UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

345 COURTLAND STREET NE
ATLANTA, GEORGIA 30365

NOV 0 6 1995

4WD-RCRA

SUBJ: Evaluation of Arizona Chemical Company's status under the RCRIS Corrective Action Environmental Indicator Event Codes (CA725 and CA750)
EPA I.D. Number: MSD 001 661 719

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AL/MS Unit

THRU: Rich Campbell, Chief
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TO: G. Alan Farmer
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I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of the Arizona Chemical Company (AZC), Gulfport, Mississippi, facility status in relation to the following RCRIS corrective action codes:

1) Human Exposures Controlled Determination (CA725),

2) Groundwater Releases Controlled Determination (CA750).

The applicability of these event codes adheres to the definitions and guidance provided by the Office of Solid Waste (OSW) in the July 29, 1994, memorandum to the Regional Waste Management Division Directors.

Concurrence by the RCRA Branch Chief is required prior to entering these event codes into RCRIS. Your concurrence with the interpretations provided in the following paragraphs and the subsequent recommendations is satisfied by dating and signing above.

II. HUMAN EXPOSURES CONTROLLED DETERMINATION (CA725)

There are three (3) national status codes under CA725. These status codes are:

1) YE Yes, applicable as of this date.

2) NA Previous determination no longer applicable as of this data.

3) NC No control measures necessary.

Region 4 added a regional status code to CA725 which tracks initial evaluations in which a determination is made that plausible human exposures to current contamination risks are not controlled. This regional status code is listed as "NO, not applicable as of this date." Use of the regional status code is only applicable during the first CA725 evaluation. Evaluations subsequent to the first evaluation will use the national status codes (i.e., YE, NA and NC) to explain the current status of exposure controls.

Note that the three national status codes for CA725 are based on the entire facility (i.e., the codes are not SWMU specific). Therefore, every area at the facility must meet the definition before a YE, NA or NC status code can be entered for CA725. Similarly, the regional status code, NO, is applicable if plausible human exposures are not controlled in any areas of the facility.

This particular CA725 evaluation is the first evaluation performed by EPA for the A2C facility. Because assumptions have to be made as to whether or not human exposures to current media contamination are plausible and, if plausible, whether or not controls are in place to address these plausible exposures, this

memo first examines each environmental media (i.e., soil, groundwater, surface water, air) at the entire facility including any offsite contamination emanating from the facility rather than from individual areas or releases. After this independent media by media examination is presented, a final recommendation is offered as to the proper CA725 status code for AZC.

The following discussions, interpretations and conclusions on contamination and exposures at the facility are based on the following reference documents:

- RCRA Facility Assessment, 1991;
- RCRA Permit Application, 6/30/95; &
- Evaluation of Historical Groundwater Conditions and Conceptual Corrective Action Plan, 6/30/95.

III. MEDIA BY MEDIA DISCUSSION OF CONTAMINATION AND THE STATUS OF PLAUSIBLE HUMAN EXPOSURES

Background

As part of the onsite wastewater treatment facility, AZC operated two aeration ponds. The wastewater managed in the ponds was classified with a hazardous waste code of D018. The ponds were closed in April 1993 according to an approved closure plan. As part of the post-closure care, quarterly groundwater monitoring was implement using groundwater monitoring wells designated as "point of compliance wells".

A non-hazardous waste landfill was used for disposal of process-generated filter cake consisting primarily of resins, solid ammonium-aluminum chloride complex and hydrocarbons. A surface impoundment was built next to the landfill to collect surface runoff during the operating period. A sample of the landfill leachate contained 1,2-dichloroethane, benzene, toluene, ethyl benzene, xylene, and naphthalene in concentrations ranging from 1.7 to 22 parts per million (ppm).

The landfill and the adjacent surface impoundment were closed by January 1989, following a plan approved by the

Mississippi Department of Natural Resources. In conjunction with remedial activities planned for the landfill and surface impoundment closure, an interceptor trench was installed in 1986 to capture groundwater flowing south from the landfill. As part of closure requirements, water quality data has been collected on a quarterly basis from existing monitoring wells since June 1986.

In addition to the aeration ponds, the landfill and its surface impoundment, there were also underground storage tanks (USTs) removed from two areas at the site in 1988 and 1991. Subsurface investigations were conducted in 1989 and 1990 and confirmed the presence of total volatile organic compounds (VOC) in excess of the 100 ppm target level established by the State of Mississippi for non-contaminated soil. VOC concentrations from composite soil sampling ranged from 1,141 mg/kg to 2, 104 mg/kg. Benzene was detected at concentrations from 8.4 mg/kg to 9.8 mg/kg.

Groundwater

A simple description of the geologic conditions on which the site is located is necessary prior to a discussion on groundwater flow rate and direction. The shallow lithologic sequence is comprised of a thin surficial sand bed underlain by clays and plastic silts. Beneath these layers is a zone of sand and non-plastic silts. These two zones were designated as the surficial aquifer and a shallow confined aquifer. The water table surface is the top of the surficial aquifer and the base is the clay/silt zone occurring at eight feet mean sea level (MSL). Groundwater in this aquifer discharges to the adjacent Harrison County Industrial Seaway (Seaway). The lower aquifer, described as a shallow "confined aquifer" occurs at -10 ft. MSL on the north side of the site and -50 feet MSL on the south side.

Groundwater flow studies conducted during 1995 interpreted the flow directions and gradient based on water level elevations in the shallow wells. The fire protection water pond, the closed landfill, the closed aeration basins, and numerous ditches appear to have localized effects. Slug tests were performed in five shallow and one deep monitoring well. When the results were

plotted on a potentiometric surface map (Figure E-6, attached), the groundwater flow directions were in several different directions. The average hydraulic gradient also varies across the site: 0.35 ft/day in the central portion and 2.2 ft/day in the southwest portion. For the deeper aquifer, the hydraulic gradient was not calculated since the three deep wells are not screened across the same lithology.

The combined horizontal contaminant plumes emanating from the closed aeration basins, tank farm area, closed landfill, and potentially other areas is quite extensive (Figures E-7 and E-8, attached). There are also "hot spots" where free product is known to be floating on top of the water table aquifer.

Groundwater is contaminated at concentrations which exceed groundwater protection standards at the point of compliance for the closed aeration basins and elsewhere throughout the combined plume. A "Corrective Action Program" is being implemented and is changing to reflect a shift of focus from a former unit-specific program to a site-wide program. However, present corrective action is limited to a groundwater recovery trench which was installed to intercept groundwater flowing from the closed landfill towards the Industrial Seaway. Recent studies performed to determine groundwater recovery effectiveness indicate an inadequate design for the current water table conditions which does not allow for the effective capture of floating contaminants. Work is to proceed based upon a proposal to correct operational deficiencies and thereby improve the performance of the interceptor trench.

We know that the groundwater underneath the A&C site is contaminated. However, with the extensive site-wide groundwater monitoring network in place and the operation of the recovery trench and soon to be implemented system improvements, plausible onsite human exposures appear controlled. Conversely, due to the lack of information with regard to sediment and/or surface water sampling, there is a plausible offsite human exposure potential.

The Seaway is not primarily used as a "recreational" surface water body but rather is primarily used for shipping and manufacturing concerns. Also, the layered geologic conditions

which exist at the land/surface water interface may prevail in retarding the movement of contaminated groundwater. In order to access the property at the land/surface water juncture, one would have to be in a boat. Then, exposure would be possible only if groundwater was visibly exiting the exposed lithologic sediment. Due to the nature of the contaminants, an "oily sheen" might be visible, but no record of such a sighting has been documented. Currently, this plausible human exposure is not controlled.

Surface Water/Sediment

Information pertaining to any proposed sediment sampling or surface water sampling of the adjacent Harrison County Industrial Seaway has not been located. Apparently, the surface water pathway potential has yet to be addressed.

Soil

Soil assessment sampling and analysis performed in association with the two former UST systems confirm contamination of the subsurface soil by benzene, toluene, ethylbenzene, xylene (collectively BTEX), naphthalene, and total recoverable petroleum hydrocarbons. Concentrations ranged from 1.3 mg/kg to 400 mg/kg.

In conjunction with the groundwater interceptor effectiveness study, soil samples were collected and analyzed for volatile and semivolatile organics. Contamination was confirmed by the presence of the aforementioned constituents. Concentrations ranged from 0.017 mg/kg to 58 mg/kg.

Soil sampling in the subsurface area associated with the solvent separators, various pipelines, and the hazardous waste tanks also confirmed the presence of BTEX constituents.

While soil sampling at numerous onsite locations indicates contamination, plausible human exposures are controlled by restricting access through means of a perimeter wide fence and control gate. The facility operates on a daily basis, but actual physical contact with contaminated soil is not expected based on

access restrictions and controls currently in place. Offsite human exposure to contaminated soil is not plausible as there are no offsite operations identified to date which could place humans at risk.

Air

Releases to the air from either soil, groundwater, or surface water is not known or expected to be occurring above relevant action levels.

IV. STATUS CODE RECOMMENDATION FOR CA725:

As explained in Section III, offsite human exposures to contamination are not completely controlled for groundwater and surface water, it is recommended that CA725 NO be entered into RCRIS.

V. GROUNDWATER RELEASES CONTROLLED DETERMINATION (CA750)

There are three (3) status codes listed under CA750:

1) YE Yes, applicable as of this date.

2) NA Previous determination no longer applicable as of this date.

3) NR No releases to groundwater.

Region 4 also added an additional status code which tracks the initial evaluations in which a determination is made that groundwater releases are not controlled. This regional status code is listed as "NO, not applicable as of this date." Use of the regional status code is only applicable in the first CA750 evaluation. Subsequent evaluations will use the national status codes (i.e., YE, NA and NR) to explain the current status of groundwater control.

Note that the three national status codes for CA750 are designed to measure the adequacy of actively or passively controlling the physical movement of groundwater contaminated with hazardous constituents above relevant action levels. The point where the success or failure of controlling the migration of hazardous constituents is measured in termed the designated boundary (e.g., the facility boundary, a line upgradient of receptors, the leading edge of the plume as defined by levels above action levels or cleanup standards, etc.). Therefore, every contaminated area t the facility must meet the definition before these event/status codes can be entered. Similarly, the regional status code is applicable if contaminated groundwater is not controlled in any area(s) of the facility.

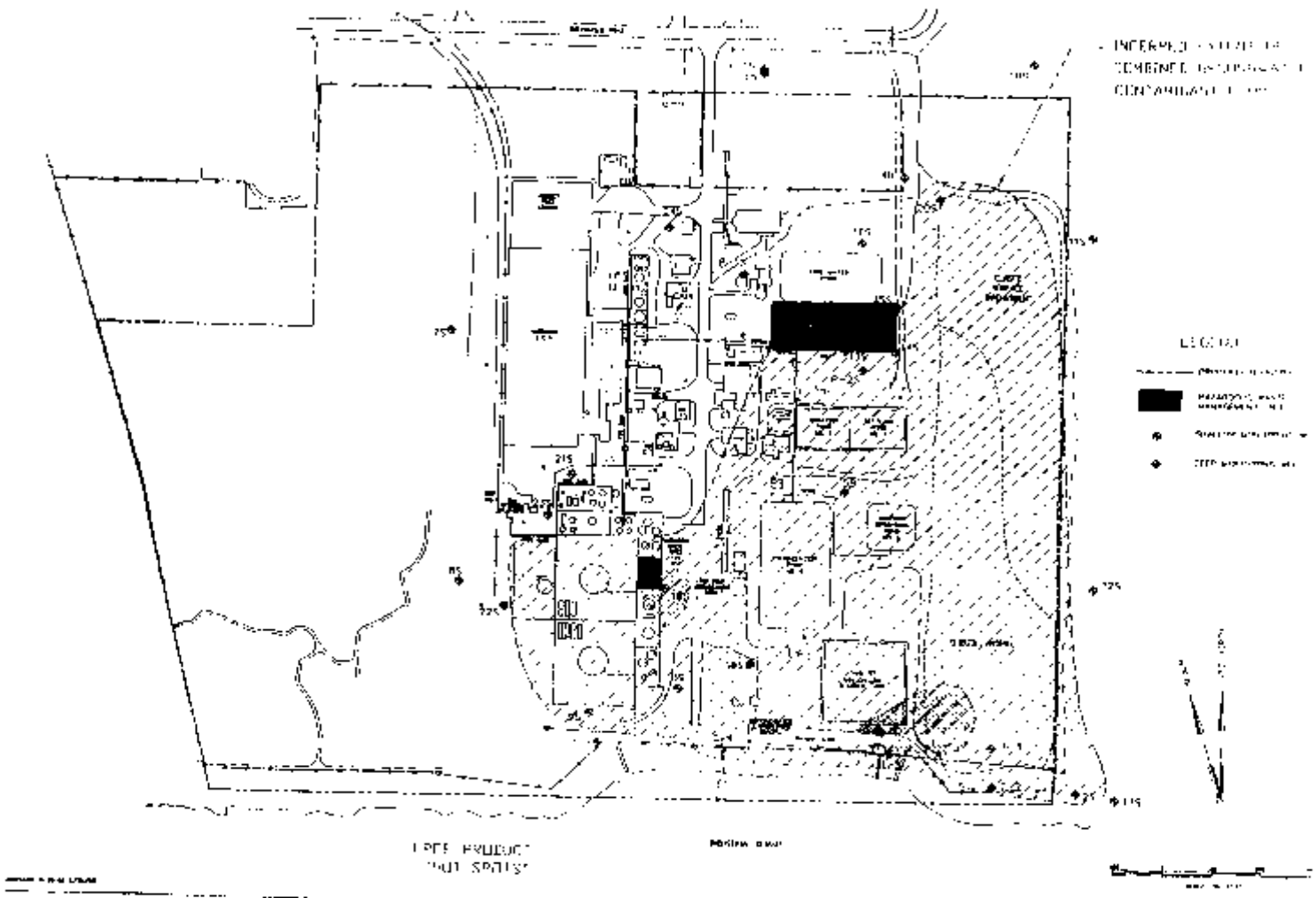
This evaluation for CA750 is the first formal evaluation performed for AZC. Please note that CA750 is based on the adequate control of all contaminated groundwater at the facility.

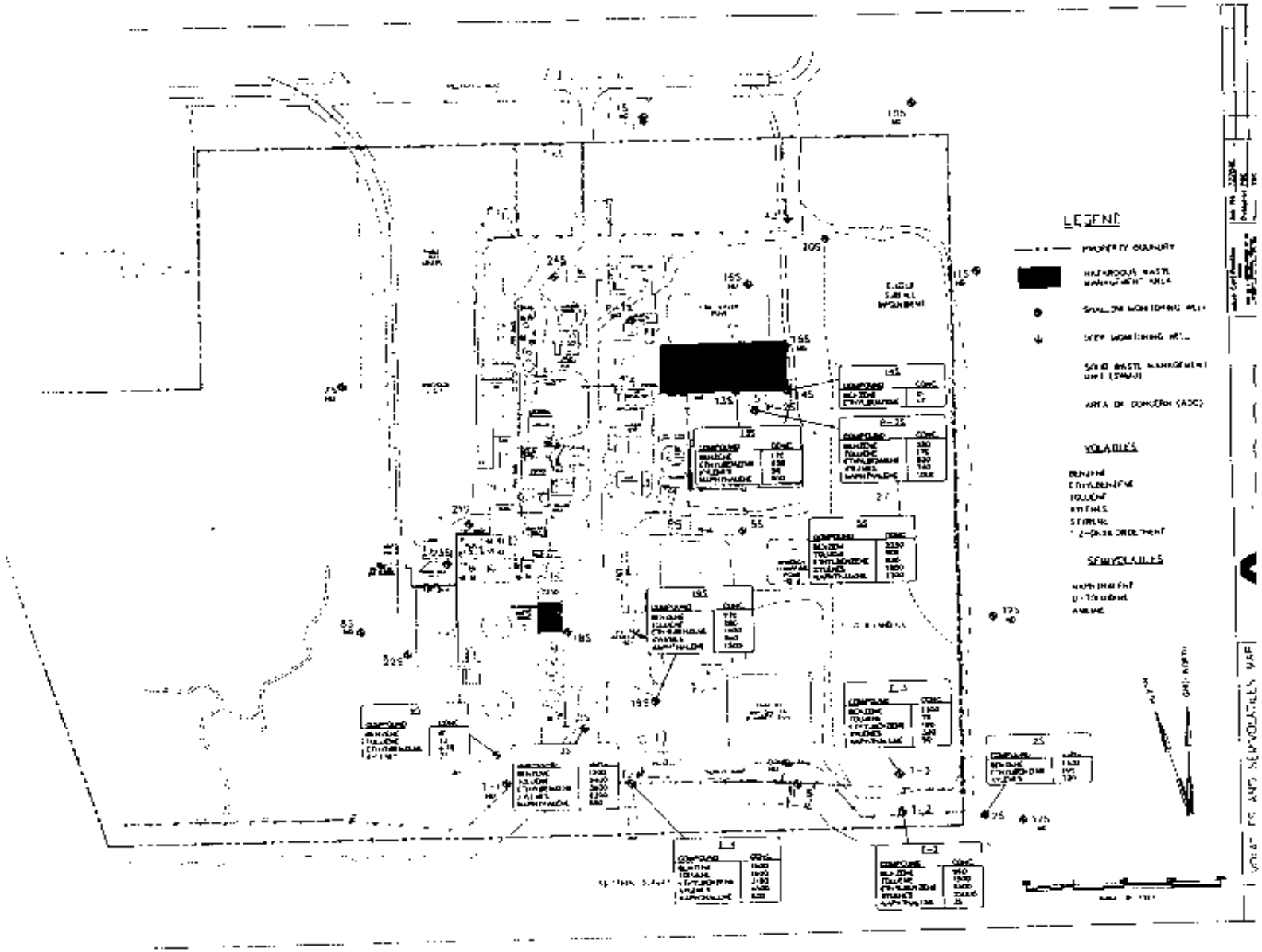
The discussions found in Section III are used as the basis for the following recommendation.

VI. STATUS CODE RECOMMENDATION FOR CA750:

Based on data contained in the documents referenced in Section II and summarized in Section III, releases from solid waste management units and/or areas of concern have contaminated groundwater at concentrations above relevant action levels. Because all groundwater contamination at or emanating from the facility is not controlled and this is the first evaluation of the AZC facility, it is recommended that **CA750 NO** be entered into RCRIS.

Attachments




LEGEND
PROPERTY BOUNDARY
HAZARDOUS WASTE MANAGEMENT AREA
SHALLOW MONITORING WELL
DEEP MONITORING WELL
SOLID WASTE MANAGEMENT UNIT (SWMU)
AREA OF CONCERN (AOC)
VOLATILES
BENZENE
ETHYLBENZENE
TOLUENE
XYLENES
STYRENE
1,2-DICHLOROETHANE
SEMIVOLATILES
NAPHTHALENE
2-METHYLNAPHTHALENE
ANILINE
GRID NORTH