Signed COPY

BEFORE THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT

In the Matter of
Boeing Military Airplane
Company Site and
Surrounding Area

Case No. 87-E-12

AMENDED CONSENT ORDER

The parties hereto, the Kansas Department of Health and Environment (KDHE) and Boeing Military Airplane Company (Boeing) having entered into a Consent Order on the 16th day of April 1987, and having further agreed that certain amendments are necessary to said document, and continuing to agree that settlement of this matter is in the best interests of the parties and the public, hereby represent and state as follows:

That the parties hereto reaffirm and incorporate into this Amended Agreement the terms of their Agreement dated April 16, 1987, except paragraph 7 of the original Consent Order.

I. Amendment 1. Paragraph 7 of Consent Order 87-E-12.

As a result of KDHE review of Boeing's letter dated July 25, 1991 and extended KDHE review of the complex nature of the geohydrologic system underlying the Boeing site which contains the contamination as described in Attachment A, the discovery of multiple, new, but not fully characterized source areas and newly discovered and/or inaccessible source areas at and around the Boeing site, KDHE has determined that the cleanup criteria listed in the original paragraph 7 of Consent Order 87-E-12 are no longer

appropriate. Therefore, the cleanup criteria shall be amended and paragraph 7 shall be replaced as follows:

A. The parties acknowledge and agree that the cleanup levels shall be those established by KDHE, based upon its knowledge of state and federal environmental requirements, and that these cleanup levels represent the best information available concerning applicable, relevant, and appropriate requirements of environmental law.

B. Boeing shall demonstrate, by means of the quarterly evaluation process, the success of the remediation system in the containment and remediation of the identified extent of contamination. Springs and creeks identified on previous quarterly reports as Spring 1 through 5 and creeks North and West shall continue to be monitored quarterly. Reduction of the current level of total volatile organic contaminants (if it is greater than or equal to 5 ppb) in these springs and creeks shall be achieved within one year of the signing of this Amended Consent Order. A plan to control access to or otherwise eliminate surface flow from springs containing volatile organic compounds which discharge off-site shall be submitted for KDHE approval within 60 days of the signing of this order.

C. Performance criteria for air strippers shall be 95% removal of VOCs. In the case that the air stripper efficiency drops below 85%, Boeing shall notify KDHE within 10 days and determine and correct the cause of the loss in efficiency.

II. Amendment 2. Further Investigation and Remediation

As a result of the discovery of further contamination and additional source areas on the Boeing site, the need to establish a zero contamination line, and the limitation of the current remediation system, KDHE has determined that further investigation and remediation are necessary.

A. Determine the Extent of Contamination

Boeing shall:

1. Submit an investigation workplan within 30 days of the signing of this Amended Consent Order for the further investigation of off-site areas (northwest area near springs and seeps, western area across K-15 Hwy between the Kansas Turnpike to the north and 47th Street to the South, and areas of suspected contamination surrounding and east of Oliver Street to the north of 47th Street) to establish the extent of horizontal and vertical contamination and establish a zero contamination line. For the purpose of this Order, the "zero contamination line"

shall be defined as that area beyond which total VOC levels are less than 5 ppb or such other level as approved by KDHE.

2. Include in the investigation workplan, a schedule for implementation, plans for the installation of additional monitoring wells, a bedrock surface map of the area, and other proposed methods of investigation.

3. Implement interim remediation operations as necessary on "hot spots" and source areas to contain and clean up contamination.

4. Submit an investigation report which includes: (1) a discussion and evaluation of the investigation findings; (2) maps showing (a) the groundwater potentiometric surface, (b) contouring of total volatile organic compound concentrations in the groundwater showing a zero contamination line, and (c) all sampling locations and site references; (3) laboratory analytical data; (4) sampling quality assurance/quality control procedures; and (5) a description of the sampling methods and field methods.

B. Design and Implement an Extended Remediation Plan

Boeing shall:

1. Submit a design plan for the remediation of additional areas and types of contamination within 120 days of KDHE approval of the investigation report as set out in paragraph II.A.4.

2. Describe and evaluate alternative remediation methods in the design plan.

3. Include an implementation schedule in the design plan with specific deliverable dates.

4. Begin implementation of the remediation plan within 60 days of KDHE approval of the design plan.

C. Modification to Monitoring System and Quarterly Reports

Boeing shall include the sampling and static water level measurement of newly constructed monitoring wells in the quarterly monitoring program. Drilling logs and construction diagrams for newly installed monitoring wells shall be included in the quarterly monitoring reports. Maps in the monitoring reports shall be modified to include the data and locations of the new monitoring wells. An additional contour map shall be provided with the quarterly reports using the total volatile organic concentration data for the quarter. The quarterly evaluation of the remediation system and the site cleanup shall include all newly discovered

information resulting from the further investigation. All additional remediation data shall be included in the quarterly reports.

Now therefore, the parties hereto have affixed their signatures on the date inserted below, to acknowledge their consent to the amended consent order as set out above.

Dated this 24 day of November, 1992.

G.L. Michaelson, Vice-President and
General Manager
Boeing Commercial Airplane Group,
Wichita Division
A Division of The Boeing Company

Dated this 22nd day of Jan, 1992.

Robert C. Harder, Secretary
Kansas Department of Health and
Environment

ATTACHMENT A

FACTORS CONTRIBUTING TO THE COMPLEXITY OF SITE GEOHYDROLOGY

1. Previous surface drainage has been covered with fill materials and may create preferred underground drainage pathways. Also, a surface drainage swale apparently created a local bedrock depression in a site area. Regrading activities have changed the surface drainage conditions over the years of site use.

2. The site area is located in a shale upland area, and generally consists of weathered bedrock material of the Wellington Shale Formation.

3. Discontinuous sand/sandstone in vertical and horizontal directions comprise most permeable material of the aquifer system. The sand/sandstone ranges in thickness from a few inches to a few feet. Many discrete beds of sandstone, limestone, or gypsum encountered in site borings do not consistently trace from one boring to another; and sand/sandstone generally has only been encountered in boreholes in the western portion of the facility.

4. Variations in composition of the apparent material and degree of weathering often results in zones of varying permeability and separation of aquifers. Although these aquifer separations are often localized, they can result in perched water and confined conditions. Overall, permeability is relatively low, with corresponding slow groundwater velocity and low well yields.

5. Recent studies have indicated the presence of at least one groundwater divide present on the site.

Due to the discontinuous permeable zones and the character of the hydrological system, it is difficult to maintain a smooth and consistent cone of depression which would demonstrate the effectiveness of the groundwater recovery system. Also, due to the low permeability of the aquifer and its heterogeneity, dramatic declines in the levels of groundwater contaminants should not be expected on a yearly basis. Inaccessible source areas, such as those under facility buildings, might possibly contribute to contamination of the groundwater during periods of higher groundwater levels. As more geohydrological information is gathered, improvements can be made to the current remediation system to increase its speed and efficiency toward the groundwater cleanup.

CERTIFICATE OF MAILING

I hereby certify that on this 26 day of January, 1993, I deposited a true and correct copy of the above and foregoing Consent Order in the United States Mail, postage prepaid, and addressed to:

G.L. Michaelson, Vice-President and
General Manager
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Theresa Johnson
KDHE Staff Person