FINAL DECISION AND RESPONSE TO COMMENTS
FOR THE
ALLIED-SIGNAL, INC. BALTIMORE WORKS FACILITY

PREFACE

This document consists of the Final Decision and Response to Comments for the Allied-Signal, Inc. Baltimore Works Facility located in the Fells Point section of Baltimore, Maryland. The Final Decision describes and discusses the corrective measure alternatives evaluated by Allied-Signal, Inc. and provides the Environmental Protection Agency's (EPA) rationale for its selection of the corrective measures to remediate the onsite and offsite contamination.

The Response to Comments provides a summary of the written and oral comments and questions submitted to EPA during the public comment period. Each comment and question is followed by a response from EPA and the Maryland Department of the Environment (MDE). This document, including both the Final Decision and Response to Comments, is part of the Administrative Record for the Facility. The Administrative Record is the official file which includes all of the documents EPA referred to in selecting the corrective measures. The Administrative Record can be found at the following locations:

U.S. EPA, Region III
841 Chestnut Building
Philadelphia, PA 19107
Attn: Diane Schott, Project Manager
(215) 597-0130

Maryland Department of the Environment
2500 Broening Highway
Baltimore, MD 21224
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ALLIED-SIGNAL, INC.
FINAL DECISION AND RESPONSE TO COMMENTS

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I. INTRODUCTION

This document provides a final decision and a response to all significant comments received by the U.S. Environmental Protection Agency (EPA) and the State of Maryland Department of the Environment (MDE) regarding the corrective measures which Allied-Signal Inc. (Allied) has proposed for its Baltimore Works Facility (Facility or Site) located in the Fells Point section of the City of Baltimore, Maryland (see Figure 1) and off-site areas to the east of the Facility.

On September 29, 1989, a Consent Decree between EPA, MDE and Allied (Consent Decree) was entered in the United States District Court for the District of Maryland pursuant to Sections 3008(h) and 7003 of the Resource Conservation and Recovery Act, as amended (RCRA), 42 U.S.C. §§ 6928(h) and 6973. The entering of the Consent Decree followed a 30-day public comment period on the Decree (June 22, 1989 to July 22, 1989). Under the terms of this Consent Decree, Allied was required to conduct environmental investigations on the nature and extent of contamination at, and migrating from, the Facility. It was further required to submit reports on these investigations and a Corrective Measures Implementation Program Plan (CMIPP) to prevent further migration of contamination from the Facility. On June 6, 1990, the Consent Decree was amended to provide for the design and construction of a new support structure around the water-side perimeter of the Site.

The Consent Decree, as amended, described the corrective measures which the parties anticipated Allied would include in the CMIPP. The corrective measures which were anticipated in the Consent Decree and proposed in the CMIPP consist of the following:

- a deep vertical hydraulic barrier to prevent the release of contamination into the Baltimore Inner Harbor (Harbor) and the groundwater surrounding the Facility;

- a groundwater withdrawal (head maintenance) system to maintain an inward flow of groundwater at the Site;

- a cap over the containment area to prevent (1) future exposure to the contaminated soil and (2) the infiltration of precipitation which in turn generates leachate;

- an enhanced bulkhead (outboard embankment); and

- surface and groundwater monitoring.

Section V, paragraph 6 of the Consent Decree states that, upon tentative approval by EPA and MDE of the CMIPP, and after a public comment period, EPA and MDE (the Agencies) shall approve the corrective measures described in the CMIPP, provided that:

1) the Agencies determine that the proposed corrective measures will achieve the performance standards established in the Consent Decree (as described more fully in Section III of this document); and

2) the environmental investigations required by the Consent Decree, or any other information brought to the attention of EPA, MDE and Allied, do not show the existence of risks to human health or the environment qualitatively different from those in the Risk Assessment approved by MDE.

EPA and MDE tentatively approved the corrective measures described in the CMIPP. In October of 1991 the Agencies published a Statement of Basis which summarized the proposed corrective measures, stated the basis for the Agencies' decision to propose them, and requested public comment. As more fully discussed in Section II, Public Participation, two public comment periods were held.

After careful consideration of the comments received, and review of the CMIPP in light of those comments, EPA and MDE believe that the two requirements in Section V, paragraph 6 of the Consent Decree for approval of the corrective measures in the CMIPP have been met. Therefore, EPA and MDE are today approving the corrective measures described in the CMIPP. EPA and MDE are also requiring certain revisions to the CMIPP, as discussed in Section V, Required Revisions to the Corrective Measures Implementation Program Plan.

II. PUBLIC PARTICIPATION

EPA and MDE invited public comment on the Agencies' tentative decision to approve the corrective measures which Allied proposed in the CMIPP. From August 26, 1991 to September 16, 1991 and from September 18, 1991 through November 12, 1991, EPA and MDE made available for comment the "Statement of Basis" for the decision (Attachment 1) as well as the Administrative Record containing all of the documents related to the decision. EPA and MDE also conducted several interviews with interested residents and business owners in the community, as well as with local officials. A public meeting was requested by a citizen on September 16, 1991 and was held on October 28, 1991 at the Lemko House, 603 South Ann Street, Baltimore, MD. The later public comment period and the public meeting were advertised in The Baltimore Sun on October 16, 1991.

All comments expressed to and/or received by EPA and MDE during the public comment period have been reviewed and considered by EPA and MDE prior to the issuance of this Final Decision and Response to Comments (Final Decision) for the Facility. These comments and questions, and MDE's and EPA's responses, are recorded in Section IV of this Final Decision.

III. THE SELECTED CORRECTIVE MEASURES

The areas at the Facility which have been identified for remediation (see Figures 2 and 3) and are included in the CMIPP include the portion of the Facility located west of Wills Street (the Former Manufacturing Area), the southeast quadrant of the Facility (Southeast Quadrant) and off-site areas to the east of the Facility (Off-site Areas). The Off-site Areas to the east of the Facility include: 1) a 10 foot by 10 foot area on Wills Street by Dock Street with high concentrations of chromium in the soil; and 2) property which has been newly acquired by Allied located at 902-920 South Caroline Street ("The Silver Property") which contains surface soil with elevated concentrations of polynuclear aromatic hydrocarbons (PAHs). The corrective measures in the CMIPP which were selected for each of these areas will be described in turn. In addition, in response to public comments the selected corrective measures shall include revisions 1 through 3 in Section V of this document, Required Revisions to the Corrective Measures Implementation Program Plan.

Corrective Measures for The Former Manufacturing Area

A deep hydraulic barrier (Barrier Wall or Wall) shall be constructed around the Former Manufacturing Area. It shall extend down to the decomposed rock (saprolite) below the Harbor. At least twelve pairs of piezometers to monitor the deep Cretaceous sediments (Patuxent aquifer) shall be placed at equal intervals along the Barrier Wall, one of each pair inside, and one outside, the Wall. Four more pairs of piezometers to monitor the shallow groundwater in the fill and the Pleistocene sand layers shall be placed along Wills Street. Wells, wellpoints, or trench drains for the extraction of groundwater shall be placed inside the Wall. An impermeable cap shall then be placed over the Former Manufacturing Area to form a containment structure. A groundwater maintenance system shall measure groundwater elevations in the paired piezometers and shall pump groundwater up and out of the containment structure as necessary to maintain an inward hydraulic gradient.

The containment structure shall prevent direct contact with the chromium-contaminated material and reduce the quantity of contaminated groundwater which is required to be pumped. An enhanced bulkhead (outboard embankment) shall

surround the entire water-side perimeter of the Facility outside of the Barrier Wall.

The corrective measures for the Former Manufacturing Area shall meet the Performance Standard for surface water established in Section V, paragraph 12 of the Consent Decree. The Surface Water Performance Standard requires a reduction of total chromium concentrations migrating into the Harbor to 50 parts per billion (ppb), calculated for each sample location by arithmetically averaging the samples taken at all depths over four consecutive days. These corrective measures shall also meet the Performance Standard for groundwater established in Section V, paragraph 13 of the Consent Decree and revised in the CMIPP. The Groundwater Gradient Performance Standard requires Allied to maintain an inward flow of groundwater into the Site. The inward hydraulic gradient from outside to inside the Barrier Wall shall be greater than 0.01 foot. Allied is required to pump and treat groundwater from the containment structure if any hourly measurement of groundwater elevations in the paired piezometers shows that a 0.01 foot inward hydraulic gradient is not being maintained.

As described more fully in Section I, Introduction, above, the major components of the selected remedy for the Former Manufacturing Area--the vertical hydraulic barrier, multi-media cap, groundwater withdrawal system, enhanced bulkhead and surface and groundwater monitoring--were anticipated in a 1989 EPA-MDE-Allied Consent Decree. Section V, paragraph 6 of that Consent Decree stated that EPA and MDE were to approve these corrective measures provided that two requirements were met. Since EPA and MDE have determined that those two requirements have been met, no alternative corrective measures were considered at this time. Allied previously evaluated alternative corrective measures for the Former Manufacturing Area in a 1987 Feasibility Study which was developed under a 1986 Consent Decree between MDE and Allied and approved by MDE.

Corrective Measures for the Southeast Quadrant of the Facility

Initial testing of soils in the Southeast Quadrant of the Facility revealed elevated levels of chromium and PAHs. Soils which could leach unacceptable concentrations of contaminants into the groundwater have already been removed and disposed of off-site in an approved RCRA land disposal facility. A layered soil cap shall be constructed over the remaining soil in the Southeast Quadrant to prevent upward migration of the remaining chromium in the soil and potential threats to human health through inhalation, ingestion or contact. The layered soil cap shall consist of

(from the bottom): on-site clean fill to provide grade adjustments; a geotextile, such as a filter cloth, as needed to separate underlying soil from gravel; 6 to 12 inches of gravel to prevent possible upward migration of contaminated pore water; another geotextile to separate overlying soil from the gravel; one to two feet of cover soil; six inches of topsoil; and a vegetative or other appropriate erosion protection cover to stabilize the layered soil cap.

The selected remedies for the Southeast Quadrant and the Off-site Areas are the result of a limited Corrective Measures Study (LCMS) for these areas which Allied completed in 1991. EPA and MDE directed Allied to undertake this LCMS as a result of information obtained from an investigation of these areas detailed in the Offsite and Southeast Quadrant Investigation Final Report (1991). The LCMS was limited in nature because much of the analysis required had already been completed in Allied's 1987 Feasibility Study.

Allied considered nine corrective measures for the contamination in the surface soils of the Southeast Quadrant. After preliminary screening, it reduced the alternatives to three: a layered soil cap, a multi-media cap, and excavation. These alternatives were evaluated against the criteria in the RCRA Corrective Action Plan guidelines, including performance (the reduction of toxicity or mobility of each contaminant), reliability (short and long-term effectiveness), implementability, safety, environmental effects, human health effects, compliance with all applicable federal, state and local public health standards, and cost.

Allied excavated those soils which could leach unacceptable concentrations of contaminants into the groundwater. In addition, Allied recommended a layered soil cap for the Southeast Quadrant because it concluded that a multi-media cap is more expensive than a layered soil cap, is harder to implement, and does not provide any additional needed protection. EPA and MDE have selected this remedy.

Corrective Measures for the Off-site Areas to the East of the Facility

High concentrations of chromium in the soil have been identified in a 10 foot by 10 foot area on Wills Street by Dock Street. Soil in this area with levels of hexavalent chromium greater than 10 ppm shall be excavated and treated and/or disposed of in accordance with RCRA.

Surface soils on the Silver Property contain concentrations of the PAHs benzo(A)anthracene, benzofluoranthenes, and indeno-(1,2,3-CD)-pyrene greater

than the risk-based concentrations which are considered protective to a resident possibly exposed to the soil by ingestion (0.8 parts per million (ppm), 1.8 ppm and 0.5 ppm, respectively). This property shall be cleared and all plant roots removed, and then the soil shall be resampled. If the PAH levels are still greater than the above risk-based concentrations, the property shall be covered with two feet of clean soil and be subjected to erosion control to protect against ingestion of contaminated soils.

Because of the limited or contingent nature of these corrective measures, a detailed corrective measures study for each alternative recommended was not considered necessary and was not required by EPA and MDE.

Monitoring and Maintenance

Section XXVIII of the Consent Decree states that Allied shall have perpetual responsibility for operating and maintaining the approved corrective measures, and for complying with the Surface Water Performance Standard and the Groundwater Gradient Performance Standard. In accordance with Exhibit 6 of the Consent Decree, surface water shall be sampled for quality four consecutive days each month in perpetuity. In accordance with Exhibit 8 of the Consent Decree, the groundwater gradient shall be monitored at established monitoring wells quarterly before and during installation of the corrective measures for the Former Manufacturing Area until such time as specific monitoring wells are abandoned as part of construction of the cap. After completion of installation of the corrective measures, the groundwater gradient shall be measured hourly in perpetuity at at least twelve pairs of piezometers spaced at equal intervals around the entire perimeter of the Former Manufacturing Area to monitor the deep Cretaceous sediments (Patuxent aquifer), and at four pairs of piezometers placed along Wills Street to monitor the shallow groundwater within the fill and the Pleistocene sand layers.

Exhibit 7 of the Consent Decree requires that the groundwater be sampled for quality quarterly each year before and during installation of the corrective measures, thereafter monthly for two years, then at least semi-annually each year thereafter. Exhibit 9 of the Consent Decree requires that the biota and sediments be sampled within one year of completion of installation of the corrective measures, and thereafter, every three years for at least ten years. The need for continued monitoring of biota and sediments shall be re-evaluated after this initial ten-year period and at six-year intervals thereafter.

IV. PUBLIC COMMENTS AND EPA'S AND MDE'S RESPONSE

The public's comments and EPA's and MDE's responses to the comments are presented below in the following order:

A. Comments Received In Letters from the State of New Jersey;

B. Comments Received by Letter from the City of Baltimore, Department of Planning;

C. Comments Received by Letter from Allied-Signal Inc.;

D. Comments/Questions Expressed During Community Interviews; and

E. Comments/Questions Expressed at the Public Meeting.

A. Comments Received In Letters from the State of New Jersey

Investigation and Remedy Selection and Feasibility:

1. The State of New Jersey questions the feasibility of constructing the deep hydraulic barrier and its durability. (September 16, 1991 Letter)

EPA and MDE Response:

Through review of the Deep Hydraulic Barrier Feasibility Evaluation and the Supplemental Saprolite Study Report submitted by Allied and the EPA documents Slurry Trench Construction for Pollution Migration Control (EPA-540/2-84-001) and Investigation of Slurry Cutoff Wall Design and Construction Methods for Containing Hazardous Wastes (NTIS) (National Technical Information Service (NTIS) PB87-229688), and through previous experiences, EPA and MDE are confident that construction of the deep hydraulic barrier is feasible. As part of the design phase of the deep hydraulic barrier, Allied is conducting tests on various soil-bentonite mixtures in order to select the most durable combination of soil and bentonite for the deep hydraulic barrier. Also see response to comment number 7 in this Section on page 10.

2. The State of New Jersey questions the ability to monitor the effectiveness of the containment structure once it is built. (September 16, 1991 Letter)

EPA and MDE Response:

The Statement of Basis (Attachment 1) which was made available during the public comment period explained that the Groundwater Gradient Performance Standard established in the Consent Decree has been revised in the CMIPP to take

into account the potential for a downward flow of contaminated groundwater into the bedrock. The Groundwater Gradient Performance Standard established in the Consent Decree required that a 0.01 foot inward hydraulic gradient be maintained over an average 30-day period. As stated in Section III (The Selected Corrective Measures) of this document, the Groundwater Gradient Performance Standard has been revised in the CMIPP to require groundwater extraction if any hourly measurement of groundwater elevation in paired piezometers (inside and outside of the containment structure) shows that a 0.01 foot inward gradient is not being maintained. EPA and MDE are confident that through the hourly measurements of groundwater elevations and the perpetual monitoring of the quality of the groundwater and surface water, the effectiveness of the containment structure can be thoroughly monitored.

3. The State of New Jersey questions the reliability of the proposed containment monitoring system. The State comments that monitoring of the containment remedy relies exclusively on hydraulic measurements and does not include groundwater quality measurements. It states that the hydraulic monitoring system proposed relies on technology which is unproven over the long-term. The State also comments that there are technical errors associated with long-term monitoring of the proposed groundwater maintenance system.

The State suggests that a more certain method to assure that hydraulic conditions do not result in continued discharge of untreated chromium to the Harbor would be to require that the water level in the containment area be kept below the level of the lowest tide at all times. This performance standard could be more reliably monitored and would not result in excessive pumping within the containment area. (November 12, 1991 Letter)

EPA and MDE Response:

The containment remedy does include groundwater quality measurements as required in Section V, paragraph 5 of the Consent Decree and described in Exhibit 7 to the Consent Decree. As stated on page 8-55 of the CMIPP, uncertainties and potential errors associated with long-term hydraulic monitoring will be controlled by requiring periodic recalibration and precision testing of the hydraulic head measuring devices, as well as periodic resurveying of each piezometer. In accordance with equipment-operating procedures, the frequency of the recalibration will be determined by the magnitude of the potential drift of measurements with time for the specific equipment to be used, and will be determined in the design phase of the project. EPA and MDE are confident that with routine maintenance and calibration, the technology for the

hydraulic monitoring system can be implemented without error over the long term, and that the required hydraulic conditions will reduce the release of chromium into the Harbor to the Performance Standard of 50 ppb established in the Consent Decree.

4. The State of New Jersey comments that current monitoring data indicates the proposed containment will not be complete because contaminated groundwater may be moving down into the bedrock in the southwest portion of the site. (September 16, 1991 Letter)

EPA and MDE Response:

This issue is addressed on page 10 of the Statement of Basis and on page 2-3a of the CMIPP. Supplemental investigations indicated that contaminated groundwater may be moving down into the bedrock in the southwest portion of the Site. As a result, the CMIPP includes a minimum of a four-day test of hourly monitoring of groundwater elevations at four existing piezometers located in the southwest part of the Site after installation of the containment structures (Barrier Wall and cap) to determine whether contaminated groundwater is flowing into the bedrock from the containment structure. If contaminated groundwater is found to be moving into the bedrock after construction of the containment structure, Allied will be required to pump water more frequently in order to maintain a continuous upward movement of groundwater from the bedrock into the containment structure.

5. The State of New Jersey believes there are a number of problems which could cause the hydraulic barrier to fail due to either the difficulty of constructing a 100-foot deep underground wall or the degradation of the wall over time. The State of New Jersey recognizes that these issues will be addressed in the design stage but believes they are crucial to the long and short-term effectiveness of the selected remedy and should have been more fully studied prior to the selection of the remedy. (September 16, 1991 Letter)

EPA and MDE Response:

The wall is expected to be approximately 70 feet deep. The EPA and NTIS documents referred to in response to the State of New Jersey's comment no. 1, above, indicate that barrier walls can be built to depths of 70 feet with existing standard technology and deeper with specialized technology. As stated in response to the State of New Jersey's comment no. 1, above, the durability of the Barrier Wall is being studied during the design phase. Also see response to comment numbers 1 and 7 in this Section located on pages 7 and 10, respectively.

EPA and MDE further note that the short and long-term effectiveness of the remedy is primarily dependent upon the groundwater maintenance system rather than the hydraulic barrier. The groundwater maintenance system will prevent contaminants from migrating into the environment outside of the Barrier Wall. While the hydraulic barrier will prevent direct contact of the contaminants with the surrounding environment, the primary purpose of the Wall is to reduce the quantity of water which will need to be pumped out of the containment structure in order to maintain the Groundwater Gradient Performance Standard.

6. The State of New Jersey comments that progressively increasing transmissivity trends were not taken into consideration when evaluating the extent of downgradient contamination migration. (September 16, 1991 Letter)

EPA and MDE Response:

Progressively increasing transmissivity trends downgradient of the Site (to the southeast) within the Patuxent aquifer were accounted for in the evaluation of the extent of downgradient contaminant migration in the July 1986 Remedial Investigation Report. This was done through a "worst case" analysis which applied a higher transmissivity value uniformly throughout the aquifer. The higher transmissivity value was selected based on data measured and reported by the Maryland Geological Survey (Chapelle, 1985) for the region of the Patuxent Aquifer in the vicinity of the Facility. Application of the higher transmissivity value more than compensated for any increased transmissivity downgradient of the Site.

7. The State of New Jersey comments that the selected remedy does not meet the criteria of long-term effectiveness and permanence (September 16, 1991 Letter). The State of New Jersey also comments that the containment remedy selected is not a treatment which would reduce the volume, toxicity or mobility of the chromium waste at the Site. The State cites EPA guidelines under CERCLA stating that remedies should generally achieve reductions of 90 to 99 percent in the concentration or mobility of individual contaminants of concern. The State comments that the CERCLA objective of permanent treatment-based remedies is normally applied to RCRA cleanups. In addition, the State submitted several documents describing treatment technologies. (November 12, 1991 Letter)

EPA and MDE Response:

EPA and MDE are confident that with proper design, construction and maintenance the selected remedy can effectively and permanently protect human health and the

environment. The selected remedy will reduce the mobility of the contamination at the Site, the quantity of groundwater and infiltrating precipitation which can become contaminated, and the amount of contamination which is released from the Site.

EPA and MDE do not believe that any treatment technologies, including those submitted by the State of New Jersey, are fully capable at this time of stabilizing and immobilizing the chromium contamination at this Site. Implementation of any existing treatment technology at this Site would still require the implementation of the groundwater maintenance/containment remedy which has been selected, and EPA and MDE are confident that the groundwater maintenance/containment remedy can be fully effective.

8. The State of New Jersey stated a concern about the potential for failure of the cap as a result of settling and bulking due to the chemical nature of the fill.

EPA and MDE Response:

A former boat slip is the only known location at which chrome ore tailings were used as fill at this Site. In the 25 years since the boat slip was paved, no heaving has occurred. Because there has been no heaving at the boat slip, the property has been in use over 140 years, and the existing buildings on the property are structurally sound, EPA and MDE are reasonably sure that the cap will not fail as a result of settling and bulking of the fill.

Health and Risk Assessment

1. The State of New Jersey comments that since the Site is located on the outcrop region of the Patuxent, it is a major area of recharge for an aquifer that is environmentally sensitive to any stresses from industrial sources. The state does not believe this issue was fully considered in the Risk Assessment. (September 16, 1991 Letter)

EPA and MDE Response:

In the Risk Assessment (contained in the Remedial Investigation Report which was approved by MDE), the effect of releases of contaminants from the Site into the Patuxent aquifer was considered through addressing the risks associated with the "worst case" extent of downgradient contaminant migration. EPA and MDE do not presently foresee that any drinking water users will ever exist for the contaminated portion of the aquifer. EPA and MDE are confident that the selected groundwater

maintenance/containment remedy will prevent the release of any further contaminants from the Site into the Patuxent aquifer.

2. The State of New Jersey comments that since the impacted area of the Patuxent aquifer is in hydraulic connection with the Type II drinking water portion of the aquifer (downgradient), then Type II standards must apply, not the Type III standards being applied by Allied. (September 16, 1991 Letter)

EPA and MDE Response:

As noted above, EPA and MDE do not presently foresee that any drinking water user (industrial or residential) will ever exist for the contaminated portion of the deep groundwater below the Site. Therefore, EPA and MDE are not requiring remediation of the contamination in the deep groundwater.

3. The State of New Jersey comments that the Risk Assessment made inappropriate adjustments for chromium bioavailability that leads to an underestimation of excess lung cancer risks. (September 16, 1991 Letter)

EPA and MDE Response:

In its Risk Assessment, Allied states that only a fraction of airborne particulate matter is respirable and a fraction of that is deposited in the lung. Consistent with EPA policy, New Jersey states that the respirable fraction and lung deposition efficiency should not be included in the risk calculation. If these are excluded, the risk value for inhalation of chromium increases from 0.73×10^{-6} to 1.72×10^{-5} (or 23.6 times) for off-site residents. This is a quantitative change in the risk. However, the risk is still within the risk range used in remediations and is not considered to be imminent or substantial risk to off-site residents.

4. The State of New Jersey comments that the exposure scenario for residential exposure assessment underestimates excess cancer risk. (September 16, 1991 Letter)

EPA and MDE Response:

The exposure scenario for residential exposure in the Allied Risk Assessment assumes that exposure to airborne material will occur in the remedial stage, during construction and excavation. The assumption of 10 hours a day for 5 days a week coincides with the working hours of the workers and allows for an

additional two hours for the dust to settle after work has ended for the day.

5. The State of New Jersey comments that the Risk Assessment underestimates non-cancer inhalation risks. (September 16, 1991 Letter)

EPA and MDE Response:

Allied does not cite a reference dose for an ambient air concentration for the non-cancer effects. The reference dose (RfD) that NJ cites of 2×10^{-6} mg/m^3 is an estimate of the daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime (Integrated Risk Information System (IRIS), 1991). Since exposure to chromium is expected to occur during the site remediation and will be eliminated after the remedy has been implemented, the subchronic (2 weeks to 7 years) reference dose 2×10^{-5} mg/m^3 would be more appropriate. The RfD is for both chromium III and chromium VI (airborne).

6. The State of New Jersey comments that residential or industrial use of ground water as drinking water is not considered. (September 16, 1991 Letter)

EPA and MDE Response:

Continued releases to the groundwater of contaminants from the Site will be eliminated through implementation of the remedy. As noted above, EPA and MDE do not presently foresee that any drinking water users (industrial or residential) will ever exist for the contaminated portion of the deep groundwater below the Site.

7. The State of New Jersey comments that ingestion of soil by adults or workers at the levels of 50 to 100 mg/day was not considered. (September 16, 1991 Letter)

EPA and MDE Response:

Ingestion of soil by adults and workers at the concentrations of 50 to 100 mg/day was not considered in the Risk Assessment. However, EPA and MDE are confident that implementation of the selected remedies will eliminate the potential for ingestion of contaminated soil for both adults and workers. During construction and as required by Section VI, paragraph 1 of the Consent Decree, the Occupational Safety and Health Act, 29 U.S.C. § 651 et seq., must be complied with. As noted in the Dismantlement Plan, Exhibit

2 of the Consent Decree, pages IV4 - IV13, workers at the site will receive training which includes, among other things, discussion of the Site Health and Safety Plan, the nature of the hazards present, the use of personal protective equipment and the medical surveillance program. In addition, access to the Site will be restricted during construction to protect non-worker adults.

8. The State of New Jersey comments that chromium or sediment concentrations were not compared to EPA or National Oceanic and Atmospheric Administration (NOAA) sediment criteria. Bioassays of target species potentially impacted by contaminated sediment were not done to evaluate potential adverse effects on these benthic and other aquatic organisms. (September 16, 1991 Letter)

EPA and MDE Response:

Analysis of sediment samples and benthic studies have been and will continue to be conducted as required by the Consent Decree. The Surface Water Quality Performance Standard established in the Consent Decree for the concentration of chromium (50 ppb) was established on the basis of EPA criteria for protection of the entire aquatic community. Achievement of this Standard as required by the Consent Decree will eliminate any continued adverse impact to human health or the environment caused through bioaccumulation of chromium in aquatic species. Implementation of the remedy will minimize the release of chromium from the Site to the environment and achieve the Surface Water Quality Standard.

9. The State of New Jersey comments that OSHA standards should be complied with where applicable, but are not applicable to the derivation of reference doses or potency factors in the risk assessment. (September 16, 1991 Letter)

EPA and MDE Response:

Occupational Safety and Health Administration (OSHA) standards were not used to derive reference doses or potency factors in the Risk Assessment. However, Section VI, paragraph 1 of the Consent Decree requires compliance with the Occupational Safety and Health Act, 29 U.S.C. § 651 et seq.

B. Comments Received by Letter from the City of Baltimore, Department of Planning

EPA and MDE note that while many of the requests by the City of Baltimore are outside of the scope of the Consent Decree, EPA and MDE agree to coordinate fully with the City of Baltimore to the extent practical to assure that its concerns are met.

1. The City comments that since the proposed cap will be approximately eight feet above the street grade, a plateau will be created which will cut the Site off from the surrounding area, visually and physically. The City questions how this issue will be addressed and requests that special consideration be given to the change in grade for both vehicular and pedestrian access.

EPA and MDE Response:

EPA and MDE's responsibility under the Consent Decree is to ensure that the design of the remedy is protective of human health and the environment. The purpose of the cap is to prevent direct contact with the chromium-contaminated material and to prevent infiltration of precipitation into the containment structure, which is necessary for maintenance of the inward hydraulic gradient. The height of the cap is necessary to protect human health and the environment. Vehicular and pedestrian access may be acceptable provided that the integrity of the containment structure is not affected. EPA and MDE do not have the authority under the Consent Decree to require Allied to provide vehicular and pedestrian access to the Site. However, all designs for the Site and changes to the Site require the approval of EPA and MDE as stated in Section V of the Consent Decree, paragraphs 7 and 16. In accordance with Section VI, paragraph 2 of the Consent Decree, Allied must also obtain any approvals necessary from other federal, State or local agencies.

2. The City requests that the promenade be installed as part of the remediation plan so that access to the area will be available as soon as it has been approved as safe, and that Allied provide the City with more detailed plans concerning the promenade area at the earliest possible date. The City is also concerned with the effect of grade changes on the public walkway around the waterfront.

EPA and MDE Response:

EPA and MDE do not have authority under the Consent Decree to require Allied to provide a promenade. However, plans which Allied has submitted to date include a walkway. See Figure 2 attached.

C. Comments Received by letter from Allied-Signal Inc.

1. Allied offered responses to the comments by New Jersey and the City of Baltimore "to clarify the matters addressed in the Statement [of Basis] and support the tentative decision [by EPA and MDE] to approve the CMIPP."

EPA and MDE Response:

EPA and MDE have reviewed Allied's comments and considered them in the context of our responses to New Jersey and the City of Baltimore. Allied's comments do not raise any questions and thus do not require a response.

D. Comments/Questions Expressed During Community Interviews

Site Investigation:

1. City employees were concerned about the areas of contamination at the newly acquired properties and the possibility of contamination spreading from the Site and how that would be addressed. They requested further investigation of Thames Street and additional Off-site Areas.

EPA and MDE Response:

An investigation of Off-site Areas to the east of the Facility, including the newly acquired properties, was completed last year (see Figure 5). The newly acquired properties are located at 902-920 South Caroline Street (the Silver Property) and at 1431-1447 Block Street. The results of the investigation show that chromium contamination in the soil has not spread to Thames Street. Such contamination is limited primarily to the Former Manufacturing Area and to the Southeast Quadrant. Some soil which is highly contaminated with chromium and has elevated levels of PAHs has been found on Wills Street by Dock Street and will be excavated as discussed in Section III of this Final Decision and Response to Comments. Analytical results from sampling of the soil show that the PAH contamination found on the Silver Property is more likely to be from the chemicals used in the treatment of wood than from Allied's former manufacturing activities. The CMIPP has a contingency plan which will address any chromium which has spread from the Facility to contiguous soils.

2. Members of the Waterfront Coalition requested that the newly acquired properties be investigated for lead contamination as a result of former foundry operations on one of the properties.

EPA and MDE Response:

Investigation for contamination which is not related to Allied's Baltimore Works Facility is outside of the jurisdiction of the Consent Decree.

Health and Risk Assessment Issues:

1. The Waterfront Coalition asked for an explanation of the

worst-case scenario risk assessment, which is located in Appendix D of the CMIPP, in relation to the actual conditions caused by the groundwater release from the property east of the containment structure.

EPA and MDE Response:

The worst-case scenario assumed that the highest concentration of contaminated groundwater found in groundwater samples taken east of Wills Street flowed into the edge of the Harbor at that concentration along the entire southeastern border of the peninsula. However, in actual site conditions the highest concentration of contaminated groundwater is limited to a very small area east of Wills Street and is not representative of the less contaminated groundwater immediately adjacent to the southeastern border of the peninsula. As noted in the Statement of Basis (Attachment 1) under "Site Characterization," analyses of the Harbor surface water immediately east of the southeast area show no detectable levels of chromium.

2. City officials and the Waterfront Coalition are concerned about water quality and fish and crabs in the Harbor. City officials asked if there are any hazards posed by eating the fish and crabs because of releases from the Site and questioned whether there should be a ban imposed on fishing and crabbing.

EPA and MDE Response:

The Surface Water Quality Standard established for the remedy will be protective of all aquatic life in the Harbor once the remedy is implemented. Insufficient information is available to determine whether fish and crabs are now being affected by releases from the Site. In order to assess the possible effects of chromium contamination on the aquatic environment and human health, better data is needed. Without information on the levels of chromium in the fish, the need for a fish advisory cannot be determined. The State of Maryland Department of Natural Resources is responsible for determining the need for a fish advisory.

3. City officials questioned what the risks would be after the Site is capped and what would cause risks.

EPA and MDE Response:

EPA and MDE are confident that no risks to human health and the environment will exist after the groundwater maintenance/containment remedy is fully implemented.

4. A resident is concerned about the deaths of her son's three dogs. Although she notes that the deaths may be the result of poison placed outside their home to kill rodents in the neighborhood, the resident questions whether the deaths could be related to the contamination at the Site.

EPA and MDE Response:

EPA and MDE do not have enough information to determine the cause of the dogs' deaths.

The Overall Site Remedy:

1. The Waterfront Coalition questions the stability of the slurry wall and cited a nearby site that has caved in.

EPA and MDE Response: The integrity of the Barrier Wall will initially be checked through pump test data generated after installation of the Wall. Thereafter, data from pumping for maintenance of the inward hydraulic gradient will be used to check the integrity of the Wall.

2. Residents expressed concern over the cost of the remedy.

EPA and MDE Response:

Allied is responsible for paying for the Site remedy and perpetual Site maintenance.

3. Residents expressed concern over long-term maintenance.

EPA and MDE Response:

Pursuant to Section XXVIII of the Consent Decree, Allied is perpetually responsible for operating and maintaining the corrective measures. EPA and MDE will provide oversight and monitoring of Allied's activities at the Site.

4. Residents inquired where the extracted water from the Site will be taken.

EPA and MDE Response: Extracted groundwater will either be treated on-site and discharged to the Harbor or the City's Public Treatment Works or the extracted groundwater will be transported off-site by truck and taken to an appropriate treatment facility.

Remedy Design:

1. The Waterfront Coalition requests information on what additional harbor area Allied provided in exchange for expansion

of the bulkhead around the Site.

EPA and MDE Response:

An outboard embankment (bulkhead) was constructed around the water-side perimeter of the Site to support the old and failing bulkheads and to prevent contamination at the Site from falling into the harbor. The outboard embankment was designed so that the Barrier Wall could be placed outside of the contaminated property. Design of the outboard embankment was made available for public comment by the Corps of Engineers in February of 1990. In the design, the Corps of Engineers required Allied to provide a shallow fish habitat in exchange for expansion of the bulkhead. On December 18, 1991, Allied requested that the Corps of Engineers accept a contribution of $375,000 to the Fish Passage Program for the Patapsco River in lieu of provision of a shallow fish habitat. A final decision on the request has not been made.

2. City officials asked that the contingency plan which addresses the migration of chromium contamination from Allied's property include all properties to Thames and Caroline Streets and not be limited to the streets contiguous to Allied's property.

EPA and MDE Response:

As a result of evaluation of this comment and consistent with Section V, paragraph 15 of the Consent Decree, EPA and MDE have determined that the contingency plan in the CMIPP shall be revised to require Allied to remediate any chromium contamination in the soil which exceeds 10 ppm hexavalent chromium at all neighboring properties to which chromium has migrated from Allied's Facility through the soil.

3. City officials requested assurance that no gaps will exist between the layered soil cap on the Southeast Quadrant and multi-media cap on the Former Manufacturing Area.

EPA and MDE Response:

As a result of evaluation of this comment, EPA and MDE have determined that the CMIPP shall be revised to require that no gaps exist between the layered soil cap on the Southeast Quadrant and the multi-media cap on the Former Manufacturing Area.

4. City officials requested further information on where pumps will be placed outside of the cap.

EPA and MDE Response:

Information on where the pumps will be placed outside of the cap has not been submitted by Allied. This information is required to be submitted by Allied in the design phase of the project.

5. City officials expressed concern over possible flooding of the Site if it is in the flood plain.

EPA and MDE Response:

Placement of the cap will raise the entire Site over the height of the 100-year flood plain. Figure 1 of Allied's Part B permit application shows that the lowest elevation on the Site is 98.6 feet. Figure 3 of the Part B application shows that the 100-year flood plain elevation is 102.1 feet. In accordance with Exhibit 5 of the Consent Decree (Allied Signal Remedial Plan), the cap will be five to seven feet thick.

6. City officials asked if the slurry wall will be visible.

EPA and MDE Response:

Design of the groundwater maintenance/containment remedy will be completed after this Final Decision. At the current time, it cannot be predicted whether the Barrier Wall will be visible. However, typical design plans for this kind of system include placement of the cap over the Barrier Wall to protect the wall. Therefore, it is unlikely that the Wall will be visible. Note also that the type of wall which will be utilized, slurry or otherwise, will be determined during the design stage.

7. City officials asked if there is a possibility that the Site can be excavated to the point where the cap would be level with the rest of the area.

EPA and MDE Response:

Excavation of the Site to the point where the cap would be level with the rest of the area would cause chromium dust to flow into the air during excavation, thereby creating an additional risk to human health and the environment. Inhalation of chromium dust has been found to cause cancer. EPA and MDE have therefore determined that Allied shall not be required to excavate the Site to the point where the cap would be level with the rest of the area.

8. City officials asked if a building permit will be needed for construction of the remedy.

EPA and MDE Response:

EPA and MDE understand that a building permit is needed for construction at the Site. However, it is Allied's responsibility under the Consent Decree to apply for and obtain any permits which are needed to implement the remedy.

Planning:

1. City officials expressed an interest in being able to place trees on the Site.

EPA and MDE Response:

Pursuant to Section V, Paragraph 16 of the Consent Decree, placement of trees on the Site is subject to EPA and MDE approval. Roots of trees can detrimentally affect the integrity of the cap. Plant boxes which would contain the roots may be acceptable if they do not affect the integrity of the remedy.

2. City officials requested that options for the design of the cap be provided to avoid any problem in urban design. The Waterfront Coalition requested that the cap be designed to accommodate future use of the Site as a park with trees or an opera house. They do not want the cap design to limit the potential use of the area.

EPA and MDE Response:

It is not within the scope of EPA's or MDE's authority under the Consent Decree to require that the design of the cap accommodate any particular future Site use.

3. City officials asked if a promenade will be required and questioned who will review plans for a promenade. The Waterfront Coalition requested that the Site design not include a boardwalk overhang off the perimeter as this would reduce space in the Harbor.

EPA and MDE Response:

It is not within the scope of EPA's or MDE's authority under the Consent Decree to require a promenade or a boardwalk overhang at the Site. If a promenade or a boardwalk overhang is included in any design plans for the Site, the design for the promenade will require review and approval by EPA and MDE to assure that the function and integrity of the remedy is not affected.

4. City officials requested that the "Fells Point Urban Renewal Plan" be incorporated into the design requirements.

EPA and MDE Response:

It is not within the scope of EPA's or MDE's authority under the Consent Decree to require that the "Fells Point Urban Renewal Plan" be incorporated into the remedy design requirements.

5. City officials requested that subdivisions be banned for the property.

EPA and MDE Response:

It is not within the scope of EPA's or MDE's authority under the Consent Decree to ban subdivisions for the property if they do not affect the function and integrity of the remedy.

6. City officials noted that a potential use of the deep aquifer, while not for drinking water, may be for non-contact cooling water. City officials are concerned about the discharge of non-contact cooling water extracted from chromium-contaminated water in the deep aquifer.

EPA and MDE Response:

The area of the deep aquifer which is known to be contaminated as a result of releases from the Site extends from the Site southeast under the Patapsco River (see Figure 4). The City may want to restrict the use of chromium-contaminated water from the deep aquifer. In accordance with State of Maryland regulations, anyone wishing to construct a new well must contact the local health department (such as the City of Baltimore's health department) in addition to obtaining a well construction permit from the Water Management Administration of MDE. If chromium-contaminated water from the deep aquifer is used for non-contact cooling water, the cooling water may require treatment to meet federal, State and City standards prior to discharge to the Publicly Owned Treatment Works (POTW) or any surface water.

7. The Waterfront Coalition asked if the reconstruction of Philpot and Thames Streets to remove tracks to four feet deep will affect caps or the containment structure.

EPA and MDE Response:

It is not expected that any removal of the tracks from Philpot or Thames Streets will affect the corrective measures. However, should there be an effect, it will be observable through routine operation and maintenance,

environmental monitoring and EPA and MDE oversight. Pursuant to Section XXVIII of the Consent Decree, Allied will have perpetual responsibility for the operation and maintenance of the corrective measures.

Coordination With the City of Baltimore:

1. City officials requested that EPA require Allied to submit all information to the City that is submitted to EPA and MDE. They asked how they can be sure that the information sent to the City by Allied is the same information received by EPA.

EPA and MDE Response:

As a result of evaluation of this comment, EPA & MDE have determined that the CMIPP shall be revised to require Allied to submit all plans and reports to the City that are submitted to EPA and MDE. In addition, all documents which are submitted to EPA and MDE are available for public review in the Administrative Record located at the offices of the Maryland Department of the Environment, 2500 Broening Highway, Baltimore, Maryland and at the offices of U.S. EPA, Region III, 841 Chestnut Building, Philadelphia, Pennsylvania.

2. The City requests that City approval be obtained for water pumped from the Site if it is put through the POTW.

EPA and MDE Response:

Under Section VI, paragraph 2 of the Consent Decree, Allied is required to apply for and obtain any approvals from the City or other governmental entities which are needed to implement the remedy.

3. The City would like to review the plans for sediment/erosion control.

EPA and MDE Response:

The plans for sediment and erosion control have not yet been submitted. As stated above, plans and reports submitted to EPA and MDE shall also be submitted to the City of Baltimore. In addition, the document will be available for review as part of the public record.

Coordination with the Community:

1. City officials and the Waterfront Coalition requested that they be informed of Allied's plans for future Site use which are included in design submittals.

EPA and MDE Response:

As stated above, plans and reports which are submitted to EPA and MDE, including design plans, shall also be submitted to the City of Baltimore. In addition, all documents which are submitted to EPA and MDE are available for public review in the Administrative Record located at the offices of the Maryland Department of the Environment, 2500 Broening Highway, Baltimore, Maryland and at the offices of U.S. EPA, Region III, 841 Chestnut Building, Philadelphia, Pennsylvania.

2. The City requested that a public comment period for the design stage be provided when the design is fifty percent completed.

EPA and MDE Response:

The Consent Decree does not provide for public comment at this stage. Under Section XIX, paragraph 4 of the Consent Decree, a public comment period of at least three weeks will be provided on the Prefinal Design Submittal described in Section V, paragraph 7.b. of the Consent Decree if the design is significantly different from the design suggested in the approved Corrective Measures Implementation Program Plan.

3. The Waterfront Coalition requested clarification as to whether the inclusion of buildings in the final design plans would be "significantly different" to require a public comment period at that time.

EPA and MDE Response:

The inclusion of buildings in the Prefinal Design Plans would only require a public comment period if the presence of the buildings significantly changed the remedies approved in the CMIPP.

4. City officials requested that the property owners of the Atlantic Mill and Lumber Yard and properties located adjacent to the Site as well as the Fells Point community groups be added to the public notice mailing list.

EPA and MDE Response:

These persons and groups have been added to the public notice list as well as to Allied's newsletter mailing list.

5. The City requested that EPA provide a sign-up sheet at the public meeting for those interested in receiving a copy of the Response to Comments document.

EPA and MDE Response:

All persons who attended the public meeting were requested to sign a sign-in sheet. All persons who signed in will receive a copy of this Final Decision and Response to Comments.

Remedy Construction:

1. City officials are concerned about the possibility that the contamination could become airborne during construction of the remedy. City officials request off-site monitoring farther away than the Site's perimeter to assure the public. There is a specific concern about how this contamination could affect the elderly residents in the area.

EPA and MDE Response:

This exposure route is being addressed by monitoring at the Facility boundary. If monitors were placed off-site, other interferences would affect the reliability of the data. In response to this and other comments, EPA and MDE have determined that the CMIPP shall be revised to require Allied to take all measures possible to ensure that the background concentration of chromium in the air at the Facility boundary is not exceeded as a result of remediation activities at the Site. This background concentration is identified in Allied's Environmental Media Monitoring Plans (December, 1989) which will be reviewed for approval by EPA and MDE. In addition, EPA will provide oversight of all work activities which create dust to assure the public that a maximal effort is being exerted to minimize and prevent releases of chromium to air.

2. City officials inquired whether the current air monitoring at the Facility boundary was established in coordination with the State's air management department.

EPA and MDE Response:

Yes, the current air monitoring at the Facility boundary was established in coordination with the State's air management department.

3. City officials are concerned for the workers who will be constructing the remedy.

EPA and MDE Response:

As required by Section VI, paragraph 1 of the Consent Decree, the Occupational Safety and Health Act, 29 U.S.C.

§ 651 et seq., must be complied with during construction. Allied requires all workers in the work area to wear air purifying dust respirators. In addition, the workers and the air in the work area are monitored for chromium particulates and noise levels.

4. Waterfront Coalition members are concerned about OSHA problems and violations at the Site.

EPA and MDE Response:

EPA and MDE are unaware of any OSHA problems or violations at the Site. OSHA reports that as of February 9, 1992, there were no OSHA violations at the Site.

Transport of Waste:

1. The Waterfront Coalition inquired where waste from the Site has gone and whether the debris is tested before it is transported.

EPA and MDE Response:

Debris is tested before it is transported. Hazardous wastes from the Site, which at this point are all solid wastes, are being placed in the Hawkins Point Hazardous Waste Landfill. Wastes containing asbestos are being sent to Wayne Disposal in Michigan. In the beginning of the dismantlement, some of the wastes containing asbestos were sent to a landfill in Virginia. Scrap steel which is non-hazardous is being sent to Cambridge Iron and Metal in East Baltimore, and non-hazardous, non-metal wastes are being sent to the City incinerator or the City landfill or to a privately-run landfill on Days Cove Road located in Baltimore County.

2. The Waterfront Coalition inquired about the process for containing releases from the trucks.

EPA and MDE Response:

All hazardous waste from the Site is transported by a licensed hazardous waste transporter. Each licensed hazardous waste transporter is required to have a plan in place to contain releases from the truck.

3. The Waterfront Coalition asked if sludge is disposed of at the Hawkins Point Landfill.

EPA and MDE Response:

No sludge is being disposed of at the Hawkins Point Landfill.

Monitoring/Oversight:

1. The Waterfront Coalition requests information on the frequency of oversight monitoring.

EPA and MDE Response:

The Facility is required to submit quarterly status reports containing all of their monitoring information. EPA and MDE routinely review all of the reports. Site inspections are completed on an as-needed basis to oversee construction and implementation of the remedy. Samples taken for the purpose of monitoring will be routinely split and analyzed by EPA and/or MDE during construction and implementation of the remedy. Oversight inspections and analyses of split samples will continue after the construction and implementation of the remedy.

2. The Waterfront Coalition requests that monitoring take place after rainfall.

EPA and MDE Response:

EPA and MDE have determined that it is not necessary to require monitoring after rainfall for the following reasons. The multimedia cap selected for the Former Manufacturing Area will prevent precipitation from contacting any of the waste there. The layered soil cap which has been selected for the Southeast Quadrant does not need to prevent precipitation because the soils do not contain concentrations of contaminants which could leach unacceptable concentrations of contaminants into the groundwater. Under the Consent Decree, a Surface Soil Monitoring Plan to monitor the integrity of the caps and their ability to prevent the upward migration of contaminants and control the infiltration of water is required to be submitted for approval and implemented. Finally, the groundwater maintenance system will measure the groundwater elevations in the piezometers hourly and will pump and treat groundwater if the required groundwater gradient is not being maintained. This will minimize the effect of any infiltration of precipitation into the containment structure.

3. The Waterfront Coalition would also like to see a regular system of reporting the results of monitoring that is conducted on-site.

EPA and MDE Response:

All monitoring results are available for public review in the Administrative Record located at the offices of the

Maryland Department of the Environment, 2500 Broening Highway, Baltimore, Maryland and at the offices of U.S. EPA, Region III, 841 Chestnut Building, Philadelphia, Pennsylvania.

4. The Waterfront Coalition would like to know if they need to be more vigilant in the monitoring and oversight process and request that EPA and MDE be accessible to the community at all times.

EPA and MDE Response:

EPA and MDE will complete all necessary monitoring and oversight. However, if any concerns about construction or implementation of the remedy arise, the community is requested to contact the project coordinators for EPA and MDE. The current project coordinator at MDE is Alvin Bowles and he may be reached at (410) 631-3344. The current project coordinator at EPA is Diane Schott and she may be reached at (215) 597-0130. As a result of evaluation of this comment, EPA and MDE have determined that the CMIPP shall be revised to require Allied to inform the community in their newsletters of any changes in project coordinators.

E. Comments/Questions Expressed at the Public Meeting

Numbers in parentheses refer to the page numbers in the transcript of the public meeting where the comment can be found. The transcript is in the Administrative Record.

Site Investigation:

1. A resident questioned why the majority of the testing/sampling conducted on-site has been conducted by Allied. The resident questions Allied's credibility regarding these studies. (p. 25) A resident asked if it is typical EPA procedure to allow the Facility responsible for contamination, in this case Allied, to conduct the Remedial Investigation/Feasibility Study for the Site. (p. 41)

EPA and MDE Response:

Under current EPA RCRA policy, the Facility owner or operator conducts the Remedial Facility Investigation and Corrective Measures Study. Since the EPA-MDE-Allied Consent Decree was entered in September of 1989, all investigations have been carried out with oversight by MDE and/or EPA. All submitted reports are reviewed by EPA and MDE.

2. A resident commented that it appears that the operating Facility (Allied) would have a vested interest in minimizing the

findings of the investigations and she would like to see the procedure changed in the future. (p. 42)

EPA and MDE Response:

The procedures to be followed at the Site in the future have been established by the Consent Decree.

3. A resident asked whether any of the newly-acquired Allied property is contaminated and, if it is contaminated, whether it will be included in the encapsulation area. (p. 42)

EPA and MDE Response:

Some surface soil contamination was discovered on the Silver Property. The contamination consisted of chemicals from a wood treatment process, not chromium or other chemicals that would be the result of Allied's manufacturing operations. The Silver Property will not be included in the encapsulated area.

4. A resident asked how long it will take to determine when that newly-acquired property will be cleaned up. (p. 44)

EPA and MDE Response:

It is planned that the property will be cleared, resampled and cleaned up within a year. Materials for the construction of the containment structure will then be stockpiled there.

5. A resident asked how much testing was completed on land around the perimeter of the Site and how far from the perimeter the testing took place. (p. 50)

EPA and MDE Response:

Testing was completed on surface soil and groundwater at the locations indicated in Figure 5.

6. A resident questioned why the Atlantic Lumber Yard, located near the Allied Site, was not tested since wood preservation chemicals, such as creosote, copper chromates, etc., would have been used at the Lumber Yard. He also stated that he doesn't believe a layered soil cap of two feet placed on the Atlantic Lumber Yard will provide much protection. (p. 52, 53)

EPA and MDE Response:

This Final Decision only addresses contamination at and from the Allied Facility and wood preservation chemical contamination on property newly acquired by Allied.

Investigation and remediation of the Atlantic Lumber Yard is outside the scope of this decision. The layered soil cap will only be placed on the Southeast Quadrant of the Allied Facility.

Health and Risk Assessment Issues:

1. A resident asked what the relationship is between chromium from the Allied Facility and the cancer rate in the State of Maryland. She also asked how the chromium released from the Site has been functioning in the food chain and how that relates to the cancer rate in the State. (p. 82)

EPA and MDE Response:

Insufficient information is available to determine whether there is any relationship between the release of chromium from the Allied Facility and the cancer rate in the State of Maryland or how chromium has been functioning in the food chain. EPA's Human Health Assessment Group states that there has been sufficient research on the effects of inhaling hexavalent chromium to conclude that this form of chromium is carcinogenic by inhalation. There has not been sufficient research to determine whether it is carcinogenic by ingestion or other routes of exposure.

The Performance Standards for the remedy in the Consent Decree are based on regulatory standards established by EPA and MDE. Compliance with these standards will ensure that the levels of chromium in the surface water will be protective of human health and the environment.

2. A resident asked if chromium functions as a promoter when working in conjunction with other compounds and whether chromium has an accumulative effect in the body. (p. 86)

EPA and MDE Response:

According to EPA's Human Health Assessment Group, there is insufficient information to determine whether chromium functions as a cancer promoter when working in conjunction with other compounds. There is some indication in the research that chromium can accumulate in the body (Integrated Risk Information System (IRIS), 1991).

Surface Water Standards:

1. A resident asked who set the standard for 50 parts per billion for surface water testing. (p. 45)

EPA and MDE Response:

The standard is part of the Ambient Water Quality Criteria set by EPA in 1980 to protect human health and the environment. This concentration is protective of any humans who may be using the water for residential or recreational use and/or consuming fish from this area. This concentration is also protective of marine life.

2. A resident asked how many 50 parts per billion (ppb) are in a pound. (p. 81)

EPA and MDE Response:

50/1,000,000,000 or 0.00000005. An easier way to understand it is that 50 ppb is the equivalent of one drop in 320 gallons of water.

Remedy Selection:

1. A resident commented that he believes that this remediation imposes strict limitations on future Site use and asked if there are other remedies that would allow planting of trees. (p. 39)

EPA and MDE Response:

In the Feasibility Study of Corrective Measures Alternatives Report, submitted to MDE by Allied in 1987, the proposed groundwater maintenance/containment remedy was compared to many remedies against the following criteria: protection of human health and the environment; suitability for mitigating exposure pathways; technical feasibility; applicable and relevant and appropriate requirements; and cost. At the time the Consent Decree was entered, the parties contemplated that Allied would propose this remedy in the CMIPP. As discussed in the Introduction, the Consent Decree requires EPA and MDE to approve this remedy after the public comment period provided that certain conditions are met.

2. A resident asked if the corrective measure alternatives considered for the Site will remain options for the future, if deemed necessary. (p.47)

EPA and MDE Response:

Use of other alternatives is not anticipated to be needed. However, if through monitoring and oversight it is determined that the remedy is not effective, selection of additional or different corrective measures will be evaluated against corrective measure alternatives which are available at that time.

3. A resident asked to be provided with information about other sites that have been "walled and capped." She specifically asked for information on sites where this type of remedy has been in place for over two years. (p. 64)

EPA and MDE Response:

The selected remedy includes maintenance of an inward flow of groundwater, as well as a Wall and cap. Sites where similar remedies have been implemented are listed in Attachment 2. This type of remedy has been successfully implemented for over a year at the Kane and Lombard Site in Maryland.

4. A resident commented that she is concerned about the possibility of sea water rise which could occur in the future and how it could impact the remedy. (p. 70)

EPA and MDE Response:

One of the purposes of the cap for the containment structure is to minimize infiltration of water. It is not expected that sea level rise will affect the cap. However, if there is an effect, it will be observable through routine operation and maintenance, environmental monitoring and EPA and MDE oversight. Under Section XXVIII of the Consent Decree, Allied will have perpetual responsibility for the operation and maintenance of the corrective measures.

<u>Deep Groundwater Contamination</u>:

1. A resident commented that she would encourage EPA to be concerned about the deep groundwater contamination that is moving to the southeast. The resident stated that she was concerned about people who will be using that groundwater and if it may affect the residents who eat fish and crabs taken from the Harbor southeast of the Facility. (p. 69)

EPA and MDE Response:

Implementation of the remedy will eliminate the release of any further contaminants to the deep groundwater from the Allied Facility. The deep contaminant plume is moving under the Harbor in a southeast direction and is not currently being used as a drinking water source. EPA and MDE do not presently foresee that any drinking water user (industrial or residential) will ever exist for the contaminated portion of the deep groundwater below the Site. Furthermore, in accordance with State of Maryland regulations, anyone wishing to construct a new well must obtain a well construction permit from the Water Management Administration of MDE, and must also contact the local health department.

Since the deep contaminant plume is in the aquifer under the Harbor, it is not affecting any fish or crabs. The State of Maryland Department of Natural Resources is responsible for determining if the fish and crabs are safe to eat.

Remedy Design:

1. A resident asked about the depth of the encapsulation unit. (p. 43)

EPA and MDE Response:

The vertical hydraulic barrier is proposed to extend to the top of the decomposed rock (saprolite), which is approximately 70 feet deep.

The Promenade:

1. A resident stated that she feels that the northwest branch of the Baltimore Harbor should benefit from whatever reparations are made for filling in the Harbor for the promenade. (p. 75)

EPA and MDE Response:

The new bulkhead was not constructed to provide a promenade. The new bulkhead was constructed around the water-side perimeter of the Site to support the old and failing bulkheads and to prevent the contamination at the Site from falling into the harbor. Design of the new bulkhead was made available for public comment by the Corps of Engineers in February of 1990. In the design, the Corps of Engineers required Allied to provide a shallow fish habitat in exchange for expansion of the bulkhead. As discussed above, Allied has requested that the Corps of Engineers accept a contribution of $375,000 to the Fish Passage Program for the Patapsco River in lieu of Allied's provision of a shallow fish habitat. A final decision on the request has not been made.

Future Site Use:

1. A resident asked what type of building could be built on the cap, whether the Site could be used as some kind of recreational/park area and whether trees could be planted on the cap. (p. 37)

Another resident expressed concern about converting the Site into a recreational area or building anything on the Site once the remediation is completed. (p. 46)

EPA and MDE Response:

No decisions have been made regarding future Site use. The Consent Decree requires that EPA and MDE review any plans for development of the Site to ensure that the function and

integrity of the corrective measures are not affected. These are the only limitations which are placed on the types of plans which Allied can submit for review and approval. Plans for uncontained plants whose roots can detrimentally affect the integrity of the cap will not be approved.

2. A resident asked when the decision will be made regarding future Site use and several residents requested that the community be notified in order to have input into that decision. (pp. 39,40,59)

EPA and MDE Response:

Decisions which may affect future Site use will be made by EPA and MDE after Allied submits any design plans which require EPA and MDE approval. Design plans which require EPA and MDE approval are the Prefinal Design Submittal, which is required to be submitted within 54 weeks after EPA and MDE approval of the CMIPP, and any plans for alterations to the Site when they are planned. EPA and MDE do not have authority under the Consent Decree to regulate Allied's timeframe for making a decision on future Site use.

Public input into the decision of future Site use should be directed to the City of Baltimore, which is responsible for land use. The City of Baltimore shall receive all plans and reports which are submitted to EPA and MDE.

Government Coordination:

1. A resident asked what type of relationship EPA will have with MDE and the City of Baltimore (p. 54)

EPA and MDE Response:

EPA and MDE are parties to the Consent Decree and are working together jointly to oversee the implementation of the Consent Decree. EPA and MDE are working with the City on an informal basis outside of the Consent Decree to accommodate the City's concerns. Allied is required to work with the City directly to obtain any and all permits for building, zoning changes, etc., necessary to implement the remedy.

2. A member of the City Planning Department commented that the City of Baltimore is working with EPA and MDE to provide a local perspective on the remediation activities planned for the Facility. The City has reviewed the corrective measures and agrees with EPA and MDE that they will be effective for remediation of the Site. The City will continue to review plans to assure that the Site and adjacent properties complement the Fells Point area and the City as a whole. (p. 80)

Coordination with the Community:

1. A resident asked for summaries of the lab data from the Site. (p. 24)

EPA and MDE Response:

As a result of evaluation of this comment, EPA and MDE have determined that the CMIPP shall be revised to require Allied to provide the community with summaries of laboratory data and brief explanations of the data in their newsletters. In addition, all Site data is available for public review in the Administrative Record located at the offices of the Maryland Department of the Environment, 2500 Broening Highway, Baltimore, Maryland and at the offices of U.S. EPA, Region III, 841 Chestnut Building, Philadelphia, Pennsylvania. EPA and MDE are available to assist the community in interpreting Site information.

2. A resident stated that she would like to have regular communications with the Agencies involved with the remedy. The resident stated she would suggest "no longer than two months between communications." She considers monthly meetings to be the minimum necessary to keep the community informed. (p. 72)

EPA and MDE Response:

As a result of evaluation of this comment, EPA and MDE have determined that the CMIPP shall be revised to require Allied to increase the frequency of publication of their newsletter to four times a year during active construction activities and two times a year thereafter in order to keep the area residents informed of the activities taking place at the Site.

Notification to Boaters of New Bulkhead:

1. A resident stated that the Harbor has been narrowed by the new bulkhead around the Facility. Since new maps of the Harbor were issued last year and will not be issued again for several more years, she would like EPA to require Allied to place buoys in the Harbor to alert boaters. (p. 74)

EPA and MDE Response: The Corps of Engineers, which issued the permit for the enhanced bulkhead (outboard embankment), is the Agency responsible for the placement of buoys. The Agency responsible for publishing the maps is the National Oceanic Atmospheric Administration (NOAA). NOAA has been informed of the placement of the outboard embankment. EPA will ask NOAA if the placement of the outboard embankment needs

to be reflected in the maps and, if so, whether new maps can be published.

Remedy Construction:

1. A resident asked if clearing the Site will produce dust contaminated with chromium which could be inhaled by the community. (p. 88)

EPA and MDE Response:

Clearing the Site will produce dust contaminated with chromium. This exposure route is being addressed by monitoring at the Facility boundary. EPA and MDE review these monitoring results. In addition, EPA will provide oversight of all work activities to ensure that all measures possible are being taken to prevent releases of chromium to air.

Waste Disposal:

1. A resident asked how much waste from Allied was taken to an incinerator and which incinerator, Pulaski or Bresco, received the waste. (p. 87)

EPA and MDE Response:

All nonhazardous nonmetal burnable material such as paper and cardboard trash was taken to the Bresco incinerator. Information on the actual amount of waste taken to the Bresco incinerator can be obtained from the Solid Waste Management Program of MDE.

2. Residents expressed concern over disposal of waste from the Allied Site at Hawkins Point Landfill and Hart Miller Island. There is concern that the waste is eventually ending up in the Chesapeake Bay. (p. 25) A member of the Maryland General Assembly questioned how the Island is tested for seepage. (p. 33) A resident inquired as to whether Hart Miller Island is regulated by the EPA. (p. 57)

EPA and MDE Response:

Hazardous waste from the dismantlement of the Facility is being sent to Hawkins Point Landfill. Hawkins Point Landfill is a hazardous waste landfill permitted by the State of Maryland. As a permitted hazardous waste landfill, Hawkins Point Landfill was constructed and is monitored to prevent releases from the Landfill from occurring. If a release from Hawkins Point Landfill is identified, EPA is authorized to require corrective measures.

Sediment which was dredged from the Inner Harbor area adjacent to the Allied Facility prior to the construction of the outboard embankment was sent to Hart Miller Island. Hart Miller Island was established for the purpose of receiving dredge material from the Inner Harbor. Dredging, transportation and disposal of the dredge material from the area around Allied's Facility was strictly controlled.

Although the dredge material was contaminated, the material was not a regulated hazardous waste. The discharge from Hart Miller Island is regulated by MDE. MDE has imposed National Pollutant Discharge Elimination System (NPDES) Standards on the Island. If the material to be discharged from the Island does not meet the NPDES Standards, then it is not discharged until it does meet the Standards. Sampling is routinely conducted around the Island to determine if any material is leaking. Visual inspections are routinely conducted on the dike areas to determine if any erosion is taking place. Hart Miller Island is not regulated by EPA.

3. A member of the Maryland General Assembly asked how the contaminated material from the Allied Site is transported to Hart Miller Island and other disposal facilities. He asked if the material is escorted by the police to ensure that there are no contamination spills during transport. (p. 31, 34)

EPA and MDE Response: No material from the Allied Site was sent to Hart Miller Island. Only dredge material from the Harbor area adjacent to the Site was sent to the Island. Transportation of the material was strictly controlled. Contaminated material from the Allied Site is transported from the Facility by truck. All hazardous waste from the Facility is transported by a licensed hazardous waste transporter. Each licensed hazardous waste transporter is required to have a plan in place to contain releases from the truck. The hauling company, the vehicle and the driver are regulated by the State. The regulations include licensing, inspections and manifests to ensure that the material that left the Allied Site arrives at its destination. The trucks are not escorted by police.

Remedy Implementation:

1. A member of the Maryland General Assembly asked if Allied will be freed from any future liabilities from the Site after the remediation is completed. (p. 31)

EPA and MDE Response: Under Section XXVIII of the Consent Decree, Allied has perpetual responsibility for operating and maintaining the approved corrective

measures and for complying with the Surface Water Performance Standard and the Groundwater Gradient Performance Standard. Section XVIII, paragraph 2 of the Consent Decree states that "No conveyance of title, easement, or other interest in the Site or business shall be executed by Defendant [Allied] without complete provision for the fulfillment of all requirements of this Consent Decree, including submission to EPA and MDE of a form of financial assurance sufficient to assure completion of the remedial work. Such transfer shall not release Defendant from its obligations under this Consent Decree."

2. A resident questioned what would happen to the remedy and monitoring if Allied "ceased to exist as a corporation." (p. 43)

EPA and MDE Response: Section XVI of the Consent Decree requires Allied to provide financial assurance to ensure completion of all requirements of the Consent Decree. Allied provided a Demonstration of Financial Responsibility Under Section XVI of the Allied Baltimore Works Consent Decree on October 4, 1990 (Attachment 3). In the demonstration, Allied asserted that its "net worth and assets in the United States are sufficiently large that no bond, letter of credit, or similar "third-party" surety is necessary." EPA and MDE have not made a final determination on this assertion. Assuming Allied meets the requirements for financial assurance, EPA and MDE would provide for the operation and maintenance of the remedy and monitoring with Allied's funds if Allied "ceased to exist as a corporation." Upon evaluation of this comment, EPA and MDE have determined that the CMIPP shall be revised to require Allied to submit annually to EPA and MDE a statement of financial assurance in accordance with Section XVI of the Consent Decree.

3. A resident asked how many Superfund sites are located in the United States and what kind of priority the Allied Site would have if Superfund should ever have to take the Site over. (p. 56)

EPA and MDE Response: There are approximately 1,200 sites on the Superfund National Priority List. Sites which are included on the Superfund National Priority List are those which have ranked high enough to require remediation under Superfund after evaluation for potential harm to human health and the environment. The priority the Allied Site would have if Superfund should ever have to take the Site over is uncertain.

4. A resident questioned what would happen if the Site remedy fails, how long it would take for EPA to realize that the remedy is failing and how long it would take to address the problems. (p. 45)

EPA and MDE Response: Section V, paragraph 14 of the Consent Decree defines remedy failure as a violation of any Performance Standard or any impairment of the structural integrity of the cap such that a direct exposure hazard has been created. This section of the Consent Decree requires Allied to provide verbal notice to EPA and MDE within 24 hours of Allied's receipt of evidence of remedy failure. The monitoring and maintenance requirements of the Consent Decree, which are discussed in Section III of this document, should enable Allied to recognize remedy failure almost as soon as it occurs.

If the remedy begins to fail, it will be addressed as quickly as possible. The amount of time needed to address the problem would depend on what portion of the remedy was failing and its complexity.

Monitoring/Oversight:

1. A resident questioned what type of input EPA will have to ensure that activities at the Site are environmentally safe. (p. 54)

EPA and MDE Response: EPA will have full approval and oversight authority to ensure that activities at the Site are environmentally safe.

2. A resident asked when EPA proposes to start joint sampling. (p. 81)

EPA and MDE Response:

EPA will start joint sampling within the next six months.

3. A member of the Maryland General Assembly asked who will pay for the monitoring program at the Site, how long the monitoring program will be in effect, how often the Allied Site will be monitored and how often sites similar to Allied's are monitored. (pp. 35, 36)

EPA and MDE Response:

Allied is responsible for payment of the Site monitoring costs. Monitoring and oversight of the Site will continue perpetually. See the section on "Monitoring and Maintenance" in Section III of this document for a complete

description of the monitoring requirements at this Site. Sites similar to Allied's are monitored quarterly each year, and thereafter receive at least one major inspection each year.

4. A resident requested that the community be included in the negotiations/decision-making process regarding the frequency of Site monitoring. She would like to see the Site monitored quarterly and groundwater monitored on a daily basis at first, then weekly and then monthly as time goes by. (p. 72)

EPA and MDE Response:

Monitoring frequencies were established in the Consent Decree. The frequency of monitoring of groundwater levels was increased in the CMIPP. Groundwater levels will now be measured hourly in perpetuity.

5. A resident asked whether the perpetual monitoring at the Site would be a joint activity between EPA and Allied, or whether Allied would be monitoring the Site without EPA. (p. 81)

EPA and MDE Response:

Allied will be responsible for perpetual monitoring and the submittal of quarterly reports to EPA and MDE. EPA and MDE will conduct oversight sampling and analysis of the corrective measures on a periodic basis.

6. A resident asked how many State inspectors are available to inspect facilities that generate hazardous waste and if Allied is inspected by the State. She also asked if the State inspectors will continue to inspect Allied once the remedy is completed. (p. 59)

EPA and MDE Response:

The State of Maryland has 12 inspectors who inspect facilities which generate waste throughout the State. The Allied Facility is frequently inspected by the State. Once the remedy is complete, the State will periodically inspect the Site.

V. REQUIRED REVISIONS TO THE CORRECTIVE MEASURES IMPLEMENTATION PROGRAM PLAN IN RESPONSE TO PUBLIC COMMENTS

After evaluating the comments received during the public comment period on the Agencies tentative decision to approve the corrective measures which Allied proposed in the CMIPP, EPA and MDE have determined that the following revisions shall be made to the CMIPP:

(Relevant public comments are referenced in the parentheses by their location in this document.)

1. The CMIPP shall be revised to require Allied to take all measures possible to ensure that the background concentration of chromium in the air at the Facility boundary is not exceeded as a result of remediation activities at the Site. This background concentration is identified in Allied's Environmental Media Monitoring Plans which will be reviewed for approval by EPA and MDE. (Comments #4 and 5 Received on Health and Risk Assessment from the State of New Jersey; Comment #1 Received on Remedy Construction in Community Interviews; Comment #1 Received on Health and Risk Assessment Issues at Public Meeting; Comment #1 Received on Remedy Construction at Public Meeting).

2. The contingency plan in the CMIPP shall be revised to require Allied to remediate any chromium contamination in the soil which exceeds 10 ppm hexavalent chromium at all neighboring properties to which chromium has migrated from Allied's Facility through the soil. (Comment #2 Received on Remedy Design in Community Interviews).

3. The CMIPP shall be revised to require that no gaps exist between the layered soil cap on the Southeast Quadrant and the multi-media cap over the Former Manufacturing Area. (Comment #3 Received on Remedy Design during Community Interviews).

4. The CMIPP shall be revised to require Allied to submit annually to EPA and MDE a statement of financial assurance in accordance with Section XVI of the Consent Decree. (Comment #2 received on Remedy Implementation at the Public Meeting).

5. The CMIPP shall be revised to require Allied to submit to the City of Baltimore all plans and reports that are submitted to EPA and MDE. (Comment #1 received on Coordination with the City of Baltimore during Community Interviews).

6. The CMIPP shall be revised to require Allied to increase the frequency of publication of its newsletter to four times a year during active construction activities and two times a year thereafter in order to keep the area residents informed of the activities taking place at the Site. (Comment #2 Received on Coordination with the Community during the Public Meeting).

7. The CMIPP shall be revised to require Allied to inform the community in its newsletters of any changes in project

coordinators. (Comment #4 Received on Monitoring/Oversight in Community Interviews).

8. The CMIPP shall be revised to require Allied to provide the community with summaries of all laboratory data and brief explanations of the data in its newsletters. (Comment #1 Received on Coordination with the Community at the Public Meeting).

VI. FUTURE ACTIONS

After this Final Decision is issued, EPA and MDE will notify Allied of the selected corrective measures. The notice will set forth the reasons why EPA and MDE selected any corrective measures which are different from those in the CMIPP. Within eight weeks after Allied receives this notice, Allied is required under Section XIX of the Consent Decree to revise the Corrective Measures Implementation Program Plan as necessary to reflect the selected corrective measures, and to submit the revised Corrective Measures Implementation Program Plan to EPA and MDE for approval or appeal the decision in accordance with the dispute resolution provisions in Section XIV of the Consent Decree. Within 30 weeks after Allied's receipt of notice of EPA and MDE approval of the Corrective Measures Implementation Program Plan, Allied is required to submit to EPA and MDE a Draft Corrective Measures Preliminary Design Plan.

VII. DECLARATION

Based on the administrative record compiled for this corrective action, I have determined that the selected remedy to be ordered at this Site is appropriate and will be protective of human health and the environment.

Edwin B Erickson

4-16-92

EDWIN B. ERICKSON
REGIONAL ADMINISTRATOR
U.S. EPA, REGION III

DATE

Bob Perciasepe

4-2-92

ROBERT PERCIASEPE
SECRETARY
DEPARTMENT OF THE ENVIRONMENT
STATE OF MARYLAND

DATE

Figure 1

Allied-Signal, Inc. Site Area Map

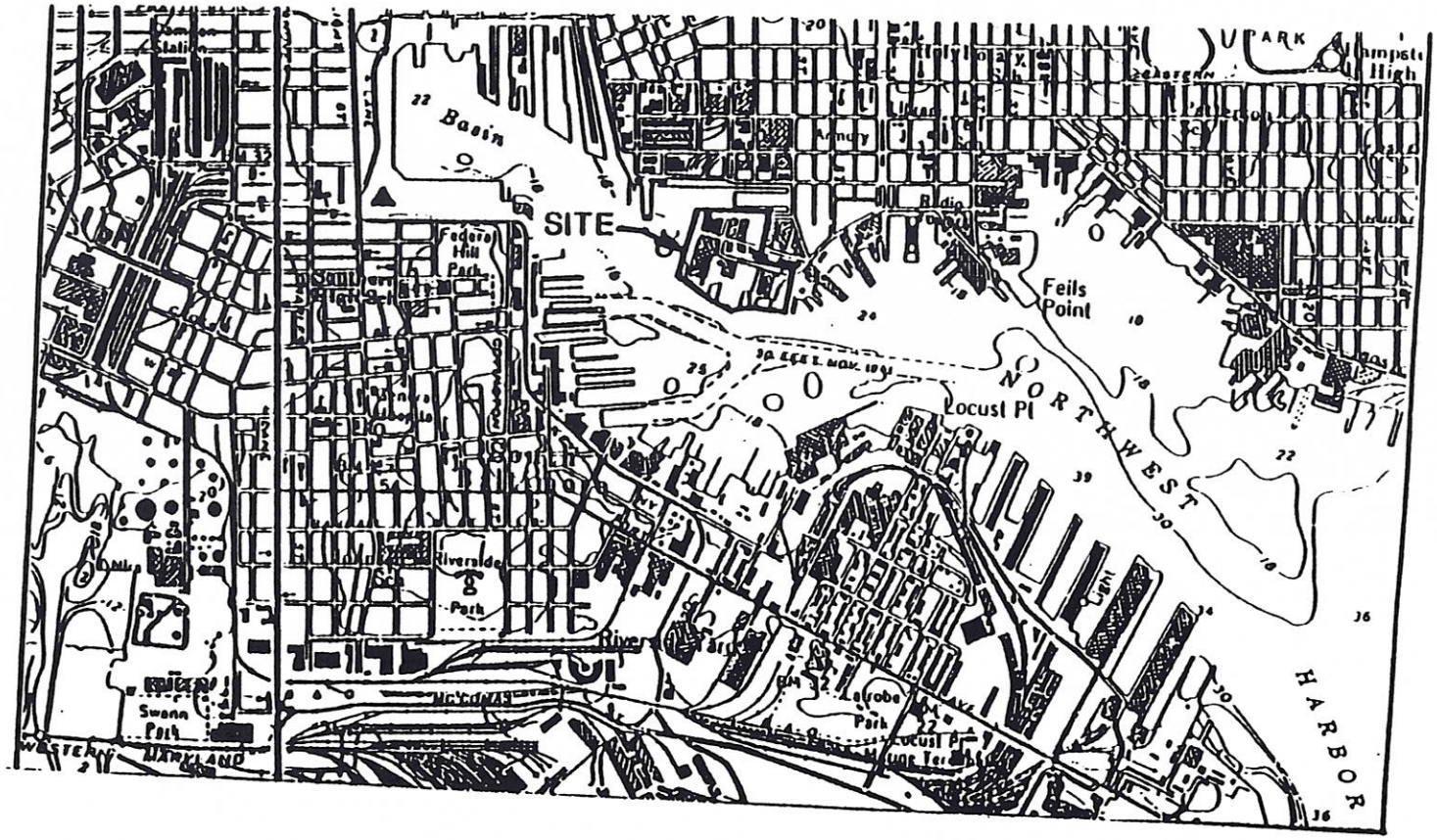
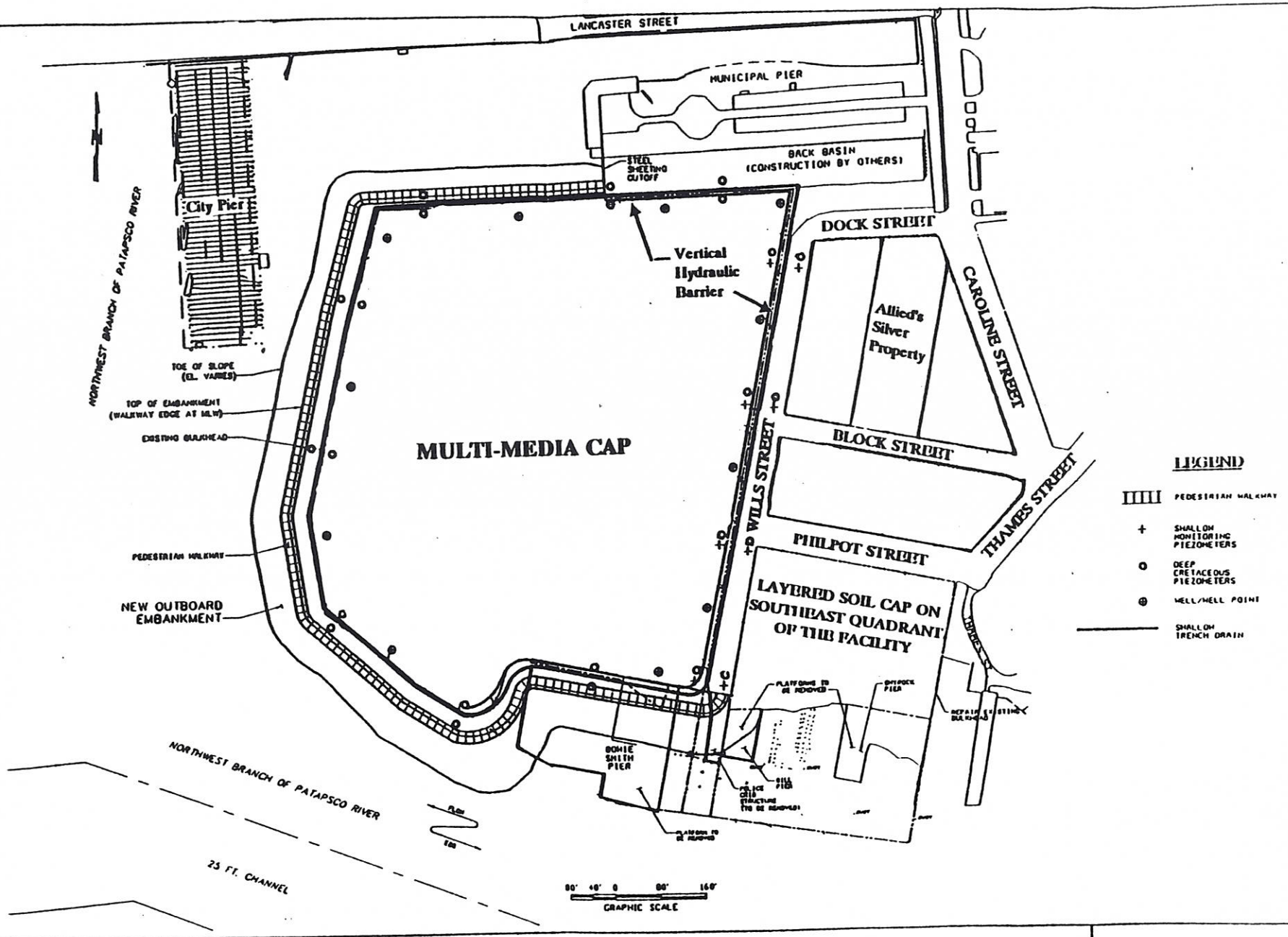


FIGURE 1

ALLIED-SIGNAL, INC.
SITE AREA MAP

Figure 2

**Primary Remedial Components
Including Placement of Wells or Well Points
at Allied-Signal Inc. Baltimore Works**



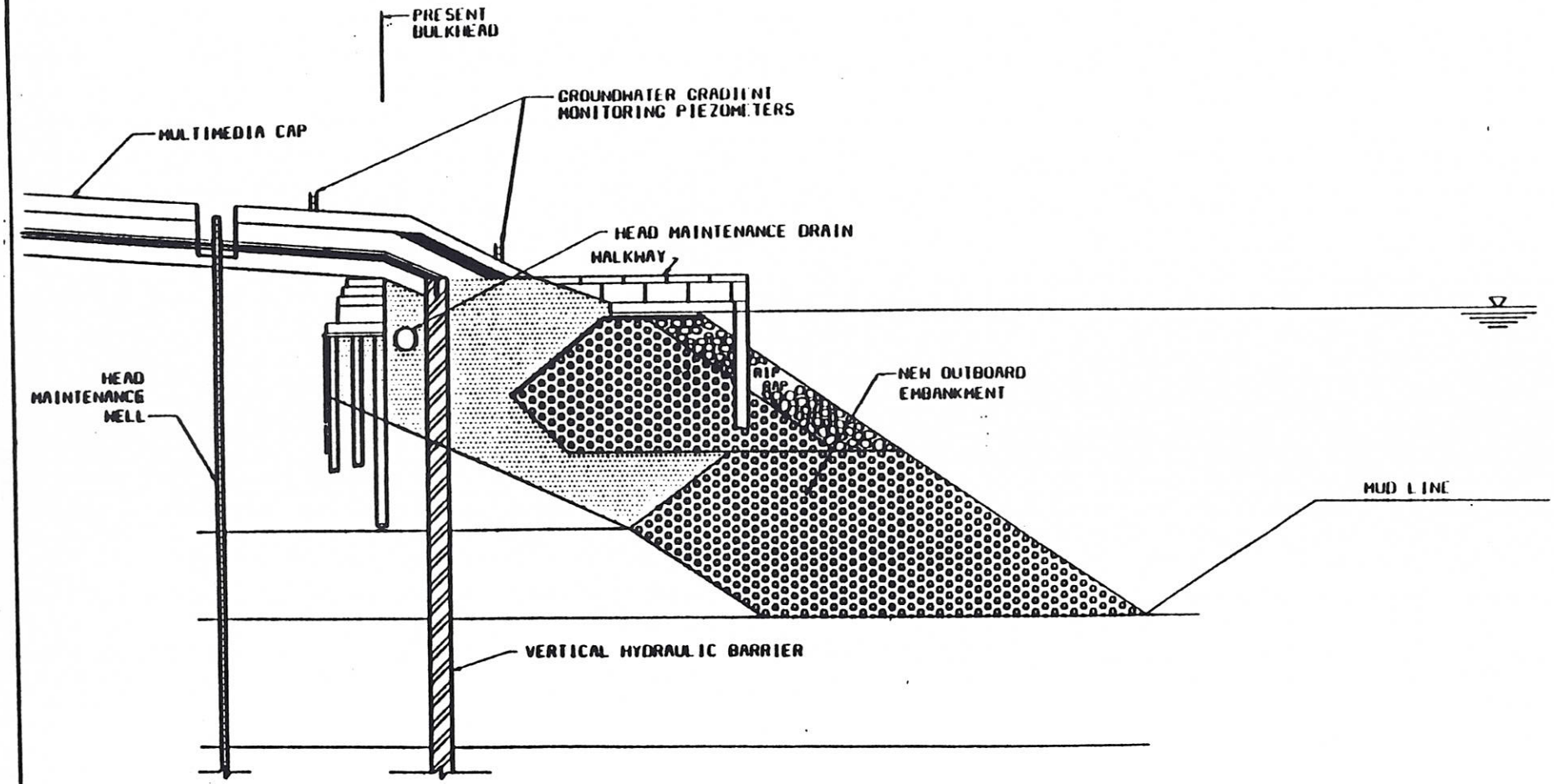
PRIMARY REMEDIAL COMPONENTS

ALLIED-SIGNAL INC. BALTIMORE WORKS

FIGURE 2

Figure 3

Schematic Section of Proposed Remedial Components
at Allied-Signal Inc. Baltimore Works



• NOT TO SCALE

AS OF REVISED		
REMARKS	BY	CHK

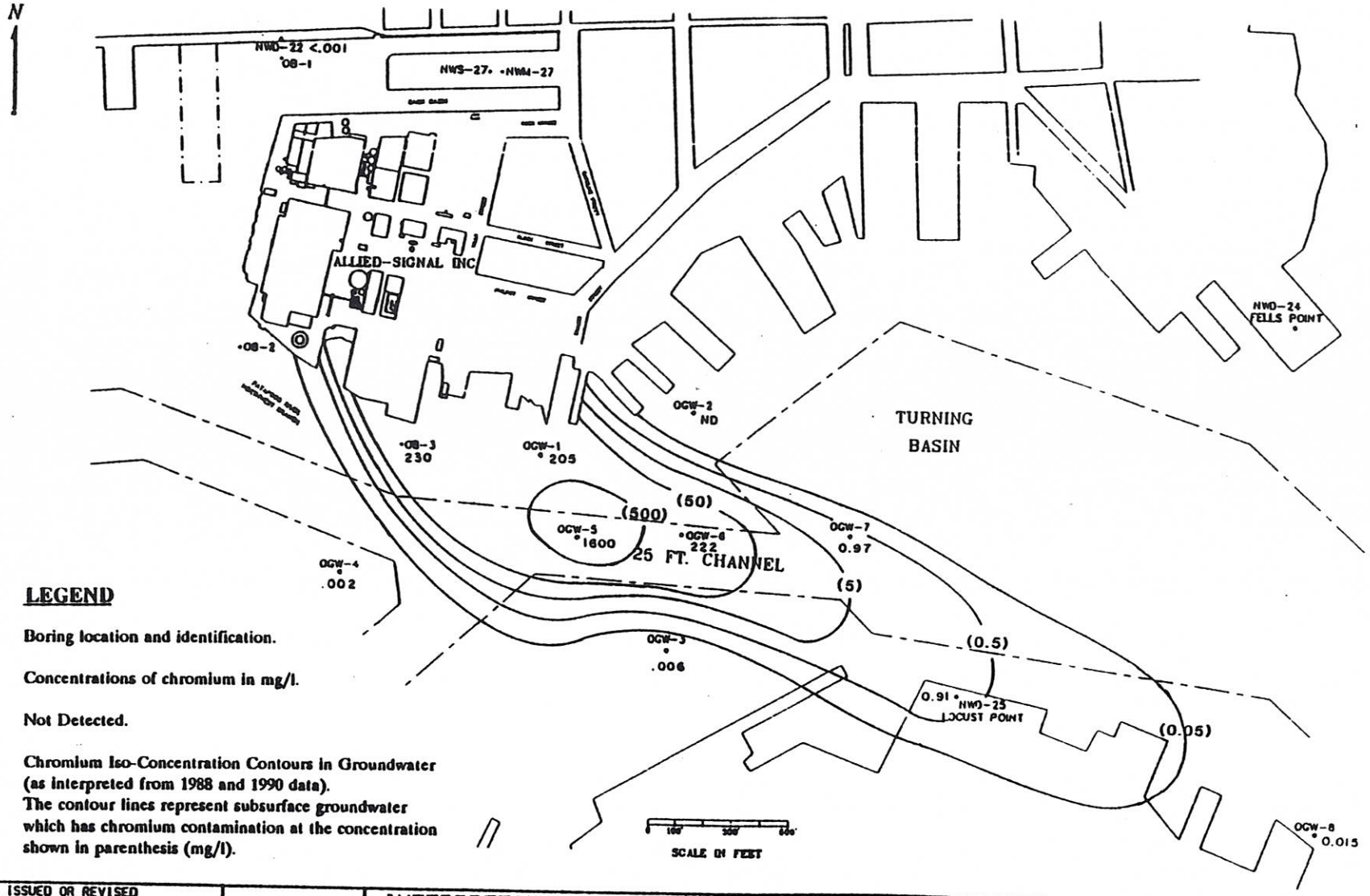
SCHEMATIC SECTION OF PROPOSED
REMEDIAL COMPONENTS

ALLIED-SIGNAL INC. BALTIMORE WORKS

FIGURE 3

Figure 4

Chromium Plume in Deep Aquifer



LEGEND

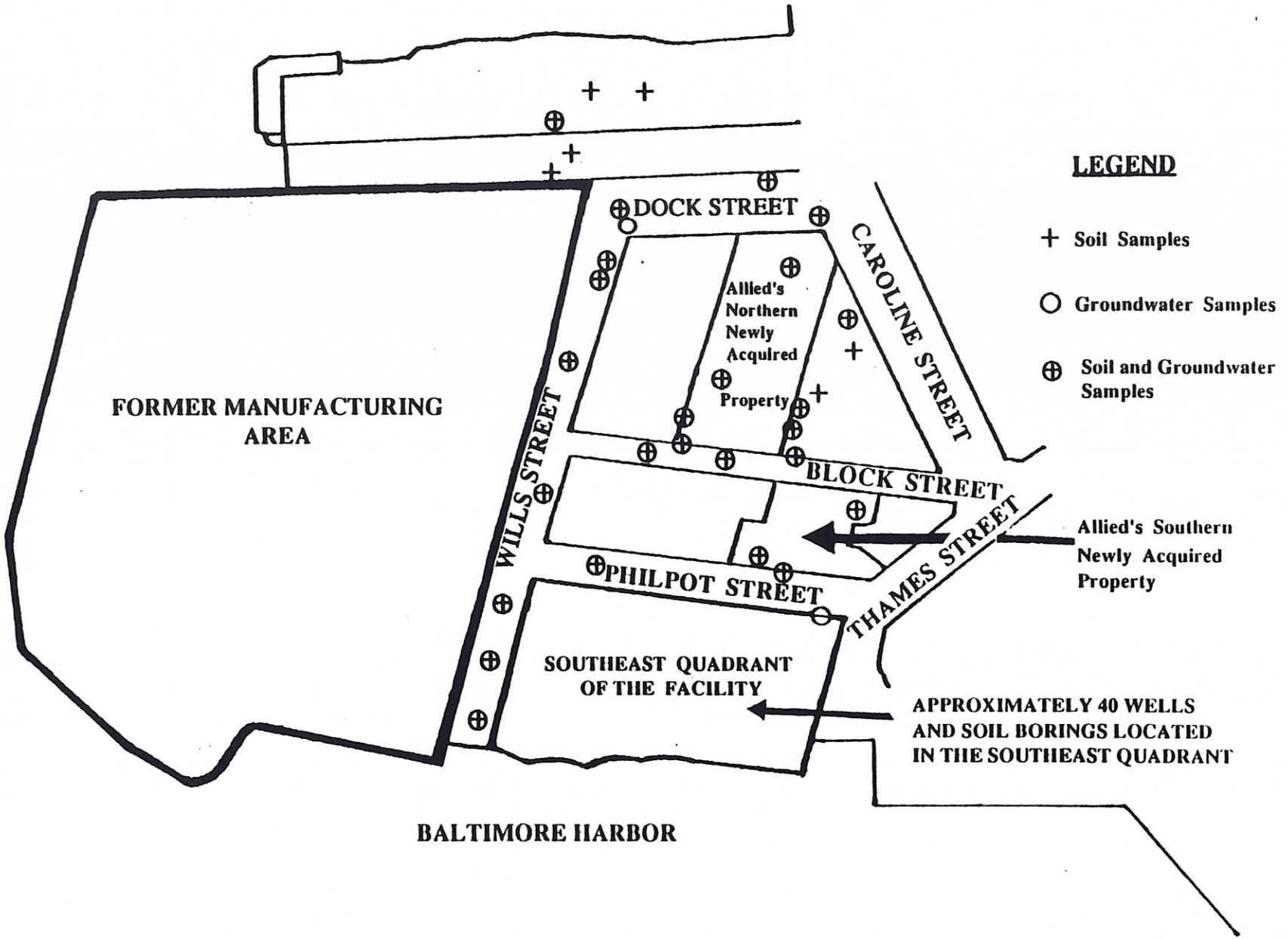
- • Boring location and identification.
- 230 Concentrations of chromium in mg/l.
- ND Not Detected.
- — Chromium Iso-Concentration Contours in Groundwater (as interpreted from 1988 and 1990 data). The contour lines represent subsurface groundwater which has chromium contamination at the concentration shown in parenthesis (mg/l).

ISSUED OR REVISED				GERAGHTY & MILLER, INC.	INTERPRETIVE ISO-CONCENTRATION CONTOURS OF TOTAL CHROMIUM IN GROUNDWATER OF THE OFFSHORE CRETACEOUS SEDIMENTS	FIGURE 4
DATE:	REMARKS	BY	CHK			
					ALLIED-SIGNAL INC. BALTIMORE WORKS	
3/1/90	ADDED OSH-6	GMS				
6/6/89	ALLIED SIGNAL ISSUE	DJH				

Figure 5

Testing Completed on Land Around Perimeter of Site
Allied-Signal Inc. Baltimore Works

FIGURE 5 - TESTING COMPLETED ON LAND AROUND PERIMETER OF SITE



ATTACHMENT 1

Statement of Basis
Allied-Signal Inc. Baltimore Works Facility

U.S. EPA
Region III

Allied-Signal Inc., Baltimore Works
Baltimore, Maryland

Statement of Basis

October 1991

INTRODUCTION

The United States Environmental Protection Agency (EPA) and the State of Maryland Department of the Environment (MDE) are requesting public comment on their tentative decision to approve certain corrective measures which Allied-Signal Inc., (Allied) has proposed for its Baltimore Works facility located in Baltimore, Maryland (Facility or Site).

On September 29, 1989, a Consent Decree between EPA, MDE and Allied (Consent Decree) was entered in the United States District Court for the District of Maryland pursuant to Sections 3008(h) and 7003 of the Resource Conservation and Recovery Act, as amended (RCRA), 42 U.S.C. §§ 6928(h) and 6973. Under the terms of this Consent Decree, Allied was required to conduct environmental investigations on the nature and extent of contamination at, and migrating from, the Facility. It was further required to submit-reports on these investigations and a Corrective Measures Implementation Program Plan (CMIPP) to prevent further migration of contamination from the Facility.

In the Consent Decree Allied proposed the corrective measures which the parties anticipated Allied would include in the CMIPP. The proposed corrective measures consisted of the following:

- A containment structure (a deep vertical hydraulic barrier) enclosing the portion of the Facility west of Wills Street to prevent the release of contamination into the Baltimore Inner Harbor (Harbor) and the groundwater surrounding the Facility

- A groundwater withdrawal system within the containment structure to maintain an inward flow of groundwater at the Site

- A cap over the containment area to prevent (1) future exposure to the contaminated soil and (2) the generation of leachate by infiltration of precipitation

- An enhanced bulkhead

- Surface and groundwater monitoring

The Consent Decree (Section V, paragraph 6) states that, after a public comment period, EPA and MDE (the Agencies) are to approve the corrective measures described in the Consent Decree, provided that:

1) The Agencies determine that the proposed corrective measures will achieve the performance standards established in the Consent Decree (as described more fully in this Statement of Basis).

2) The environmental investigations required by the Consent Decree, or any other information brought to the attention of EPA, MDE and Allied, do not show the existence of risks to human health or the environment qualitatively different from those in the Risk Assessment approved by MDE.

Allied has completed the environmental investigations and the CMIPP, as required by the Consent Decree. This Statement of Basis describes the proposed corrective measures in the CMIPP, including modifications to the measures identified in the Consent Decree, and presents EPA and MDE's justification for making a tentative decision to approve the proposed corrective measures.

EPA and MDE welcome public comment on this tentative decision and on the reports submitted by Allied. If new and/or substantive information or arguments are presented regarding the proposed corrective measures which show the existence of risks to public health or the

environment qualitatively different from those in the Risk Assessment approved by MDE, or that the proposed corrective measures will not meet the performance standards established in the Consent Decree, then the proposed corrective measures may be changed. The final corrective measures selected by EPA and MDE will be implemented through provisions in the existing Consent Decree.

This Statement of Basis highlights certain information presented in the environmental investigation reports and the CMIPP, but does not serve as a substitute for these documents. Persons desiring more complete sources of information regarding the Site or the proposed corrective measures should contact the MDE Program Administrator or the EPA Project Manager whose addressess are listed at the end of this document.

The Administrative Record for this tentative decision can be reviewed at the locations listed at the end of this document. The following documents, which are part of the Administrative Record, are of particular relevance to this tentative decision; however, EPA and MDE encourage members of the public to review all documents contained in the Administrative Record:

Remedial Investigation Report, July 1986
Feasibility Study Report, November 1987
EPA-MDE-Allied Consent Decree, September 1989 and Amendment thereto, June 1990
Supplemental Site Characterization Report, May 1990
Supplemental Off-Site Investigation Report, October 1989
Supplemental Saprolite Study Report, October 1989
Environmental Media Monitoring Plans, December 1989
Corrective Measures Implementation Program Plan (CMIPP), May 1990, as amended January 1991 and July 1991

FACILITY BACKGROUND

Allied's Baltimore Works is located on a peninsula on the northeast shore of Baltimore's Inner Harbor in the Fells Point section of the City of Baltimore, Maryland (Figure 1).

This former chromium chemical manufacturing facility consisted of two main production buildings and numerous support buildings which encompassed approximately twenty acres (Figure 2). The Facility is surrounded by water to the north, west and south and by small industrial operations to the east.

Allied Chemical Corporation and Allied Corporation, predecessors to Allied-Signal Inc., operated this Facility from 1954, when it was purchased from the Mutual Chemical Corporation, until it ceased operations in 1985. Chromium chemical manufacturing has occurred at this location for approximately 140 years. Successive owners have expanded the Facility to its current size and shape by filling adjacent portions of the Harbor with various materials, including refuse material from the processing of refined chromite ore.

The Facility filed a Notification of Hazardous Waste Activity form with EPA in July 1980. It filed a Part A permit application in November 1980 for the operation of two indoor waste piles and qualified for interim status[1] under RCRA as a hazardous waste storage Facility. A Part B permit application for the storage of hazardous waste was submitted in 1983.

In anticipation of the requirement for a Corrective Action permit to be issued by EPA in conjunction with the RCRA Part B permit for hazardous waste storage to be issued by the State of Maryland, Allied began an investigation of the solid waste management units at the Facility. In its first study, Site Study-Phase I (IT Report, May 1985), Allied reported the existence of significant and extensive chromium contamination in the soils and groundwater at its Facility. In September 1986, Allied Corporation and the State of Maryland entered into a Consent Decree in the United States District Court for the District of Maryland, in which Allied agreed to perform a Remedial Investigation and Feasibility Study to determine the nature and extent of the contamination and to develop and evaluate alternative methods to eliminate and/or reduce risks associated with this contamination. The Remedial Investigation and the Feasibility Study were completed in 1986 and 1987, respectively.

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[1] Facilities which submitted a "Notification of Hazardous Waste Activity" and "Part A" of the application for operating a hazardous waste facility in 1980 are qualified for Interim Status to operate a hazardous facility under RCRA pending formal issuance of a permit..

A Part B permit for the storage of hazardous waste was issued to the Facility by the State of Maryland in November 1985. In November 1986, EPA issued a corrective action permit to Allied. Allied appealed this corrective action permit on several grounds.

While EPA and Allied sought a resolution to the permit appeal, EPA and MDE pursued remediation of the Site under other regulatory authorities. These efforts resulted in a three-party Consent Decree between EPA, MDE, and Allied. The Consent Decree was lodged with the United States District Court for the District of Maryland on June 18, 1989. A notice of a thirty (30)-day public comment period for the proposed Consent Decree was published in the Federal Register on June 22, 1989 (Vol. 54, No. 119 Fed. Reg. 26265). The Consent Decree was approved and entered by the Court on September 29, 1989.

On March 8, 1991, MDE determined that Allied's Part B permit for the storage of hazardous waste was no longer necessary because the storage buildings no longer existed and the environmental conditions at the Site will be monitored for the future in accordance with the Consent Decree. Accordingly, the permit expired and was never reissued.

On May 20, 1991, EPA and Allied filed a joint motion to vacate EPA's corrective action permit and dismiss Allied's appeal, as moot, on the ground that the permit was no longer necessary because the Consent Decree requires corrective action. By an Order dated July 29, 1991, the Administrator of EPA vacated EPA's permit and dismissed Allied's appeal.

Prior to the entry of the Consent Decree, Allied had evaluated alternatives for the remediation of the Site in the Feasibility Study Report. It had determined that corrective measures including a multi-media cap, an enhanced bulkhead, a vertical hydraulic barrier, a groundwater withdrawal system which would maintain an inward hydraulic gradient around the containment area, and various surface and groundwater monitoring programs, would best achieve the objective of remediation. The Consent Decree anticipated that these would be the corrective measures which Allied would propose in the CMIPP.

The Consent Decree also established the surface water and groundwater performance standards which the final corrective measures selected by the Agencies were to meet. The standards are described immediately below.

The surface water performance standard requires a reduction in total chromium concentrations migrating into the Harbor to 50 parts per billion (ppb), with measurements averaged over 4 consecutive days. Fifty (50) ppb is the concentration in the EPA marine water quality criteria for hexavalent chromium.

The groundwater gradient performance standard requires Allied to maintain an inward flow of groundwater into the Site. The inward hydraulic gradient from outside to inside the barrier must be greater than 0.01 foot and will be determined in the following manner. A minimum of 16 piezometer pairs will encircle the containment structure, each pair consisting of one piezometer inside and one outside of the barrier. Hourly pressure height (head) measurements for each piezometer pair will be averaged over a 30-day period. The groundwater gradient performance standard must be maintained for each piezometer pair.

EPA and MDE must review and approve all design, construction, and monitoring plans to ensure that the performance standards under the Consent Decree are met. If Allied fails to meet either of the performance standards, it is required under the Consent Decree to implement any necessary additional action to prevent the failure from recurring.

SITE CHARACTERIZATION

The environmental investigations that have been conducted by Allied have identified the Site conditions and the extent of chromium contamination at the Facility. Chromium was found in the shallow groundwater aquifer at levels from 0.01 milligrams per liter (mg/l) to 14,500 mg/l, with the higher concentrations near the chemical manufacturing buildings at the Site. Chromium contamination in the deep groundwater aquifer was found at levels of 0.25 mg/l to 8,000 mg/l and was also highest near the chemical manufacturing buildings. The studies found that contaminated groundwater had migrated away from the Site. Chromium concentrations up to 1,600 mg/l were measured in the deep groundwater beneath the Northwest Branch of the Patapsco River. Migration of chromium-contaminated

groundwater was primarily to the southeast, with little migration in other directions.

In the Supplemental Site Characterization Report prepared by Allied pursuant to the Decree, Allied identified the presence of contaminants including chromium throughout the investigated portion of the Site. Soil and groundwater samples were analyzed for organic and inorganic priority pollutants. Other than chromium, no other hazardous waste constituent was found above the Maximum Contaminant Level (MCL)[2] in the groundwater. In the soils proposed for containment, elevated levels of heavy metals were detected. It was determined that these levels should not impact the viability of the containment structure or the groundwater maintenance system.

An additional investigation was completed on soils and groundwater at the Southeast Quadrant of the Facility and at offsite areas to the east of the proposed containment structure. Sampling identified elevated levels of chromium and creosote related organic compounds in the soil and elevated levels of chromium in the shallow groundwater. Soils in the Southeast Quadrant which were defined as hazardous through EPA's Toxicity Characteristic Leaching Procedure (see 40 C.F.R. Parts 261 and 268) have been removed. The soils were disposed of off-site in an approved RCRA land disposal facility. An interim corrective measure is proposed in the CMIPP for removal of additional hazardous material in Wills Street, south of Block Street.

The remaining soils in the Southeast Quadrant do not contain levels of contaminants high enough to present a risk should the substances leach into groundwater. However, their presence was determined to pose a potential hazard through direct exposure to the contaminated soil. Therefore, it is proposed in the CMIPP that the surface soil in the Southeast Quadrant be remediated to a depth of two (2) feet to protect from the following:

1. Dermatological and inhalation effects for concentrations of hexavalent chromium in the surface soil greater than 10 parts per million (ppm).

2. Ingestion effects for concentrations of the polynuclear aromatic hydrocarbons (PAHs): benzo(A)anthracene, benzofluoranthenes, and indeno-(1,2,3-CD)-pyrene in the surface soil greater than 0.8 ppm, 1.8 ppm and 0.5 ppm, respectively.

A limited corrective measure study (LCMS) based on these goals was completed for the surface soil in the Southeast Quadrant and is contained in the CMIPP. The LCMS was "limited" based on information learned through the previously completed Feasibility Study (Nov. 1987) for the proposed containment area. After screening and further evaluation, a layered soil cap was identified as the preferred alternative and is proposed in the CMIPP for the soil in the Southeast Quadrant.

An interim corrective measure is proposed in the CMIPP for clearing and grubbing[3] two soil locations on newly-acquired Allied property outside of the Southeast Quadrant with concentrations of PAH compounds slightly greater than those noted above. Since asphalt streets normally create elevated concentrations of PAH compounds in the underlying soil, a corrective measure was not required for areas with elevated PAH compounds which were attributable to the overlying asphalt in the street.

Theoretical worst case modeling of the contaminated shallow groundwater showed that the contaminated shallow groundwater outside of the containment barrier may have the potential to cause the Harbor surface water to have a concentration of 150 ppb of chromium. The standard for the concentration of chromium in surface water which is established in the Consent Decree is 50 ppb. Actual site conditions indicate that the assumptions used in the worst case modeling are overly conservative. Analysis of the Harbor surface water immediately east of the southeast area shows no detectable levels of chromium. Most likely the water will not be degraded above 50 ppb of chromium because it is unlikely that all of the theoretical worst case assumptions will occur at the same time. Therefore, a corrective measure is not being proposed at this time for the contaminated groundwater outside of the containment barrier. However, the Environmental Media

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[2] MCLs are federally enforceable drinking water standards developed under the Safe Drinking Water Act, 42 U.S.C. §§ 300f et seq., and codified at 40 C.F.R. Part 141.

[3] To clear by digging up roots and stumps, Webster's Ninth New Collegiate Dictionary (1984. Merriam-Webster).

Monitoring Plan was revised to monitor the effect of the eastern groundwater flow on the Harbor. Appropriate action can be taken if the shallow groundwater plume degrades surface water in the future.

In the Supplemental Off-Site Investigation Report, also prepared by Allied in accordance with the Consent Decree, Allied provided results of its study on the extent of off-site contamination in the deep groundwater. The results of the study indicate that the chromium plume is similar to that described in the 1986 Remedial Investigation report. The chromium has moved along the lower portion of the aquifer above the bedrock and extends approximately 3,000 feet from the Site.

The Supplemental Saprolite Study Report revealed the extent of saprolite beneath the Site and the ability of the saprolite to support the proposed deep vertical hydraulic barrier. The results of the study support the feasibility of using the saprolite as a foundation for the hydraulic barrier due to the relative impermeability of this geologic layer. A slight downward gradient of groundwater was noted in the southwest portion of the Site, however, which could allow the escape of contaminated groundwater into the bedrock below the barrier. If this condition continues after the implementation of corrective measures, Allied will be required under provisions of the Consent Decree to take action to eliminate the downward flow of groundwater from the containment structure.

SCOPE OF CORRECTIVE ACTION

The following is the scope of the proposed corrective action. The components of the proposed remedy are illustrated in Figure 3.

1. Dismantlement of Existing Structures - The dismantlement of all existing buildings and support structures at the Site is in progress. A dismantlement plan, which had been previously approved by MDE, was incorporated into the Consent Decree. Dismantlement is proceeding in accordance with that plan. This work is not part of the corrective measures proposed in the CMIPP, but it is required to construct the cap that is to cover the area of contamination. A Land Disposal Treatment Variance, which was requested by Allied and granted by EPA on May 15, 1990, provides for the decontamination of chromium contaminated dismantlement debris and the disposal of material that cannot be decontaminated in a hazardous waste landfill.

2. New Outboard Embankment - A new support structure has been constructed around the water-side perimeter of the Site to provide support for the old and failing bulkheads to prevent the collapse of chromium-contaminated soil into the Harbor. The new outboard embankment will provide long-term support and protection for the Site. The construction of the embankment was allowed to proceed prior to approval of the CMIPP by an amendment to the Consent Decree that was approved on June 6, 1990. The amendment specifically stated that approval of construction of the embankment did not constitute selection or approval of the final corrective measures for the Site.

3. Deep Vertical Hydraulic Barrier - A soil-bentonite wall is proposed to prevent the migration of chromium contamination from the Site into the Harbor or groundwater surrounding the Site. The hydraulic barrier will be installed around the perimeter of the area that is continuing to release chromium contamination (the portion of the Facility west of Wills Street). It will extend from the surface down to the saprolite layer below the Harbor. The hydraulic barrier will reduce substantially the ability of water to flow beyond the Site. The integrity of the barrier wall will initially be checked through pump test data generated after installation of the wall. Thereafter, data from pumping for maintenance of the inward hydraulic gradient, discussed below, will be used to check the integrity of the wall.

4. Multi-Media Cap - The area to be surrounded by a hydraulic barrier will be covered by a multi-media cap to prevent contact with contaminated soils and to reduce infiltration of precipitation into the containment area, thereby reducing the volume of leachate. The cap will be consistent with RCRA guidance and will be constructed of several layers, including low permeability soil and a synthetic liner to reduce infiltration. Although future development plans do not exist at this time, the Consent Decree prevents any future development unless approved by EPA and MDE. EPA and MDE must review development plans to ensure that any development will not interfere with the efficacy of the corrective measures, the groundwater or surface water performance standards, or the environmental monitoring plans.

5. Groundwater Maintenance System - To prevent any contaminated groundwater from migrating outward from within the containment structure, an inward hydraulic gradient of the groundwater will be maintained for the aquifer down to the bedrock in the containment area. The inward hydraulic gradient will be monitored through the hourly measurement of hydraulic pressure height (head) in piezometer pairs which will be located inside and outside of the barrier. Wells or drains located inside the containment barrier and between the piezometers will be pumped as necessary to maintain an inward gradient. Microprocessors connected to pressure transducers in each piezometer will determine when and where to turn on pumps. Pumps will be switched on as soon as a pressure head difference of less than 0.01 foot inward gradient is measured in any piezometer pair.

The Consent Decree groundwater performance standard requires an inward hydraulic gradient from outside to inside the barrier of 0.01 foot based on a 30-day average of hourly measurements from each piezometer pair. Information gathered during the supplemental investigations conducted by Allied pursuant to the Consent Decree revealed tidally-caused groundwater fluctuations that may make the performance standard inadequate to ensure that contaminated groundwater is contained under all probable circumstances. Therefore, an additional requirement has been added to the CMIPP which will require the extraction of groundwater in the containment structure to commence if any hourly measurement for any piezometer pair shows that a 0.01 foot inward hydraulic gradient is not being maintained.

The supplemental investigations also indicated that contaminated groundwater may be moving down into the bedrock in the southwest portion of the Site. Allied believes that this condition will be corrected by the installation of the containment structures. The CMIPP includes monitoring after installation of the containment structures. If downward movement of contaminated groundwater into the bedrock from the containment structure still exists after construction of the containment structure (barrier wall and cap), Allied will be required to implement a groundwater maintenance program that will maintain a continuous upward movement of groundwater from the bedrock into the containment structure. This will be achieved though additional pumping in the shallow zone to induce upward flow.

These two additional requirements for maintenance of the inward hydraulic gradient - extraction if inward hydraulic gradient performance standard is not maintained in any hourly measurement, and a maintenance program, as necessary, to maintain continuous upward movement of groundwater from the bedrock into the containment structure - will become requirements of the Consent Decree if these corrective measures are selected by EPA and MDE after consideration of public comments and the CMIPP is incorporated into the Consent Decree.

The groundwater that is extracted from the containment structure will be treated to remove contaminants and then discharged through an approved outfall in accordance with the requirements of the Clean Water Act. The actual location and design of the treatment system will be determined during the preliminary design stage of the corrective measures.

6. Environmental Monitoring - Monitoring of air, surface water, groundwater, harbor sediments, and aquatic biota is already being conducted. Monitoring will continue on a regular basis through construction of corrective measures and after construction is complete.

7. Soil in Southeast Quadrant - A layered soil cap is proposed in the CMIPP as the preferred alternative for soil in the Southeast Quadrant. The layered soil cap consists of (from the bottom): onsite clean fill to provide grade adjustments; a geotextile, such as a filter cloth, as needed to separate underlying soil from gravel; 6 to 12 inches of gravel to prevent possible upward migration of contaminated pore water; another geotextile to separate overlying soil from the gravel; one to two feet of cover soil; six inches of topsoil; and a vegetative or other appropriate erosion protection cover to stabilize the layered soil cap.

EVALUATION OF THE PROPOSED REMEDY

EPA and MDE have evaluated the impact of the proposed corrective measures on the following three areas of contamination:

1. The chromium source area - that area of the Facility that continues to release chromium into the environment

2. The Southeast Quadrant and off-site areas to the east

3. The area of deep groundwater contamination beneath the Northwest Branch of the Patapsco River

Chromium Source Area - A containment structure (hydraulic barrier and multi-media cap), as proposed in the Consent Decree, will be installed around the area of the Facility which contains material that continues to release chromium to the environment (the portion of the Facility west of Wills Street). This containment structure, together with the proposed groundwater withdrawal system, would be designed to prevent future releases of contaminants to the groundwater, surface water and air surrounding the Facility. The containment structure proposal was evaluated for its ability to meet the groundwater and surface water performance standards of the Consent Decree. Preliminary testing of material for the hydraulic barrier indicates that a wall of low permeability can be constructed around the Site to contain the contamination. Additional tests will be conducted during the design phase of the containment structures, using the most contaminated groundwater at the Site. These tests will ensure that the materials used in the actual construction of the hydraulic barrier will provide long-term durability. The two modifications in the CMIPP to the performance standard in the Consent Decree (i.e., groundwater withdrawal based on hourly measurements of the groundwater gradient, and maintenance of an upward flow of groundwater from the bedrock) are expected to provide adequate assurance that contaminated groundwater will not escape through imperfections that may exist in the containment structure.

Southeast Quadrant and Off-Site Areas to the East - The Southeast Quadrant and off-site areas to the east of the proposed containment structure are not included in the containment structure since the Agencies have determined that these areas are not a source of continuing off-site contamination. Soils either have been or are proposed in the CMIPP to be removed from the eastern Facility area where contaminants could potentially leach from the contaminated soil into the groundwater. The soils which were removed were defined as hazardous through EPA's Toxicity Characteristic Leaching Procedure (see 40 C.F.R. Parts 261 and 268). The removal was, in 1990, approved in the dismantlement plan for the Bowie Smith Pier. The soils which were removed were located near the Bowie Smith Pier. The soils were disposed of off-site in an approved RCRA land disposal facility. As a preventive measure, a corrective measure contingency plan is proposed in the CMIPP to address source material which is found on contiguous Facility property before, during and after construction of the containment area. In addition, the Environmental Media Monitoring Plan has been revised to monitor the effect of the eastern groundwater flow on the Harbor.

A layered soil cap is the alternative which Allied recommends for the Southeast Quadrant soils. The layered soil cap will prevent the generation of airborne contaminants, and dermal contact, ingestion and stormwater erosion of contaminated surface soils. A layered soil cap meets the Agencies' above stated goals for surface soil in the Southeast Quadrant to a depth of two (2) feet to protect from:

1. Dermatological and inhalation effects of concentrations of hexavalent chromium in the surface soil greater than 10 ppm.

2. Ingestion effects of concentrations of the polynuclear aromatic hydrocarbons (PAHs): benzo(A)anthracene, benzofluoranthenes, and indeno-(1,2,3-CD)-pyrene in the surface soil greater than 0.8 ppm, 1.8 ppm and 0.5 ppm, respectively.

Placement of a layered soil cap will comply with applicable RCRA standards for management of wastes. EPA is confident that placement of the soil cap will be protective of human health and the environment.

Surface soils on newly acquired Allied property with concentrations of PAH compounds greater than those stated above which remain after clearing and grubbing will be covered with two feet of clean soil to protect against ingestion of contaminated soils. Upward migration of pore water is not expected to carry the PAHs to the soil surface. Therefore, a layered soil cap is not being required for the soil contaminated only with PAHs at this time.

Deep Groundwater Contamination - The Supplemental Off-Site Investigation Report supports the information previously known about the chromium which has been released from the Site and is moving with the deep groundwater under the Northwest Branch of the Patapsco River. The contaminant plume occurs in an area of the fresh water aquifer that is already contaminated with chloride from the salt water above it. Since

there are no known users of this aquifer for drinking water, remediation of the deep groundwater beneath the Northwest Branch of the Patapsco will not be required at this time. Should information about exposure to the contaminated groundwater become known in the future, the need for corrective action will be reevaluated based on possible risk from such exposure.

SUMMARY OF CORRECTIVE MEASURE EFFECTIVENESS

The extensive chromium contamination at the Allied Site poses risks to human health and the environment through direct exposure to the contaminated soil and fill material, primarily through inhalation of hexavalent chromium - a known human carcinogen - and through exposure to contaminated surface water adjacent to the Site and soil. In addition, the concentration of PAH compounds in the soil at the Southeast Quadrant of the Site poses a risk to human health through ingestion of the soil.

The containment structure and the maintenance of an inward flow of groundwater for the portion of the property west of Wills Street, the removal of contaminated material at the intersection of Wills and Dock Streets and on the newly-acquired Allied property, and the placement of a layered soil cap on the Southeast Quadrant, are expected to minimize the future release of chromium to either the air, surface soil, surface water, or groundwater. The layered soil cap on the Southeast Quadrant will additionally prevent the release of PAH compounds to the surface soil. The surface water surrounding the Site will be monitored to ensure that the chromium level does not exceed the surface water quality standard in the Consent Decree.

Remediation of contamination of the deep groundwater that has migrated under the Northwest Branch of the Patapsco River, will not be required since there is presently no known exposure to this contaminated groundwater. Should information on future exposure be discovered, remediation of this contaminant plume may be required based on possible risk to human health or the environment.

PUBLIC PARTICIPATION

EPA and MDE are requesting comments from the public on the Agencies' tentative decision to approve the corrective measures identified in the CMIPP. EPA and MDE have made this tentative decision because they believe, based on information gained by the supplemental investigations required by the Consent Decree, that the proposed corrective measures can meet the performance standards identified in the Consent Decree, as modified by the CMIPP.

The public comment period is from Wednesday, September 18, 1991 through Tuesday, November 12, 1991. Comments on this tentative decision should be in writing. Written comments should be submitted to both Alvin Bowles and Diane Schott at the addresses listed below:

Alvin Bowles
Program Administrator
Hazardous Waste Program
Maryland Department of the Environment
2500 Broening Highway
Baltimore, MD 21224
(301) 631-3343

Diane Schott, Project Manager
Hazardous Waste Management Division
U.S. Environmental Protection Agency
Region III
841 Chestnut Building
Philadelphia, PA 19107
Attn: 3HW61
(215) 597-0130

Additionally, EPA and MDE will hold a public meeting to discuss this matter in more detail and to receive oral comments from the public on **October 28, 1991 at 7:00 p.m. at the Lemko House, 603 South Ann Street, Baltimore, Maryland 21231.**

Following the public comment period and any public meeting, EPA and MDE will prepare a Final Decision and Response to Comments which identifies the selected remedy and addresses all written comments and/or any substantive comments made at the public meeting. The Final Decision and Response to Comments will be made available to the public.

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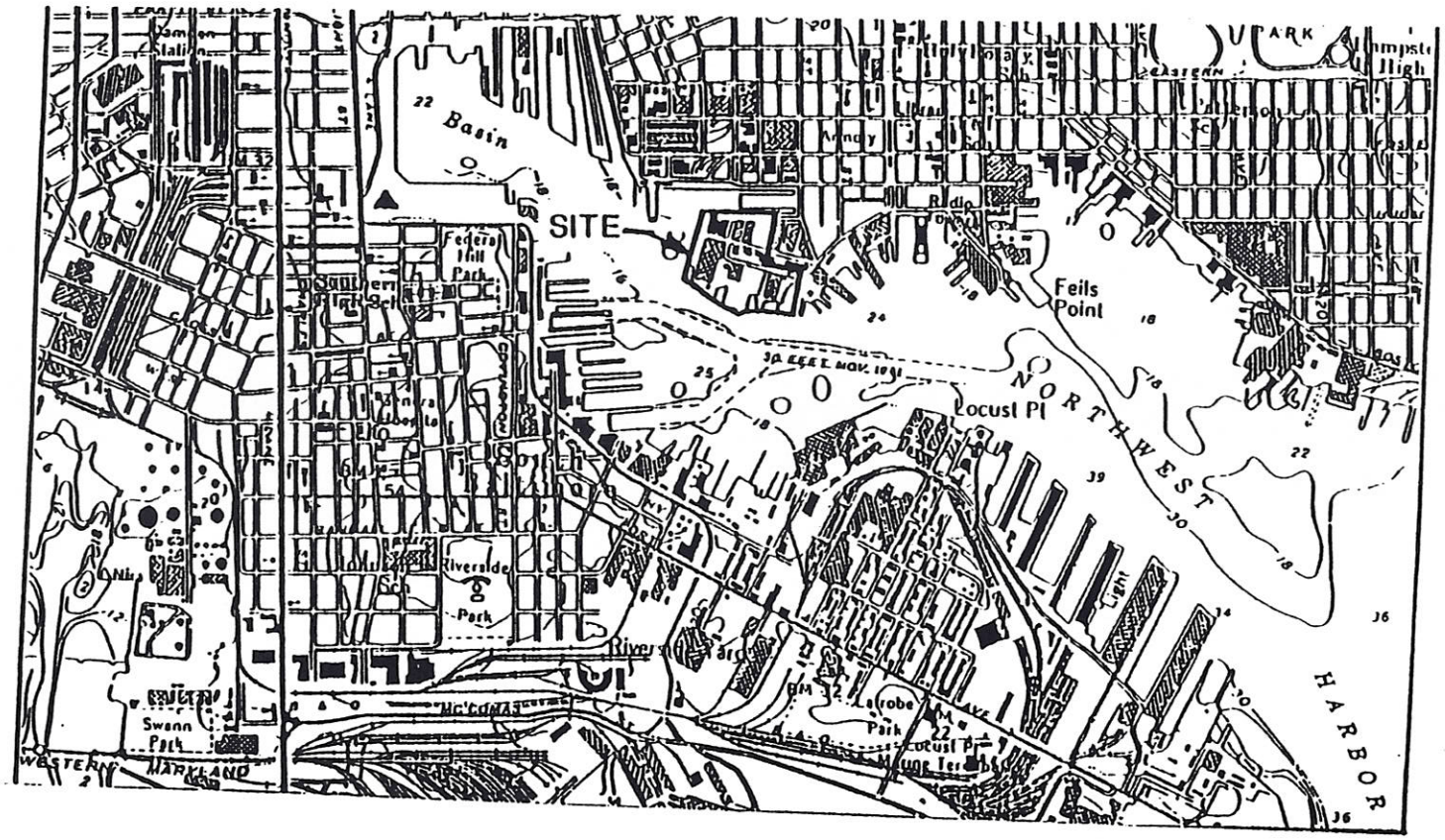
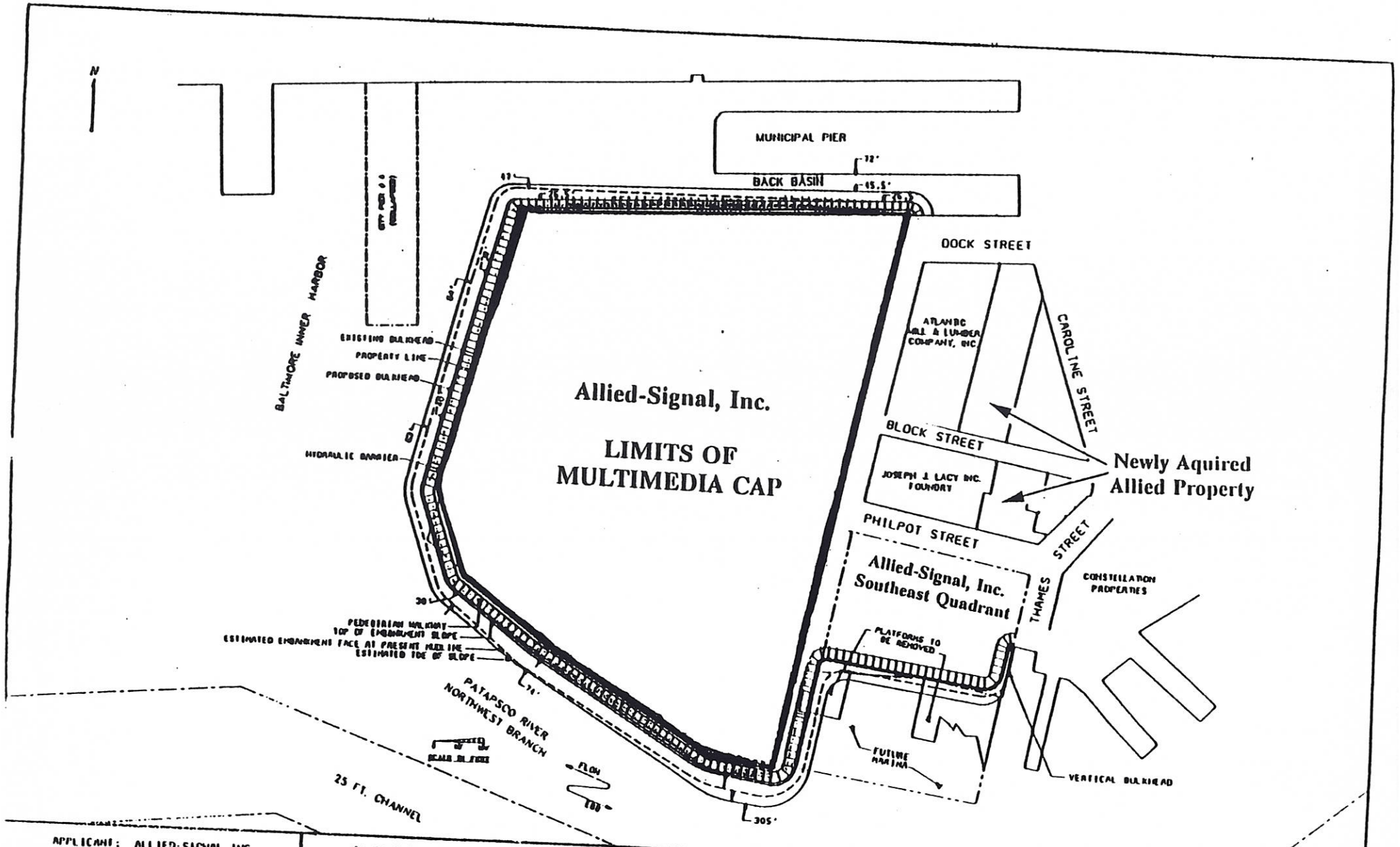
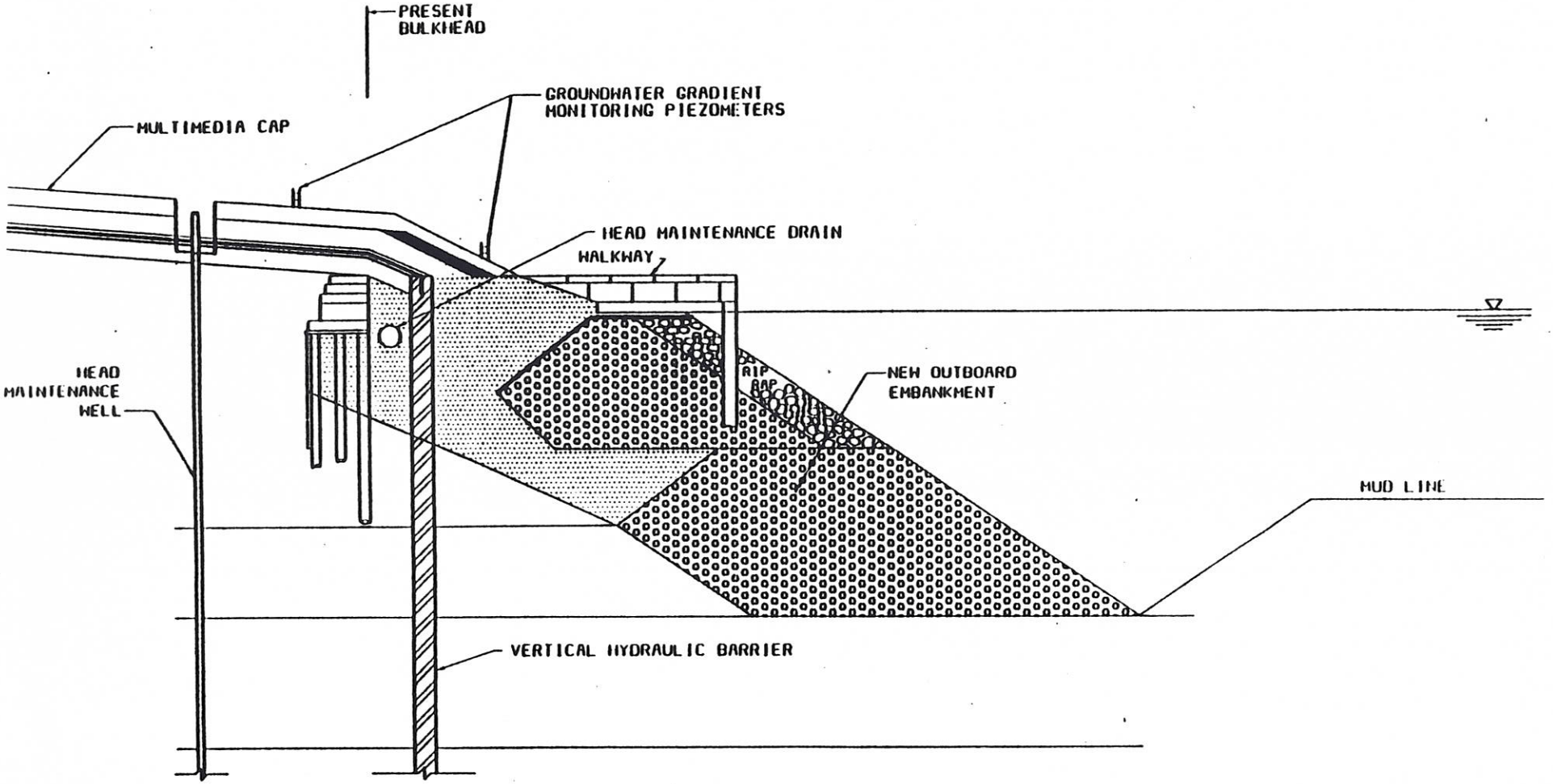


FIGURE 1

ALLIED-SIGNAL, INC.
SITE AREA MAP



APPLICANT: ALLIED-SIGNAL INC. J. A. TURNER	CONCEPTUAL SITE PERIMETER PLAN ALLIED-SIGNAL INC. BALTIMORE WORKS	BALTIMORE INNER HARBOR/ N. W. BRANCH OF PATAPSCO RIVER BALTIMORE CITY, MARYLAND FIGURE 2



• NOT TO SCALE

ED OR REVISED	BY	CHK

SCHEMATIC SECTION OF PROPOSED
REMEDIAL COMPONENTS

ALLIED-SIGNAL INC. BALTIMORE WORKS

FIGURE 3

ATTACHMENT 2

Hazardous Waste Sites
Utilizing Capping, Slurry Walls,
Onsite Containment and Plume Management

From EPA/540/8-90/006
Superfund Record of Decision Annual Report: FY 1982-1989

Sites Utilizing
Capping, Slurry Walls and Onsite Containment Technologies

SITE	STATE
REGION II	
GE Moreau	New York
Kin-Buc Landfill	New Jersey
Lipari Landfill	New Jersey
REGION III	
Kane & Lombard	Maryland
REGION V	
Allied/Ironton Coke	Ohio
E.H. Schilling Landfill	Ohio
Forest Waste Disposal	Michigan
Liquid Disposal	Michigan
Ninth Avenue Dump	Indiana
Outboard Marine (Amendment)	Illinois
Summit National	Ohio
REGION VI	
Industrial Waste Control	Arkansas

Sites Utilizing
Capping, Slurry Walls and Plume Management Technologies

SITE	STATE
REGION II	
GE Moreau	New York

Attachment 3

Demonstration of Financial Responsibility by Allied-Signal Inc. Baltimore Works

Allied Signal

Allied-Signal Inc.
Engineered Materials Sector
1348 Block Street
Baltimore, MD 21231

October 4, 1990

Ms. Maureen Essenthier
Environmental Engineer
RCRA Enforcement Corrective Action (3HW61)
U.S. Environmental Protection Agency
Region III
841 Chestnut Street
Philadelphia, Pennsylvania 19107

Mr. Alvin Bowles
Program Administrator
Hazardous & Solid Waste Management Administration
Department of the Environment
State of Maryland
2500 Broening Highway
Baltimore, Maryland 21224

Re: Demonstration of Financial Responsibility Under Section XVI of the Allied Baltimore Works Consent Decree

Dear Maureen and Alvin:

Section XVI, paragraph 1 of the Consent Decree ("Consent Decree") signed on September 19, 1989, by Allied-Signal Inc. ("Allied"), U.S. Environmental Protection Agency ("EPA"), and the Maryland Department of the Environment ("MDE") requires Allied to "present to EPA and MDE for review and approval copies and a summary and analysis of Defendant's existing instruments for financial assurance under the applicable Maryland . . . regulations for the Facility." EPA and MDE may require additional financial assurances, but

> The amount of financial assurance that may be required, may equal but shall not exceed, the sum of the amounts that would be required separately for closure, post-closure, liability coverage, and the work required under this Consent Decree.

Section XVI, par. 2

COMAR 26.13.05.08, which establishes the Maryland financial assurance requirements, incorporates by reference the relevant portions of 40 CFR Part 264, the EPA Financial Assurance requirements. Under these regulations, an owner may satisfy the financial assurance requirements by demonstrating its ability to pass a "financial test;" i.e., showing that its net worth and assets in the United States are sufficiently large that no bond, letter of credit, or similar "third-party" surety is necessary. In those circumstances under the regulations no further Financial Assurance instruments may be required.

Allied's March 21, 1990 demonstration of financial responsibility, enclosed, follows the format prescribed in the regulations. It notes that existence of $16,962,717 in aggregate corporate potential liabilities for closure, post-closure, and liability coverage. Based upon Allied's independently audited financial statements for the year ended December 31, 1989 (the most recent full year), Allied's Tangible Net Worth was $2,084,000,000, and its Total Assets in the U.S. amounted to $8,299,000,000. The regulations require these amounts to be at least six times as large as the potential liabilities. In this case, these amounts exceed the potential liabilities by more than 100 times.

Allied has also enclosed a new demonstration of financial responsibility that assumes that the cost of corrective action at the Baltimore Works will be $100,000,000. (Allied's expectation is that the remaining cost of the dismantlement and corrective action prescribed by the Consent Decree for the Baltimore Works is approximately $67.3 million but a larger number has been used for the demonstration because the cost estimates for the entire project have not yet been submitted or approved). In that case, Allied's total potential liabilities would be $116,962,717, and Allied's Tangible Net Worth and Total Assets in the U.S. would still be more than 17 times as large as the potential liabilities. Since the demonstration requires only that Tangible Net Worth and Total Assets in the U.S. be more than six times the potential liabilities, Allied's demonstration satisfies the EPA and MDE regulations. Accordingly, no further financial assurances should or can be required of Allied under the terms of Section XVI of the Consent Decree.

Allied is of course required under the regulations to repeat this showing annually, and it intends to do so at the appropriate times.

We would appreciate your written confirmation of this conclusion.

Sincerely,

Mark A. Sylvester
Project Coordinator

MAS:em

Encl.

cc: United States Department of Justice
L.R. Taunton
W.R. Blank
S.A. Bleicher

Allied-Signal Inc.
Engineered Materials Sector
Engineering Department
P.O. Box 2105R
Morristown, NJ 07960

CERTIFICATION

"I certify that the information contained in or accompanying this document, the financial assurance analysis, except with respect to the portions identified pursuant to the next paragraph, is true, accurate, and complete.

As to the identified portion of this document for which I cannot personally verify its truth and accuracy, I certify, as the company official having supervisory responsibility for the person(s) who, acting under my direct instructions, made the verification, that this information is true, accurate and complete to the best of my knowledge after reasonable inquiry. For purposes of this certification, the identified portion is the entire document, other than the cost estimate for the work to be performed under the Consent Decree."

L. Ray Taunton

Vice President-Operations

Allied Signal

Allied-Signal, Inc.
P.O. Box 3000R
Morristown, NJ 07960-2496
Telephone: (201) 455-5107
(212) 964-5111

John W. Barter
Senior Vice President and
Chief Financial Officer

September 24, 1990

Mr. Ronald Nelson, Director
Hazardous and Solid Waste Management Admin.
Department of the Environment
2500 Broening Highway
Baltimore, Maryland 21224

Dear Sir:

I am the chief financial officer of Allied-Signal Inc., Columbia Turnpike, Morristown, New Jersey 07960. This letter is in support of the use of the financial test to demonstrate financial responsibility for liability coverage and closure and/or post-closure care as specified in Subpart H of 40 CFR Parts 264 and 265.

The owner or operator identified above is the owner or operator of the following facilities for which liability coverage is being demonstrated through the financial test specified in Subpart H of 40 CFR Parts 264 and 265: See Table I.

1. The owner or operator identified above owns or operates the following facilities for which financial assurance for closure or post-closure care is demonstrated through the financial test specified in Subpart H of 40 CFR Parts 264 and 265. The current closure and/or post-closure estimates covered by the test are shown for each facility: See Table I.

2. The owner or operator identified above guarantees, through the corporate guarantee specified in Subpart H of 40 CFR Parts 264 and 265, the closure and post-closure care of the following facilities owned or operated by its subsidiaries. The current cost estimates for the closure or post-closure care so guaranteed are shown for each facility: None.

3. In States where EPA is not administering the financial requirements of Subpart H of 40 CFR Parts 264 and 265, this owner or operator is demonstrating financial assurance for the closure or post-closure care of the following facilities through the use of a test equivalent or substantially equivalent to the financial test specified in Subpart H of 40 CFR Parts 264 and 265. The current closure and/or post-closure cost estimates covered by such a test are shown for each facility: See Table II.

4. The owner or operator identified above owns or operates the following hazardous waste management facilities for which financial assurance for closure or, if a disposal facility, post-closure care, is not demonstrated either to

EPA or a State through the financial test or any other financial assurance mechanism specified in Subpart H of 40 CFR Parts 264 and 265 or equivalent or substantially equivalent State mechanisms. The current closure and/or post-closure cost estimates not covered by such financial assurance are shown for each facility: None.

This owner or operator is required to file a Form 10K with the Securities and Exchange Commission (SEC) for the latest fiscal year.

The fiscal year of this owner or operator ends December 31. The figures for the following items marked with an asterisk are derived from this owner's or operator's independently audited, year-end financial statements and footnotes for the latest completed fiscal year, ended December 31, 1989.

ALTERNATIVE II

1.	Sum of current closure and post-closure cost estimates (total of all cost estimates listed above).	$104,962,717
2.	Amount of annual aggregate liability coverage to be demonstrated	$ 12,000,000
3.	Sum of lines 1 and 2.	$116,962,717
4.	Current bond rating of most recent issuance and name of rating service	A.Standard & Poor's
5.	Date of issuance of bond	9/26/89
6.	Date of maturity of bond.	9/01/2009
*7.	Tangible net worth (if any portion of the closure or post-closure cost estimates is included in "total liabilities" on your financial statements, you may add the amount of that portion to this line)	$2,084,000,000
*8.	Total assets in U.S. (required only if less than 90% of assets are located in the U.S.)	$8,299,000,000

		Yes	No
9.	Is line 7 at least $10 Million? . . .	X	___
10.	Is line 7 at least 6 times line 3?. .	X	___
*11.	Are at least 90% of assets located in the U.S.? If not, complete Line 12 .	___	X
12.	Is line 8 at least 6 times line 3?. .	X	___

I hereby certify that the wording of this letter is identical to the wording specified in 40 CFR 264.151(g) as such regulations were constituted on the date shown immediately below.

John W. Barter
Allied-Signal Inc.
Senior Vice President and
Chief Financial Officer
September 24, 1990

TABLE I

ALLIED-SIGNAL INC. FACILITIES FOR WHICH FINANCIAL ASSURANCE FOR LIABILITY COVERAGE AND CLOSURE AND/OR POST-CLOSURE COST IS BEING DEMONSTRATED BY THE FINANCIAL TEST

STATE	EPA ID NUMBER	PLANT NAME & ADDRESS	CURRENT COST ESTIMATES	
			CLOSURE	POST-CLOSURE
Maryland	MDD069396711	Allied-Signal Inc. Baltimore Works 1348 Block Street Baltimore, MD 21231	$100,000,000	N/A
		Total State of Maryland	$100,000,000	N/A

TABLE II

ALLIED-SIGNAL INC. FACILITIES LOCATED IN STATES WHERE EPA IS NOT ADMINISTERING 40 CFR PARTS 264 AND 265 AND WHERE EQUIVALENT REGULATIONS EXIT

STATE	EPA ID NUMBER	PLANT NAME & ADDRESS	CURRENT COST ESTIMATES	
			CLOSURE	POST-CLOSURE
Maryland	MDDO69396711	Allied-Signal Inc. Baltimore Works 1348 Block Street Baltimore, MD 21231	$100,000,000	N/A
		Total State of Maryland	$100,000,000	N/A

4. The owner or operator identified above owns or operates the following hazardous waste management facilities for which financial assurance for closure or, if a disposal facility, post-closure care, is not demonstrated either to EPA or a State through the financial test or any other financial assurance mechanism specified in Subpart H of 40 CFR Parts 264 and 265 or equivalent or substantially equivalent State mechanisms. The current closure and/or post-closure cost estimates not covered by such financial assurance are shown for each facility: None.

This owner or operator is required to file a Form 10K with the Securities and Exchange Commission (SEC) for the latest fiscal year.

The fiscal year of this owner or operator ends December 31. The figures for the following items marked with an asterisk are derived from this owner's or operator's independently audited, year-end financial statements and footnotes for the latest completed fiscal year, ended December 31, 1989.

ALTERNATIVE II

1.	Sum of current closure and post-closure cost estimates (total of all cost estimates listed above) . . .	$ 4,962,717
2.	Amount of annual aggregate liability coverage to be demonstrated	$ 12,000,000
3.	Sum of lines 1 and 2	$ 16,962,717
4.	Current bond rating of most recent issuance and name of rating service	A, Standard & Poor's
5.	Date of issuance of bond	9/26/89
6.	Date of maturity of bond	9/01/2009
*7.	Tangible net worth (if any portion of the closure or post-closure cost estimates is included in "total liabilities" on your financial statements, you may add the amount of that portion to this line) . .	$2,084,000,000
*8.	Total assets in U.S. (required only if less than 90% of assets are located in the U.S.)	$8,299,000,000

		YES	NO
9.	Is line 7 at least $10 Million?	X	—
10.	Is line 7 at least 6 times line 3?	X	—
*11.	Are at least 90% of assets located in the U.S.? If not, complete Line 12	—	X
12.	Is line 8 at least 6 times line 3?	X	—

TABLE II

ALLIED-SIGNAL INC. FACILITIES LOCATED IN STATES WHERE EPA IS NOT ADMINISTERING 40 CFR PARTS 264 AND 265 AND WHERE EQUIVALENT REGULATIONS EXIST

STATE	EPA ID NUMBER	PLANT NAME & ADDRESS	CURRENT COST ESTIMATES	
			CLOSURE	POST-CLOSURE CARE
Maryland	MDD069396711	Allied-Signal Inc. Baltimore Works 1348 Block Street Baltimore, MD 21231	$ 233,097	N/A
		Total, State of Maryland	$ 233,097	N/A