



First Amendment To **ACTION MEMORANDUM**

Request for Removal Action for **Kenwood Storm Water Drainage Pathway**

Montrose Chemical Superfund Site (CAD008242711)
Los Angeles County, California

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I. Introduction and Purpose

The purpose of this *Action Memorandum Amendment* is to request and document approval of certain additions and changes to the EPA Region IX Action Memorandum dated June 7, 2001, authorizing a time critical removal action for the Kenwood Storm Water Drainage Pathway at the Montrose Chemical Superfund Site in Los Angeles County, California. This removal action is presently underway. Excavation work was initiated on July 24, 2001. Twelve yards have been excavated as of this document; up to twenty-five yards are eligible to be excavated during the removal action.

This Action Memorandum Amendment does not repeat all background discussion and removal action provisions of the original Action Memorandum; only those provisions subject to amendment are addressed in this document. Terms defined in the original Action Memorandum also are carried over into this document without further remark or definition. The removal action that is the subject of this document and the original Action Memorandum does not address all response actions necessary for the Montrose Chemical Superfund Site (*see* the original Action Memorandum for the context of this action).

Under the removal action that is the subject of this document and the original Action Memorandum, EPA is removing soils from residential yards that are contaminated with the pesticide DDT. These soils were affected by historical storm water drainage from the former Montrose Chemical DDT manufacturing plant. This removal action will remove unacceptable long-term health risks to residents and will attain the Applicable or Relevant and Appropriate

Requirements (ARARs) for this action.

This Action Memorandum Amendment provides for three primary modifications to the original Action Memorandum:

- ! The excavation approach is being adjusted to address the identification and removal of a thin layer of depositional material with high concentrations of DDT found at three yards;
- ! The removal action is being augmented to address the removal of the layer of high-concentration depositional material where it occurs under structures, and
- ! The removal action cost ceiling estimate is being increased due to a number of factors which are discussed herein.

II. Amendment to Site Characteristics and Basis for Amending the Response Action

A. Summary of Facts in Evidence Regarding Finding of High-Concentration Depositional Layer

This section provides a discussion of the finding of, and facts related to, a layer of high-concentration DDT material found at two of the fifteen yards which have been excavated during the removal action presently underway. A third yard has also exhibited small ribbons of the material. No other yards have exhibited the material. The yards are shown on the left side of Figure 3. The location of the layer is most reliably discussed relative to the depth below the grade of the existing street (“street grade”). This is because five of the yards have a layer of soil fill that results in the grade of the existing yard (“yard grade”) being higher than street grade, whereas the other yards do not have this [*See* left side of Figure 4 and the first paragraph in the top box on the right side of Figure 4]. Where appropriate, the depth of the layer below yard grade is also noted.

1. 20713 S. Kenwood Avenue

After finishing excavation in the alley between 20723 S. Kenwood and 20713 S. Kenwood, EPA began excavating northward into the south end of the front yard at 20713 S. Kenwood Avenue. While excavating soils at 20713 S. Kenwood Avenue, field crews began encountering a very thin, flat, planar layer of off-color whitish material at approximately 4 ½ feet below the grade of the street and yard (same grade in this case) [*See* Figures 1A and 1B]. The layer was only 1-3 inches thick and had a waxy appearance. It was highly visible under casual observation. No other whitish material was seen in the soil profile. The layer was within the storm water drainage pathway as originally defined by the EPA Phase II investigation. The approximate affected area

can be seen on Figure 2A. This layer was not evident at any depth excavated in either the alley, nor at 20723 S. Kenwood, nor at 1209 W. Torrance Blvd, which had already been excavated to the south of this property.

A sample was collected from the layer which was analyzed by immunoassay, from which it was clear that a high concentration of DDT was present. Samples of layer material were later analyzed by the laboratory and found to have 173,000 ppm of total DDT. Samples from above and below the thin whitish layer ranged from 0.04 ppm to 0.79 ppm, indicating that the higher concentrations of DDT were localized to the layer itself and not above or below the layer.

EPA determined that the existing dust control and monitoring, dust suppression, and public access controls were already adequate to address the intended removal of this layer, and so excavation proceeded, with the intention of removing it along with all other soil already marked for removal. EPA informed Montrose Chemical Corporation of California of the discovery of this layer and provided representatives of Montrose with split samples of this material at their request. Upon removing the remainder of the soil in the initial excavation area at 20713 Kenwood, it became visually apparent that the layer extends under the garage at that address. Horizontal borings were drilled under and to the side of the garage at four lateral locations which indicated that the layer extends between four and 10 feet under the garage structure. The layer extends under most of the front yard lying streetward of the garage; however, it stopped several yards before the street. The layer remained flat and thin as excavation proceeded north, becoming narrower, fainter, and thinner upon approaching the southern boundary of 20709 Kenwood, the next property to the north. EPA did not have property access to excavate that property, and so excavation did not proceed northward from that point. Layer material remains at this time under the garage and in a small area to the north of the garage, pending further cleanup action. All other layer material has been removed.

2. 20523 S. Kenwood Avenue (and a sliver of 20531 S. Kenwood)

A similar whitish planar layer became visible during excavation in the front yard at 20523 S. Kenwood Avenue, near the location that the Kenwood Drain “elbows” westward into front yards and then turns south again as it moves southward down Kenwood Avenue [*Refer to* the left half of Figure 3]. This layer was also only a few inches thick, and a few pieces of broken glass and a bottle cap or two were present at the very top of the layer. The layer is flat and lies at a depth of about 3 ½ feet below street grade (essentially the same as yard grade at this location). The white layer was not present in the majority of the front yard, and is present only near the southeast corner of the house and for several feet along the boundary with the yard at 20531 Kenwood which lies to the south. The shape of the layer (its profile as seen from the air) was irregular [*See* Figure 2A]. This layer is much smaller in extent at this property than is that at 20713 S. Kenwood, discussed earlier.

A sample was collected from the layer which was analyzed by immunoassay, from which it was clear that a high concentration of DDT was present. The layer was later determined by laboratory analysis of two layer samples to have 34,660 ppm and 34,900 ppm of total DDT, respectively. Samples from above and below the thin whitish layer ranged from non-detect to 11.3 ppm, indicating that the higher concentrations of DDT were localized to the layer itself and not above or below the layer.

It is evident that this layer extends under the corner of the house on the front portion of the lot (20523 S. Kenwood). The layer also extended under the south border fence into the property at 20531 S. Kenwood. Horizontal borings indicated that a sliver of layer material extended no more than four feet into the yard at 20531 S. Kenwood Avenue; that property has now been excavated and the layer material does not extend under the house there [See Figure 2A]. All layer material was removed from the property at 20531 S. Kenwood Avenue. Layer material remains at this time under the edge of the house at 20523 S. Kenwood, pending further cleanup action.

The yard at 20535 S. Kenwood Avenue, 2 properties to the south of the layer material at 20523 S. Kenwood, has been fully excavated to depths of 5-6 feet, and no layer material was identified. A small area near the house at 20535 S. Kenwood was excavated only to 2-3 feet. At this location, continuous cores were drilled to check for the white layer material and none was seen.

3. 20437 S. Kenwood Avenue

A similar whitish layer became visible during excavation in the front yard at 20437 S. Kenwood Avenue. In this yard, the layer was more accurately described as a few ribbons of material; it was only a few feet wide in extent, and per the other occurrences, only a few inches thick. It occurred at about 3 feet below street grade, which corresponded to about 5-6 feet below the existing yard grade. The layer material was completely removed in this case.

A sample was collected from the layer which was analyzed by immunoassay, from which it was clear that a high concentration of DDT was present. The layer was later determined by laboratory analysis of a layer sample to have 97,000 ppm of total DDT. Samples from above and below the thin whitish layer ranged from 13.5 ppm to 31.0 ppm, indicating that the higher concentrations of DDT were localized to the layer itself and not above or below the layer.

In this yard, EPA also excavated and removed a buried corrugated iron pipe, oriented parallel to the street, the bottom of which corresponded exactly with the depth of the layer. Historical aerial photos showed iron pipe culverts channelling water in the Kenwood Ditch under the driveways during the 1940s and 1950s [See Figure 2A]. The pipe that was found was adjacent to the driveway. In addition, on the north wall of the excavation under the former location of the present driveway, bedding material for a historical driveway was present. This material sloped toward the street several feet below the present driveway. Just before the street, at the location where the corrugated iron pipe was found, the material dipped into a "U" shape, following the

former contour of the Ditch itself [*See* Figure 2A]. EPA has now excavated this portion of the yard to a depth 5-6 feet below the street grade (up to 8 feet below yard grade).

B. Interpretation of the Finding

The best interpretation of these findings is that the removal action has uncovered small areas of residual undisturbed Kenwood ditch. As discussed in the original Action Memorandum, the majority of the original Ditch appears to have been disturbed by soil moving and mixing activities over time, especially the during the construction of the Kenwood Drain. The flat, thin layer occurs within a given yard at a consistent elevation, and is sometimes accompanied by a few loose pieces of surface material such as bottle caps or glass. Also, the layer, where it exists, is isolated within the soil profile, with no other layers or occurrences of whitish DDT material in the soil profile. These physical characteristics indicate strongly that:

- ! The layer was laid down by the deposition of DDT from storm water, and is not consistent with fill or disposal activity.
- ! The layer was formerly at the surface of the ground in the 1940s and 1950s (the time that Montrose discharges to the pathway were likely most prevalent), before the construction of the Kenwood Ditch and the alteration of Kenwood Avenue. Over time, the elevation of the street was raised [*See* Figure 2B].

Field observations of the layer also indicate that the original elevation of the Kenwood Ditch (here evidenced by the elevation of the layer) is closer to current street grade elevation at the north end of Kenwood than at the south end (2.5 feet down at 20437 Kenwood, 3.5 feet down at 20523 Kenwood and 4 ½ feet down at 20713 Kenwood) [*See* Figure 2B].

Aerial photographs provide for additional strong support of this interpretation. At 20713 and 20519 S. Kenwood, the layer material was located at the upstream end of ponding areas, most notably north of street corners within the storm water pathway. At these locations, the ditch widened and the water encountered ponding causing it to slow down. DDT (which does not dissolve readily in water) would be entrained or suspended as particulates in the water. The areas of slower moving or stagnated water would provide an environment where deposition of DDT particulates could occur. Aerial photographs show a tear-drop shaped pattern of ponding starting at 20713 Kenwood that corresponds very well to the approximate aerial profile of the layer material at that location. Aerial photos have previously shown a small ponding area at 20437 S. Kenwood Avenue, as well, after a heavy rain.

As was noted in the original Action Memorandum, the construction of the Kenwood Drain caused the excavation and mixing of large amounts of soil within the pathway of the construction of the drain. The excavation opened to build the Kenwood Drain appeared to sit somewhat to the east of the Ditch in the north half of the street, and coincide more closely with the Ditch in the south

half of the street [*See* Figure 3]. This may explain why undisturbed ditch exists in so few places along the pathway and why artifacts such as the buried corrugated iron pipe are found in the north, but not the south portion of the pathway.

This historical soil excavation and construction activity is a possible explanation for why:

- ! The layer does not occur in certain other yards associated with ponding areas, such as 1209 W. Torrance Blvd., 20723 S. Kenwood Avenue, and 20535 S. Kenwood Avenue. At 20723 S. Kenwood and the alley north of it, for instance, not only was the Kenwood Drain installed, but a large diameter feeder drain line was constructed in the alley (running east-west between 20713 and 20723 S. Kenwood Avenue) [*See* Figure 3]. This alley drain empties into the Kenwood Drain at a right angle. The Kenwood Drain excavation was, in some locations, 12 feet deep. The excavation to install both drains at this junction was likely enormous. Hence, it makes sense that the layer could exist at 20713 Kenwood but be absent in the alley and at 20723 Kenwood.;
- ! The layer does not exist close to the street at 20523 S. Kenwood. The Kenwood Drain elbowed westward here into the front yard and likely historically removed any layer that was present at that location [*See* Figure 3].
- ! The layer at 20523 S. Kenwood is irregular in aerial horizontal extent.

There is very substantial evidence documenting that the DDT found in properties along the west side of Kenwood Avenue originated at the Montrose Plant Property as the result of process waste and stormwater releases that travelled to and through the Kenwood Ditch. *See* Action Memorandum at 4-5 (summary of relevant information). The discovery of this depositional layer at several locations along the area where the Kenwood Ditch was located is consistent with what is known and documented about the Montrose discharge to the Kenwood Ditch. Acidic process wastewater containing high levels of DDT was occasionally released from the Montrose Plant Property and travelled to and through the Kenwood Ditch in the early 1950s. Based on the nature of Montrose's DDT manufacturing operations, the quantity of acidic process wastewater released in any one event would have been substantial. Importantly, DDT did settle out of this process wastewater and accumulate on the walls and brick-lined trenches used by Montrose to convey this wastewater to various locations at the Montrose Plant Property.

C. Analysis of Depositional Layer in Context of the Removal Action; Basis for Amendment to Response Action

The white depositional layer, though not present in all yards, is confirming residual physical evidence of the former Kenwood Ditch. The possibility of depositional DDT in this former storm water ditch, and residual contamination from it, was what led EPA to investigate Kenwood Avenue over the course of two years and perform this removal action. Per the original Action Memorandum, EPA set out to remove this ditch and residual contaminated soils associated with it. The layer, where it has been found, is within the Kenwood storm water pathway already subject to the removal action. The Montrose Chemical plant, and the contaminant transport process that gave rise to the depositional layer, is the same process that has been the target of our investigation and gave rise to the DDT in soils that we have been removing all along. The facts surrounding this layer are squarely within the objective of the removal action as already laid out by the original Action Memorandum. However, an adjustment needs to be made in two regards.

Cleanup Depth and Checks. First, a consideration with respect to the cleanup depth must be added. The original Action Memorandum addresses soils within six feet of the existing *yard* grade. This is the reasonable depth within which future activities of residents may hypothetically result in soil being brought to the surface, resulting in turn in possible future exposure to the soil. Under the original action, soils below six feet are not excavated unless there is evidence of extremely high DDT concentrations at six feet below the yard grade.

As mentioned, the yard grade and street grade may be the same, or in some yards, the yard grade is higher than street grade with a retaining wall at the sidewalk [*See* Figure 4]. Based on the foregoing discussions, the depositional layer, where present, occurs within 4 ½ feet of existing *street* grade, independent of yard grade [*See* Figure 4]. Because *yard* grade varies, and the cleanup has been tied to depth below that grade, the excavation under the original action may or may not be as deep as 4 ½ feet below *street* grade, the deepest level at which the white layer occurs. Therefore, in yards not already excavated to 4 ½ feet below street grade, it is recommended that a check be performed to that elevation for layer material. This characteristics of this check are discussed in the next section of this Action Memorandum Amendment.

The concentrations of DDT in the depositional layer are very high (3-17% DDT). The layer poses no human health threat today, because of its depth. However, where the layer lies within six feet of the yard grade, it poses a potential threat to the health of residents in the future if the layer is dug up during residential activities and placed on the surface of the ground. If then left exposed on the *surface* of the ground, the soil with these levels of DDT would pose not only a potential chronic health threat (occurs after long exposure) but an acute health threat as well (occurs from casual short term exposure). Likewise, workers doing future excavation-related construction or repair work, if exposed to layer material, could suffer acute health effects.

While there is exceedingly little prospect for resident activities bringing layer material from below six feet to the surface in the future, the depth range of the layer is known and it is generally within a few feet of 6 feet below yard grade. If a white layer is identified within a few additional feet below six feet below yard grade, it is therefore considered efficient to remove it to the extent practicable.

Excavation under Structures. Second, the original Action Memorandum does not include excavation under structures. Because the depositional layer material extends under two structures, the Action Memorandum needs to be modified to address the removal of the layer under structures, where it occurs.

These adjustments will enhance the long-term protectiveness and effectiveness of this response action by preventing the potential for exposure to the high-concentrations in the depositional layer at any point in the future. Although it presently appears that the depositional layer is primarily associated only with the upstream portion of ponding areas, it cannot conclusively be determined that this is uniformly true throughout the drainage pathway, and so a check of all properties within the Kenwood Storm Water Drainage Pathway with respect to the depositional layer is recommended.

It is noted that the procedures outlined in the Action Memorandum as the basis for identifying the lateral location of the Stormwater Drainage Pathway, performing confirmation sampling, air monitoring and dust suppression, excavation and soil handling, remain appropriate to the situation and remain in effect.

III. Amendments to Proposed Actions

A. Definition of High Concentration Depositional Layer

In the remainder of this document, the term “layer” or “layer material” shall refer to a high-concentration depositional layer or ribbon of visible, whitish material situated in a flat, planar fashion with confirmed very high concentrations of DDT (e.g. greater than 30,000 ppm), and present due to the historical presence of a depositional environment in which DDT particulates dropped out of suspension in water which flowed through the Kenwood Stormwater Drainage Pathway.

B. Amendments to Address Identification and Removal of High-Concentration Depositional Layer *not* under Structures

1. Routine Removal, Visual Tracking, and Confirmation Sampling

Where layer material is identified during excavation under the procedures established by the work plan and original Action Memorandum, including either excavation to the initial target depth or excavation deepened as a result of confirmation sampling, the layer material shall be removed in the context of other soil being removed from the property. The identification of the layer shall include sampling to confirm that high-concentration DDT is present (as opposed to gypsum or some other whitish substance).

During excavation, the extent of the layer shall be tracked both visually and by chemical analyses as determined appropriate by the On Scene Coordinator (OSC). The visual tracking of the layer shall be considered an adjunct confirmation requirement to confirmation sampling; excavation shall continue to remove the layer if it is still visible even if confirmation sampling from soils outside the layer are within the acceptable range. The layer material will be “chased” with the ultimate goal to remove the presence of the layer material from the yard, to the extent practicable.

2. Checks at Depth for Depositional Layer Material

All yards, within the planned area of excavation and within the Kenwood Storm Water Drainage Pathway, will be checked to an elevation of 4 ½ feet below Kenwood Avenue street grade for layer material under one of the following scenarios [*See* Figure 4]:

- a.** If excavation per the original work plan has already proceeded to an elevation deeper than 4 ½ feet below *street* grade, then layer material, if identified, will be removed according to subparagraph (1) above [*See* Figure 4].
- b.** If excavation per the original work plan does *not* proceed to an elevation as deep as 4 ½ feet below street grade, and confirmation sampling indicates no further excavation is necessary, then a check will be performed from the bottom of the excavation to an elevation at least as deep as 4 ½ feet below street grade [*See* Figure 4]. The purpose of the check will be to verify that there is not layer material at a greater depth than the bottom of the excavation, down to 4 ½ feet below street grade.

- c. The check may be performed by digging a trench, digging a pit, or installing a series of continuous cores (borings) which can be extracted and examined for layer material. If layer material is found, it will be removed. Analytical chemical samples will be collected from the test trenches, pits, or cores within 6 feet below the original yard grade. The check for layer material below that elevation will be based on visual observation for the material, unless otherwise determined appropriate by EPA. A depiction of this process can be seen in Figure 4.

C. Amendments to Address Identification and Removal of High-Concentration Depositional Layer Material Under Structures, and Response Actions for Structures

Based on provisions provided in Section (A) above, layer material shall be tracked visually and by chemical analysis within the excavation. In cases where the excavation comes close enough to the structure that further excavation is not possible without undermining the integrity of the structure, then EPA shall determine whether the evidence indicates that the layer extends under the structure. If it does, then the goal shall be to remove the layer material from under the structure. This may be accomplished by any of the following methods:

- ! Excavating under the structure with no support to the foundation;
- ! Supporting the foundation of the structure and excavating under it;
- ! Elevating or “jacking up” the structure and excavating under it;
- ! Demolishing part of the structure, excavating under it, and rebuilding the portion that was demolished, reconnecting it to the remaining original structure;
- ! Demolishing the entire structure, excavating under it, and rebuilding it; or

The appropriate response shall be determined by EPA for any given structure and situation. In each such case, EPA shall perform an engineering structural analysis of the structure to determine which options are possible. The analysis shall consider *effectiveness, implementability, and cost.*

In cases where structures are demolished, the debris from the demolition shall be hauled away and properly disposed as part of this removal action.

Restoration of structures shall be based on fair “in-kind” equivalent replacement value. EPA will pay for upgrades that are required due to changed County Code requirements that were

grandfathered into the original structure, if determined necessary to restore the building.

IV. Amendment to Cost Ceiling Estimate

The original Action Memorandum, with cost ceiling estimate, was signed on June 7, 2001. The actual on-site construction and excavation did not begin until July 24, 2001. The original cost ceiling estimate for the project was \$3.5 million. There are three generalized types of factors which have resulted in a need to significantly increase the cost ceiling estimate. These are:

- ! The original estimate was low with respect to certain costs that were known at the time of signing the Action Memorandum on June 7, 2001;
- ! In the interval between June 7 and July 24, 2001, substantial additional planning and adjustments to field requirements occurred that resulted in costs not accounted for in the original Action Memorandum estimate; and
- ! Since the removal action began and has proceeded, events and requirements which could not have been foreseen at the time of the removal action have resulted in higher costs associated with completing the removal action.

In hindsight, the original ceiling estimate needs to be considered preliminary because of the significant additional development of and planning for the action that occurred subsequent to the estimate. The following specific areas account for the majority of the increase in the estimate:

- ! Analytical costs for more extensive and accurate confirmation sampling;
- ! Excavations going to significantly greater depths in many yards than originally planned;
- ! A much-expanded temporary relocation program;
- ! An extensive air monitoring plan and program;
- ! 24-hour site security at homes and at the Montrose plant property;
- ! Decision to remove driveways and soil under driveways;
- ! Addressing buried concrete at one yard;
- ! Addressing the depositional layer material;
- ! Expanded site administration facilities, such as extra trailers at the command post;

- ! Increased numbers of field staff and supervisors to complete the job during this season;
- ! Costs of restoration were higher than expected due to contract and wage rates applicable in California and poor bid response among competing subcontract firms;
- ! The need to support and excavate under at least two structures; and
- ! Extension of the duration of the removal action to mid-December, due to the fact that soil was removed to a greater depth at many yards and that neighborhood residents did not sign up for the cleanup in advance but in sporadic fits and starts.

More detailed summary of the individual factors is now provided to document the increased ceiling. Cost estimates are based on the assumption that 22 yards will be subject to the response action - the number of residents who have provided signed property access at present.

A. Plans, Scoping, and Interim Reporting

The original cost estimate for the work plan, including both general and resident-specific work plans was insufficient. The work plan required several iterations to make it acceptable under the high-profile status of this project. In addition, there was no provision in the original estimate for a separate air monitoring plan. When the scope of the ARARs pertaining to air standards was addressed in the planning documents, and EPA determined that the level of air data we would need to ensure that we were safely removing the DDT material was greater than originally planned, and an extensive air monitoring plan was developed. The cost of the plan was not included in the original estimate. Also, extensive interim analysis and reporting of air monitoring data has been required by EPA since the removal action began.

Estimate of Additional Cost \$442,000

B. Additional Work Items Which Increase Direct Per-Property Costs

The original estimate incorporated an estimate of direct costs attributable to each individual property, which at the time was \$35,000 - \$40,000. After the Action Memorandum was signed, it was decided to remove and excavate under all driveways within the excavation area. Also, it was decided to include 24-hour security at all properties being worked on. The contingency for overexcavation (degree to which we expand the initial excavation area due to confirmation sampling) was increased due the fact that more soil removal has been required at many properties based on confirmation sample results. The duration of the removal action was expanded because it took longer in the field to remove the additional soil (go to greater depths in many yards). This resulted in greater labor and equipment costs. Home office costs associated with subcontract procurement were added to this estimate. Finally, costs for subcontractors to deliver clean soil fill, survey completed properties, etc. is included in the new estimate. The revised estimate

provides for an average of approximately \$76,000 per property.

Estimate of Additional Cost \$787,000

C. Air Monitoring Program

The original estimate did not include a provision for the air monitoring program. Once the full impact of the ARARs for air quality was analyzed, and the level of data needed to demonstrate that the removal was being safely conducted became clear, a very extensive air monitoring program was developed. The execution of this program includes five PM-10 monitoring stations at the Montrose plant site and three dedicated air monitoring personnel. At each residence where work is being conducted, there are four datarams for dust monitoring and a portable pump for DDT monitoring. There are five background locations in the neighborhood where dust and DDT monitoring is taking place, and three meteorological stations. Three air monitoring personnel are assigned to the neighborhood areas, and a data evaluation team interprets and presents the data. DDT analyses for the project run about \$1300 per day in laboratory analytical costs.

Estimate of Additional Cost \$761,000

D. Temporary Relocation

The number of eligible residents requesting temporary relocation was far greater than originally anticipated. The original plan was that most residents would stay in their homes and that only a few would want temporary relocation, based in part on feedback we had received from residents early in the project planning phases. During execution, activists from outside the neighborhood, and certain community members, launched a sustained campaign to malign EPA's cleanup and to frighten residents to think that relocation was necessary. Recently, more than 100 persons were relocated at one time. In addition, EPA's policy on who was eligible for relocation was expanded between the time the Action Memorandum was signed and the time that the work began. Originally, it was assumed that only persons in the property being worked on would be eligible; this was expanded to include persons living at properties on either side of the property being worked on, and to persons on the east side of the street on a case-by-case basis for persons who sleep during the day, have very small children, or who have severe respiratory ailments. Costs had to be increased to account for two full-time coordinators and a third part-time contractor coordinator. Another important factor is that, because residents did not sign up in advance of the work but access agreements trickled in, placing yards intermittently into the cleanup, many more residents were relocated for a longer time than had EPA been able to simply move straight down the street, doing each yard in succession. This greatly increased relocation costs. Ultimate costs associated with relocation are difficult to estimate, as it is not always known with certainty who will want relocation. The present estimate is based on historical rates of expenditure and associated labor rates for personnel coordinating the program.

Estimate of Additional Cost \$923,000

E. Outreach Center

The plan and scope for the activities at the Outreach Center was not known at the time of the original Action Memorandum Estimate as the plan was developed subsequent to May 7, 2001. In addition, after the Action Memorandum it was later decided to require 24-hour security at the Outreach Center beginning with the signing of the lease on the property at 20723 S. Kenwood in June, even though excavation work had not begun at that time. The original estimate did not account for this security.

Estimate of Additional Cost \$60,000

F. Montrose Plant Property Soil Containment Cells

The original Action Memorandum was signed before there was an agreement with Montrose Chemical to allow EPA to construct containment cells for storing the excavated soils at the Montrose property. The original estimate included costs for a 30 ml high density polyethylene (HDPE) liner, one laborer and one equipment operator at the Montrose plant property. Once the agreement was signed and a scope agreed to, the design was expanded. The design documents were made into fully-engineered drawings, and the number of workers at the plant property was increased to allow EPA to meet the terms of the agreement. Three additional laborers, an additional equipment operator, a water truck driver, and a dedicated quality control engineer were required on site. The final design called for a 45 ml polypropylene liner and an additional 30 ml liner on the top of each cell when it is completed. Additional equipment was required including a grizzly to separate soil and debris, an additional bulldozer, and a water tank. The agreement required that EPA post 24-hour security from the point the agreement became active to the point that the containment cells are turned over to Montrose. This also was not accounted for in the original estimate. An extension of time for the rental of equipment and labor due to increasing the length of the removal action by 4 weeks was factored into this figure. Finally, disposal of debris that has been held in bins (e.g. rebar, personal protective equipment, root balls, etc. that cannot go into the debris storage cell) must be accounted for. It was not clear how much such debris would be present at the time of the original estimate.

Estimated Additional Cost \$296,000

G. Construction of Additional Soil Containment Cell

While EPA's agreement with Montrose accommodated at least 6 soil containment cells at the Montrose plant property, the original estimate accounted for construction of only 4 cells at that time. A final, fifth cell will now be necessary.

Estimated Additional Cost \$165,000

H. Sampling and Analysis

The original estimate was based on the assumption of 20 confirmation samples per residence with a 5-day turnaround. Soon after the removal action began, it became clear that 20 confirmation samples was an underestimate. A more accurate projection turned out to be 50 samples per property. This was due to EPA's requiring confirmation samples on a 10 foot grid spacing, as well as confirmation samples above and below the high-concentration depositional layer. For example, at 20723 S. Kenwood alone, the extensive excavation and overexcavation required 120 confirmation samples. In addition, it has become necessary to use a faster turnaround time with the laboratory. This was necessary in order to maintain field schedules, return residents to their homes quickly, be able to get the work done before the rainy season. The costs per sample increased from \$100 to about \$250 due to this change. The number of field chemists was increased from one to three to keep up with the vast number of immunoassay analyses coming in from the field. Costs for an increased number of immunoassay test kits have been included to account for the increased number of samples collected. Data validation costs were not included in the original estimate and have now been included. EPA performed significant sampling of the borrow source for the backfill material and topsoil before bringing it to the site, which was not reflected in the original estimate. Finally, EPA performed additional sampling at 20609 S. Kenwood, 1209 W. 204th Street, 1203 W. 204th Street, and 20619 S. Kenwood Avenue which had not been planned at the time of the original Action Memorandum and were therefore not originally accounted for.

Estimate of Additional Cost \$792,000

I. Property Restoration Costs

Restoration was originally projected at an average of \$20,000 per property. However, California construction wages under the Davis-Bacon Act were not fully accounted for in the original estimate. In addition, there was sparse competition for the restoration subcontracts - few low bids were submitted. The revised estimate for restoration is \$40,000 per property.

Estimate of Additional Cost \$440,000

J. Water Main Break

During excavation at 20713 S. Kenwood, a large water main broke when what appeared to be concrete “dribble” from a former construction operation was later found to have adhered to the main. The main broke when the piece of loose concrete was moved. The water that filled the excavation had to be contained, and portable toilets and water had to be provided to residents while the main was being repaired. Ultimately, the water had to be disposed as a hazardous waste.

Estimate of Additional Cost \$130,000

K. Site Administration

The original estimate included three contractor personnel onsite for site administration, and for one command post trailer. As the removal proceeded, a full time project business administrator, an additional field superintendent, another full size trailer, seven lap tops, ten pick up trucks, and 24-hour security for the command post compound were required. An allowance for extension of the rental period for equipment and site administration labor had to be added when the time frame for the removal was extended to mid-December.

Estimate of Additional Cost \$339,000

L. Completion Report

The original estimate assumed a very basic completion report. However, given the extensive air monitoring and confirmation data and the amount of scrutiny given all data associated with the project, a more extensive completion report will be necessary.

Estimate of Additional Cost \$200,000

M. Allowance for Non-Negotiated Contract Fee

Under the structure of the contract, an allowance must be left for contract fee that is not yet negotiated given the increase in overall contract scope.

Estimated Additional Cost Allowance \$105,000

N. Lodging and Per Diem

There has been an increase in the number of contract field people on site, including those mentioned in the last paragraph as well as an air monitor technician, dedicated quality control engineer for the soil containment cells, and additional equipment operator, which were not

accounted for in the original estimate.

Estimate of Additional Cost \$160,000

O. U.S. Corps of Engineers Personnel Costs

At present no increase in the estimate of \$293,000 for USACE costs is required. Presently, the USACE has 9 persons working on the project regularly, including a project manager, the Rapid Response program manager, two construction engineer/representatives to oversee daily work, a real estate expert, a technical planning advisor, a supervisor, an administrative support person, and a budget analyst. Contracting officers and contract staff are also involved.

P. Costs Required to Address Layer Material Under Structures

The following costs are added to the cost ceiling estimate to address the layer material under structures that is discussed in this Action Memorandum Amendment. It is assumed for the estimate that the garage at 20713 S. Kenwood will be addressed by either the CHANCE technology to support the structure or by demolishing and rebuilding the structure. It is assumed that the house at 20523 S. Kenwood will be addressed by using the CHANCE Technology. The cost of excavating the layer material is included in the estimate.

Estimate of Additional Cost \$200,000

Q. Summary of Amendment to Cost Ceiling Estimate

The above modifications correspond to an increase of \$5,800,000. The original cost ceiling estimate was \$3,500,000¹. Accordingly this Action Memorandum Amendment requests an increase in the authorized cost ceiling to **\$9,300,000**.

No additional applicable or relevant and appropriate legal requirements, pursuant to Section 121(d) of CERCLA, have been identified with regard to the modifications to the Action Memorandum proposed herein.

V. Recommendation

As documented in the original Action Memorandum and this Action Memorandum Amendment, conditions within the Kenwood storm water drainage pathway meet the National Contingency Plan criteria for a removal action (40 C.F.R. Section 300.415(b)(2)), and the CERCLA Section

¹ The \$3,500,000 estimate applied to the case where the waste disposal contingency – hauling all soil waste off site -- was not activated. That contingency was not activated because the soil wastes are, in fact, being stockpiled and contained at the former Montrose property.

104(c) consistency exemption from the \$2 million limitation. The contamination in the high-concentration depositional layer is high enough to pose an acute health threat to those in direct contact with it. It is appropriate to ensure that it is located and its extent determined by relying on sampling data as well as knowledge of its historical and physical characteristics, and to remove the layer to the extent practicable.

The total project cost ceiling is estimated to be \$9,300,000. The primary source of funds for this removal action will continue to be the Montrose Chemical Superfund Site Special Account. In anticipation of near-term funding needs, the Superfund Removal Budget has also been tapped for a total of \$1.1 million. If the combination of the Special Site Account and funds already drawn from the Superfund Removal Budget are ultimately insufficient to complete the removal action, the source for additional funding will be the Superfund Removal budget, unless additional Special Account funds are received. It is expected that the removal action can be completed by December. Due to planning time for engineering requirements prior to performing the excavation under structures, it *may* be necessary to wait until after the southern California rain season and complete the work under structures by the end of April, 2002.

Approval Signature

Date

Disapproval Signature

Date