APPENDIX A

DATA QUALITY OBJECTIVES

Appendix A - Data Quality Objectives

Step 1. State the Problem

1) *Identify members of the planning team* - The members of the planning team are the Environmental Protection Agency (EPA) Remedial Project Manager; Montrose Chemical Corporation of California (Montrose), conducting work under an EPA Administrative Order on Consent (AOC); and Montrose's designated consultant, Earth Tech, who will provide a Site Manager, a Review Team Leader, and a Quality Assurance Officer.

2) *Identify the primary decision maker* - Montrose will conduct the work under EPA oversight.

3) *Develop a concise description of the problem* –
Additional data are needed to supplement existing data for feasibility study (FS) evaluations and health risk assessments.

   Since the 1985 grading of the Montrose property and construction of the building pads, several environmental subsurface soil investigations have taken place at the Montrose Site. Based on findings from these investigations, EPA has determined that a supplemental investigation of surface and subsurface soil is needed to obtain additional information on the nature and extent of contamination to complete the soil FS, and to complete risk assessments for on- and off-Property areas. EPA has also determined the need to evaluate the impact of soils, and potentially residual dense nonaqueous phase liquid (DNAPL) in the soil column, as continuing sources of contamination to groundwater. Data obtained from this sampling effort will (1) support evaluations of the presence, distribution, and concentrations of chemicals; (2) allow for completion of the risk assessments; (3) provide for greater certainty in the FS regarding estimation of volumes requiring remediation; and (4) assist in evaluating the appropriateness and feasibility of remedial options.

4) *Specify available resources and relevant deadlines for the study* - Montrose will be conducting the sampling effort. Sampling is planned for 2005.

Step 2. Identify the Decision

1) *Identify the principal study question –*

   a) What are the human health risks due to surface and subsurface soil both on- and off-Property?

   b) What is the nature and extent of soil contamination for the purposes of the FS and completion of the remedy selection process?

   c) What are contaminant concentrations in soil beneath areas potentially impacted by vertical migration of contaminants?

   d) What are the contaminant concentrations in investigation-derived wastes (IDW), for the purposes of determining appropriate disposal?

2) *Define alternate actions that could result from resolution of the principal study question -*

   a) (1) Identify on- and/or off-Property areas that may exceed human health risk criteria.

      (2) Identify no on and/or off-Property areas that exceed human health risk criteria.

   b) (1) The extent of chemicals and/or areas to be considered for remediation may need to be expanded beyond areas of known elevated concentrations (based on analytical results, treatment requirements, and risk assessment findings).

      (2) The extent of chemicals and/or areas to be considered for remediation may be limited to those chemicals and areas already characterized as having elevated concentrations of chemicals of concern, and/or exceeding risk criteria.

   c) (1) At areas potentially impacted by vertical migration, additional remedial actions may be required to address source areas and prevent migration of contaminants to groundwater and/or soil gas.

      (2) At areas potentially impacted by vertical migration, additional remedial actions may not be required to address source areas and prevent migration of contaminants to groundwater and/or soil gas.

   d) <u>For IDW soil</u>: (1) dispose to an offsite nonhazardous Treatment, Storage and Disposal Facility (TSDF); or (2) dispose to an offsite hazardous waste TSDF.

      <u>For IDW water</u>: (1) dispose to the local publicly owned treatment works (POTW); or (2) dispose to an offsite TSDF.

3) *Combine the principal study question and the alternative actions into a decision statement* -

a) (1) If on- and/or off-Property areas exceed human health risk criteria, the geographic extent of areas to be considered for remediation may be expanded to include these properties.

(2) If no on- and/or off-Property areas exceed human health risk criteria, the geographic extent of the area to be considered for remediation may not be expanded.

b) (1) If the nature and extent of soil contamination are different from the current understanding, the chemicals and/or areas to be considered for remediation may need to be expanded.

(2) If the nature and extent of soil contamination are found to be similar to the current understanding, the extent of remediation may be limited to those chemicals and areas already characterized as having elevated concentrations of chemicals of concern.

c) (1) If soil concentrations detected beneath areas that are potentially impacted by vertical migration indicate source areas in soil, then additional remedial actions may be required to prevent migration of contaminants.

(2) If soil concentrations detected beneath areas potentially impacted by vertical migration do not indicate source areas in soil, then additional remedial actions may not be required to prevent migration of contaminants.

d) For IDW soil: Based on whether IDW soil contaminant concentrations exceed regulatory criteria or not, one of the following two options will be implemented: (1) dispose to an offsite nonhazardous waste TSDF; or (2) dispose to an offsite hazardous waste TSDF.

For IDW water: Depending on whether IDW water contaminant concentrations exceed regulatory criteria or not, one of the following two options will be implemented: (1) dispose the water to a POTW; or (2) dispose the water to an offsite TSDF.

4) *Organize multiple decisions* - Based on the answer to the principal study question, decisions about additional phases of remedial activities will be made by the planning team. These decisions may be:

a) The soil sample results may indicate areas that will require additional characterization to support the risk assessment.

b) Further characterization of subsurface soils may be considered in the future if additional refinement of the areas to be considered for remediation is necessary or could reduce the cost of remediation.

c) Additional characterization of soil may be necessary if potential source areas are detected in deep soil borings.

d) Although a relatively comprehensive suite of analytes are specified for waste profiling, additional analyses may be required as determined by the waste facility.

Step 3. Identify Inputs to the Decision

1) *Identify the information that will be required to resolve the decision statement* –

a) Additional soil sample data for pesticides (DDT, DDD, DDE, BHC, and their isomers), volatile organic compounds (VOCs; including monochlorobenzene, chloroform, and others), and metals (arsenic, lead, total chromium, and hexavalent chromium). See **Table 1** of this Revised QAPP for list of analytes.

b) For IDW soil: Waste profiling will be accomplished using the soil boring analytical results or results from a representative composite soil sample. For IDW water: representative samples will be analyzed for volatiles, pesticides, and metals. See **Table 1** of this Revised QAPP for list of analytes. Additional analyses may be performed as required by the waste facility.

2) *Determine the sources for each item of information identified* - These data need to be obtained through field sampling and laboratory analyses.

3) *Identify the information that is needed to establish the action level* - Data need to be comparable to past databases, thus past database detection levels (standard method levels) are appropriate levels. Also, cleanup levels being implemented in neighboring sites and EPA Region IX Preliminary Remediation Goals (PRGs) shown in **Table 1** of this Revised QAPP are applicable. These cleanup levels are above the detection limits in standard methods, thus standard method levels are appropriate.

Since issuing the Remedial Investigation (RI) Report in 1998, an assessment of appropriate soil benchmarks for investigation purposes at nearby residential communities has been conducted. In 2001 and 2002, EPA conducted a response action for DDT in soil at residences along the west side of Kenwood Avenue, about two blocks from the Montrose plant, where historically, a swale (and later a ditch) served as a stormwater drainage pathway from the former Montrose Property through the yards of these residences, and episodically carried entrained DDT. A previous investigation of DDT background levels in residential soil had found DDT levels averaging between 1 and 3 milligrams per kilogram (mg/kg), and ranging up to approximately 10 mg/kg. This concentration range for DDT corresponds to an excess residential cancer risk of less than 6×10^{-6} (6 in one million) for individuals hypothetically exposed over a lifetime. This is at the low end of EPA's "risk range," which represents the concentrations at which exposure to the contaminant, even over a lifetime, would be insignificant. EPA selected 10 mg/kg DDT as a site-

specific cleanup standard for DDT in soil for the 2001-2002 Kenwood Stormwater Drainage Pathway removal action.

EPA considers it reasonable, for the purposes of this Revised QAPP, to use 10 mg/kg as a benchmark for defining where DDT contamination has been sufficiently defined. Use of this value for this purpose does not represent a determination by EPA that 10 mg/kg has been or will be selected by EPA as a performance standard for the on- and near-Property soil remedies. This benchmark was selected as a conservative approach (applying a residential benchmark to industrial and commercial properties) that will improve delineation of identified areas of DDT contamination within the Montrose Site.

For chemicals other than DDT, with exception of arsenic (see below), this Revised QAPP will use the chemical-specific industrial EPA Region IX PRGs dated October 2004 as benchmarks for sufficient characterization (PRGs are risk-based benchmarks corresponding to a one-in-a-million (1×10^{-06}) cancer risk for a hypothetical lifetime exposure, or a hazard index of unity for noncarcinogens, under standard exposure assumptions; they do not represent promulgated or selected cleanup goals).

The Revised QAPP will use the benchmark value of 10 mg/kg for arsenic. This value is within the California Department of Toxic Substances (DTSC) background range for Southern California soil (8 to 11 mg/kg). Furthermore, for the Del Amo Superfund Site located approximately 1,000 feet to the east of the Montrose Plant Property, the *Draft Baseline Risk Assessment* analysis of background soil concentrations found the breakpoint between the regional background for arsenic and the non-ambient values to be 10 mg/kg (*Draft Baseline Risk Assessment Report, Del Amo Site, Los Angeles California*. September 28,URS 2001).

4) *Confirm the appropriate measurement methods exist to provide the necessary data* - Volatiles and metals will be analyzed using EPA Methods 8260B and 6020, respectively. For pesticides analysis, additional isomers will be measured using EPA Method 8081A, with additional standards for the 2,4'- isomers not covered under the method. Analytical methods are provided in **Table 2** of this Revised QAPP.

Step 4. Define the Boundaries for the Study

1) *Specify the characteristics that define the population of interest* - Reworked soil zone, native soil zone, and deeper native soil potentially impacted by vertical migration (up to 90 feet bgs) define the populations of interest.

2) *Define the spatial boundary of the decision statement* -

   a) Define the geographical area to which the decision statement applies - The approximate geographical boundaries are shown in Figure 3 in Section 2.0 of

this Revised QAPP. The reworked material varies across the Montrose Property, generally between 1 and 7 feet thick, but may extend to a depth of approximately 15 feet. Native (undisturbed) material underlies the reworked material. At select areas within and/or nearby the Montrose Property, contamination may be present in subsurface soil in the vadose zone and upper saturated zone as a result of vertical migration of contaminants. The depth to first encountered groundwater beneath the Montrose Property is approximately 65 feet.

b) Divide the population into strata that have relatively homogeneous characteristics - Homogeneity, for the purposes of these Data Quality Objectives (DQOs), defines areas that have been subjected to similar processes. Reworked soil and native soil zones can generally be considered as two different strata; deeper native soil potentially impacted by vertical migration is a third stratum. Soil in the upper saturated zone is a separate, fourth stratum.

3) *Define the temporal boundary of the decision statement* -

a) Determine the timeframe to which the decision statement applies - These data will be used to update and finalize the risk assessment and FS evaluation of different remedial alternatives. These tasks are expected to begin after the sampling effort is completed.

b) Determine when to collect data – 2005

4) *Define the scale of decision making* - The scale of decision making is the same as the spatial boundary discussed above in Items 2(a) and (b).

5) *Identify practical constraints on data collection* - Unexpected underlying structures or debris may dictate changes in boring locations. In addition, elevated levels of organic vapors may be encountered, and thus present practical constraints to drilling in highly contaminated areas. Exceedances of established action levels may dictate the need for upgrading of personal protective equipment (PPE) and/or implementation of engineering controls (e.g., mitigate potential offsite migration of soil vapors). The HASP for the project addresses these and other related health and safety issues.

Step 5. Develop a Decision Rule

1) *Specify the statistical parameter that characterizes the population of interest* - As the purpose of this investigation is mainly to supplement data gaps from previous investigations, a judgmental approach rather than statistical design is needed.

2) *Specify the action level for the study* - Levels (EPA Region IX PRGs and EPA determined benchmark levels) are listed in **Table 1** of this Revised QAPP.

3) *Develop a decision rule (an "if...then..." statement)* –

a) (1) If areas exceed human health risk criteria (excess lifetime cancer risk [ELCR] and/or hazard index [HI] within or above EPA's "risk range"), then those areas may be included in the geographic extent of the area to be considered for remediation based on human health risk.

(2) If areas do not exceed human health risk criteria (ELCR and/or HI above EPA's "risk range"), then the geographic extent of the area to be considered for remediation may not be extended based on human health risk.

b) (1) If those chemicals and concentrations found in soil samples exceed EPA's benchmark levels (10 mg/kg for DDT and arsenic, and industrial PRGs for other chemicals), then the geographic extent of the area to be considered for remediation may need to be extended beyond areas of known elevated concentrations.

(2) If those chemicals and concentrations found in soil samples do not exceed EPA's benchmark levels (10 mg/kg for DDT and arsenic, and industrial PRGs for other chemicals), then the extent of the area to be considered for remediation may be limited to those chemicals and areas already characterized as having elevated concentrations of chemicals of concern.

c) (1) If chemical concentrations are detected in deeper native soils beneath areas potentially impacted by vertical migration, then additional characterization and/or remedial actions may be required if not previously delineated at the site.

(2) If chemical concentrations are not detected in deeper native soils beneath areas potentially impacted by vertical migration, then additional characterization and/or remedial actions may not be required to prevent downward migration of contaminants.

d) For IDW soil: IDW soil contaminant concentrations will be compared to regulatory criteria. Based on whether the IDW soil is determined to be hazardous or not, one of the following two options will be implemented: (1) dispose to an offsite nonhazardous waste TSDF; or (2) dispose to an offsite hazardous waste TSDF.

For IDW water: IDW water contaminant concentrations will be compared to regulatory criteria (see **Table 1**). Depending on whether the IDW water is determined to be hazardous or not, one of the following two options will be implemented: (1) dispose the water to a POTW; or (2) dispose the water to an offsite TSDF.

Step 6. Specify Tolerable Limits on Decision Errors

1) *Determine the range of the parameters of interest* - The range of parameter concentrations as seen from past investigations is quite broad, ranging from less than the detection limit to greater than 1,000 milligrams per kilogram (mg/kg) of various constituents.

2) *Sampling strategy rationale* - The additional sampling is judgmental, not statistical, because it is designed to fill in data gaps within the historical site characterization data.

3) *Specify a range of possible values of the parameter of interest where the consequences of decision error are relatively minor* - Error analysis is limited to analytical error, since the sampling is not based on a statistical design; therefore, the concentration ranges above 5 to 10 times of the detection limits present the potential for the least error.

4) *Assign probability values to points above and below the action level that reflect the tolerable probability for the occurrence of decision errors* - As statistical design is not used, probabilities cannot be assigned.

Step 7. Optimize the Design

1) *Review the DQO outputs and existing data* - Existing data have been reviewed and are summarized in the *Final Remedial Investigation Report for the Montrose Superfund Site, Los Angeles, California* (EPA, 1998). The DQO outputs are presented as part of Item (III) below.

2) *Develop general data collection design alternatives* - see Item (3) below.

3) *For each data collection design alternative, select the optimal sample size that satisfies the DQOs* - See below.

Soil Boring Locations

On- and Near-Property Pesticides

Characterization of DDT

Shallow Soils: To meet the objectives for DDT sampling in shallow soil (increasing sampling density and defining the extent of DDT), samples will be collected from 19 on-Property and 13 near-Property borings, as shown in **Figure 17** of the Revised FSP. These samples will be collected and laboratory analyzed by EPA Method 8081A according to the On- and Near-Property Pesticide Protocols for Shallow Borings presented in **Table 3**.

Deep Soils: To characterize areas where DDT may have migrated to deep native soil and to assess for the presence of NAPL, samples will be collected from 20 on-Property and two near-Property (Normandie Avenue Ditch and historical ponding area) deep borings, in accordance with Pesticide Protocols for Deep Borings (Reworked and Native Soil to 60 feet bgs). Additionally, 6 on- Property 90-foot bgs borings will be advanced and sampled in accordance with Pesticide Protocols for 90-foot Deep Borings as provided in **Table 3**.

Characterization of BHC

Shallow Soils: To better characterize reworked and shallow native soil for BHC [BHC Characterization Objectives (a) and (b)], 22 on-Property and 12 near-Property borings will be sampled for BHC, as shown in **Figure 18** of the Revised FSP. The samples shall be collected and analyzed by EPA Method 8081A according to the On-Property Pesticide Protocols for Shallow Borings (**Table 3**).

Deep Soils: Additional BHC sampling to characterize deeper native soil near potential source areas [BHC Characterization Objective (c)] will be conducted at 20 on-Property borings and two near-Property borings, in accordance with the Pesticide Protocols for 60-foot Deep Borings. Additionally, 6 on- Property 90-foot bgs borings will be advanced and sampled in accordance with Pesticide Protocols for 90-foot Deep Borings (**Table 3**).

On- and Near-Property Volatile Organic Compounds

Shallow Soils: Samples will be collected from 11 borings on-Property and 2 near-Property boring locations to evaluate the reworked zone and shallow native soil for the presence of VOCs [VOC Characterization Objective (a)]. These samples will be collected and analyzed by EPA Method 8260B according to the On-Property VOC Protocols for Shallow Borings (**Table 3**). Proposed sampling locations are shown in **Figure 4**. There are 6 additional borings (C12, C19, C28, C37, C47, and C58), all near-Property, that will be sampled for VOCs if the FID/PID headspace readings are elevated. The primary objective for these 6 borings is delineation of pesticides and metals, but the samples will additionally be analyzed for VOCs if warranted based on field observations.

Deep Soils: To address VOCs in the reworked zone and native soil to 60 feet or to 90 feet [Characterization Objective (b)], on- and near-Property borings will be sampled at the following areas, in accordance with the On- and Near-Property VOC Protocols for Deep Borings (**Table 3**):

- **Former Underground Gasoline Tank** – A soil boring cannot be advanced directly in the footprint of the former tank, because a containment cell holding soil from the Kenwood Stormwater Drainage Pathway removal action is situated partially over the location of the former gasoline storage tank. Therefore, a boring (C13) will be located and advanced as shown in **Figure 4**; the boring C13 is located approximately 17.5 feet from the tank.

- **Former Ditches, Trenches, Railroad Tracks, and Aboveground Storage Tanks** - Samples will be collected from 27 on- and near-Property boring locations to address VOCs in soil from potential releases to ditches, trenches, railroad tracks, the wastewater treatment pond, and from aboveground storage tanks east of the CPA.

- **Former BHC Plant** - 2 soil borings (C57, C59) will be advanced and sampled from the area of the former BHC plant, as shown in **Figure 4**. One of these borings also

will be used to characterize the railroad tracks in the southeast portion of the property (see Ditches, Trenches, Railroad Tracks, and Storage Tanks, above). Prior to June 2004, 4 deep soil borings (C48, C52, C52, C56) were drilled by Hargis + Associates to 90-feet bgs in the vicinity of the former BHC plant.

- **Normandie Avenue Ditch and historical ponding area** - Soil samples will be collected from one boring (C98) located in the area of the historic ditch and ponding area, as shown in **Figure 4**.

On- and Near-Property Metals

Shallow Soils: To characterize metals in reworked and shallow native soil [Metals Characterization Objective (a)], 20 on-Property borings and 13 near-Property borings (including the Union Pacific Railroad right-of-way immediately east of the Montrose Property) will be collected and analyzed in accordance with the On- and Near-Property Metals Protocols for Shallow Borings (**Table 3**). Sampling locations are shown in **Figure 4**.

- **Normandie Avenue Ditch and historical ponding area including** - Seven samples will be sampled for metals including from two 10-foot borings (C71, C76) located in the area of the ditch and historic ponding areas, and 5 borings (C75, C92, C101, C105, and C109) to 10-feet directly west of the ponding area as shown in **Figure 4**.

Deep Soils: To address metals that may have migrated to deeper native soil (Metals Characterization Objective [b]), the following on- and near-Property borings will be sampled to 60 or 90-feet bgs in accordance with the On- and Near-Property Metals Protocols for Deep Borings (**Table 3**):

- **Northwest Corner** – One boring (C1) will be sampled for metals.
- **Former Cooling Tower, Ditches, and Wastewater Recycling Pond at the CPA** - Currently, only the eastern edge of the former location of the cooling tower is accessible for sampling; a temporary containment cell holding soil from the Kenwood Stormwater Pathway Avenue removal action is located above and to the west of the former cooling tower. Therefore, the boring (C21) is located next to the former location of the cooling tower, straddling the former ditch. An additional 3 borings will be advanced within the CPA, one boring (C22) along the former ditch leading from the cooling tower area to the wastewater recycling pond in the CPA, and two borings (C26 and C31) adjacent to the former wastewater pond.
- **Former Underground Gasoline Tank** - One deep boring in this area (C13) will be sampled for metals.
- **Ditches and Other Source Areas West, South and East of the CPA** – Nine additional borings will be sampled for metals (C29, C35, C42, C44, C54, C60, C61, C64 and C65).

Off-Property Pesticides

Samples will be collected from shallow native soil at each of the following areas to meet the identified Off-Property Pesticide Characterization Objectives. Sampling protocols for these areas are presented in **Table 4**.

- **LADWP Right of Way** - To characterize areas with lower sample density and delineate areas with pesticide concentrations exceeding benchmarks, 11 borings will be sampled for both DDT and BHC isomers; and 2 borings (C73 and C74) will be sampled for BHC only. One boring (C70) will be analyzed for DDT only. Soil samples will be collected to a depth of 6 feet bgs and analyzed by EPA Method 8081A in accordance with the Off-Property Pesticide Protocols for LADWP/Farmer Brothers (**Table 4**). The proposed soil sampling locations are shown in **Figure 4**.
- **Farmer Brothers Property** – 17 borings will be sampled for both DDT and BHC isomers; and one additional boring (C108) will be sampled for BHC only. Samples will be collected to a depth of 6 feet bgs and all analyzed by EPA Method 8081A in accordance with the Off-Property Pesticide Protocols for LADWP/Farmer Brothers (**Table 4**). Sampling locations are shown in **Figure 4**.
- **Commercial Property East of Normandie** - The area-specific objectives for this area are to characterize pesticides in soil that has historically be exposed to potential aerial dispersion effects, and to delineate locations previously found to have DDT concentrations in excess of benchmarks. Therefore, 17 borings are located in areas of historically exposed soil and outside of building footprints. Soil borings will be advanced to a depth of 2 feet bgs and sampled for DDT and BHC by EPA Method 8081A in accordance with the Off-Property Pesticide Protocols for LADWP/Farmer Brothers (**Table 4**).
- **Western Waste Parcel** - To characterize soil throughout the parcel and in the adjacent LADWP right-of-way to the north, 12 borings located in the rework area north of the U-shaped railroad spur will be advanced and sampled to 8 feet bgs. 9 borings located east of the drainage swales north of the U-shaped rail spur will be advanced and sampled to a depth of 4 feet bgs. Four borings located in the southwestern of the U-shaped rail spur (locations are shown in **Figure 4**) will be advanced and sampled to a depth of 6 feet bgs. Borings will be sampled and analyzed in accordance with the Off-Property Pesticide Protocols specific to the Western Waste parcel (**Table 4**).

Number of Samples

The number of samples collected at each boring location will be determined according to the objective-specific protocols presented in **Tables 3** and **4** of this Revised QAPP. For deep on- and near-Property borings, 10 to 13 soil samples per boring will be collected depending on the total depth of the boring (60 or 90 feet bgs). For shallow on- and near-Property borings, 4 to 5 soil samples will be collected per boring. All collected soil samples will be analyzed in accordance with the established protocols.

For shallow off-Property borings at the Western Waste parcel, 3 to 5 soil samples will be collected per boring. For shallow off-property borings at the Farmer Brothers property, 4 soil samples will be collected per boring. For shallow off-property borings at the business area east of Normandie Avenue, 2 soil samples will be collected per boring.

Figure 4 shows the locations of the 148 proposed soil borings, including 116 shallow borings, 26 deep borings (to 60 feet bgs), and 6 deep borings to 90-feet bgs. The sampling of four additional 90-foot borings (C48, C51, C52, and C56) was completed prior to June 2004 (10 total 90-foot borings).

Laboratory Analyses

As shown in **Tables 3** and **4** of this Revised QAPP, soil samples will be analyzed by EPA Method 8081A for pesticides (DDT, DDE, DDD, BHC and their isomers), EPA Method 8260B for VOCs, and EPA Method 6020 for metals (total chromium, arsenic, lead). A turnaround time of 2 weeks will be requested for total chromium results, so that the sample can also be analyzed for hexavalent chromium by EPA Method 7199 if the total chromium results are above the industrial PRG for hexavalent chromium (64 mg/kg). IDW for soil will be analyzed by the same methods.

QA/QC aqueous samples will be analyzed for VOCs, pesticides, and metals.

Investigation-derived wastewater samples will be analyzed for volatiles, metals, and pesticides/PCBs for waste characterization. Additional analyses may be performed if required by the waste facility.

1) *Select the most resource-effective data collection design that satisfies the DQOs* - The existing data gaps and rationale identified are summarized in **Tables 3** and **4** of this Revised QAPP.

2) *Document the operational details and theoretical assumptions of the selected design in sampling and analysis plan* - A sampling and analysis plan consisting of a Quality Assurance Project Plan (QAPP) and Field Sampling Plan (FSP) are being presented with this DQO outline; these plans document the operational details.

APPENDIX B

ANALYTICAL SPECIFICATIONS

Documentation and Deliverables for Analytical Methods:

All documentation and deliverables required in the revised QAPP must be submitted. All packages will include full documentation, and data for the individual methods shall stand on their own. Deliverables for each Sample Delivery Group include, but are not limited to, the following:

1. Table of contents – All sections should be detailed and page numbers designated. Subsections, such as within the raw data sections need to be identified with page numbers. Within the same Sample Delivery Group (SDG), data from the different methods need to be separated.
2. All Sample Tracking Reports (i.e., signed Packing Lists/Chain-of-Custody forms).
3. Sample log-in information with documentation for cooler temperature measurement and pH check.
4. Complete SDG File (CSF) inventory.
5. Any telephone logs referring to the samples.
6. A case narrative signed by the laboratory manager or his/her designee, certifying the accuracy and validity of all data reported. The narrative will detail the specific deviation quantatively, as well as provide an affirmative statement for parameters where there were no deviations.
7. Tabulated sample results, with analyte concentration units clearly specified. As applicable to the method, surrogate recoveries will be included with the individual sample results.
8. A QC summary section, which includes the following summary data, as applicable to the individual methods: Blanks, laboratory control standards, matrix spikes and duplicates, initial calibration, continuing calibration, tuning, interference checks, breakdown checks, site sample internal standard area and retention time summaries.
9. A sequence log (presented in the QC summary section) showing all QC runs and associated samples in chronological order, including: initial calibration, continuing calibration tuning, interference checks, blanks, laboratory control standards, matrix spikes and duplicates. The QC sample IDs should be clearly traceable to the raw data sections. Associations between different QC runs and samples should be clearly identified. Run times for site and QC samples should be shown. Client sample IDs and laboratory sample IDs need to be clearly shown, and cross-referenced to each other.
10. The raw data section should be comprehensive and the data should be clearly presented, including:

    a. All computer printouts with integrated areas, peak heights, and calibration factors.

    b. Bench sheets for sample preparation, indicating dates, times, methods of sample preparation, sample dilution, spiking solution identification and volumes/amounts added, instrument run time/date, etc.

    c. A formula (including definitions) showing how the results were calculated, with an example of an actual calculation.

    d. Standards preparation logs, including the source and traceable lot numbers, and concentrations of all standards used for calibration and spiking.

    e. Data review checklists

Table A
Toxicity Characteristics Leaching Procedure (TCLP) Regulatory Levels for VOC's, Pesticides, and Trace Metals (Methods 8260B, 8081A, and 6020)
Montrose Superfund Site
20201 Normandie Avenue, Torrance, California

Substance	Regulatory Level (mg/L)
Arsenic	5
Barium	100
Benzene	0.5
Cadmium	1
Carbon tetrachloride	0.5
Chlordane	0.03
Chlorobenzene	100
Chloroform	6
Chromium	5
1,2-Dichloroethane	0.5
1,1-Dichloroethylene	0.7
Endrin	0.02
Heptachlor (and its hydroxide)	0.008
Lead	5
Lindane	0.4
Mercury	0.2
Methoxychlor	10
Methyl ethyl ketone	200
Selenium	1
Silver	5
Toxaphene	0.5
Tetrachloroethylene	0.7
Trichloroethylene	0.5
Vinyl Chloride	0.2

Notes:
mg/L - milligrams per liter

TABLE B
Soluable Threshhold Limit Concentrations (STLC) for VOC's, Pesticides, PCBS, and Trace Metals
(Methods 8260B, 8081A, 8082, and 6020)
Montrose Superfund Site
20201 Normandie Avenue, Torrance, California

Substance	mg/L
Inorganic Persistent Bioaccumulative Toxic Substances	
Antimony and compounds	15
Arsenic and compounds	5
Barium and compounds	100
Beryllium	0.75
Cadmium	1
Chromium (III) compounds	5
Cobalt	80
Copper	25
Lead	5
Molybdenum	350
Nickel	20
Selenium	1
Silver	5
Thallium	7
Vanadium	24
Zinc	250
Organic Persistent Bioaccumulative Toxic Substances	
Aldrin	0.14
Chlordane	0.25
DDT, DDE, DDD	0.1
Dieldrin	0.8
Endrin	0.02
Heptachlor	0.47
Lindane	0.4
Methoxychlor	10
Polychlorinated biphenyls (PCBs)	5
Toxaphene	0.5
Trichloroethylene	204

Notes:
mg/L - milligrams per liter

TABLE C
Analytical Method Information for EPA SW846 Method 6020 (Soil)
Montrose Superfund Site
20201 Normandie Avenue, Torrance, California

Analyte	MDL (date: 09/15/2004)	Reporting Limit		Duplicate RPD	Matrix Spike		Blank Spike / LCS	
					%R	RPD	%R (method specified limits)	RPD (method specified limits)
6020 in Soil (EPA 6020) **Preservation:** 4 C, Cool **Container:** 4 oz Glass Jar/Stainless Steel Sleeve			**Amount Required:** 100 grams				**Hold Time:** 180 days	
Antimony	0.39	1.0 mg/kg			75 - 125	20	80 - 120	20
Arsenic	0.21	0.50 mg/kg			75 - 125	20	80 – 120	20
Barium	0.12	0.50 mg/kg			75 - 125	20	80 – 120	20
Beryllium	0.069	0.30 mg/kg			75 - 125	20	80 – 120	20
Cadmium	0.024	0.50 mg/kg			75 - 125	20	80 – 120	20
Chromium	0.19	1.0 mg/kg			75 - 125	20	80 – 120	20
Cobalt	0.029	0.50 mg/kg			75 - 125	20	80 – 120	20
Copper	0.13	1.0 mg/kg			75 - 125	20	80 – 120	20
Lead	0.047	0.50 mg/kg			75 - 125	20	80 – 120	20
Molybdenum	0.061	0.50 mg/kg			75 - 125	20	80 – 120	20
Nickel	0.072	0.50 mg/kg			75 - 125	20	80 – 120	20
Selenium	0.14	1.0 mg/kg			75 - 125	20	80 – 120	20
Silver	0.083	0.50 mg/kg			75 - 125	20	80 – 120	20
Thallium	0.055	0.50 mg/kg			75 - 125	20	80 – 120	20
Vanadium	0.3	0.50 mg/kg			75 - 125	20	80 – 120	20
Zinc	0.81	10 mg/kg			75 - 125	20	80 - 120	20

Table provided by Del Mar Analytical of Irvine, California

TABLE D
Analytical Method Information for EPA SW846 Method 6020 (Water)
Montrose Superfund Site
20201 Normandie Avenue, Torrance, California

Analyte	MDL (date: 09/15/2004)	Reporting Limit		Duplicate RPD	Matrix Spike		Blank Spike / LCS	
					%R	RPD	%R (method specified limits)	RPD
6020 in Water (EPA 6020) **Preservation:** 4 C, HNO3 **Container:** 500 ml Polyethylene			**Amount Required:** 500 ml			**Hold Time:** 180 days		
Antimony	0.18	2.0 µg/L			75 - 125	20	80 - 120	20
Arsenic	0.49	1.0 µg/L			75 - 125	20	80 – 120	20
Barium	0.14	1.0 µg/L			75 - 125	20	80 – 120	20
Beryllium	0.037	0.50 µg/L			75 - 125	20	80 – 120	20
Cadmium	0.015	1.0 µg/L			75 - 125	20	80 – 120	20
Chromium	0.26	1.0 µg/L			75 - 125	20	80 – 120	20
Cobalt	0.1	1.0 µg/L			75 - 125	20	80 – 120	20
Copper	0.49	2.0 µg/L			75 - 125	20	80 – 120	20
Lead	0.13	1.0 µg/L			75 - 125	20	80 – 120	20
Molybdenum	0.08	1.0 µg/L			75 - 125	20	80 – 120	20
Nickel	0.15	1.0 µg/L			75 - 125	20	80 – 120	20
Selenium	0.36	2.0 µg/L			75 - 125	20	80 – 120	20
Silver	0.089	1.0 µg/L			75 - 125	20	80 – 120	20
Thallium	0.075	1.0 µg/L			75 - 125	20	80 – 120	20
Vanadium	0.86	1.0 µg/L			75 - 125	20	80 – 120	20
Zinc	3.1	20 µg/L			75 - 125	20	80 - 120	20

Table provided by Del Mar Analytical of Irvine, California

TABLE E
Analytical Method Information for EPA SW846 Method 8260B (Soil, EnCore)
Montrose Superfund Site
20201 Normandie Avenue, Torrance, California

Analyte	MDL	Reporting	Surrogate	Duplicate	Matrix Spike		Blank Spike / LCS	
							%R	RPD
	(date:8/6/2003)	Limit	%R	RPD	%R	RPD	(date:8/5/2004)	
8260B/5035-EN in Soil (EPA 8260B) **Preservation:** 4 C, Cool **Container:** Encore			**Amount Required:** 5 grams				**Hold Time:** 7 days	
Benzene	0.5	2.0 µg/kg			65 – 130	20	70 – 120	20
Bromobenzene	0.84	5.0 µg/kg			70 – 135	25	80 – 120	20
Bromochloromethane	0.44	5.0 µg/kg			65 – 145	25	65 - 135	20
Bromodichloromethane	0.42	2.0 µg/kg			70 – 145	20	70 – 140	20
Bromoform	0.8	5.0 µg/kg			60 – 145	30	60 – 140	25
Bromomethane	0.92	5.0 µg/kg			50 – 155	25	55 – 145	20
2-Butanone (MEK)	7.3	10 µg/kg			15 – 180	50	45 – 145	35
n-Butylbenzene	0.72	5.0 µg/kg			60 – 140	30	75 – 130	20
sec-Butylbenzene	0.67	5.0 µg/kg			65 – 135	25	75 – 125	20
tert-Butylbenzene	0.62	5.0 µg/kg			70 – 135	25	80 – 125	20
Carbon tetrachloride	0.66	5.0 µg/kg			70 – 145	25	70 – 140	20
Chlorobenzene	0.52	2.0 µg/kg			80 – 130	25	80 – 125	20
Chloroethane	1.1	5.0 µg/kg			50 – 150	25	55 – 145	25
Chloroform	0.4	2.0 µg/kg			70 – 130	20	75 – 120	20
Chloromethane	1.4	5.0 µg/kg			30 – 145	25	35 – 145	25
2-Chlorotoluene	0.87	5.0 µg/kg			65 – 135	25	75 – 125	20
4-Chlorotoluene	0.74	5.0 µg/kg			65 – 135	25	80 – 125	20
Dibromochloromethane	0.56	2.0 µg/kg			65 – 145	25	65 – 145	20
1,2-Dibromo-3-chloropropane	1.5	5.0 µg/kg			50 – 155	30	50 – 150	30
1,2-Dibromoethane (EDB)	0.66	2.0 µg/kg			65 – 140	25	75 – 130	20
Dibromomethane	0.62	2.0 µg/kg			65 – 140	25	75 – 130	20
1,2-Dichlorobenzene	0.95	2.0 µg/kg			75 – 130	25	80 – 125	20
1,3-Dichlorobenzene	0.84	2.0 µg/kg			70 – 125	25	80 – 120	20
1,4-Dichlorobenzene	0.94	2.0 µg/kg			75 – 130	25	80 – 120	20
Dichlorodifluoromethane	0.82	5.0 µg/kg			10 – 195	35	10 – 160	30
1,1-Dichloroethane	0.37	2.0 µg/kg			65 – 135	25	70 – 135	20
1,2-Dichloroethane	0.58	2.0 µg/kg			60 – 150	25	60 – 150	20
1,1-Dichloroethene	0.45	5.0 µg/kg			70 – 140	25	75 – 130	20
cis-1,2-Dichloroethene	0.35	2.0 µg/kg			60 – 135	25	70 – 125	20
trans-1,2-Dichloroethene	0.41	2.0 µg/kg			65 – 135	25	70 – 130	20
1,2-Dichloropropane	0.3	2.0 µg/kg			65 – 125	20	70 – 120	20
1,3-Dichloropropane	0.63	2.0 µg/kg			65 – 135	25	70 – 130	20
2,2-Dichloropropane	0.45	2.0 µg/kg			60 – 155	25	70 – 150	20
1,1-Dichloropropene	0.28	2.0 µg/kg			65 – 140	20	75 – 130	20
cis-1,3-Dichloropropene	0.44	2.0 µg/kg			70 – 135	25	75 – 130	20
trans-1,3-Dichloropropene	0.51	2.0 µg/kg			65 – 140	25	75 – 135	20
Ethylbenzene	0.51	2.0 µg/kg			70 – 135	25	75 – 125	20
Hexachlorobutadiene	0.73	5.0 µg/kg			60 – 145	35	75 – 140	20
Isopropylbenzene	0.54	2.0 µg/kg			65 – 140	25	75 – 125	20
p-Isopropyltoluene	0.72	2.0 µg/kg			60 – 135	25	75 – 125	20

TABLE E
Analytical Method Information for EPA SW846 Method 8260B (Soil, EnCore)
Montrose Superfund Site
20201 Normandie Avenue, Torrance, California

Analyte	MDL (date:8/6/2003)	Reporting Limit	Surrogate %R	Duplicate RPD	Matrix Spike %R	Matrix Spike RPD	Blank Spike / LCS %R (date:8/5/2004)	Blank Spike / LCS RPD (date:8/5/2004)
8260B/5035-EN in Soil (EPA 8260B) **Preservation:** 4 C, Cool **Container:** Encore			**Amount Required:** 5 grams			**Hold Time:** 7 days		
Methylene chloride	6.5	20 µg/kg			60 – 145	25	60 – 135	20
Naphthalene	1.1	5.0 µg/kg			40 – 160	40	50 – 145	25
n-Propylbenzene	0.61	2.0 µg/kg			65 – 140	25	75 – 130	20
Styrene	0.58	2.0 µg/kg			70 – 145	20	80 – 135	20
1,1,1,2-Tetrachloroethane	0.57	5.0 µg/kg			70 – 145	20	70 – 145	20
1,1,2,2-Tetrachloroethane	0.77	2.0 µg/kg			50 – 155	30	60 – 145	30
Tetrachloroethene	0.49	2.0 µg/kg			70 – 135	25	80 – 125	20
Toluene	0.91	2.0 µg/kg			70 – 125	20	75 – 120	20
1,2,3-Trichlorobenzene	1	5.0 µg/kg			55 – 140	30	65 – 135	20
1,2,4-Trichlorobenzene	1	5.0 µg/kg			60 – 140	30	70 – 140	20
1,1,1-Trichloroethane	0.39	2.0 µg/kg			65 – 140	20	75 – 140	20
1,1,2-Trichloroethane	0.76	2.0 µg/kg			65 – 140	30	70 – 130	20
Trichloroethene	0.34	2.0 µg/kg			70 – 140	25	75 – 125	20
Trichlorofluoromethane	0.54	5.0 µg/kg			45 – 155	25	55 – 145	25
1,2,3-Trichloropropane	1.7	10 µg/kg			55 – 145	30	60 – 140	25
1,2,4-Trimethylbenzene	0.78	2.0 µg/kg			65 – 135	25	75 – 125	20
1,3,5-Trimethylbenzene	0.63	2.0 µg/kg			70 – 130	25	80 – 125	20
Vinyl chloride	0.91	5.0 µg/kg			45 – 130	30	45 – 130	25
o-Xylene	0.47	2.0 µg/kg			70 – 125	25	80 – 125	20
m,p-Xylenes	0.75	2.0 µg/kg			70 – 130	25	80 – 125	20
Acetone	6.8	10 µg/kg			15 – 150	40	40 – 150	30
2-Hexanone	9.1	10 µg/kg			30 – 165	40	40 – 150	35
4-Methyl-2-Pentanone (MIBK)	3.2	5 µg/kg			40 -160	40	50 – 145	35
Carbon disulfide	0.97	5 µg/kg			50 – 145	20	60 – 135	20
Methyl-tert Butyl Ether (MTBE)	1	2.0 µg/kg			50 – 155	25	55 – 145	25
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	1.2	5 µg/kg			–	–	–	–
surr: Dibromofluoromethane			80 - 125					
surr: Toluene-d8			80 - 120					
surr: 4-Bromofluorobenzene			80 - 120					

Table provided by Del Mar Analytical of Irvine, California

TABLE F
Analytical Method Information for EPA SW846 Method 8260B (Water)
Montrose Superfund Site
20201 Normandie Avenue, Torrance, California

Analyte	MDL	Reporting	Surrogate	Duplicate	Matrix Spike		Blank Spike / LCS	
							%R	RPD
	(date:8/14/2003)	Limit	%R	RPD	%R	RPD	(date:8/2/2004)	
8260B/5035 in Water (EPA 8260B) **Preservation:** 4 C, HCl **Container:** 40 ml VOA Glass Vial			**Amount Required:** Three 40 ml VOAs			**Hold Time:** 14 days		
Benzene	0.28	2.0 µg/L			70 – 120	20	70 – 120	20
Bromobenzene	0.27	5.0 µg/L			60 – 135	25	80 – 120	20
Bromochloromethane	0.32	5.0 µg/L			60 – 140	25	65 – 135	20
Bromodichloromethane	0.3	2.0 µg/L			70 – 140	20	70 – 140	20
Bromoform	0.32	5.0 µg/L			50 – 135	25	50 – 135	25
Bromomethane	0.34	5.0 µg/L			50 – 140	25	60 – 140	20
2-Butanone (MEK)	3.8	10 µg/L			30 – 140	30	40 – 135	30
n-Butylbenzene	0.37	5.0 µg/L			70 – 135	20	75 – 130	20
sec-Butylbenzene	0.25	5.0 µg/L			70 – 130	20	75 – 125	20
tert-Butylbenzene	0.22	5.0 µg/L			70 – 130	20	75 – 125	20
Carbon tetrachloride	0.28	5.0 µg/L			70 – 140	25	70 – 140	25
Chlorobenzene	0.36	2.0 µg/L			80 – 125	20	80 – 125	20
Chloroethane	0.33	5.0 µg/L			50 – 145	25	60 – 145	20
Chloroform	0.33	2.0 µg/L			70 – 130	20	70 – 130	20
Chloromethane	0.3	5.0 µg/L			30 – 145	30	40 – 145	25
2-Chlorotoluene	0.28	5.0 µg/L			65 – 145	25	75 – 125	20
4-Chlorotoluene	0.29	5.0 µg/L			70 – 145	20	75 – 125	20
Dibromochloromethane	0.28	2.0 µg/L			65 – 145	20	65 – 145	20
1,2-Dibromo-3-chloropropane	0.92	5.0 µg/L			50 – 150	25	50 – 130	25
1,2-Dibromoethane (EDB)	0.32	2.0 µg/L			70 – 125	20	70 – 125	20
Dibromomethane	0.36	2.0 µg/L			65 – 135	20	70 – 130	20
1,2-Dichlorobenzene	0.32	2.0 µg/L			70 – 130	20	75 – 120	20
1,3-Dichlorobenzene	0.35	2.0 µg/L			70 – 130	20	75 – 120	20
1,4-Dichlorobenzene	0.37	2.0 µg/L			75 – 120	20	80 – 120	20
Dichlorodifluoromethane	0.79	5.0 µg/L			10 – 160	30	10 – 160	30
1,1-Dichloroethane	0.27	2.0 µg/L			65 – 135	20	70 – 135	20
1,2-Dichloroethane	0.28	2.0 µg/L			60 – 150	25	60 – 150	20
1,1-Dichloroethene	0.32	5.0 µg/L			65 – 145	25	75 – 140	20
cis-1,2-Dichloroethene	0.32	2.0 µg/L			60 – 130	20	65 – 125	20
trans-1,2-Dichloroethene	0.27	2.0 µg/L			60 – 135	20	65 – 130	20
1,2-Dichloropropane	0.35	2.0 µg/L			60 – 130	20	65 – 120	20
1,3-Dichloropropane	0.3	2.0 µg/L			65 – 140	25	70 – 130	20
2,2-Dichloropropane	0.29	2.0 µg/L			60 – 150	20	70 – 150	20
1,1-Dichloropropene	0.28	2.0 µg/L			60 – 145	20	75 – 130	20
cis-1,3-Dichloropropene	0.22	2.0 µg/L			70 – 140	20	70 – 130	20
trans-1,3-Dichloropropene	0.24	2.0 µg/L			70 – 140	20	75 – 135	20
Ethylbenzene	0.25	2.0 µg/L			70 – 125	20	80 – 120	20
Hexachlorobutadiene	0.38	5.0 µg/L			65 – 140	25	65 – 140	20
Isopropylbenzene	0.25	2.0 µg/L			65 – 130	25	70 – 125	20
p-Isopropyltoluene	0.28	2.0 µg/L			70 – 130	20	75 – 125	20
Methylene chloride	0.48	5.0 µg/L			60 – 135	20	60 – 135	20

TABLE F
Analytical Method Information for EPA SW846 Method 8260B (Water)
Montrose Superfund Site
20201 Normandie Avenue, Torrance, California

Analyte	MDL	Reporting	Surrogate	Duplicate	Matrix Spike		Blank Spike / LCS	
							%R	RPD
	(date:8/14/2003)	Limit	%R	RPD	%R	RPD	(date:8/2/2004)	
8260B/5035 in Water (EPA 8260B) **Preservation:** 4 C, HCl **Container:** 40 ml VOA Glass Vial			**Amount Required:** Three 40 ml VOAs			**Hold Time:** 14 days		
Naphthalene	0.41	5.0 µg/L			50 – 145	25	50 – 145	25
n-Propylbenzene	0.27	2.0 µg/L			70 – 135	20	75 – 130	20
Styrene	0.16	2.0 µg/L			60 – 145	25	80 – 135	20
1,1,1,2-Tetrachloroethane	0.27	5.0 µg/L			65 – 145	20	70 – 145	20
1,1,2,2-Tetrachloroethane	0.24	2.0 µg/L			60 – 140	25	60 – 135	25
Tetrachloroethene	0.32	2.0 µg/L			70 – 130	20	75 – 125	20
Toluene	0.36	2.0 µg/L			65 – 120	20	70 – 120	20
1,2,3-Trichlorobenzene	0.45	5.0 µg/L			60 – 135	20	65 – 135	20
1,2,4-Trichlorobenzene	0.48	5.0 µg/L			55 – 140	25	70 – 140	20
1,1,1-Trichloroethane	0.3	2.0 µg/L			75 – 140	20	75 – 140	20
1,1,2-Trichloroethane	0.3	2.0 µg/L			60 – 135	20	65 – 125	20
Trichloroethene	0.26	2.0 µg/L			70 – 125	20	75 – 120	20
Trichlorofluoromethane	0.34	5.0 µg/L			50 – 150	25	60 – 145	25
1,2,3-Trichloropropane	0.85	10 µg/L			60 – 140	25	60 – 130	20
1,2,4-Trimethylbenzene	0.23	2.0 µg/L			60 – 125	20	75 – 125	20
1,3,5-Trimethylbenzene	0.26	2.0 µg/L			70 – 130	20	75 – 125	25
Vinyl chloride	0.26	5.0 µg/L			40 – 130	25	50 – 125	20
o-Xylene	0.24	2.0 µg/L			65 – 125	20	75 – 125	20
m,p-Xylenes	0.52	2.0 µg/L			60 – 125	25	70 – 120	20
Acetone	4.5	10 µg/L			10 – 150	35	30 – 140	30
2-Hexanone	2.6	10 µg/L			20 – 145	35	40 – 140	30
4-Methyl-2-Pentanone (MIBK)	2.5	10 µg/L			40 – 145	35	40 – 140	30
Carbon disulfide	0.48	5 µg/L			50 – 145	20	60 – 135	20
Methyl-tert Butyl Ether (MTBE)	0.32	5 µg/L			50 – 155	25	55 – 145	25
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	1.2	5 µg/L			–	–	–	–
surr: Dibromofluoromethane			80 – 120					
surr: Toluene-d8			80 – 120					
surr: 4-Bromofluorobenzene			80 – 120					

Table provided by Del Mar Analytical of Irvine, California

TABLE G
Analytical Method Information for EPA SW846 Method 8081A with 2,4-isomers (Soil)
Montrose Superfund Site
20201 Normandie Avenue, Torrance, California

Analyte	MDL	Reporting	Surrogate	Duplicate	Matrix Spike		Blank Spike / LCS	
							%R	RPD
	(date: 9/1/2003)	Limit	%R	RPD	%R	RPD	(date: 6/30/2004)	
8081A-Pesticides in Soil (EPA 3545/8081A) **Preservation:** 4 C, cool **Container:** 4 oz Glass Jar/Stainless Stell Sleeve			**Amount Required:** 100 grams			**Hold Time:** 14 days		
Aldrin	0.47	5.0 µg/kg			45 - 115	30	50 - 115	20
alpha-BHC	0.47	5.0 µg/kg			40 - 115	30	55 - 115	20
beta-BHC	0.68	5.0 µg/kg			45 - 115	30	55 - 115	20
delta-BHC	0.55	10.0 µg/kg			50 - 115	30	60 - 115	20
gamma-BHC (Lindane)	0.41	5.0 µg/kg			40 - 115	30	50 - 115	20
Chlordane	9.9	50 µg/kg						
4,4'-DDD	0.52	5.0 µg/kg			45 - 120	30	60 - 115	20
4,4'-DDE	0.57	5.0 µg/kg			45 - 120	30	60 - 115	20
4,4'-DDT	1.0	5.0 µg/kg			45 - 130	30	65 – 120	20
Dieldrin	0.46	5.0 µg/kg			45 - 130	30	60 - 115	20
Endosulfan I	0.52	5.0 µg/kg			45 - 115	30	60 - 115	20
Endosulfan II	2.9	5.0 µg/kg			50 - 115	30	60 - 115	20
Endosulfan sulfate	0.85	10.0 µg/kg			45 - 125	30	65 - 115	20
Endrin	0.56	5.0 µg/kg			50 - 120	30	60 - 115	20
Endrin aldehyde	0.76	5.0 µg/kg			35 - 115	30	55 - 115	20
Endrin ketone	2.0	5.0 µg/kg			45 - 120	30	60 - 115	20
Heptachlor	0.53	5.0 µg/kg			40 - 115	30	50 - 115	20
Heptachlor epoxide	1.0	5.0 µg/kg			45 – 115	30	55 - 115	20
Methoxychlor	2.3	5.0 µg/kg			45 – 130	30	60 - 120	20
Toxaphene	50	200 µg/kg						
2,4'-DDD	2.3	5.0 µg/kg			40 - 140	25	65 - 115	20
2,4'-DDE	0.89	5.0 µg/kg			45 - 120	20	65 - 115	20
2,4'-DDT	0.49	5.0 µg/kg			55 - 125	25	70 - 125	20
surr: Tetrachloro-m-xylene			35 - 115					
surr: Decachlorobiphenyl			45 - 120					

Table provided by Del Mar Analytical of Irvine, California

TABLE H
Analytical Method Information for EPA SW846 Method 8081A with 2,4-isomers (Water)
Montrose Superfund Site
20201 Normandie Avenue, Torrance, California

Analyte	MDL (date: 6/17/2004)	Reporting Limit	Surrogate %R	Duplicate RPD	Matrix Spike %R	Matrix Spike RPD	Blank Spike / LCS %R (date: 6/30/2004)	Blank Spike / LCS RPD (date: 6/30/2004)
8081A-Pesticides in Water (EPA 3510C/8081A) **Preservation:** 4 C, cool **Container:** 1 Liter Glass Amber			**Amount Required:** 2,000 ml				**Hold Time:** 7 days to extraction	
Aldrin	0.0026	0.0040 µg/L			45 - 115	30	45 - 115	30
alpha-BHC	0.00049	0.0050 µg/L			45 - 115	30	45 - 115	30
beta-BHC	0.0023	0.010 µg/L			50 - 115	30	50 - 115	30
delta-BHC	0.0022	0.0050 µg/L			55 - 120	30	55 - 115	30
gamma-BHC (Lindane)	0.0048	0.010 µg/L			45 - 115	30	45 - 115	30
Chlordane	0.028	0.10 µg/L						
2,4'-DDD	0.0076	0.10 µg/L			55 - 120	20	70 - 120	20
2,4'-DDE	0.012	0.10 µg/L			55 - 115	20	65 - 115	20
2,4'-DDT	0.0092	0.10 µg/L			60 - 120	20	70 - 120	20
4,4'-DDD	0.00064	0.0050 µg/L			60 - 120	30	60 - 120	30
4,4'-DDE	0.0017	0.0050 µg/L			55 - 120	30	55 - 120	30
4,4'-DDT	0.0022	0.010 µg/L			60 - 130	30	60 - 130	30
Dieldrin	0.0005	0.0050 µg/L			55 - 120	30	55 - 120	30
Endosulfan I	0.00061	0.0050 µg/L			50 - 115	30	50 - 115	30
Endosulfan II	0.0015	0.0050 µg/L			60 - 125	30	60 - 125	30
Endosulfan sulfate	0.0024	0.010 µg/L			60 - 120	30	60 - 120	30
Endrin	0.0033	0.0050 µg/L			55 - 125	30	55 - 125	30
Endrin aldehyde	0.0063	0.010 µg/L			55 - 115	30	55 - 115	30
Endrin ketone	0.0021	0.010 µg/L			60 - 120	30	60 - 120	30
Heptachlor	0.0025	0.010 µg/L			45 - 115	30	45 - 115	30
Heptachlor epoxide	0.0033	0.0050 µg/L			50 – 120	30	50 - 120	30
Methoxychlor	0.0015	0.0050 µg/L			60 – 130	30	60 - 135	30
Toxaphene	0.54	5.0 µg/L						
surr: Tetrachloro-m-xylene			35 - 120					
surr: Decachlorobiphenyl			45 - 120					

Table provided by Del Mar Analytical of Irvine, California