	
				1.0E-07	I			V		1		2.4E+00	~Tetraethyl Lead	78-00-2	7.8E-03	n	1.2E-01	n					1.3E-03	n		4.7E-06	n	
				5.0E-06	P			V		1		3.8E+02	Lewisite	541-25-3	3.9E-01	n	5.8E+00	n					9.0E-02	n		3.8E-05	n	
				7.7E-03	O					1	0.1		Linuron	330-55-2	4.9E+02	n	6.3E+03	n					1.3E+02	n		1.1E-01	n	
				2.0E-03	P					1			Lithium	7439-93-2	1.6E+02	n	2.3E+03	n					4.0E+01	n		1.2E+01	n	
				5.0E-04	I					1	0.1		MCPA	94-74-6	3.2E+01	n	4.1E+02	n					7.5E+00	n		2.0E-03	n	
				4.4E-03	O					1	0.1		MCPB	94-81-5	2.8E+02	n	3.6E+03	n					6.5E+01	n		2.6E-02	n	
				1.0E-03	I					1	0.1		MCPP	93-65-2	6.3E+01	n	8.2E+02	n					1.6E+01	n		4.7E-03	n	
				2.0E-02	I					1	0.1		Malathion	121-75-5	1.3E+03	n	1.6E+04	n					3.9E+02	n		1.0E-01	n	
				1.0E-01	I	7.0E-04	C			1	0.1		Maleic Anhydride	108-31-6	6.3E+03	n	8.0E+04	n	7.3E-01	n	3.1E+00	n	1.9E+03	n		3.8E-01	n	
				5.0E-01	I					1	0.1		Maleic Hydrazide	123-33-1	3.2E+04	n	4.1E+05	nm					1.0E+04	n		2.1E+00	n	
				1.0E-04	P					1	0.1		Malononitrile	109-77-3	6.3E+00	n	8.2E+01	n					2.0E+00	n		4.1E-04	n	
				3.0E-02	H					1	0.1		Mancozeb	8018-01-7	1.9E+03	n	2.5E+04	n					5.4E+02	n		7.6E-01	n	
				5.0E-03	I					1	0.1		Maneb	12427-38-2	3.2E+02	n	4.1E+03	n					9.8E+01	n		1.4E-01	n	
				1.4E-01	I	5.0E-05	I			1			Manganese (Diet)	7439-96-5														
				2.4E-02	S	5.0E-05	I			0.04			Manganese (Non-diet)	7439-96-5	1.8E+03	n	2.6E+04	n	5.2E-02	n	2.2E-01	n	4.3E+02	n		2.8E+01	n	
				9.0E-05	H					1	0.1		Mephosfolan	950-10-7	5.7E+00	n	7.4E+01	n					1.8E+00	n		2.6E-03	n	
				3.0E-02	I					1	0.1		Mepiquat Chloride	24307-26-4	1.9E+03	n	2.5E+04	n					6.0E+02	n		2.0E-01	n	
1.1E-02	P			4.0E-03	P					1	0.1		Mercaptobenzothiazole, 2-	149-30-4	4.9E+01	c**	2.1E+02	c*					6.3E+00	c*		1.8E-02	c*	
													Mercury Compounds															
				3.0E-04	I	3.0E-04	S			0.07			~Mercuric Chloride (and other Mercury salts)	7487-94-7	2.3E+01	n	3.5E+02	n	3.1E-01	n	1.3E+00	n	5.7E+00	n	2.0E+00		n	
						3.0E-04	I	V		1		3.1E+00	~Mercury (elemental)	7439-97-6	1.1E+01	ns	4.6E+01	ns	3.1E-01	n	1.3E+00	n	6.3E-01	n	2.0E+00	3.3E-02	n	1.0E-01
				1.0E-04	I					1			~Methyl Mercury	22967-92-6	7.8E+00	n	1.2E+02	n					2.0E+00	n			n	
				8.0E-05	I					1	0.1		~Phenylmercuric Acetate	62-38-4	5.1E+00	n	6.6E+01	n					1.6E+00	n		5.0E-04	n	
				3.0E-05	I			V		1			Merphos	150-50-5	2.3E+00	n	3.5E+01	n					6.0E-01	n		5.9E-02	n	
				1.0E-04	O					1	0.1		Merphos Oxide	78-48-8	6.3E+00	n	8.2E+01	n					2.8E-01	n		1.4E-03	n	
				6.0E-02	I					1	0.1		Metalaxyl	57837-19-1	3.8E+03	n	4.9E+04	n					1.2E+03	n		3.3E-01	n	
				1.0E-04	I	3.0E-02	P	V		1		4.6E+03	Methacrylonitrile	126-98-7	7.5E+00	n	1.0E+02	n	3.1E+01	n	1.3E+02	n	1.9E+00	n		4.3E-04	n	
				5.0E-05	I					1	0.1		Methamidophos	10265-92-6	3.2E+00	n	4.1E+01	n					1.0E+00	n		2.1E-04	n	
				2.0E+00	I	2.0E+01	I	V		1		1.1E+05	Methanol	67-56-1	1.2E+05	nms	1.2E+06	nms	2.1E+04	n	8.8E+04	n	2.0E+04	n		4.1E+00	n	
				1.5E-03	O					1	0.1		Methidathion	950-37-8	9.5E+01	n	1.2E+03	n					2.9E+01	n		7.1E-03	n	
				2.5E-02	I					1	0.1		Methomyl	16752-77-5	1.6E+03	n	2.1E+04	n					5.0E+02	n		1.1E-01	n	
4.9E-02	C	1.4E-05	C							1	0.1		Methoxy-5-nitroaniline, 2-	99-59-2	1.1E+01	c	4.7E+01	c	2.0E-01	c	8.8E-01	c	1.5E+00	c		5.3E-04	c	
				5.0E-03	I					1	0.1		Methoxychlor	72-43-5	3.2E+02	n	4.1E+03	n					3.7E+01	n	4.0E+01	2.0E+00	n	2.2E+00
				8.0E-03	P	1.0E-03	P	V		1		1.2E+05	Methoxyethanol Acetate, 2-	110-49-6	1.1E+02	n	5.1E+02	n	1.0E+00	n	4.4E+00	n	2.1E+00	n		4.2E-04	n	
				5.0E-03	P	2.0E-02	I	V		1		1.1E+05	Methoxyethanol, 2-	109-86-4	3.3E+02	n	3.5E+03	n	2.1E+01	n	8.8E+01	n	2.9E+01	n		5.9E-03	n	
				1.0E+00	X			V		1		2.9E+04	Methyl Acetate	79-20-9	7.8E+04	ns	1.2E+06	nms					2.0E+04	n		4.1E+00	n	
						2.0E-02	P	V		1		6.8E+03	Methyl Acrylate	96-33-3	1.5E+02	n	6.1E+02	n	2.1E+01	n	8.8E+01	n	4.2E+01	n		8.9E-03	n	
				6.0E-01	I	5.0E+00	I	V		1		2.8E+04	Methyl Ethyl Ketone (2-Butanone)	78-93-3	2.7E+04	n	1.9E+05	nms	5.2E+03	n	2.2E+04	n	5.6E+03	n		1.2E+00	n	
		1.0E-03	X	1.0E-03	P	2.0E-05	X	V		1		1.8E+05	Methyl Hydrazine	60-34-4	1.4E-01	c**	6.2E-01	c**	2.8E-03	c**	1.2E-02	c**	5.6E-03	c**		1.3E-06	c**	
						3.0E+00	I	V		1		3.4E+03	Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	3.3E+04	ns	1.4E+05	nms	3.1E+03	n	1.3E+04	n	6.3E+03	n		1.4E+00	n	
						1.0E-03	C	V		1		1.0E+04	Methyl Isocyanate	624-83-9	4.6E+00	n	1.9E+01	n	1.0E+00	n	4.4E+00	n	2.1E+00	n		5.9E-04	n	
				1.4E+00	I	7.0E-01	I	V		1		2.4E+03	Methyl Methacrylate	80-62-6	4.4E+03	ns	1.9E+04	ns	7.3E+02	n	3.1E+03	n	1.4E+03	n		3.0E-01	n	
				2.5E-04	I					1	0.1		Methyl Parathion	298-00-0	1.6E+01	n	2.1E+02	n					4.5E+00	n		7.4E-03	n	
				6.0E-02	X					1	0.1		Methyl Phosphonic Acid	993-13-5	3.8E+03	n	4.9E+04	n					1.2E+03	n		2.4E-01	n	
				6.0E-03	H	4.0E-02	H	V		1		3.9E+02	Methyl Styrene (Mixed Isomers)	25013-15-4	3.2E+02	n	2.6E+03	ns	4.2E+01	n	1.8E+02	n	2.3E+01	n		3.8E-02	n	
9.9E-02	C	2.8E-05	C							1	0.1		Methyl methanesulfonate	66-27-3	5.5E+00	c	2.3E+01	c	1.0E-01	c	4.4E-01	c	7.9E-01	c		1.6E-04	c	
1.8E-03	C	2.6E-07	C			3.0E+00	I	V		1		8.9E+03	Methyl tert-Butyl Ether (MTBE)	1634-04-4	4.7E+01	c	2.1E+02	c	1.1E+01	c	4.7E+01	c	1.4E+01	c		3.2E-03	c	
				3.0E-04	X					1	0.1		Methyl-1,4-benzenediamine dihydrochloride, 2-	615-45-2	1.9E+01	n	2.5E+02	n					6.0E+00	n		3.6E-03	n	
9.0E-03	P			2.0E-02	X					1	0.1		Methyl-5-Nitroaniline, 2-	99-55-8	6.0E+01	c*	2.6E+02	c*					8.2E+00	c*		4.6E-03	c*	
8.3E+00	C	2.4E-03	C							1	0.1		Methyl-N-nitro-N-nitrosoguanidine, N-	70-25-7	6.5E-02	c	2.8E-01	c	1.2E-03	c	5.1E-03	c	9.4E-03	c		3.2E-06	c	
1.3E-01	C	3.7E-05	C							1	0.1		Methylaniline Hydrochloride, 2-	636-21-5	4.2E+00	c	1.8E+01	c	7.6E-02	c	3.3E-01	c	6.0E-01	c		2.6E-04	c	
				1.0E-02	A					1	0.1		Methylarsonic acid	124-58-3	6.3E+02	n	8.2E+03	n					2.0E+02	n		5.8E-02	n	
				2.0E-04	X					1	0.1		Methylbenzene,1-4-diamine monohydrochloride, 2-	74612-12-7	1.3E+01	n	1.6E+02	n					4.0E+00	n			n	
1.0E-01	X			3.0E-04	X					1	0.1		Methylbenzene-1,4-diamine sulfate, 2-	615-50-9	5.4E+00	c**	2.3E+01	c*					7.8E-01	c**			c**	
2.2E+01	C	6.3E-03	C						M	1	0.1		Methylcholanthrene, 3-	56-49-5	5.5E-03	c	1.0E-01	c	1.6E-04	c	1.9E-03	c	1.1E-03	c		2.2E-03	c	
2.0E-03	I	1.0E-08	I	6.0E-03	I	6.0E-01	I	V	M	1		3.3E+03	Methylene Chloride	75-09-2	5.7E+01	c**	1.0E+03	c**	1.0E+02	c**	1.2E+03	c**	1.1E+01	c**	5.0E+00	2.9E-03	c**	1.3E-03
1.0E-01	P	4.3E-04	C	2.0E-03	P				M	1	0.1		Methylene-bis(2-chloroaniline), 4,4'-	101-14-4	1.2E+00	c	2.3E+01	c*	2.4E-03	c	2.9E-02	c	1.6E-01	c		1.8E-03	c	

Key: I = IRIS; P = PPRTV; D = DWSHA; O = OPP; A = ATSDR; C = Cal EPA; X = APPENDIX PPRTV SCREEN (See FAQ #29); H = HEAST; F = See FAQ; E = see user guide Section 2.3.5; L = see user guide on lead; M = mutagen; S = see user guide Section 5; V = volatile; R = RBA applied (See User Guide for Arsenic notice) ; c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = Concentration may exceed ceiling limit (See User Guide); s = Concentration may exceed Csat (See User Guide)

Toxicity and Chemical-specific Information												Contaminant		Screening Levels												Protection of Ground Water SSLs		
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	volatile	muta-gen	GIABS	ABS	C_{sat} (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air (ug/m^3)	key	Industrial Air (ug/m^3)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
4.6E-02	I	1.3E-05	C							1	0.1		Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	101-61-1	1.2E+01	c	5.0E+01	c	2.2E-01	c	9.4E-01	c	4.8E-01	c		2.6E-03	c	
1.6E+00	C	4.6E-04	C							1	0.1		Methylenebisbenzenamine, 4,4'-	101-77-9	3.4E-01	c	1.4E+00	c	6.1E-03	c	2.7E-02	c	4.7E-02	c		2.1E-04	c	
						2.0E-02	C			1	0.1		Methylenediphenyl Diisocyanate	101-68-8	8.5E+05	nm	3.6E+06	nm	6.3E-01	n	2.6E+00	n							
				7.0E-02	H			V		1		5.0E+02	Methylstyrene, Alpha-	98-83-9	5.5E+03	ns	8.2E+04	ns					7.8E+02	n		1.2E+00	n	
				1.5E-01	I					1	0.1		Metolachlor	51218-45-2	9.5E+03	n	1.2E+05	nm					2.7E+03	n		3.2E+00	n	
				2.5E-02	I					1	0.1		Metribuzin	21087-64-9	1.6E+03	n	2.1E+04	n					4.9E+02	n		1.5E-01	n	
				2.5E-01	I					1	0.1		Metsulfuron-methyl	74223-64-6	1.6E+04	n	2.1E+05	nm					4.9E+03	n		1.9E+00	n	
				3.0E+00	P			V		1		3.4E-01	Mineral oils	8012-95-1	2.3E+05	nms	3.5E+06	nms					6.0E+04	n		2.4E+03	n	
1.8E+01	C	5.1E-03	C	2.0E-04	I			V		1			Mirex	2385-85-5	3.6E-02	c	1.7E-01	c	5.5E-04	c	2.4E-03	c	8.8E-04	c		6.3E-04	c	
				2.0E-03	I					1	0.1		Molinate	2212-67-1	1.3E+02	n	1.6E+03	n					3.0E+01	n		1.7E-02	n	
				5.0E-03	I					1			Molybdenum	7439-98-7	3.9E+02	n	5.8E+03	n					1.0E+02	n		2.0E+00	n	
				1.0E-01	I					1			Monochloramine	10599-90-3	7.8E+03	n	1.2E+05	nm					2.0E+03	n	4.0E+03		n	
				2.0E-03	P					1	0.1		Monomethylaniline	100-61-8	1.3E+02	n	1.6E+03	n					3.8E+01	n		1.4E-02	n	
				2.5E-02	I					1	0.1		Myclobutanil	88671-89-0	1.6E+03	n	2.1E+04	n					4.5E+02	n		5.6E+00	n	
				3.0E-04	X					1	0.1		N,N'-Diphenyl-1,4-benzenediamine	74-31-7	1.9E+01	n	2.5E+02	n					3.6E+00	n		3.7E-01	n	
				2.0E-03	I			V		1			Naled	300-76-5	1.6E+02	n	2.3E+03	n					4.0E+01	n		1.8E-02	n	
				3.0E-02	X	1.0E-01	P	V		1			Naphtha, High Flash Aromatic (HFAN)	64742-95-6	2.3E+03	n	3.5E+04	n	1.0E+02	n	4.4E+02	n	1.5E+02	n			n	
1.8E+00	C	0.0E+00	C							1	0.1		Naphthylamine, 2-	91-59-8	3.0E-01	c	1.3E+00	c					3.9E-02	c		2.0E-04	c	
				1.2E-01	O					1	0.1		Napropamide	15299-99-7	7.6E+03	n	9.8E+04	n					2.0E+03	n		1.3E+01	n	
		2.6E-04	C	1.1E-02	C	1.4E-05	C			1	0.1		Nickel Acetate	373-02-4	6.7E+02	n	8.1E+03	n	1.1E-02	c**	4.7E-02	c**	2.2E+02	n		4.5E-02	n	
		2.6E-04	C	1.1E-02	C	1.4E-05	C			1	0.1		Nickel Carbonate	3333-67-3	6.7E+02	n	8.1E+03	n	1.1E-02	c**	4.7E-02	c**	2.2E+02	n			n	
		2.6E-04	C	1.1E-02	C	1.4E-05	C	V		1			Nickel Carbonyl	13463-39-3	8.2E+02	n	1.1E+04	n	1.1E-02	c**	4.7E-02	c**	2.2E-02	c**			c**	
		2.6E-04	C	1.1E-02	C	1.4E-05	C			0.04			Nickel Hydroxide	12054-48-7	8.2E+02	n	1.1E+04	n	1.1E-02	c**	4.7E-02	c**	2.0E+02	n			n	
		2.6E-04	C	1.1E-02	C	2.0E-05	C			0.04			Nickel Oxide	1313-99-1	8.4E+02	n	1.2E+04	n	1.1E-02	c**	4.7E-02	c**	2.0E+02	n			n	
		2.4E-04	I	1.1E-02	C	1.4E-05	C			0.04			Nickel Refinery Dust	E715532	8.2E+02	n	1.1E+04	n	1.2E-02	c**	5.1E-02	c**	2.2E+02	n		3.2E+01	n	
		2.6E-04	C	2.0E-02	I	9.0E-05	A			0.04			Nickel Soluble Salts	7440-02-0	1.5E+03	n	2.2E+04	n	1.1E-02	c**	4.7E-02	c**	3.9E+02	n		2.6E+01	n	
1.7E+00	C	4.8E-04	I	1.1E-02	C	1.4E-05	C			0.04			Nickel Subsulfide	12035-72-2	4.1E-01	c	1.9E+00	c	5.8E-03	c**	2.6E-02	c**	4.5E-02	c			c	
		2.6E-04	C	1.1E-02	C	1.4E-05	C			1	0.1		Nickelocene	1271-28-9	6.7E+02	n	8.1E+03	n	1.1E-02	c**	4.7E-02	c**	2.2E+02	n			n	
				1.6E+00	I					1			Nitrate	14797-55-8	1.3E+05	nm	1.9E+06	nm					3.2E+04	n	1.0E+04		n	
										1			Nitrate + Nitrite (as N)	E701177											1.0E+04			
				1.0E-01	I					1			Nitrite	14797-65-0	7.8E+03	n	1.2E+05	nm					2.0E+03	n	1.0E+03		n	
				1.0E-02	X	5.0E-05	X			1	0.1		Nitroaniline, 2-	88-74-4	6.3E+02	n	8.0E+03	n	5.2E-02	n	2.2E-01	n	1.9E+02	n		8.0E-02	n	
2.0E-02	P			4.0E-03	P	6.0E-03	P			1	0.1		Nitroaniline, 4-	100-01-6	2.7E+01	c**	1.1E+02	c*	6.3E+00	n	2.6E+01	n	3.8E+00	c*		1.6E-03	c*	
		4.0E-05	I	2.0E-03	I	9.0E-03	I	V		1		3.1E+03	Nitrobenzene	98-95-3	5.1E+00	c*	2.2E+01	c*	7.0E-02	c	3.1E-01	c	1.4E-01	c*		9.2E-05	c*	
				3.0E+03	P					1	0.1		Nitrocellulose	9004-70-0	1.9E+08	nm	2.5E+09	nm					6.0E+07	n		1.3E+04	n	
				7.0E-02	H					1	0.1		Nitrofurantoin	67-20-9	4.4E+03	n	5.7E+04	n					1.4E+03	n		6.1E-01	n	
1.3E+00	C	3.7E-04	C							1	0.1		Nitrofurazone	59-87-0	4.2E-01	c	1.8E+00	c	7.6E-03	c	3.3E-02	c	6.0E-02	c		5.4E-05	c	
1.7E-02	P			1.0E-04	P					1	0.1		Nitroglycerin	55-63-0	6.3E+00	n	8.2E+01	n					2.0E+00	n		8.5E-04	n	
				1.0E-01	I					1	0.1		Nitroguanidine	556-88-7	6.3E+03	n	8.2E+04	n					2.0E+03	n		4.8E-01	n	
		8.8E-06	P			5.0E-03	P	V		1		1.8E+04	Nitromethane	75-52-5	5.4E+00	c*	2.4E+01	c*	3.2E-01	c*	1.4E+00	c*	6.4E-01	c*		1.4E-04	c*	
		2.7E-03	H			2.0E-02	I	V		1		4.9E+03	Nitropropane, 2-	79-46-9	1.4E-02	c	6.0E-02	c	1.0E-03	c	4.5E-03	c	2.1E-03	c		5.4E-07	c	
2.7E+01	C	7.7E-03	C						M	1	0.1		Nitroso-N-ethylurea, N-	759-73-9	4.5E-03	c	8.5E-02	c	1.3E-04	c	1.6E-03	c	9.2E-04	c		2.2E-07	c	
1.2E+02	C	3.4E-02	C						M	1	0.1		Nitroso-N-methylurea, N-	684-93-5	1.0E-03	c	1.9E-02	c	3.0E-05	c	3.6E-04	c	2.1E-04	c		4.6E-08	c	
5.4E+00	I	1.6E-03	I					V		1			Nitroso-di-N-butylamine, N-	924-16-3	9.9E-02	c	4.6E-01	c	1.8E-03	c	7.7E-03	c	2.7E-03	c		5.5E-06	c	
7.0E+00	I	2.0E-03	C							1	0.1		Nitroso-di-N-propylamine, N-	621-64-7	7.8E-02	c	3.3E-01	c	1.4E-03	c	6.1E-03	c	1.1E-02	c		8.1E-06	c	
2.8E+00	I	8.0E-04	C							1	0.1		Nitrosodiethanolamine, N-	1116-54-7	1.9E-01	c	8.2E-01	c	3.5E-03	c	1.5E-02	c	2.8E-02	c		5.6E-06	c	
1.5E+02	I	4.3E-02	I						M	1	0.1		Nitrosodiethylamine, N-	55-18-5	8.1E-04	c	1.5E-02	c	2.4E-05	c	2.9E-04	c	1.7E-04	c		6.1E-08	c	
5.1E+01	I	1.4E-02	I	8.0E-06	P	4.0E-05	X	V	M	1		2.4E+05	Nitrosodimethylamine, N-	62-75-9	2.0E-03	c	3.4E-02	c	7.2E-05	c	8.8E-04	c	1.1E-04	c		2.7E-08	c	
4.9E-03	I	2.6E-06	C							1	0.1		Nitrosodiphenylamine, N-	86-30-6	1.1E+02	c	4.7E+02	c	1.1E+00	c	4.7E+00	c	1.2E+01	c		6.7E-02	c	
2.2E+01	I	6.3E-03	C					V		1		1.1E+05	Nitrosomethylethylamine, N-	10595-95-6	2.0E-02	c	9.1E-02	c	4.5E-04	c	1.9E-03	c	7.1E-04	c		2.0E-07	c	
6.7E+00	C	1.9E-03	C							1	0.1		Nitrosomorpholine [N-]	59-89-2	8.1E-02	c	3.4E-01	c	1.5E-03	c	6.5E-03	c	1.2E-02	c		2.8E-06	c	
9.4E+00	C	2.7E-03	C							1	0.1		Nitrosopiperidine [N-]	100-75-4	5.8E-02	c	2.4E-01	c	1.0E-03	c	4.5E-03	c	8.2E-03	c		4.4E-06	c	
2.1E+00	I	6.1E-04	I							1	0.1		Nitrosopyrrolidine, N-	930-55-2	2.6E-01	c	1.1E+00	c	4.6E-03	c	2.0E-02	c	3.7E-02	c		1.4E-05	c	
				1.0E-04	X					1	0.1		Nitrotoluene, m-	99-08-1	6.3E+00	n	8.2E+01	n					1.7E+00	n		1.6E-03	n	
2.2E-01	P			9.0E-04	P			V		1		1.5E+03	Nitrotoluene, o-	88-72-2	3.2E+00	c*	1.5E+01	c*					3.1E-01	c*		3.0E-04	c*	
1.6E-02	P			4.0E-03	P					1	0.1		Nitrotoluene, p-	99-99-0	3.4E+01	c**	1.4E+02	c*					4.3E+00	c*		4.0E-03	c*	
				3.0E-04	X	2.0E-02	P	V		1		6.9E+00	Nonane, n-	111-84-2	1.1E+01	ns	7.2E+01	ns	2.1E+01	n	8.8E+01	n	5.3E+00	n		7.5E-02	n	
				1.5E-02	O					1	0.1		Norflurazon	27314-13-2	9.5E+02	n	1.2E+04	n					2.9E+02	n		1.9E+00	n	
				3.0E-03	I					1	0.1		Octabromodiphenyl Ether	32536-52-0	1.9E+02	n	2.5E+03	n					6.0E+01	n		1.2E+01	n	
				5.0E-02	I					1	0.006		Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0	3.9E+03	n	5.7E+04	n					1.0E+03	n		1.3E+00	n	
				2.0E-03	H					1	0.1		Octamethylpyrophosphoramide	152-16-9	1.3E+02	n	1.6E+03	n					4.0E+01	n		9.6E-03	n	
7.8E-03	O			1.4E-01	O					1	0.1		Oryzalin	19044-88-3	7.0E+01	c	2.9E+02	c					7.9E+00	c		1.5E-02	c	
				5.0E-03	I					1	0.1		Oxadiazon	19666-30-9	3.2E+02	n	4.1E+03	n					4.7E+01	n		4.8E-01	n	
				2.5E-02	I					1	0.1		Oxamyl	23135-22-0	1.6E+03	n	2.1E+04	n					5.0E+02	n	2.0E+02	1.1E-01	n	4.4E-02
7.3E-02	O			3.0E-02	O					1	0.1		Oxyfluorfen	42874-03-3	7.4E+00	c	3.1E+01	c					5.4E-01	c		4.3E-02	c	
				1.3E-02	I					1	0.1		Paclobutrazol	76738-62-0	8.2E+02	n	1.1E+04	n					2.3E+02	n		4.6E-01	n	
				4.5E-03	I					1	0.1		Paraquat Dichloride	1910-42-5	2.8E+02	n	3.7E+03	n					9.0E+01	n		1.2E+00	n	
				6.0E-03	H					1	0.1		Parathion	56-38-2	3.8E+02	n	4.9E+03	n					8.6E+01	n		4.3E-01	n	
				5.0E-02	H			V		1			Pebulate	1114-71-2	3.9E+03	n	5.8E+04	n					5.6E+02	n		4.5E-01	n	
				3.0E-02	O					1	0.1		Pendimethalin	40487-42-1	1.9E+03	n	2.5E+04	n					1.4E+02	n		1.6E+00	n	
				2.0E-03	I			V		1		3.1E-01	Pentabromodiphenyl Ether	32534-81-9	1.6E+02	ns	2.3E+03	ns					4.0E+01	n		1.7E+00	n	
				1.0E-04	I					1	0.1		Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99)	60348-60-9	6.3E+00	n	8.2E+01	n					2.0E+00	n		8.7E-02	n	
				8.0E-04	I			V		1			Pentachlorobenzene	608-93-5	6.3E+01	n	9.3E+02	n					3.2E+00	n		2.4E-02	n	
9.0E-02	P							V		1		4.6E+02	Pentachloroethane	76-01-7	7.7E+00	c	3.6E+01	c					6.5E-01	c		3.1E-04	c	
2.6E-01	H			3.0E-03	I			V		1			Pentachloronitrobenzene	82-68-8	2.7E+00	c*	1.3E+01	c					1.2E-01	c		1.5E-03	c	
4.0E-01	I	5.1E-06	C	5.0E-03	I					1	0.25		Pentachlorophenol	87-86-5	1.0E+00	c	4.0E+00	c	5.5E-01	c	2.4E+00	c	4.1E-02	c	1.0E+00	5.7E-05	c	1.4E-03

Key: I = IRIS; P = PPRTV; D = DWSHA; O = OPP; A = ATSDR; C = Cal EPA; X = APPENDIX PPRTV SCREEN (See FAQ #29); H = HEAST; F = See FAQ; E = see user guide Section 2.3.5; L = see user guide on lead; M = mutagen; S = see user guide Section 5; V = volatile; R = RBA applied (See User Guide for Arsenic notice) ; c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = Concentration may exceed ceiling limit (See User Guide); s = Concentration may exceed Csat (See User Guide)

Toxicity and Chemical-specific Information												Contaminant		Screening Levels														Protection of Ground Water SSLs		
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	volatile	muta-gen	GIABS	ABS	C_{sat} (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air (ug/m^3)	key	Industrial Air (ug/m^3)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
4.0E-03	X			2.0E-03	P					1	0.1		Pentaerythritol tetranitrate (PETN)	78-11-5	1.3E+02	n	5.7E+02	c**					1.9E+01	c**		2.8E-02	c**	
						1.0E+00	P	V		1		3.9E+02	Pentane, n-	109-66-0	8.1E+02	ns	3.4E+03	ns	1.0E+03	n	4.4E+03	n	2.1E+03	n		1.0E+01	n	
													Perchlorates																	
				7.0E-04	I					1			~Ammonium Perchlorate	7790-98-9	5.5E+01	n	8.2E+02	n					1.4E+01	n			n	
				7.0E-04	I					1			~Lithium Perchlorate	7791-03-9	5.5E+01	n	8.2E+02	n					1.4E+01	n			n	
				7.0E-04	I					1			~Perchlorate and Perchlorate Salts	14797-73-0	5.5E+01	n	8.2E+02	n					1.4E+01	n	1.5E+01(F)		n	
				7.0E-04	I					1			~Potassium Perchlorate	7778-74-7	5.5E+01	n	8.2E+02	n					1.4E+01	n			n	
				7.0E-04	I					1			~Sodium Perchlorate	7601-89-0	5.5E+01	n	8.2E+02	n					1.4E+01	n			n	
				2.0E-02	P					1	0.1		Perfluorobutane sulfonic acid (PFBS)	375-73-5	1.3E+03	n	1.6E+04	n					4.0E+02	n		1.3E-01	n	
				2.0E-02	P					1	0.1		Perfluorobutanesulfonate	45187-15-3	1.3E+03	n	1.6E+04	n					4.0E+02	n		1.3E-01	n	
				5.0E-02	I					1	0.1		Permethrin	52645-53-1	3.2E+03	n	4.1E+04	n					1.0E+03	n		2.4E+02	n	
2.2E-03	C	6.3E-07	C							1	0.1		Phenacetin	62-44-2	2.5E+02	c	1.0E+03	c	4.5E+00	c	1.9E+01	c	3.4E+01	c		9.7E-03	c	
				2.4E-01	O					1	0.1		Phenmedipham	13684-63-4	1.5E+04	n	2.0E+05	nm					3.8E+03	n		2.1E+01	n	
				3.0E-01	I	2.0E-01	C			1	0.1		Phenol	108-95-2	1.9E+04	n	2.5E+05	nm	2.1E+02	n	8.8E+02	n	5.8E+03	n		3.3E+00	n	
				4.0E-03	I					1	0.1		Phenol, 2-(1-methylethoxy)-, methylcarbamate	114-26-1	2.5E+02	n	3.3E+03	n					7.8E+01	n		2.5E-02	n	
				5.0E-04	X					1	0.1		Phenothiazine	92-84-2	3.2E+01	n	4.1E+02	n					4.3E+00	n		1.4E-02	n	
				2.0E-04	X			V		1		1.3E+02	Phenyl Isothiocyanate	103-72-0	1.6E+01	n	2.3E+02	ns					2.6E+00	n		1.7E-03	n	
				6.0E-03	I					1	0.1		Phenylenediamine, m-	108-45-2	3.8E+02	n	4.9E+03	n					1.2E+02	n		3.2E-02	n	
1.2E-01	P			4.0E-03	P					1	0.1		Phenylenediamine, o-	95-54-5	4.5E+00	c*	1.9E+01	c					6.5E-01	c		1.7E-04	c	
				1.0E-03	X					1	0.1		Phenylenediamine, p-	106-50-3	6.3E+01	n	8.2E+02	n					2.0E+01	n		5.4E-03	n	
1.9E-03	H									1	0.1		Phenylphenol, 2-	90-43-7	2.8E+02	c	1.2E+03	c					3.0E+01	c		4.1E-01	c	
				2.0E-04	H					1	0.1		Phorate	298-02-2	1.3E+01	n	1.6E+02	n					3.0E+00	n		3.4E-03	n	
						3.0E-04	I	V		1		1.6E+03	Phosgene	75-44-5	3.1E-01	n	1.3E+00	n	3.1E-01	n	1.3E+00	n						
				2.0E-02	I					1	0.1		Phosmet	732-11-6	1.3E+03	n	1.6E+04	n					3.7E+02	n		8.2E-02	n	
													Phosphates, Inorganic																	
				4.9E+01	P					1			~Aluminum metaphosphate	13776-88-0	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Ammonium polyphosphate	68333-79-9	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Calcium pyrophosphate	7790-76-3	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Diammonium phosphate	7783-28-0	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Dicalcium phosphate	7757-93-9	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Dimagnesium phosphate	7782-75-4	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Dipotassium phosphate	7758-11-4	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Disodium phosphate	7558-79-4	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Monoaluminum phosphate	13530-50-2	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Monoammonium phosphate	7722-76-1	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Monocalcium phosphate	7758-23-8	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Monomagnesium phosphate	7757-86-0	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Monopotassium phosphate	7778-77-0	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Monosodium phosphate	7558-80-7	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Polyphosphoric acid	8017-16-1	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Potassium tripolyphosphate	13845-36-8	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Sodium acid pyrophosphate	7758-16-9	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Sodium aluminum phosphate (acidic)	7785-88-8	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Sodium aluminum phosphate (anhydrous)	10279-59-1	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Sodium aluminum phosphate (tetrahydrate)	10305-76-7	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Sodium hexametaphosphate	10124-56-8	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Sodium polyphosphate	68915-31-1	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Sodium trimetaphosphate	7785-84-4	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Sodium tripolyphosphate	7758-29-4	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Tetrapotassium phosphate	7320-34-5	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Tetrasodium pyrophosphate	7722-88-5	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Trialuminum sodium tetra decahydrogenoctaorthophosphate (dihydrate)	15136-87-5	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Tricalcium phosphate	7758-87-4	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Trimagnesium phosphate	7757-87-1	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Tripotassium phosphate	7778-53-2	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				4.9E+01	P					1			~Trisodium phosphate	7601-54-9	3.8E+06	nm	5.7E+07	nm					9.7E+05	n			n	
				3.0E-04	I	3.0E-04	I	V		1			Phosphine	7803-51-2	2.3E+01	n	3.5E+02	n	3.1E-01	n	1.3E+00	n	5.7E-01	n			n	
				4.9E+01	P	1.0E-02	I			1			Phosphoric Acid	7664-38-2	3.0E+06	nm	2.9E+07	nm	1.0E+01	n	4.4E+01	n	9.7E+05	n			n	
				2.0E-05	I			V		1			Phosphorus, White	7723-14-0	1.6E+00	n	2.3E+01	n					4.0E-01	n		1.5E-03	n	
													Phthalates																	
1.4E-02	I	2.4E-06	C	2.0E-02	I					1	0.1		~Bis(2-ethylhexyl)phthalate	117-81-7	3.9E+01	c*	1.6E+02	c	1.2E+00	c	5.1E+00	c	5.6E+00	c*	6.0E+00	1.3E+00	c*	1.4E+00
1.9E-03	P			2.0E-01	I					1	0.1		~Butyl Benzyl Phthalate	85-68-7	2.9E+02	c*	1.2E+03	c					1.6E+01	c		2.4E-01	c	
				1.0E+00	I					1	0.1		~Butylphthalyl Butylglycolate	85-70-1	6.3E+04	n	8.2E+05	nm					1.3E+04	n		3.1E+02	n	
				1.0E-01	I					1	0.1		~Dibutyl Phthalate	84-74-2	6.3E+03	n	8.2E+04	n					9.0E+02	n		2.3E+00	n	
				8.0E-01	I					1	0.1		~Diethyl Phthalate	84-66-2	5.1E+04	n	6.6E+05	nm					1.5E+04	n		6.1E+00	n	
				1.0E-01	I			V		1			~Dimethylterephthalate	120-61-6	7.8E+03	n	1.2E+05	nm					1.9E+03	n		4.9E-01	n	
				1.0E-02	P					1	0.1		~Octyl Phthalate, di-N-	117-84-0	6.3E+02	n	8.2E+03	n					2.0E+02	n		5.7E+01	n	
				1.0E+00	H					1	0.1		~Phthalic Acid, P-	100-21-0	6.3E+04	n	8.2E+05	nm					1.9E+04	n		6.8E+00	n	
				2.0E+00	I	2.0E-02	C			1	0.1		~Phthalic Anhydride	85-44-9	1.3E+05	nm	1.6E+06	nm	2.1E+01	n	8.8E+01	n	3.9E+04	n		8.5E+00	n	
				7.0E-02	I					1	0.1		Picloram	1918-02-1	4.4E+03	n	5.7E+04	n					1.4E+03	n	5.0E+02	3.8E-01	n	1.4E-01
				1.0E-04	X					1	0.1		Picramic Acid (2-Amino-4,6-dinitrophenol)	96-91-3	6.3E+00	n	8.2E+01	n					2.0E+00	n		1.3E-03	n	
				9.0E-04	X					1	0.1		Picric Acid (2,4,6-Trinitrophenol)	88-89-1	5.7E+01	n	7.4E+02	n					1.8E+01	n		8.4E-02	n	
				6.7E-05	O					1	0.1		Pirimiphos, Methyl	29232-93-7	4.2E+00	n	5.5E+01	n					8.1E-01	n		7.7E-04	n	
3.0E+01	C	8.6E-03	C	7.0E-06	H					1	0.1		Polybrominated Biphenyls	59536-65-1	1.8E-02	c*	7.7E-02	c*	3.3E-04	c	1.4E-03	c	2.6E-03	c*			c*	
													Polychlorinated Biphenyls (PCBs)																	
7.0E-02	S	2.0E-05	S	7.0E-05	I			V		1	0.14		~Aroclor 1016	12674-11-2	4.1E+00	n	2.7E+01	c**	1.4E-01	c	6.1E-01	c	2.2E-01	c**		2.1E-02	c**	

Key: I = IRIS; P = PPRTV; D = DWSHA; O = OPP; A = ATSDR; C = Cal EPA; X = APPENDIX PPRTV SCREEN (See FAQ #29); H = HEAST; F = See FAQ; E = see user guide Section 2.3.5; L = see user guide on lead; M = mutagen; S = see user guide Section 5; V = volatile; R = RBA applied (See User Guide for Arsenic notice) ; c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = Concentration may exceed ceiling limit (See User Guide); s = Concentration may exceed Csat (See User Guide)

Toxicity and Chemical-specific Information												Contaminant		Screening Levels												Protection of Ground Water SSLs		
SFO (mg/kg-day)$^{-1}$	key	IUR ($\mu g/m^3$)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	volatile	muta-gen	GIABS	ABS	C_{sat} (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air (ug/m^3)	key	Industrial Air (ug/m^3)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
2.0E+00	S	5.7E-04	S					V		1	0.14		~Aroclor 1221	11104-28-2	2.0E-01	c	8.3E-01	c	4.9E-03	c	2.1E-02	c	4.7E-03	c		8.0E-05	c	
2.0E+00	S	5.7E-04	S					V		1	0.14		~Aroclor 1232	11141-16-5	1.7E-01	c	7.2E-01	c	4.9E-03	c	2.1E-02	c	4.7E-03	c		8.0E-05	c	
2.0E+00	S	5.7E-04	S					V		1	0.14		~Aroclor 1242	53469-21-9	2.3E-01	c	9.5E-01	c	4.9E-03	c	2.1E-02	c	7.8E-03	c		1.2E-03	c	
2.0E+00	S	5.7E-04	S					V		1	0.14		~Aroclor 1248	12672-29-6	2.3E-01	c	9.5E-01	c	4.9E-03	c	2.1E-02	c	7.8E-03	c		1.2E-03	c	
2.0E+00	S	5.7E-04	S	2.0E-05	I			V		1	0.14		~Aroclor 1254	11097-69-1	2.4E-01	c**	9.7E-01	c*	4.9E-03	c	2.1E-02	c	7.8E-03	c*		2.0E-03	c*	
2.0E+00	S	5.7E-04	S					V		1	0.14		~Aroclor 1260	11096-82-5	2.4E-01	c	9.9E-01	c	4.9E-03	c	2.1E-02	c	7.8E-03	c		5.5E-03	c	
				6.0E-04	X			V		1	0.14		~Aroclor 5460	11126-42-4	3.5E+01	n	4.4E+02	n					1.2E+01	n		2.0E+00	n	
3.9E+00	E	1.1E-03	E	2.3E-05	E	1.3E-03	E	V		1	0.14		~Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)	39635-31-9	1.3E-01	c*	5.2E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c		2.8E-03	c	
3.9E+00	E	1.1E-03	E	2.3E-05	E	1.3E-03	E	V		1	0.14		~Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)	52663-72-6	1.2E-01	c*	5.1E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c		1.7E-03	c	
3.9E+00	E	1.1E-03	E	2.3E-05	E	1.3E-03	E	V		1	0.14		~Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157)	69782-90-7	1.2E-01	c*	5.0E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c		1.7E-03	c	
3.9E+00	E	1.1E-03	E	2.3E-05	E	1.3E-03	E	V		1	0.14		~Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156)	38380-08-4	1.2E-01	c*	5.0E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c		1.7E-03	c	
3.9E+03	E	1.1E+00	E	2.3E-08	E	1.3E-06	E	V		1	0.14		~Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)	32774-16-6	1.2E-04	c*	5.1E-04	c*	2.5E-06	c	1.1E-05	c	4.0E-06	c		1.7E-06	c	
3.9E+00	E	1.1E-03	E	2.3E-05	E	1.3E-03	E	V		1	0.14		~Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)	65510-44-3	1.2E-01	c*	4.9E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c		1.0E-03	c	
3.9E+00	E	1.1E-03	E	2.3E-05	E	1.3E-03	E	V		1	0.14		~Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)	31508-00-6	1.2E-01	c*	4.9E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c		1.0E-03	c	
3.9E+00	E	1.1E-03	E	2.3E-05	E	1.3E-03	E	V		1	0.14		~Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)	32598-14-4	1.2E-01	c*	4.9E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c		1.0E-03	c	
3.9E+00	E	1.1E-03	E	2.3E-05	E	1.3E-03	E	V		1	0.14		~Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)	74472-37-0	1.2E-01	c*	5.0E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c		1.0E-03	c	
1.3E+04	E	3.8E+00	E	7.0E-09	E	4.0E-07	E	V		1	0.14		~Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)	57465-28-8	3.6E-05	c*	1.5E-04	c*	7.4E-07	c	3.2E-06	c	1.2E-06	c		3.0E-07	c	
2.0E+00	I	5.7E-04	I					V		1	0.14		~Polychlorinated Biphenyls (high risk)	1336-36-3	2.3E-01	c	9.4E-01	c	4.9E-03	c	2.1E-02	c			5.0E-01			
4.0E-01	I	1.0E-04	I					V		1	0.14		~Polychlorinated Biphenyls (low risk)	1336-36-3					2.8E-02	c	1.2E-01	c	4.4E-02	c	5.0E-01	6.8E-03	c	7.8E-02
7.0E-02	I	2.0E-05	I					V		1	0.14		~Polychlorinated Biphenyls (lowest risk)	1336-36-3					1.4E-01	c	6.1E-01	c			5.0E-01			
1.3E+01	E	3.8E-03	E	7.0E-06	E	4.0E-04	E			1	0.14		~Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77)	32598-13-3	3.8E-02	c*	1.6E-01	c*	7.4E-04	c	3.2E-03	c	6.0E-03	c*		9.4E-04	c*	
3.9E+01	E	1.1E-02	E	2.3E-06	E	1.3E-04	E	V		1	0.14		~Tetrachlorobiphenyl, 3,4,4',5- (PCB 81)	70362-50-4	1.2E-02	c*	4.8E-02	c*	2.5E-04	c	1.1E-03	c	4.0E-04	c		6.2E-05	c	
						6.0E-04	I			1	0.1		Polymeric Methylene Diphenyl Diisocyanate (PMDI)	9016-87-9	8.5E+05	nm	3.6E+06	nm	6.3E-01	n	2.6E+00	n						
													Polynuclear Aromatic Hydrocarbons (PAHs)														
				6.0E-02	I			V		1	0.13		~Acenaphthene	83-32-9	3.6E+03	n	4.5E+04	n					5.3E+02	n		5.5E+00	n	
				3.0E-01	I			V		1	0.13		~Anthracene	120-12-7	1.8E+04	n	2.3E+05	nm					1.8E+03	n		5.8E+01	n	
1.0E-01	E	6.0E-05	E					V	M	1	0.13		~Benz[a]anthracene	56-55-3	1.1E+00	c	2.1E+01	c	1.7E-02	c	2.0E-01	c	3.0E-02	c		1.1E-02	c	
1.2E+00	C	1.1E-04	C							1	0.13		~Benzo(j)fluoranthene	205-82-3	4.2E-01	c	1.8E+00	c	2.6E-02	c	1.1E-01	c	6.5E-02	c		7.8E-02	c	
1.0E+00	I	6.0E-04	I	3.0E-04	I	2.0E-06	I		M	1	0.13		~Benzo[a]pyrene	50-32-8	1.1E-01	c	2.1E+00	c	1.7E-03	c**	8.8E-03	n	2.5E-02	c	2.0E-01	2.9E-02	c	2.4E-01
1.0E-01	E	6.0E-05	E						M	1	0.13		~Benzo[b]fluoranthene	205-99-2	1.1E+00	c	2.1E+01	c	1.7E-02	c	2.0E-01	c	2.5E-01	c		3.0E-01	c	
1.0E-02	E	6.0E-06	E						M	1	0.13		~Benzo[k]fluoranthene	207-08-9	1.1E+01	c	2.1E+02	c	1.7E-01	c	2.0E+00	c	2.5E+00	c		2.9E+00	c	
				8.0E-02	I			V		1	0.13		~Chloronaphthalene, Beta-	91-58-7	4.8E+03	n	6.0E+04	n					7.5E+02	n		3.9E+00	n	
1.0E-03	E	6.0E-07	E						M	1	0.13		~Chrysene	218-01-9	1.1E+02	c	2.1E+03	c	1.7E+00	c	2.0E+01	c	2.5E+01	c		9.0E+00	c	
1.0E+00	E	6.0E-04	E						M	1	0.13		~Dibenz[a,h]anthracene	53-70-3	1.1E-01	c	2.1E+00	c	1.7E-03	c	2.0E-02	c	2.5E-02	c		9.6E-02	c	
1.2E+01	C	1.1E-03	C							1	0.13		~Dibenzo(a,e)pyrene	192-65-4	4.2E-02	c	1.8E-01	c	2.6E-03	c	1.1E-02	c	6.5E-03	c		8.4E-02	c	
2.5E+02	C	7.1E-02	C						M	1	0.13		~Dimethylbenz(a)anthracene, 7,12-	57-97-6	4.6E-04	c	8.4E-03	c	1.4E-05	c	1.7E-04	c	1.0E-04	c		9.9E-05	c	
				4.0E-02	I					1	0.13		~Fluoranthene	206-44-0	2.4E+03	n	3.0E+04	n					8.0E+02	n		8.9E+01	n	
				4.0E-02	I			V		1	0.13		~Fluorene	86-73-7	2.4E+03	n	3.0E+04	n					2.9E+02	n		5.4E+00	n	
1.0E-01	E	6.0E-05	E						M	1	0.13		~Indeno[1,2,3-cd]pyrene	193-39-5	1.1E+00	c	2.1E+01	c	1.7E-02	c	2.0E-01	c	2.5E-01	c		9.8E-01	c	
2.9E-02	P			7.0E-02	A			V		1	0.13	3.9E+02	~Methylnaphthalene, 1-	90-12-0	1.8E+01	c	7.3E+01	c					1.1E+00	c		6.0E-03	c	
				4.0E-03	I			V		1	0.13		~Methylnaphthalene, 2-	91-57-6	2.4E+02	n	3.0E+03	n					3.6E+01	n		1.9E-01	n	
		3.4E-05	C	2.0E-02	I	3.0E-03	I	V		1	0.13		~Naphthalene	91-20-3	3.8E+00	c*	1.7E+01	c*	8.3E-02	c*	3.6E-01	c*	1.7E-01	c*		5.4E-04	c*	
1.2E+00	C	1.1E-04	C							1	0.13		~Nitropyrene, 4-	57835-92-4	4.2E-01	c	1.8E+00	c	2.6E-02	c	1.1E-01	c	1.9E-02	c		3.3E-03	c	
				3.0E-02	I			V		1	0.13		~Pyrene	129-00-0	1.8E+03	n	2.3E+04	n					1.2E+02	n		1.3E+01	n	
				2.0E-02	P					1	0.1		Potassium Perfluorobutane Sulfonate	29420-49-3	1.3E+03	n	1.6E+04	n					4.0E+02	n			n	
1.5E-01	I			9.0E-03	I					1	0.1		Prochloraz	67747-09-5	3.6E+00	c	1.5E+01	c					3.8E-01	c		1.9E-03	c	
				6.0E-03	H			V		1			Profluralin	26399-36-0	4.7E+02	n	7.0E+03	n					2.6E+01	n		1.6E+00	n	
				1.5E-02	I					1	0.1		Prometon	1610-18-0	9.5E+02	n	1.2E+04	n					2.5E+02	n		1.2E-01	n	
				4.0E-02	O					1	0.1		Prometryn	7287-19-6	2.5E+03	n	3.3E+04	n					6.0E+02	n		9.0E-01	n	
				1.3E-02	I					1	0.1		Propachlor	1918-16-7	8.2E+02	n	1.1E+04	n					2.5E+02	n		1.5E-01	n	
				5.0E-03	I					1	0.1		Propanil	709-98-8	3.2E+02	n	4.1E+03	n					8.2E+01	n		4.5E-02	n	
3.3E-02	O			4.0E-02	O					1	0.1		Propargite	2312-35-8	1.7E+01	c	7.0E+01	c					9.2E-01	c		6.8E-02	c	
				2.0E-03	I			V		1		1.1E+05	Propargyl Alcohol	107-19-7	1.6E+02	n	2.3E+03	n					4.0E+01	n		8.1E-03	n	
				2.0E-02	I					1	0.1		Propazine	139-40-2	1.3E+03	n	1.6E+04	n					3.4E+02	n		3.0E-01	n	
				2.0E-02	I					1	0.1		Propham	122-42-9	1.3E+03	n	1.6E+04	n					3.5E+02	n		2.2E-01	n	
				1.0E-01	O					1	0.1		Propiconazole	60207-90-1	6.3E+03	n	8.2E+04	n					1.6E+03	n		5.3E+00	n	
						8.0E-03	I	V		1		3.3E+04	Propionaldehyde	123-38-6	7.5E+01	n	3.1E+02	n	8.3E+00	n	3.5E+01	n	1.7E+01	n		3.4E-03	n	
				1.0E-01	X	1.0E+00	X	V		1		2.6E+02	Propyl benzene	103-65-1	3.8E+03	ns	2.4E+04	ns	1.0E+03	n	4.4E+03	n	6.6E+02	n		1.2E+00	n	
						3.0E+00	C	V		1		3.5E+02	Propylene	115-07-1	2.2E+03	ns	9.3E+03	ns	3.1E+03	n	1.3E+04	n	6.3E+03	n		6.0E+00	n	
				2.0E+01	P					1	0.1		Propylene Glycol	57-55-6	1.3E+06	nm	1.6E+07	nm					4.0E+05	n		8.1E+01	n	
						2.7E-04	A			1	0.1		Propylene Glycol Dinitrate	6423-43-4	3.9E+05	nm	1.6E+06	nm	2.8E-01	n	1.2E+00	n						
				7.0E-01	H	2.0E+00	I	V		1		1.1E+05	Propylene Glycol Monomethyl Ether	107-98-2	4.1E+04	n	3.7E+05	nms	2.1E+03	n	8.8E+03	n	3.2E+03	n		6.5E-01	n	
2.4E-01	I	3.7E-06	I			3.0E-02	I	V		1		7.8E+04	Propylene Oxide	75-56-9	2.1E+00	c	9.7E+00	c	7.6E-01	c*	3.3E+00	c*	2.7E-01	c		5.6E-05	c	
				7.5E-02	I					1	0.1		Propyzamide	23950-58-5	4.7E+03	n	6.2E+04	n					1.2E+03	n		1.2E+00	n	
				1.0E-03	I			V		1		5.3E+05	Pyridine	110-86-1	7.8E+01	n	1.2E+03	n					2.0E+01	n		6.8E-03	n	
				5.0E-04	I					1	0.1		Quinalphos	13593-03-8	3.2E+01	n	4.1E+02	n					5.1E+00	n		4.3E-02	n	
3.0E+00	I									1	0.1		Quinoline	91-22-5	1.8E-01	c	7.7E-01	c					2.4E-02	c		7.8E-05	c	
				9.0E-03	I					1	0.1		Quizalofop-ethyl	76578-14-8	5.7E+02	n	7.4E+03	n					1.2E+02	n		1.9E+00	n	
						3.0E-02	A			1			Refractory Ceramic Fibers	E715557	4.3E+07	nm	1.8E+08	nm	3.1E+01	n	1.3E+02	n						
				3.0E-02	I					1	0.1		Resmethrin	10453-86-8	1.9E+03	n	2.5E+04	n					6.7E+01	n		4.2E+01	n	
				5.0E-02	H			V		1			Ronnel	299-84-3	3.9E+03	n	5.8E+04	n					4.1E+02	n		3.7E+00	n	
				4.0E-03	I					1	0.1		Rotenone	83-79-4	2.5E+02	n	3.3E+03	n					6.1E+01	n		3.2E+01	n	
2.2E-01	C	6.3E-05	C						M	1	0.1		Safrole	94-59-7	5.5E-01	c	1.0E+01	c	1.6E-02	c	1.9E-01	c	9.6E-02	c		5.9E-05	c	
				5.0E-03	I					1			Selenious Acid	7783-00-8	3.9E+02	n	5.8E+03	n					1.0E+02	n			n	
				5.0E-03	I	2.0E-02	C			1			Selenium	7782-49-2	3.9E+02	n	5.8E+03	n	2.1E+01	n	8.8E+01	n	1.0E+02	n	5.0E+01	5.2E-01	n	2.6E-01
				5.0E-03	C	2.0E-02	C			1			Selenium Sulfide	7446-34-6	3.9E+02	n	5.8E+03	n	2.1E+01	n	8.8E+01	n	1.0E+02	n			n	

Key: I = IRIS; P = PPRTV; D = DWSHA; O = OPP; A = ATSDR; C = Cal EPA; X = APPENDIX PPRTV SCREEN (See FAQ #29); H = HEAST; F = See FAQ; E = see user guide Section 2.3.5; L = see user guide on lead; M = mutagen; S = see user guide Section 5; V = volatile; R = RBA applied (See User Guide for Arsenic notice) ; c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = Concentration may exceed ceiling limit (See User Guide); s = Concentration may exceed Csat (See User Guide)

Toxicity and Chemical-specific Information													Contaminant		Screening Levels												Protection of Ground Water SSLs		
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	volatile	muta-gen	GIABS	ABS	C_{sat} (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air (ug/m^3)	key	Industrial Air (ug/m^3)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
				1.4E-01	O					1	0.1		Sethoxydim	74051-80-2	8.8E+03	n	1.1E+05	nm					1.6E+03	n		1.4E+01	n	
						3.0E-03	C			1			Silica (crystalline, respirable)	7631-86-9	4.3E+06	nm	1.8E+07	nm	3.1E+00	n	1.3E+01	n						
				5.0E-03	I					0.04			Silver	7440-22-4	3.9E+02	n	5.8E+03	n					9.4E+01	n		8.0E-01	n	
1.2E-01	H			5.0E-03	I					1	0.1		Simazine	122-34-9	4.5E+00	c*	1.9E+01	c					6.1E-01	c	4.0E+00	3.0E-04	c	2.0E-03
				1.3E-02	I					1	0.1		Sodium Acifluorfen	62476-59-9	8.2E+02	n	1.1E+04	n					2.6E+02	n		2.1E+00	n	
				4.0E-03	I					1			Sodium Azide	26628-22-8	3.1E+02	n	4.7E+03	n					8.0E+01	n			n	
5.0E-01	C	1.5E-01	C	2.0E-02	C	2.0E-04	C		M	0.025			Sodium Dichromate	10588-01-9	3.0E-01	c	6.2E+00	c	6.8E-06	c	8.2E-05	c	4.1E-02	c			c	
2.7E-01	H			3.0E-02	I					1	0.1		Sodium Diethyldithiocarbamate	148-18-5	2.0E+00	c	8.5E+00	c					2.9E-01	c		1.8E-04	c	
				5.0E-02	A	1.3E-02	C			1			Sodium Fluoride	7681-49-4	3.9E+03	n	5.8E+04	n	1.4E+01	n	5.7E+01	n	1.0E+03	n			n	
				2.0E-05	I					1	0.1		Sodium Fluoroacetate	62-74-8	1.3E+00	n	1.6E+01	n					4.0E-01	n		8.1E-05	n	
				1.0E-03	H					1			Sodium Metavanadate	13718-26-8	7.8E+01	n	1.2E+03	n					2.0E+01	n			n	
				8.0E-04	P					1			Sodium Tungstate	13472-45-2	6.3E+01	n	9.3E+02	n					1.6E+01	n			n	
				8.0E-04	P					1			Sodium Tungstate Dihydrate	10213-10-2	6.3E+01	n	9.3E+02	n					1.6E+01	n			n	
2.4E-02	H			3.0E-02	I					1	0.1		Stirofos (Tetrachlorovinphos)	961-11-5	2.3E+01	c*	9.6E+01	c					2.8E+00	c		8.2E-03	c	
5.0E-01	C	1.5E-01	C	2.0E-02	C	2.0E-04	C		M	0.025			Strontium Chromate	7789-06-2	3.0E-01	c	6.2E+00	c	6.8E-06	c	8.2E-05	c	4.1E-02	c			c	
				6.0E-01	I					1			Strontium, Stable	7440-24-6	4.7E+04	n	7.0E+05	nm					1.2E+04	n		4.2E+02	n	
				3.0E-04	I					1	0.1		Strychnine	57-24-9	1.9E+01	n	2.5E+02	n					5.9E+00	n		6.5E-02	n	
				2.0E-01	I	1.0E+00	I	V		1		8.7E+02	Styrene	100-42-5	6.0E+03	ns	3.5E+04	ns	1.0E+03	n	4.4E+03	n	1.2E+03	n	1.0E+02	1.3E+00	n	1.1E-01
				3.0E-03	P					1	0.1		Styrene-Acrylonitrile (SAN) Trimer		1.9E+02	n	2.5E+03	n					4.8E+01	n			n	
				1.0E-03	P	2.0E-03	X			1	0.1		Sulfolane	126-33-0	6.3E+01	n	8.2E+02	n	2.1E+00	n	8.8E+00	n	2.0E+01	n		4.4E-03	n	
				8.0E-04	P					1	0.1		Sulfonylbis(4-chlorobenzene), 1,1'-	80-07-9	5.1E+01	n	6.6E+02	n					1.1E+01	n		6.5E-02	n	
						1.0E-03	C	V		1			Sulfur Trioxide	7446-11-9	1.4E+06	nm	6.0E+06	nm	1.0E+00	n	4.4E+00	n	2.1E+00	n			n	
						1.0E-03	C			1			Sulfuric Acid	7664-93-9	1.4E+06	nm	6.0E+06	nm	1.0E+00	n	4.4E+00	n						
2.5E-02	I	7.1E-06	I	5.0E-02	H					1	0.1		Sulfurous acid, 2-chloroethyl 2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester	140-57-8	2.2E+01	c	9.2E+01	c	4.0E-01	c	1.7E+00	c	1.3E+00	c		1.5E-02	c	
				3.0E-02	H					1	0.1		TCMTB	21564-17-0	1.9E+03	n	2.5E+04	n					4.8E+02	n		3.3E+00	n	
				7.0E-02	I					1	0.1		Tebuthiuron	34014-18-1	4.4E+03	n	5.7E+04	n					1.4E+03	n		3.9E-01	n	
				2.0E-02	H					1	0.1		Temephos	3383-96-8	1.3E+03	n	1.6E+04	n					4.0E+02	n		7.6E+01	n	
				1.3E-02	I					1	0.1		Terbacil	5902-51-2	8.2E+02	n	1.1E+04	n					2.5E+02	n		7.5E-02	n	
				2.5E-05	H			V		1		3.1E+01	Terbufos	13071-79-9	2.0E+00	n	2.9E+01	n					2.4E-01	n		5.2E-04	n	
				1.0E-03	I					1	0.1		Terbutryn	886-50-0	6.3E+01	n	8.2E+02	n					1.3E+01	n		1.9E-02	n	
				1.0E-04	I					1	0.1		Tetrabromodiphenyl ether, 2,2',4,4'- (BDE-47)	5436-43-1	6.3E+00	n	8.2E+01	n					2.0E+00	n		5.3E-02	n	
				3.0E-04	I			V		1			Tetrachlorobenzene, 1,2,4,5-	95-94-3	2.3E+01	n	3.5E+02	n					1.7E+00	n		7.9E-03	n	
2.6E-02	I	7.4E-06	I	3.0E-02	I			V		1		6.8E+02	Tetrachloroethane, 1,1,1,2-	630-20-6	2.0E+00	c	8.8E+00	c	3.8E-01	c	1.7E+00	c	5.7E-01	c		2.2E-04	c	
2.0E-01	I	5.8E-05	C	2.0E-02	I			V		1		1.9E+03	Tetrachloroethane, 1,1,2,2-	79-34-5	6.0E-01	c	2.7E+00	c	4.8E-02	c	2.1E-01	c	7.6E-02	c		3.0E-05	c	
2.1E-03	I	2.6E-07	I	6.0E-03	I	4.0E-02	I	V		1		1.7E+02	Tetrachloroethylene	127-18-4	2.4E+01	c**	1.0E+02	c**	1.1E+01	c**	4.7E+01	c**	1.1E+01	c**	5.0E+00	5.1E-03	c**	2.3E-03
				3.0E-02	I					1	0.1		Tetrachlorophenol, 2,3,4,6-	58-90-2	1.9E+03	n	2.5E+04	n					2.4E+02	n		1.8E-01	n	
2.0E+01	H							V		1			Tetrachlorotoluene, p- alpha, alpha, alpha-	5216-25-1	3.5E-02	c	1.6E-01	c					1.3E-03	c		4.5E-06	c	
				5.0E-04	I					1	0.1		Tetraethyl Dithiopyrophosphate	3689-24-5	3.2E+01	n	4.1E+02	n					7.1E+00	n		5.2E-03	n	
						8.0E+01	I	V		1		2.1E+03	Tetrafluoroethane, 1,1,1,2-	811-97-2	1.0E+05	nms	4.3E+05	nms	8.3E+04	n	3.5E+05	n	1.7E+05	n		9.3E+01	n	
				2.0E-03	P					1	0.0007		Tetryl (Trinitrophenylmethylnitramine)	479-45-8	1.6E+02	n	2.3E+03	n					3.9E+01	n		3.7E-01	n	
				2.0E-05	S					1			Thallic Oxide	1314-32-5	1.6E+00	n	2.3E+01	n					4.0E-01	n			n	
				1.0E-05	X					1			Thallium (I) Nitrate	10102-45-1	7.8E-01	n	1.2E+01	n					2.0E-01	n			n	
				1.0E-05	X					1			Thallium (Soluble Salts)	7440-28-0	7.8E-01	n	1.2E+01	n					2.0E-01	n	2.0E+00	1.4E-02	n	1.4E-01
				1.0E-05	X			V		1			Thallium Acetate	563-68-8	7.8E-01	n	1.2E+01	n					2.0E-01	n		4.1E-05	n	
				2.0E-05	X			V		1			Thallium Carbonate	6533-73-9	1.6E+00	n	2.3E+01	n					4.0E-01	n		8.3E-05	n	
				1.0E-05	X					1			Thallium Chloride	7791-12-0	7.8E-01	n	1.2E+01	n					2.0E-01	n			n	
				1.0E-05	S					1			Thallium Selenite	12039-52-0	7.8E-01	n	1.2E+01	n					2.0E-01	n			n	
				2.0E-05	X					1			Thallium Sulfate	7446-18-6	1.6E+00	n	2.3E+01	n					4.0E-01	n			n	
				4.3E-02	O					1	0.1		Thifensulfuron-methyl	79277-27-3	2.7E+03	n	3.5E+04	n					8.6E+02	n		2.6E-01	n	
				1.0E-02	I					1	0.1		Thiobencarb	28249-77-6	6.3E+02	n	8.2E+03	n					1.6E+02	n		5.5E-01	n	
				7.0E-02	X					1	0.0075		Thiodiglycol	111-48-8	5.4E+03	n	7.9E+04	n					1.4E+03	n		2.8E-01	n	
				3.0E-04	H					1	0.1		Thiofanox	39196-18-4	1.9E+01	n	2.5E+02	n					5.3E+00	n		1.8E-03	n	
1.2E-02	O			2.7E-02	O					1	0.1		Thiophanate, Methyl	23564-05-8	4.7E+01	c*	2.0E+02	c					6.7E+00	c*		5.7E-03	c*	
				1.5E-02	O					1	0.1		Thiram	137-26-8	9.5E+02	n	1.2E+04	n					2.9E+02	n		4.2E-01	n	
				6.0E-01	H					1			Tin	7440-31-5	4.7E+04	n	7.0E+05	nm					1.2E+04	n		3.0E+03	n	
						1.0E-04	A	V		1			Titanium Tetrachloride	7550-45-0	1.4E+05	nm	6.0E+05	nm	1.0E-01	n	4.4E-01	n	2.1E-01	n			n	
				8.0E-02	I	5.0E+00	I	V		1		8.2E+02	Toluene	108-88-3	4.9E+03	ns	4.7E+04	ns	5.2E+03	n	2.2E+04	n	1.1E+03	n	1.0E+03	7.6E-01	n	6.9E-01
		1.1E-05	C			8.0E-06	C	V		1			Toluene-2,4-diisocyanate	584-84-9	6.4E+00	n	2.7E+01	n	8.3E-03	n	3.5E-02	n	1.7E-02	n		2.5E-04	n	
1.8E-01	X			2.0E-04	X					1	0.1		Toluene-2,5-diamine	95-70-5	3.0E+00	c**	1.3E+01	c*					4.3E-01	c**		1.3E-04	c**	
		1.1E-05	C			8.0E-06	C	V		1		1.7E+03	Toluene-2,6-diisocyanate	91-08-7	5.3E+00	n	2.2E+01	n	8.3E-03	n	3.5E-02	n	1.7E-02	n		2.6E-04	n	
1.6E-02	P	5.1E-05	C							1	0.1		Toluidine, o- (Methylaniline, 2-)	95-53-4	3.4E+01	c	1.4E+02	c	5.5E-02	c	2.4E-01	c	4.7E+00	c		2.0E-03	c	
3.0E-02	P			4.0E-03	X					1	0.1		Toluidine, p-	106-49-0	1.8E+01	c*	7.7E+01	c*					2.5E+00	c*		1.1E-03	c*	
				3.0E+00	P			V		1		3.4E-01	Total Petroleum Hydrocarbons (Aliphatic High)	E1790670	2.3E+05	nms	3.5E+06	nms					6.0E+04	n		2.4E+03	n	
						6.0E-01	P	V		1		1.4E+02	Total Petroleum Hydrocarbons (Aliphatic Low)	E1790666	5.2E+02	ns	2.2E+03	ns	6.3E+02	n	2.6E+03	n	1.3E+03	n		8.8E+00	n	
				1.0E-02	X	1.0E-01	P	V		1		6.9E+00	Total Petroleum Hydrocarbons (Aliphatic Medium)	E1790668	9.6E+01	ns	4.4E+02	ns	1.0E+02	n	4.4E+02	n	1.0E+02	n		1.5E+00	n	
				4.0E-02	P					1	0.1		Total Petroleum Hydrocarbons (Aromatic High)	E1790676	2.5E+03	n	3.3E+04	n					8.0E+02	n		8.9E+01	n	
				4.0E-03	P	3.0E-02	P	V		1		1.8E+03	Total Petroleum Hydrocarbons (Aromatic Low)	E1790672	8.2E+01	n	4.2E+02	n	3.1E+01	n	1.3E+02	n	3.3E+01	n		1.7E-02	n	
				4.0E-03	P	3.0E-03	P	V		1			Total Petroleum Hydrocarbons (Aromatic Medium)	E1790674	1.1E+02	n	6.0E+02	n	3.1E+00	n	1.3E+01	n	5.5E+00	n		2.3E-02	n	
1.1E+00	I	3.2E-04	I							1	0.1		Toxaphene	8001-35-2	4.9E-01	c	2.1E+00	c	8.8E-03	c	3.8E-02	c	7.1E-02	c	3.0E+00	1.1E-02	c	4.6E-01
				7.5E-03	I					1	0.1		Tralomethrin	66841-25-6	4.7E+02	n	6.2E+03	n					1.5E+02	n		5.8E+01	n	
				3.0E-04	A			V		1			Tri-n-butyltin	688-73-3	2.3E+01	n	3.5E+02	n					3.7E+00	n		8.2E-02	n	
				8.0E+01	X					1	0.1		Triacetin	102-76-1	5.1E+06	nm	6.6E+07	nm					1.6E+06	n		4.5E+02	n	
				3.4E-02	O					1	0.1		Triadimefon	43121-43-3	2.1E+03	n	2.8E+04	n					6.3E+02	n		5.0E-01	n	
7.2E-02	O			2.5E-02	O			V		1			Triallate	2303-17-5	9.7E+00	c	4.6E+01	c					4.7E-01	c		1.0E-03	c	
				1.0E-02	I					1	0.1		Triasulfuron	82097-50-5	6.3E+02	n	8.2E+03	n					2.0E+02	n		2.1E-01	n	
				8.0E-03	I					1	0.1		Tribenuron-methyl	101200-48-0	5.1E+02	n	6.6E+03	n					1.6E+02	n		6.1E-02	n	

Key: I = IRIS; P = PPRTV; D = DWSHA; O = OPP; A = ATSDR; C = Cal EPA; X = APPENDIX PPRTV SCREEN (See FAQ #29); H = HEAST; F = See FAQ; E = see user guide Section 2.3.5; L = see user guide on lead; M = mutagen; S = see user guide Section 5; V = volatile; R = RBA applied (See User Guide for Arsenic notice) ; c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = Concentration may exceed ceiling limit (See User Guide); s = Concentration may exceed Csat (See User Guide)

Toxicity and Chemical-specific Information											Contaminant		Screening Levels												Protection of Ground Water SSLs		
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	volatile	muta-gen	GIABS	ABS	C_{sat} (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air (ug/m^3)	key	Industrial Air (ug/m^3)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
				5.0E-03	I			V		1			Tribromobenzene, 1,2,4-	615-54-3	3.9E+02	n	5.8E+03	n					4.5E+01	n		6.4E-02	n	
				9.0E-03	X					1	0.1		Tribromophenol, 2,4,6-	118-79-6	5.7E+02	n	7.4E+03	n					1.2E+02	n		2.2E-01	n	
9.0E-03	P			1.0E-02	P					1	0.1		Tributyl Phosphate	126-73-8	6.0E+01	c*	2.6E+02	c*					5.2E+00	c*		2.5E-02	c*	
				3.0E-04	P					1	0.1		Tributyltin Compounds	E1790678	1.9E+01	n	2.5E+02	n					6.0E+00	n			n	
				3.0E-04	I					1	0.1		Tributyltin Oxide	56-35-9	1.9E+01	n	2.5E+02	n					5.7E+00	n		2.9E+02	n	
				3.0E+01	I	5.0E+00	P	V		1		9.1E+02	Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	6.7E+03	ns	2.8E+04	ns	5.2E+03	n	2.2E+04	n	1.0E+04	n		2.6E+01	n	
7.0E-02	I			2.0E-02	I					1	0.1		Trichloroacetic Acid	76-03-9	7.8E+00	c	3.3E+01	c					1.1E+00	c	6.0E+01	2.2E-04	c	1.2E-02
2.9E-02	H									1	0.1		Trichloroaniline HCl, 2,4,6-	33663-50-2	1.9E+01	c	7.9E+01	c					2.7E+00	c		7.4E-03	c	
7.0E-03	X			3.0E-05	X					1	0.1		Trichloroaniline, 2,4,6-	634-93-5	1.9E+00	n	2.5E+01	n					4.0E-01	n		3.6E-03	n	
				8.0E-04	X			V		1			Trichlorobenzene, 1,2,3-	87-61-6	6.3E+01	n	9.3E+02	n					7.0E+00	n		2.1E-02	n	
2.9E-02	P			1.0E-02	I	2.0E-03	P	V		1		4.0E+02	Trichlorobenzene, 1,2,4-	120-82-1	2.4E+01	c**	1.1E+02	c**	2.1E+00	n	8.8E+00	n	1.2E+00	c**	7.0E+01	3.4E-03	c**	2.0E-01
				2.0E+00	I	5.0E+00	I	V		1		6.4E+02	Trichloroethane, 1,1,1-	71-55-6	8.1E+03	ns	3.6E+04	ns	5.2E+03	n	2.2E+04	n	8.0E+03	n	2.0E+02	2.8E+00	n	7.0E-02
5.7E-02	I	1.6E-05	I	4.0E-03	I	2.0E-04	X	V		1		2.2E+03	Trichloroethane, 1,1,2-	79-00-5	1.1E+00	c**	5.0E+00	c**	1.8E-01	c**	7.7E-01	c**	2.8E-01	c**	5.0E+00	8.9E-05	c**	1.6E-03
4.6E-02	I	4.1E-06	I	5.0E-04	I	2.0E-03	I	V	M	1		6.9E+02	Trichloroethylene	79-01-6	9.4E-01	c**	6.0E+00	c**	4.8E-01	c**	3.0E+00	c**	4.9E-01	c**	5.0E+00	1.8E-04	c**	1.8E-03
				3.0E-01	I			V		1		1.2E+03	Trichlorofluoromethane	75-69-4	2.3E+04	ns	3.5E+05	nms					5.2E+03	n		3.3E+00	n	
				1.0E-01	I					1	0.1		Trichlorophenol, 2,4,5-	95-95-4	6.3E+03	n	8.2E+04	n					1.2E+03	n		4.0E+00	n	
1.1E-02	I	3.1E-06	I	1.0E-03	P					1	0.1		Trichlorophenol, 2,4,6-	88-06-2	4.9E+01	c**	2.1E+02	c**	9.1E-01	c	4.0E+00	c	4.1E+00	c**		4.0E-03	c**	
				1.0E-02	I					1	0.1		Trichlorophenoxyacetic Acid, 2,4,5-	93-76-5	6.3E+02	n	8.2E+03	n					1.6E+02	n		6.8E-02	n	
				8.0E-03	I					1	0.1		Trichlorophenoxypropionic acid, -2,4,5	93-72-1	5.1E+02	n	6.6E+03	n					1.1E+02	n	5.0E+01	6.1E-02	n	2.8E-02
				5.0E-03	I			V		1		1.3E+03	Trichloropropane, 1,1,2-	598-77-6	3.9E+02	n	5.8E+03	ns					8.8E+01	n		3.5E-02	n	
3.0E+01	I			4.0E-03	I	3.0E-04	I	V	M	1		1.4E+03	Trichloropropane, 1,2,3-	96-18-4	5.1E-03	c	1.1E-01	c	3.1E-01	n	1.3E+00	n	7.5E-04	c		3.2E-07	c	
				3.0E-03	X	3.0E-04	P	V		1		3.1E+02	Trichloropropene, 1,2,3-	96-19-5	7.3E-01	n	3.1E+00	n	3.1E-01	n	1.3E+00	n	6.2E-01	n		3.1E-04	n	
				2.0E-02	A					1	0.1		Tricresyl Phosphate (TCP)	1330-78-5	1.3E+03	n	1.6E+04	n					1.6E+02	n		1.5E+01	n	
				3.0E-03	I					1	0.1		Tridiphane	58138-08-2	1.9E+02	n	2.5E+03	n					1.8E+01	n		1.3E-01	n	
						7.0E-03	I	V		1		2.8E+04	Triethylamine	121-44-8	1.2E+02	n	4.8E+02	n	7.3E+00	n	3.1E+01	n	1.5E+01	n		4.4E-03	n	
				2.0E+00	P					1	0.1		Triethylene Glycol	112-27-6	1.3E+05	nm	1.6E+06	nm					4.0E+04	n		8.8E+00	n	
						2.0E+01	P	V		1		4.8E+03	Trifluoroethane, 1,1,1-	420-46-2	1.5E+04	ns	6.2E+04	ns	2.1E+04	n	8.8E+04	n	4.2E+04	n		1.3E+02	n	
7.7E-03	I			7.5E-03	I			V		1			Trifluralin	1582-09-8	9.0E+01	c**	4.2E+02	c*					2.6E+00	c*		8.4E-02	c*	
2.0E-02	P			1.0E-02	P					1	0.1		Trimethyl Phosphate	512-56-1	2.7E+01	c*	1.1E+02	c*					3.9E+00	c*		8.6E-04	c*	
				1.0E-02	I	6.0E-02	I	V		1		2.9E+02	Trimethylbenzene, 1,2,3-	526-73-8	3.4E+02	ns	2.0E+03	ns	6.3E+01	n	2.6E+02	n	5.5E+01	n		8.1E-02	n	
				1.0E-02	I	6.0E-02	I	V		1		2.2E+02	Trimethylbenzene, 1,2,4-	95-63-6	3.0E+02	ns	1.8E+03	ns	6.3E+01	n	2.6E+02	n	5.6E+01	n		8.1E-02	n	
				1.0E-02	I	6.0E-02	I	V		1		1.8E+02	Trimethylbenzene, 1,3,5-	108-67-8	2.7E+02	ns	1.5E+03	ns	6.3E+01	n	2.6E+02	n	6.0E+01	n		8.7E-02	n	
				1.0E-02	X			V		1		3.0E+01	Trimethylpentene, 2,4,4-	25167-70-8	7.8E+02	ns	1.2E+04	ns					6.5E+01	n		2.2E-01	n	
				3.0E-02	I					1	0.019		Trinitrobenzene, 1,3,5-	99-35-4	2.2E+03	n	3.2E+04	n					5.9E+02	n		2.1E+00	n	
3.0E-02	I			5.0E-04	I					1	0.032		Trinitrotoluene, 2,4,6-	118-96-7	2.1E+01	c**	9.6E+01	c**					2.5E+00	c**		1.5E-02	c**	
				2.0E-02	P					1	0.1		Triphenylphosphine Oxide	791-28-6	1.3E+03	n	1.6E+04	n					3.6E+02	n		1.5E+00	n	
				2.0E-02	A					1	0.1		Tris(1,3-Dichloro-2-propyl) Phosphate	13674-87-8	1.3E+03	n	1.6E+04	n					3.6E+02	n		8.0E+00	n	
				1.0E-02	X					1	0.1		Tris(1-chloro-2-propyl)phosphate	13674-84-5	6.3E+02	n	8.2E+03	n					1.9E+02	n		6.5E-01	n	
2.3E+00	C	6.6E-04	C					V		1		4.7E+02	Tris(2,3-dibromopropyl)phosphate	126-72-7	2.8E-01	c	1.3E+00	c	4.3E-03	c	1.9E-02	c	6.8E-03	c		1.3E-04	c	
2.0E-02	P			7.0E-03	P					1	0.1		Tris(2-chloroethyl)phosphate	115-96-8	2.7E+01	c*	1.1E+02	c*					3.8E+00	c*		3.8E-03	c*	
3.2E-03	P			1.0E-01	P					1	0.1		Tris(2-ethylhexyl)phosphate	78-42-2	1.7E+02	c*	7.2E+02	c					2.4E+01	c*		1.2E+02	c*	
				8.0E-04	P					1			Tungsten	7440-33-7	6.3E+01	n	9.3E+02	n					1.6E+01	n		2.4E+00	n	
				2.0E-04	A	4.0E-05	A			1			Uranium (Soluble Salts)	E715565	1.6E+01	n	2.3E+02	n	4.2E-02	n	1.8E-01	n	4.0E+00	n	3.0E+01	1.8E+00	n	1.4E+01
1.0E+00	C	2.9E-04	C						M	1	0.1		Urethane	51-79-6	1.2E-01	c	2.3E+00	c	3.5E-03	c	4.2E-02	c	2.5E-02	c		5.6E-06	c	
		8.3E-03	P	9.0E-03	I	7.0E-06	P			0.026			Vanadium Pentoxide	1314-62-1	4.6E+02	c**	2.0E+03	c**	3.4E-04	c*	1.5E-03	c*	1.5E+02	n			n	
				5.0E-03	S	1.0E-04	A			0.026			Vanadium and Compounds	7440-62-2	3.9E+02	n	5.8E+03	n	1.0E-01	n	4.4E-01	n	8.6E+01	n		8.6E+01	n	
				1.0E-03	I			V		1			Vernolate	1929-77-7	7.8E+01	n	1.2E+03	n					1.1E+01	n		8.9E-03	n	
				1.2E-03	O					1	0.1		Vinclozolin	50471-44-8	7.6E+01	n	9.8E+02	n					2.1E+01	n		1.6E-02	n	
				1.0E+00	H	2.0E-01	I	V		1		2.8E+03	Vinyl Acetate	108-05-4	9.1E+02	n	3.8E+03	ns	2.1E+02	n	8.8E+02	n	4.1E+02	n		8.7E-02	n	
		3.2E-05	H			3.0E-03	I	V		1		2.5E+03	Vinyl Bromide	593-60-2	1.2E-01	c*	5.2E-01	c*	8.8E-02	c*	3.8E-01	c*	1.8E-01	c*		5.1E-05	c*	
7.2E-01	I	4.4E-06	I	3.0E-03	I	1.0E-01	I	V	M	1		3.9E+03	Vinyl Chloride	75-01-4	5.9E-02	c	1.7E+00	c	1.7E-01	c	2.8E+00	c	1.9E-02	c	2.0E+00	6.5E-06	c	6.9E-04
				3.0E-04	I					1	0.1		Warfarin	81-81-2	1.9E+01	n	2.5E+02	n					5.6E+00	n		5.9E-03	n	
				2.0E-01	S	1.0E-01	S	V		1		3.9E+02	Xylene, P-	106-42-3	5.6E+02	ns	2.4E+03	ns	1.0E+02	n	4.4E+02	n	1.9E+02	n		1.9E-01	n	
				2.0E-01	S	1.0E-01	S	V		1		3.9E+02	Xylene, m-	108-38-3	5.5E+02	ns	2.4E+03	ns	1.0E+02	n	4.4E+02	n	1.9E+02	n		1.9E-01	n	
				2.0E-01	S	1.0E-01	S	V		1		4.3E+02	Xylene, o-	95-47-6	6.5E+02	ns	2.8E+03	ns	1.0E+02	n	4.4E+02	n	1.9E+02	n		1.9E-01	n	
				2.0E-01	I	1.0E-01	I	V		1		2.6E+02	Xylenes	1330-20-7	5.8E+02	ns	2.5E+03	ns	1.0E+02	n	4.4E+02	n	1.9E+02	n	1.0E+04	1.9E-01	n	9.9E+00
				3.0E-04	I					1			Zinc Phosphide	1314-84-7	2.3E+01	n	3.5E+02	n					6.0E+00	n			n	
				3.0E-01	I					1			Zinc and Compounds	7440-66-6	2.3E+04	n	3.5E+05	nm					6.0E+03	n		3.7E+02	n	
				5.0E-02	I					1	0.1		Zineb	12122-67-7	3.2E+03	n	4.1E+04	n					9.9E+02	n		2.9E+00	n	
				8.0E-05	X					1			Zirconium	7440-67-7	6.3E+00	n	9.3E+01	n					1.6E+00	n		4.8E+00	n	

Appendix D Sites of Concern

CDOT Parcel #	Address	Denver Parcel Number
PE-197	5151 Franklin Street	0214300148000
AP-86, AP-86A, AP-86B	3223 E. 46th Ave., 3495 E. 46th Ave., and 3455 E. 46th Ave.	0224100029000, 0224100031000
AP-91, AP-93, AP-93A	4501 Monroe St., 3538 E. 46th Ave., and 3600 E. 46th Ave.	0224105015000, 0224105014000, 0224104011000
AP-96	4605 Jackson St.	0224100032000
AP-94	3601 E. 46th Ave.	0224100033000
AP-88	3501 E. 46th Ave.	0224100028000
AP-55	4600 Josephine St.	0224213015000
AP-52	4631 Josephine St.	0224212018000
IU	4375 Havana St.	0122400004000

Railroad Parcel #	Denver Parcel Number
UPRR	
Construction License Permit 26	0223124001000, 0223400057000, 0223123004000, 0223123003000, 0223123011000, 0223122002000, 0223100046000, additional area w/o schedule #
BNSF	
TE-90; TE-90A	0224121009000, 0224100006000
PE-90; PE-90A	0224121009000, 02241000, 6000
DRIR	
RW-136; RW-136B	0120100045000, 0120100063000
PE-136A	no schedule # assigned

Appendix E CDPHE GIS Mapping Requirements for Environmental Covenants

Revised 03/19/2012

Non-Technical information for administrative use:

Colorado Department of Public Health and Environment (CDPHE) requires a computerized delineation of the actual part of the property (Institutional Control Boundary) that is to be covered by the Environmental Covenant. This data will be used to create something similar to what one might find on the commercial Map Quest or Google Map sites. A new survey is rarely needed to create this covenant outline. A mapping professional such as geographic information systems (GIS) technician or geographer will be your best resource for completing this requirement. Sometimes a larger surveying company may also be capable of delivering this data. Technical information below will be required by mapping professional. Legal descriptions alone or printed maps will not be accepted. CDPHE requires an electronic form of the geographic data described in the Technical users information below. If you have questions, please contact Paul Will, GIS Manager, Paul.Will@state.co.us

Technical information for GIS application:

CDPHE uses Environmental Systems Research Institute, Inc. (ESRI) software to create polygons representing the actual geometry of the Institutional Control Boundary for Environmental Covenant requested. We require spatially referenced electronic formats, which can be imported into ESRI ArcGIS databases.

1. GIS data must have least 3 meter accuracy, tied to a known (unmodified) world projection system.
2. ESRI "shape" files are preferred.
3. CAD files are only accepted when the files are electronically geospatially enabled. ONLY include the relevant outline and/or vector points. Do not send an entire CAD projects which include annotations and other features.
4. Non proprietary data submissions are allowed. Sequential point (X, Y or Latitude, Longitude) data are acceptable in a delimited .txt format. Projection datum used must be included.
5. The projection must be standard and identified including
    - Projection system, Datum, Zone and Units
6. The preferred projection is UTM, NAD83, meters, and Zone 13N.
    - UTM
      NAD_1983_UTM_Zone_13N
      GCS_North_American_1983
      Angular Unit: Degree (0.0174532925199433295)
      Prime Meridian: Greenwich (0.000000000000000000)
      Datum: D_North_American_1983
      Spheroid: GRS_1980
      Semimajor Axis: 6378137.000000000000000000
      Semiminor Axis: 6356752.314140356100000000
      Inverse Flattening: 298.257222101000020000
      (Zone 13 N is required for the entire state even though a small western part of the state does fall into Zone 12 N).
      Units = Meters
      Please check your projection, errors may cause substantial delays.

In most cases, when new measurements are needed, data collected with accuracy of hand held GPS units should work. This is intended to be a graphic representation; it will not be used as a legal reference. The legal description is taken care of elsewhere in the Environmental Covenant. Legal descriptions alone will not be accepted for this application, it must be spatially enabled data in an electronic format.