



3734.13(A) and 6111.03(H) have been made and are outlined below. Respondent, by entering into this Consent Agreement does not admit the findings set forth below. Specifically, TRW neither admits nor denies that any threatened or actual imminent and substantial endangerment exists requiring remedial action, and denies any legal liabilities associated with the Minerva site.

A. The overall site consists of approximately 135 acres located in Stark County, Ohio, near the town of Minerva, Ohio. The plant site itself is situated on a 54 acre parcel of property just east of State Route 183, approximately 1.3 miles northeast of the intersection of Route 183 and U.S. Route 30. Located on the 54 acre parcel is the single major building comprising the Minerva, Ohio, Casting Division facility of the TRW Aircraft Components Group. Additional properties known as the "South Property" and the "East Property," both adjacent to the original 54 acre parcel all make up the "Site" for purpose of this order. This Site is a "facility" as that term is defined in Section 101(9) of CERCLA and Section 3734.01 of the Revised Code.

B. TRW Inc. is an Ohio corporation authorized to do business in the State of Ohio. TRW's principal place of business is located at its Executive Offices, 1900 Richmond Road, Cleveland, Ohio 44124.

C. Respondent TRW Inc. is the owner of the Site and as such is a "person" as that term is defined at Section 101(21) of CERCLA.

D. Certain materials were used by TRW at this Site, among which were hydraulic oils containing polychlorinated biphenyls (PCBs), and solvents including 1,1,1-trichloroethane (TCA), and trichloroethene (TCE). All of those materials are "industrial wastes" as that term is defined in ORC Section 6111.01 and "hazardous substances" as that term is defined in Section 101(14) of CERCLA. TRW used these materials in the metal casting of aircraft components.

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By: Unmad Oatis Date: 5/9/86<sup>2</sup>

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E. In the past, PCBs, TCA and TCE were discharged by TRW to the drainage swale and the wax ditch areas of the Site. From there the materials migrated or were physically moved so that now there is contamination of six specific areas at the Site: the swale, the wax ditch, the South Pond, the rubble pile, the South Property, and groundwater.

F. By Director's Final Findings and Orders, issued and effective on <sup>July 19</sup> July 5, 1985, the Director of OEPA and TRW Inc. agreed to implement a surface cleanup of environmental contamination. While groundwater monitoring was required in the <sup>July 19</sup> July 5, 1985 Orders, groundwater remediation and cleanup was not the objective of the surface cleanup and is instead the subject of this Administrative Order on Consent.

G. A release or threat of release as those terms have been defined at Section 101(22) of CERCLA has occurred at the Site in that PCBs, TCA and TCE have been released to the environment, including discharge of TCE and TCA to waters of the State.

H. The plant Site is underlain by a layer of glacial till approximately 90 feet thick below which is a layer of limestone-shale bedrock. The glacial till layer contains a productive aquifer. The groundwater in the area moves generally in a south-southwesterly direction. Additionally, there is a surface water stream that runs to the west of the plant and drains an area known as "West Lake."

I. Across Route 183 from the plant in a southwesterly direction are a number of private residences, some of which draw domestic water from private wells.

J. Based on the information outlined above, OEPA has determined that because of an actual or threatened release of hazardous substances from the

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By: Virgil Davis Date 5/9/86

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Site there may be an imminent and substantial endangerment to the public health or welfare or the environment. OEPA has also determined that action must be taken to protect public health and welfare and the environment. Such action may include, but will not necessarily be limited to, the remedial activities described more fully in the attachments to this Consent Order.

TRW Inc. (TRW) has developed, proposed and agrees to undertake only those actions required of it by the terms and conditions of this Consent Order.

#### IV. PARTIES BOUND

This Consent Order shall apply to and be binding upon TRW and OEPA their agents, successors, and assigns and upon all persons, contractors, and consultants acting on behalf of OEPA or TRW. TRW agrees to provide copies of this Order to all contractors performing any work called for by this Order.

#### V. WORK TO BE PERFORMED

OEPA and TRW agree on the scope of work and the specific remedial activities addressed by this Order, and, based on facts presently known, believe that it is consistent with the National Contingency Plan (NCP).

All response work performed pursuant to this Consent Order shall be under the direction and supervision of a qualified professional engineer or a certified geologist with expertise in hazardous waste site cleanup. Prior to the initiation of site work, TRW shall notify OEPA in writing regarding the identity of such engineer or geologist and of any contractors and/or subcontractors to be used in carrying out the terms of this Consent Order.

Moreover, all actions required to be taken pursuant to this Consent Order shall be undertaken in accordance with the requirements of all applicable local, state, and federal laws and regulations unless an exemption from such requirements is specifically provided herein. OEPA shall cooperate to expedite all required permit processing.

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By: William Davis Date: 5/9/86

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Handwritten notes at the top of the page, including "I", "II", and "III" followed by illegible text. On the right side, there is a circled handwritten note: "(Install Report)".

Based on the foregoing, it is hereby AGREED TO AND ORDERED that the following work shall be performed:

A. TRW shall implement the tasks detailed in the Groundwater Workplan which has been prepared by TRW and approved by OEPA, and is attached to and incorporated in this Consent Order (Attachment A). This work shall be conducted in accordance with the standards, specifications, and schedule contained in the Groundwater Workplan.

1. TRW shall design, construct, maintain and operate the groundwater extraction and treatment system consisting of groundwater extraction wells and air stripping of volatile organic chemicals. This system shall be constructed in accordance with conceptual design criteria presented in Attachment A. Further, TRW shall design, construct, and maintain groundwater monitoring compliance wells in accordance with plans, which shall be approved by OEPA and installed at locations, to be approved by OEPA. Upon approval by OEPA, said plans and well locations shall be incorporated into this Order as Attachment C.

2. TRW shall maintain a hydraulic gradient with groundwater and contaminant flow towards the groundwater extraction wells at all times until the groundwater cleanup is determined to be completed, as described below.

3. TRW shall utilize the analytical protocols specified in 40 CFR 136 as amended October 26, 1984 method 601 for the determination of 29 purgable halocarbons in water.

4. TRW shall obtain from Ohio EPA an Ohio National Pollutant Elimination System permit to discharge treated wastewater pursuant to the provisions of Chapter 6111 of the Ohio Revised Code and air permits to install and operate in accordance with Chapter 3704 of the Ohio Revised Code. Ohio EPA will use its best efforts to timely review and issue said permits, as final actions of the Director pursuant to Section 3745.04 of the Ohio Revised Code.

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By: Virgil Davis Date 5/9/86<sup>5</sup>

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Handwritten date: 9/19/86

5. TRW shall predict the effective reduction in volatile organic chemical concentration for each compliance monitoring location for each of the following time intervals, beginning 30 days from the date of Ohio EPA approval of the model calibration:

- 1 year after construction
- 5 years after construction
- 10 years after construction

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6. At the time intervals listed at A-5 above, TRW shall determine the effectiveness of the groundwater treatment system by comparing predicted clean-up concentrations with actual analytical results from groundwater monitoring compliance wells and submit reports describing TRW's findings to Ohio EPA.

7. TRW shall collect groundwater samples from the groundwater monitoring compliance wells and submit reports to OEPA beginning 30 days from the date of the final report. Samples shall be collected and reported monthly for the first six months and quarterly thereafter.

8. TRW and Ohio EPA shall review the effectiveness of the groundwater treatment system and shall determine if the objectives of the Groundwater Workplan, Attachment A, are being met at the compliance monitoring points which are to be developed jointly by TRW and OEPA, with final approval by OEPA. The groundwater extraction and treatment system shall be operated until four quarters of monitoring data demonstrate compliance with one (or a combination) of the following performance standards:

- a. Groundwater quality meets or exceeds established drinking water standards for the parameters of concern; or
- b. Groundwater quality reaches background or  $1 \times 10^{-6}$  cancer risk concentrations for the parameters of concern; or
- c. Groundwater quality meets or exceeds alternate concentration limits as established under the procedure set forth in 40 CFR

Section 264.94 and OAC 3745-54-94 and as further described in Attachment B.

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6 11/1/66 [Signature]

Failure to achieve compliance with the applicable criteria at the compliance monitoring points will result in additional corrective actions by TRW to be specified by Ohio EPA. These additional corrective actions may be, but not limited to, additional actions proposed by TRW and shall be incorporated into this Order as an amendment thereto. Any difference, dispute, or disagreement between OEPA and TRW regarding additional corrective actions shall be resolved pursuant to the procedures set forth in paragraph X., below.

B. Within 15 days of the effective date of this Consent Order, TRW shall commence the work called for in this Order.

C. TRW shall provide monthly written progress reports to OEPA beginning on the 15th of the month following the effective date of this Order and each month thereafter until completion of the construction phase and implementation of groundwater extraction wells, as required by this Order and for a period of six months thereafter. At a minimum these progress reports shall: (1) describe the actions which have been taken toward achieving compliance with the Consent Order during the previous month, (2) include all results of sampling and tests and all other data received by TRW, and (3) include all plans and procedures completed subsequent to OEPA approval of the Groundwater Work Plan, during the past month as well as such actions, data, and plans which are scheduled for the next month.

D. Within thirty (30) days of the completion of the construction phase and implementation of the groundwater extraction wells, TRW shall submit a final report on the project. OEPA shall use best efforts to review the draft final report and the final report within thirty (30) days (and in no event shall review take more than ninety (90) days) of receipt and shall notify TRW in writing of OEPA's approval or disapproval of the reports or any part thereof. In the event of any disapproval, OEPA shall specify in writing both the deficiencies

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By: *Virgil G. Murr* Date: *5/9/86* 7

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and the reasons for such disapproval. Approval or disapproval by OEPA shall not be inconsistent with the NCP, CERCLA, Sections 3734.13(A) and 6111.03(H) of the Ohio Revised Code or the regulations promulgated thereunder.

E. In the event of disapproval of any report, TRW shall amend and submit to OEPA such revised reports within 30 calendar days of receipt of OEPA notification of report disapproval.

Documents, including reports, approvals, and other correspondence, to be submitted pursuant to this Consent Order, shall be sent by certified mail to the respective Project Coordinators at the following addresses or to such other addresses as TRW or OEPA hereafter may designate in writing:

1) Documents to be submitted to TRW should be sent to:

Andrew Resetar, Project Coordinator  
TRW Inc., T-1313  
23555 Euclid Avenue  
Cleveland, Ohio 44771

2) Documents to be submitted to the OEPA should be sent to:

Gary Gifford  
Project Coordinator  
Ohio EPA  
Northeast District Office  
2110 East Aurora Road  
Twinsburg, Ohio 44087

and

Gerald Myers  
Ohio EPA  
Division of Solid and Hazardous  
Waste Management  
P.O. Box 1049  
Columbus, Ohio 43216-1049

#### VI. PROJECT COORDINATORS' DUTIES

The identity of each Project Coordinator is listed in paragraph V. above. Each Project Coordinator shall be responsible for overseeing the implementation of this Consent Order. To the maximum extent possible, communications between the parties and all documents, including reports, approvals, and other correspondence, concerning the activities performed pursuant to the terms and conditions of this Consent Order, shall be directed through the Project Coordinators.

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By: Wanda Davis Date: 5/9/86 8

OEPA and TRW each have the right to change their respective Project Coordinator. Such a change shall be accomplished by notifying the other parties in writing at least five calendar days prior to the change.

The OEPA Project Coordinator shall have the authority vested in the On-Scene-Coordinator by the National Contingency Plan; 40 C.F.R. Part 300 et seq., 47 Federal Register 31180 July 16, 1982. The Project Coordinators shall each have the authority to direct that work stop for a period not to exceed seventy-two (72) hours whenever a Project Coordinator determines that activities at the site may create a present danger to public health or the environment.

#### VII. SITE ACCESS

To the extent that the Site is presently owned by parties other than those bound by this Consent Order, TRW has obtained or will use its best efforts to obtain site access agreements from the present owners within 30 calendar days of the effective date of this Consent Order. Such agreements shall provide complete access to OEPA and/or its authorized representatives. In the event that site access agreements are not obtained within the time referenced above, TRW shall notify OEPA regarding the lack of such agreements as soon as possible after the passage of the thirty (30) days, and in no event more than fifteen (15) days after the end of the thirty (30) day time period.

#### VIII. SAMPLING, ACCESS, AND DATA/DOCUMENT AVAILABILITY

TRW shall make the results of all sampling and/or tests or other data generated by TRW, or on TRW's behalf, with respect to the implementation of this Consent Order, available to OEPA and shall submit these results in monthly progress reports as described in Section V of this Consent Order. OEPA will make available to TRW the results of sampling and/or tests or other data similarly generated by OEPA.

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By: Virgil Davis Date 5/9/86 9

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At the request of OEPA, TRW shall allow split or duplicate samples to be taken by OEPA and/or its authorized representatives, of any samples collected by TRW pursuant to the implementation of this Consent Order. TRW shall notify OEPA not less than 48 hours in advance of any sample collections activity.

OEPA or its authorized representative shall have the authority to enter and freely move about all property at the Site at all reasonable times for the purposes of, inter alia: inspecting and copying records, operating logs, and contracts related to the Site; reviewing the progress of TRW in carrying out the terms of this Consent Order; conducting such tests as the Project Coordinators deem necessary; and verifying the data submitted to OEPA by TRW. OEPA shall use its best efforts pursuant to its statutory authority in Chapters 3734 and 6111 of the Ohio Revised Code to assist TRW in obtaining access in the event that TRW is denied voluntary access.

All parties with access to the Site pursuant to this paragraph shall comply with all approved health and safety plans. Nothing herein shall act to limit the statutory authority of OEPA to conduct inspections and gather information.

#### IX. RECORD PRESERVATION

OEPA and TRW agree that each shall preserve, during the pendency of this Consent Order and for a minimum of six (6) years after its termination, all records and documents in their possession or in the possession of their divisions, employees, agents, accountants, contractors, or attorneys which relate in any way to the Site, despite any document retention policy to the contrary. After this six year period, TRW shall notify OEPA within 30 calendar days prior to the destruction of any such documents. Upon request by any party, the other party shall make available to the requesting party such records or copies of any such records at reasonable cost.

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By: William D. Davis Date 5/9/66 10

#### X. DISPUTE RESOLUTION

The Project Coordinators shall, wherever possible, operate by consensus, and in the event that there is a disapproval of any report or disagreement about the conduct of the work performed under this Order, the Project Coordinators shall negotiate in good faith for 5 business days to resolve the differences.

In the event that the Project Coordinators are unable to reach consensus on the disapproval or disagreement in 5 business days, then each Project Coordinator shall reduce his position to written form within 5 business days of the end of the good faith negotiations referenced above. Those written positions shall be immediately exchanged by the Project Coordinators.

Following the exchange of written positions, the parties shall have an additional 5 business days to resolve their differences. If OEPA concurs with the position of the Respondents, OEPA will modify the Consent Order to include necessary extensions of time or variances of required work. If OEPA does not concur with the position of the Respondents, OEPA will resolve the dispute, based upon, and consistent with, the Consent Order and Workplan and upon issuance of a final "action" of the OEPA Director pursuant to Section 3734.04 of the Revised Code.

#### XI. RESERVATION OF RIGHTS

Nothing herein shall waive OEPA's right to seek to enforce this Consent Order under Section 106(b) of CERCLA and Chapter 3734, 3745 and 6111 of the Ohio Revised Code.

Nothing herein shall waive OEPA's right to take any action authorized by Ohio Revised Code Sections 3734.20 through 3734.26 or Section 107 of CERCLA or any other law.

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By: David A. Owen Date 5/9/86

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Nothing herein shall waive TRW's right to seek to enforce any remedies or assert any defenses against OEPA or others in connection with the Site and (or) this Consent Order.

#### XII. REIMBURSEMENT OF COSTS

A. Thirty days after the end of the construction phase and implementation of the groundwater extraction wells, OEPA shall submit to TRW an accounting of all response and oversight costs, which are not inconsistent with the NCP, incurred by Ohio EPA with respect to this Consent Order. TRW shall, within 30 calendar days of receipt of that accounting, remit a check to OEPA for the amount of those costs. OEPA presently estimates that its costs associated with this project will be approximately \$5,000. In no event, however, shall the cumulative total of oversight costs exceed \$10,000 per year for OEPA.

B. Notwithstanding paragraph XII. A., above, OEPA reserves the right to seek all response and oversight costs which may be incurred by OEPA in the event that additional corrective actions are specified pursuant to paragraph V. A. 8., above.

C. For OEPA the checks shall be made payable to Treasurer, State of Ohio; Hazardous Waste Cleanup Special Account, and shall be addressed to:

Ohio Environmental Protection Agency  
Division of Solid and Hazardous Waste Management  
Attn: Fiscal Officer  
P.O. Box 1049  
Columbus, Ohio 43216-1049

A copy of the transmittal letter should be sent to the Project Coordinator.

#### XIII. OTHER CLAIMS

Nothing herein is intended to release any claims, causes of action or demands in law or equity against any person, firm, partnership, or corporation not a signatory to this Consent Order for any liability it may have arising out of or relating in any to the generation, storage, treatment,

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By: Virgil Davis Date 5/9/86

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handling, transportation, release, or disposal of any hazardous substances, hazardous waste, pollutants, or contaminants found at, taken to, or taken from the Site.

The OEPA recognizes and agrees that TRW shall have a right to contribution, indemnity and(or) any other available remedies against any person found to be a responsible person or otherwise liable for contribution, indemnity and(or) other available remedies for any amounts which have been or will be expended by TRW or paid to OEPA under this Consent Order or otherwise in connection with any claims asserted by the OEPA and(or) others against TRW in connection with the Site.

#### XIV. INDEMNIFICATION

TRW agrees to indemnify and save and hold OEPA, its agents and employees, harmless from any and all claims or causes of action arising from or on account of acts or omissions of TRW, its agents or assigns, in carrying out the activities pursuant to this Consent Order. OEPA shall not be party to any contract involving TRW for work accomplished pursuant to this Order. Consistent with federal, state, and common laws, nothing in this Order shall render TRW liable for any act or omission of OEPA.

#### XV. PUBLIC COMMENT, EFFECTIVE DATE AND MODIFICATION

OEPA shall make the draft final version of this Consent Order available to the public for review and comment pursuant to OEPA policy, prior to signature of the Director and in accordance with the procedures of Chapter 3734-47 of the Ohio Administrative Code; specifically, Rules 3745-47-05, 3745-47-08, and 3745-47-12.

The effective date of this Consent Order shall be the date on which it is signed by the last party.

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By: Virgil Davis Date: 5/9/86 13

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This Consent Order may be amended by mutual agreement of OEPA and TRW. Such amendments shall be in writing and shall have as the effective date, that date on which such amendments are signed by the last party.

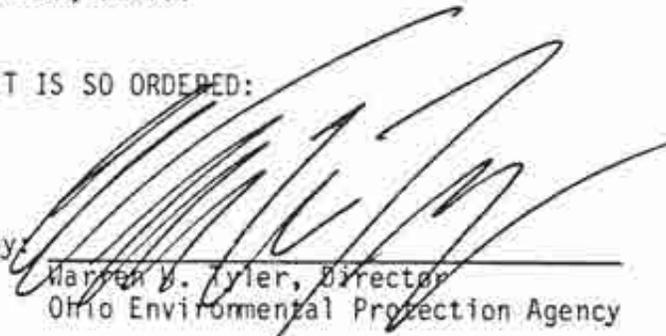
XVI. RELEASE AND COVENANT NOT TO SUE

Upon termination of this Consent Order pursuant to Section XVII of this Consent Order, and reimbursement to OEPA as provided in Section XII, OEPA covenants not to sue TRW for costs incurred by OEPA associated with the conduct and completion of the activities called for in this Consent Order except as otherwise reserved herein, and TRW shall be released from obligations embodied in this Consent Order with the exception of maintenance, monitoring and reporting requirements and subject to Section XI above.

XVII. TERMINATION AND SATISFACTION

The provisions of this Consent Order shall be deemed satisfied upon TRW's receipt of written approval from OEPA of the final report pursuant to paragraph V. D. above, except with respect to the provisions of paragraphs V. A. 5. to V. A. 8., above.

IT IS SO ORDERED:

By:   
Warren V. Tyler, Director  
Ohio Environmental Protection Agency

4/28/86  
Date

TRW Inc. has consented to the issuance of this Order, and hereby waives any right it may have to appeal the issuance of this Order.

By: C.T. Bingham  
MANAGER ENVIRONMENTAL PROS  
Title

4/15/86  
Date

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By: Virgil Cross Date 5/9/86 14

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ATTACHMENT A

RI/FS EQUIVALENT

Pursuant to guidance from Ohio EPA and USEPA, TRW has created a "Remedial Investigation/Feasibility Study Equivalent" (RI/FS Equivalent) plan. The plan is the result of extensive sampling, lab analysis and field work, as well as desk research and analysis and engineering bench work. The results of these efforts were reported to the government agencies in a series of reports during 1984 and 1985. These reports, listed below, are, collectively, the RI/FS Equivalent.

The RI/FS Equivalent is the basis upon which the remedial action was chosen and contains within it the description of groundwater remedial activities contemplated at the Minerva site.

The reports that comprise the RI/FS Equivalent are:

- REPORT #1: CLEMENT ASSOCIATES, INC., 1984. "Amended Proposed Groundwater Treatment Feasibility Study for the TRW Site in Minerva, Ohio". Prepared for TRW, Inc., December 7, 1984.
- REPORT #2: CLEMENT ASSOCIATES, INC., 1985. "Groundwater Remedial Investigation and Feasibility Study Report for the TRW Site in Minerva, Ohio". Prepared for TRW, Inc., April 17, 1985.
- REPORT #3: O'BRIEN & GERE ENGINEERS, INC., 1985a. "Groundwater Treatment Conceptual Design Report, TRW, Minerva, Ohio." Prepared for TRW, Inc., July 8, 1985.
- REPORT #4: O'BRIEN & GERE ENGINEERS, INC., 1985b. "Addendum - Groundwater Treatment Conceptual Design Report, TRW, Minerva, Ohio." Prepared for TRW, Inc., July 24, 1985.

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By: Wesley Davis Date 5/9/86

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A summary of intended groundwater remedial actions, not intended to include the greater detail inherent in the actual RI/FS Equivalent, is as follows:

- Drilling of four groundwater withdrawal recovery wells (three south of the plant and one in the TRW barn area), and the installation of pumps and piping to convey recovered groundwater to the proposed treatment system.
- Installation of a packed tower air stripper to treat groundwater by removing volatile organic compounds.
- Discharge of treated groundwater to Sandy Creek via the West Lake drainage stream.

Details of the proposed remedial actions are described in Reports #3 and #4.

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State Of Ohio Environmental Protection Agency

P.O. Box 1049, 361 East Broad St., Columbus, Ohio 43266-0149  
(614) 466-8565



Richard F. Celeste, Governor

Attachment B

As applied to this site, potential adverse effects on groundwater quality will be addressed as per the above provisions by considering the following receptors and their associated exposure points: 1) current users of groundwater from private wells; 2) users of Minerva city well water. Potential effect on hydraulically connected surface water quality will be addressed considering downstream users at Sandy Creek.

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3745-54-94

CONCENTRATION LIMITS

- (A) THE FACILITY PERMIT WILL SPECIFY THE CONCENTRATION LIMITS IN THE GROUND WATER FOR HAZARDOUS CONSTITUENTS ESTABLISHED UNDER RULE 3745-54-93 OF THE ADMINISTRATIVE CODE. THE CONCENTRATION OF A HAZARDOUS CONSTITUENT:
- (1) MUST NOT EXCEED THE BACKGROUND LEVEL OF THAT CONSTITUENT IN THE GROUND WATER AT THE TIME THAT LIMIT IS SPECIFIED IN THE PERMIT; OR
  - (2) FOR ANY OF THE CONSTITUENTS LISTED IN "TABLE I" MUST NOT EXCEED THE RESPECTIVE VALUE GIVEN IN THAT TABLE IF THE BACKGROUND LEVEL OF THE CONSTITUENT IS BELOW THE VALUE GIVEN IN "TABLE I"; OR
  - (3) MUST NOT EXCEED AN ALTERNATE LIMIT ESTABLISHED IN THE PERMIT UNDER PARAGRAPH (B) OF THIS RULE.

(B) AN ALTERNATE CONCENTRATION LIMIT WILL BE ESTABLISHED FOR A HAZARDOUS CONSTITUENT IF IT IS FOUND THAT THE CONSTITUENT WILL NOT POSE A SUBSTANTIAL PRESENT OR POTENTIAL HAZARD TO HUMAN HEALTH OR THE ENVIRONMENT AS LONG AS THE ALTERNATE CONCENTRATION LIMIT IS NOT EXCEEDED. IN ESTABLISHING ALTERNATE CONCENTRATION LIMITS, THE DIRECTOR WILL CONSIDER THE FOLLOWING FACTORS:

- (1) POTENTIAL ADVERSE EFFECTS ON GROUND WATER QUALITY, CONSIDERING:
  - (a) THE PHYSICAL AND CHEMICAL CHARACTERISTICS OF THE WASTE IN THE REGULATED UNIT, INCLUDING ITS POTENTIAL FOR MIGRATION;
  - (b) THE HYDROGEOLOGICAL CHARACTERISTICS OF THE FACILITY AND SURROUNDING LAND;
  - (c) THE QUANTITY OF GROUND WATER AND THE DIRECTION OF GROUND WATER FLOW;
  - (d) THE PROXIMITY AND WITHDRAWAL RATES OF GROUND WATER USERS;
  - (e) THE CURRENT AND FUTURE USE OF GROUND WATER IN THE AREA;
  - (f) THE EXISTING QUALITY OF GROUND WATER, INCLUDING OTHER SOURCES OF CONTAMINATION AND THEIR CUMULATIVE IMPACT ON THE GROUND WATER QUALITY;
  - (g) THE POTENTIAL FOR HEALTH RISKS CAUSED BY HUMAN EXPOSURE TO WASTE CONSTITUENTS;

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- (h) THE POTENTIAL DAMAGE TO WILDLIFE, CROPS, VEGETATION, AND PHYSICAL STRUCTURES CAUSED BY EXPOSURE TO WASTE CONSTITUENTS;
  - (i) THE PERSISTENCE AND PERMANENCE OF THE POTENTIAL ADVERSE EFFECTS; AND
- (2) POTENTIAL ADVERSE EFFECTS ON HYDRAULICALLY-CONNECTED SURFACE-WATER QUALITY, CONSIDERING:
- (a) THE VOLUME AND PHYSICAL AND CHEMICAL CHARACTERISTICS OF THE WASTE IN THE REGULATED UNIT;
  - (b) THE HYDROGEOLOGICAL CHARACTERISTICS OF THE FACILITY AND SURROUNDING LAND;
  - (c) THE QUANTITY AND QUALITY OF GROUND WATER, AND THE DIRECTION OF GROUND WATER FLOW;
  - (d) THE PATTERNS OF RAINFALL IN THE REGION;
  - (e) THE PROXIMITY OF THE REGULATED UNIT TO SURFACE WATERS;
  - (f) THE CURRENT AND FUTURE USES OF SURFACE WATERS IN THE AREA AND ANY WATER QUALITY STANDARDS ESTABLISHED FOR THOSE SURFACE WATERS;
  - (g) THE EXISTING QUALITY OF SURFACE WATER, INCLUDING OTHER SOURCES OF CONTAMINATION AND THE CUMULATIVE IMPACT ON SURFACE WATER QUALITY;
  - (h) THE POTENTIAL FOR HEALTH RISKS CAUSED BY HUMAN EXPOSURE TO WASTE CONSTITUENTS;
  - (i) THE POTENTIAL DAMAGE TO WILDLIFE, CROPS, VEGETATION, AND PHYSICAL STRUCTURES CAUSED BY EXPOSURE TO WASTE CONSTITUENTS;
  - (j) THE PERSISTENCE AND PERMANENCE OF THE POTENTIAL ADVERSE EFFECTS.

I certify this to be a true and accurate copy of the official document as filed in the records of the Ohio Environmental Protection Agency.

By: Virgil Davis Date 5/9/86

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(v) The hydrogeological characteristics of the facility and surrounding area around the facility, the Regional Administrator will consider any identification of underground sources of drinking water and exempted aquifers made under § 144.8 of this chapter.

(vi) The quantity of ground water the direction of ground-water

(vii) The proximity and withdrawal rates of ground-water users;

(viii) The current and future uses of and water in the area;

(ix) The existing quality of ground water, including other sources of contamination and their cumulative effect on the ground-water quality;

(x) The potential for health risks caused by human exposure to waste constituents;

(xi) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents;

(xii) The persistence and permanence of the potential adverse effects; and

(xiii) Potential adverse effects on hydrologically-connected surface water quality, considering:

(1) The volume and physical and chemical characteristics of the waste regulated unit;

(2) The hydrogeological characteristics of the facility and surrounding area;

(3) The quantity and quality of ground water, and the direction of ground-water flow;

(4) The patterns of rainfall in the area;

(5) The proximity of the regulated unit to surface waters;

(6) The current and future uses of surface waters in the area and any water quality standards established for those surface waters;

(7) The existing quality of surface water, including other sources of contamination and the cumulative impact on surface-water quality;

(8) The potential for health risks caused by human exposure to waste constituents;

(9) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(10) The persistence and permanence of the potential adverse effects.

(c) In making any determination under paragraph (b) of this section about the use of ground water in the area around the facility the Regional Administrator will consider any identification of underground sources of drinking water and exempted aquifers made under § 144.8 of this chapter.

(47 FR 32380, July 26, 1982, as amended at 48 FR 14284, Apr. 1, 1983)

§ 264.94 Concentration limits.

(a) The Regional Administrator will specify in the facility permit concentration limits in the ground water for hazardous constituents established under § 264.93. The concentration of a hazardous constituent:

(1) Must not exceed the background level of that constituent in the ground water at the time that limit is specified in the permit; or

(2) For any of the constituents listed in Table 1, must not exceed the respective value given in that Table if the background level of the constituent is below the value given in Table 1; or

(3) Must not exceed an alternate limit established by the Regional Administrator under paragraph (b) of this section.

(b) The Regional Administrator will establish an alternate concentration limit for a hazardous constituent if he finds that the constituent will not pose a substantial present or potential hazard to human health or the environment as long as the alternate concentration limit is not exceeded. In establishing alternate concentration limits, the Regional Administrator will consider the following factors:

(1) Potential adverse effects on ground-water quality, considering:

TABLE 1—MAXIMUM CONCENTRATION OF CONSTITUENTS FOR GROUND-WATER PROTECTION—Continued

Constituent	Maximum concentration <sup>1</sup>
Polychlorinated biphenyls (polychlorinated biphenyls)	0.004
Polychlorinated biphenyls (polychlorinated biphenyls)	0.1
Polychlorinated biphenyls (polychlorinated biphenyls)	0.008
Polychlorinated biphenyls (polychlorinated biphenyls)	0.1
Polychlorinated biphenyls (polychlorinated biphenyls)	0.01

<sup>1</sup> Milligrams per liter.

(i) The physical and chemical characteristics of the waste in the regulated unit, including its potential for migration;

(ii) The hydrogeological characteristics of the facility and surrounding area;

(iii) The quantity of ground water and the direction of ground-water flow;

(iv) The proximity and withdrawal rates of ground-water users;

(v) The current and future uses of ground water in the area;

(vi) The existing quality of ground water, including other sources of contamination and their cumulative impact on the ground-water quality;

(vii) The potential for health risks caused by human exposure to waste constituents;

(viii) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents;

(ix) The persistence and permanence of the potential adverse effects; and

(x) Potential adverse effects on hydrologically-connected surface-water quality, considering:

(1) The volume and physical and chemical characteristics of the waste in the regulated unit;

(2) The hydrogeological characteristics of the facility and surrounding area;

(3) The quantity and quality of ground water, and the direction of ground-water flow;

(4) The patterns of rainfall in the area;

(5) The proximity of the regulated unit to surface waters;

(6) The current and future uses of surface waters in the area and any water quality standards established for those surface waters;

(7) The existing quality of surface water, including other sources of contamination and the cumulative impact on surface-water quality;

(8) The potential for health risks caused by human exposure to waste constituents;

(9) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(10) The persistence and permanence of the potential adverse effects.

(v) The proximity of the regulated unit to surface waters;

(vi) The current and future uses of surface waters in the area and any water quality standards established for those surface waters;

(vii) The existing quality of surface water, including other sources of contamination and the cumulative impact on surface water quality;

(viii) The potential for health risks caused by human exposure to waste constituents;

(ix) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(x) The persistence and permanence of the potential adverse effects.

(c) In making any determination under paragraph (b) of this section about the use of ground water in the area around the facility the Regional Administrator will consider any identification of underground sources of drinking water and exempted aquifers made under § 144.8 of this chapter.

(47 FR 32380, July 26, 1982, as amended at 48 FR 14284, Apr. 1, 1983)

§ 264.95 Point of compliance.

(a) The Regional Administrator will specify in the facility permit the point of compliance at which the groundwater protection standard of § 264.92 applies and at which monitoring must be conducted. The point of compliance is a vertical surface located at the hydraulically downgradient limit of the waste management area that extends down into the uppermost aquifer underlying the regulated unit.

(b) The waste management area is the limit projected in the horizontal plane of the area on which waste will be placed during the active life of a regulated unit.

(1) The waste management area includes horizontal space taken up by any liner, dike, or other barrier designed to contain waste in a regulated unit.

(2) If the facility contains more than one regulated unit, the waste management area is described by an imaginary line circumscribing the several regulated units.

This document is intended as filed in the records of the Ohio Environmental Protection Agency.

TABLE 1—MAXIMUM CONCENTRATION OF CONSTITUENTS FOR GROUND-WATER PROTECTION

Constituent	Maximum concentration <sup>1</sup>
Arsenic	0.05
Boron	1.0
Cadmium	0.01
Chromium	0.05
Lead	0.05
Mercury	0.002
Selenium	0.01
Silver	0.05
Endrin	(1,2,3,4,10-haachloro-1,7-epoxy-1,4,4a,8,8a,8b-octachloro-1,4-endo, 8-endo-8,8-dimethano naphthalene)

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TABLE I

Attachment B

MAXIMUM CONCENTRATION OF CONSTITUENTS FOR  
GROUND WATER PROTECTION

CONSTITUENT	MAXIMUM CONCENTRATION (MILLIGRAMS PER LITER)
ARSENIC	0.05
BARIUM	1.0
CADMIUM	0.01
CHROMIUM	0.05
LEAD	0.05
MERCURY	0.002
SELENIUM	0.01
SILVER	0.05
ENDRIN (1,2,3,4,10,10-HEXACHLORO-1,7-EPOXY- 1,4,4a,5,6,7,8,9a,-OCTAHYDRO-1,4-ENDO, ENDO- 5,8-DIMETHANO NAPHTHALENE)	0.0002
LINDANE (1,2,3,4,5,6-HEXACHLOROCYCLOHEXANE, GAMMA ISOMER)	0.004
METHOXYCHLOR (1,1,1-TRICHLORO-2,2-BIS (P-METHOX- YPHENYLETHANE)	0.1
TOXAPHENE (C <sub>10</sub> H <sub>10</sub> Cl <sub>6</sub> TECHNICAL CHLORINATED CAMPHENE, 67-69-PERCENT CHLORINE)	0.005
2,4-D (2,4-DICHLOROPHENOXACETIC ACID)	0.1
2,4,5-TP SILVEX (2,4,5-TRICHLOROPHENOXYPROPIONIC ACID)	0.01

Effective: 30 JUL 1984

CERTIFICATION: *[Signature]*

30 JUL 1984

Date

Promulgated under: RC Chapter 119  
Rule applies: RC Section 3734.12

I certify this to be a true and accurate copy of the  
official document as filed in the records of the Ohio  
Environmental Protection Agency.

By: *Virgil Davis* Date: 5/9/86

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# Attachment C

Attachment C (according to TRW)  
is:

Supplemental Groundwater  
Seismicity Study for the  
TRW Site  
Thermon, Ohio

Vol I, II & III

Volumes I & II dated Nov 21, 1986

Volume III dated January 20, 1987  
(supercedes Nov 21, 1986)

**OhioEPA**

SURFACE  
WATER

(PCB)

June 5, 1985

CERTIFIED MAIL

TRW Incorporated  
Edward A. Kurrent, Esq.  
Senior Counsel  
23555 Euclid Avenue  
Cleveland, Ohio 44117

Re: TRW Inc. Minerva, Ohio Facility

Dear Ed:

Enclosed please find an original duplicate time stamped administrative consent order concerning the above matter.

Thank you for your cooperation in this matter.

Sincerely yours,



Ben L. Pfefferle, III  
Attorney

BLP:cwm

Enclosure

cc: Virginia Aveni, with attachment  
Steve White, " "  
Tom Crepeau, " "  
Roger Hannahs, " "  
Jerry Myers, " "  
Gary Gifford, " "

RECEIVED

JUN 06 1985

OHIO EPA-N.E.D.O.

Issue Date June 5, 1985

Effective Date June 5, 1985

BEFORE THE  
OHIO ENVIRONMENTAL PROTECTION AGENCY

In the Matter of: :  
: TRW INC. :  
: Aircraft Components Group :  
: Minerva, Ohio : Director's Final Findings and  
: : Orders  
RESPONDENT. :  
: Proceeding under Ohio Revised Code :  
: Sections 3734.13(A) and 6111.03(H) :

ADMINISTRATIVE ORDER ON CONSENT

I. JURISDICTION

This Administrative Order on Consent (Consent Order) is issued pursuant to the authority vested in the Director of the Ohio Environmental Protection Agency (OEPA) by Ohio Revised Code (ORC) Sections 3734.13(A) and 6111.03(H).

II. STATEMENT OF PURPOSE

In entering into this Consent Order, the mutual objective of OEPA and TRW Inc. is to implement a surface cleanup of environmental contamination at TRW's Minerva, Ohio facility during calendar year 1985 consistent with the requirements of the National Contingency Plan (NCP), 40 CFR Part 300.68 (a)-(j) (47 Federal Register 31180 (July 16, 1982), revised at 42 Federal Register 40658 (September 8, 1984)), as specified in the Remedial Investigation/Feasibility Study equivalent Work Plan (RI/FS equivalent), attached hereto as Attachment A and incorporated herein by reference.

III. FINDINGS OF FACT, DETERMINATIONS, AND CONCLUSIONS OF LAW

OEPA has determined that all findings of fact necessary for the issuance of this Consent Order pursuant to Section ORC Sections 3734.13(A) and 6111.03(H)

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have been made and are outlined below. Respondent, by entering into this Consent Agreement does not admit the findings set forth below. Specifically, TRW neither admits nor denies that any threatened or actual imminent and substantial endangerment exists requiring remedial action, and denies any legal liabilities associated with the Minerva site.

A. The overall site consists of approximately 135 acres located in Stark County, Ohio, near the town of Minerva, Ohio. The plant site itself is situated on a 54 acre parcel of property just east of State Route 183, approximately 1.3 miles northeast of the intersection of Route 183 and U.S. Route 30. Located on the 54 acre parcel is the single major building comprising the Minerva, Ohio, Casting Division facility of the TRW Aircraft Components Group. Additional properties known as the "South Property" and the "East Property," both adjacent to the original 54 acre parcel all make up the "Site" for purpose of this order.

B. TRW Inc. is an Ohio corporation authorized to do business in the State of Ohio. TRW's principal place of business is located at its Executive Offices, 23555 Euclid Avenue, Cleveland, Ohio 44117.

C. Respondent TRW Inc. is the owner of the Site.

D. Certain materials were used by TRW at this Site, among which were hydraulic oils containing polychlorinated biphenyls (PCBs), and solvents including 1,1,1-trichloroethane (TCA), and trichloroethene (TCE). All of those materials are "industrial wastes" as that term is defined in ORC Section 6111.01. TRW used these materials in the metal casting of aircraft components.

E. In the past, PCBs, TCA and TCE were discharged by TRW to the drainage swale and the wax ditch areas of the Site. From there the materials migrated

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or were physically moved so that now there is contamination of six specific areas at the Site: the swale, the wax ditch, the South Pond, the rubble pile, the South Property, and groundwater.

F. A release or threat of release has occurred and will continue to occur at the Site in that PCBs, TCA And TCE have been released to the environment, including discharge of TCE and TCA to waters of the State.

G. The plant Site is underlain by a layer of glacial till approximately 90 feet thick below which is a layer of limestone-shale bedrock. The glacial till layer contains a productive aquifer. The groundwater in the area moves generally in a south-southwesterly direction. Additionally, there is a surface water stream that runs to the west of the plant and drains an area known as "West Lake."

H. Across Route 183 from the plant in a southwesterly direction are a number of private residences, some of which draw domestic water from private wells.

I. Based on the information outlined above, OEPA has determined that because of an actual or threatened release of hazardous substances from the Site there may be an imminent and substantial endangerment to the public health or welfare or the environment. OEPA has also determined that action must be taken to protect public health and welfare and the environment. Such action may include, but will not necessarily be limited to, the remedial activities described more fully in the attachments to this Consent Order.

TRW Inc. (TRW) has developed, proposed and agrees to undertake only those actions required of it by the terms and conditions of this Consent Order.

#### IV. PARTIES BOUND

This Consent Order shall apply to and be binding upon TRW and OEPA their agents, successors, and assigns and upon all persons, contractors, and con-

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sultants acting on behalf of OEPA or TRW. TRW agrees to provide copies of this Order to all contractors performing any work called for by this Order.

V. WORK TO BE PERFORMED

OEPA and TRW agree on the scope of work and the specific remedial activities addressed by this Order, and, based on facts presently known, believe that it is consistent with the National Contingency Plan (NCP).

All response work performed pursuant to this Consent Order shall be under the direction and supervision of a qualified professional engineer or a certified geologist with expertise in hazardous waste site cleanup. Prior to the initiation of site work, TRW shall notify OEPA in writing regarding the identity of such engineer or geologist and of any contractors and/or subcontractors to be used in carrying out the terms of this Consent Order.

Moreover, all actions required to be taken pursuant to this Consent Order shall be undertaken in accordance with the requirements of all applicable local, state, and federal laws and regulations unless an exemption from such requirements is specifically provided herein. OEPA shall cooperate to expedite all required permit processing. Performance of the terms of this Consent Order is predicated upon the approval or waiver by the USEPA required by the Toxic Substances Control Act, a copy of which is incorporated by reference in this Order and attached hereto as Attachment "B." *See Amended Conditions Aug 2 1985*

Based on the foregoing, it is hereby AGREED TO AND ORDERED that the following work shall be performed:

A. The Respondent shall implement the tasks detailed in the Remedial Investigation and Feasibility Study equivalent Work Plan (RI/FS equivalent) which has been prepared by TRW and approved by OEPA, and is attached to and incorporated in this Consent Order (Attachment A). This work shall be conducted

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in accordance with the standards, specifications, and schedule contained in the RI/FS equivalent Work Plan.

B. Within 15 days of the effective date of this Consent Order, TRW shall commence the work called for in this Order.

C. TRW shall provide monthly written progress reports to OEPA beginning <sup>6/15/85</sup> on the 15th of the month following the effective date of this Order and each month thereafter until the termination of this Order. At a minimum these progress reports shall: (1) describe the actions which have been taken toward achieving compliance with the Consent Order during the previous month, (2) include all results of sampling and tests and all other data received by TRW, and (3) include all plans and procedures completed subsequent to OEPA approval of the RI/FS equivalent Work Plan, during the past month as well as such actions, data, and plans which are scheduled for the next month. ✓

D. Within thirty (30) days of the conclusion of all work called for by this order, TRW shall submit a final report on the project. OEPA shall use best efforts to review all reports within thirty (30) days (and in no event shall review take more than ninety (90) days) of receipt and shall notify TRW in writing of OEPA's approval or disapproval of the reports or any part thereof. In the event of any disapproval, OEPA shall specify in writing both the deficiencies and the reasons for such disapproval. Approval or disapproval by OEPA shall not be inconsistent with the NCP, CERCLA, Sections 3734.13(A) and 6111.03(H) of the Ohio Revised Code or the regulations promulgated thereunder. ✓

E. In the event of disapproval of any report, TRW shall amend and submit to OEPA such revised reports within 30 calendar days of receipt of EPA notification of report disapproval.

Documents, including reports, approvals, and other correspondence, to be submitted pursuant to this Consent Order, shall be sent by certified mail

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to the respective Project Coordinators at the following addresses or to such other addresses as TRW or OEPA hereafter may designate in writing:

1) Documents to be submitted to TRW should be sent to:

Andrew Resetar, Project Coordinator  
TRW Inc., T-1313  
23555 Euclid Avenue  
Cleveland, Ohio 44771

2) Documents to be submitted to the OEPA should be sent to:

Gary Gifford  
Project Coordinator  
Ohio EPA  
Northeast District Office  
2110 East Aurora Road  
Twinsburg, Ohio 44087

and

Gerald Myers  
Ohio EPA  
Division of Solid and Hazardous  
Waste Management  
P.O. Box 1049  
Columbus, Ohio 43216-1049

#### VI. PROJECT COORDINATORS' DUTIES

The identity of each Project Coordinator is listed in paragraph V. above. Each Project Coordinator shall be responsible for overseeing the implementation of this Consent Order. To the maximum extent possible, communications between the parties and all documents, including reports, approvals, and other correspondence, concerning the activities performed pursuant to the terms and conditions of this Consent Order, shall be directed through the Project Coordinators.

OEPA and TRW each have the right to change their respective Project Coordinator. Such a change shall be accomplished by notifying the other parties in writing at least five calendar days prior to the change. ✓

The OEPA Project Coordinator shall have the authority vested in the On-Scene-Coordinator by the National Contingency Plan; 40 C.F.R. Part 300 et seq., 47 Federal Register 31180 July 16, 1982. The Project Coordinators shall each have the authority to direct that work stop for a period not to exceed seventy-two (72) hours whenever a Project Coordinator determines that activities at the site may create a present danger to public health or the environment.

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## VII. SITE ACCESS

To the extent that the Site is presently owned by parties other than those bound by this Consent Order, TRW has obtained or will use its best efforts to obtain site access agreements from the present owners within 30 calendar days of the effective date of this Consent Order. Such agreements shall provide complete access to OEPA and/or its authorized representatives. In the event that site access agreements are not obtained within the time referenced above, TRW shall notify OEPA regarding the lack of such agreements as soon as possible after the passage of the thirty (30) days, and in no event more than fifteen (15) days after the end of the thirty (30) day time period.

## VIII. SAMPLING, ACCESS, AND DATA/DOCUMENT AVAILABILITY

TRW shall make the results of all sampling and/or tests or other data generated by TRW, or on TRW's behalf, with respect to the implementation of this Consent Order, available to OEPA and shall submit these results in monthly progress reports as described in Section V of this Consent Order. OEPA will make available to TRW the results of sampling and/or tests or other data similarly generated by OEPA.

At the request of OEPA, TRW shall allow split or duplicate samples to be taken by OEPA and/or its authorized representatives, of any samples collected by TRW pursuant to the implementation of this Consent Order. TRW shall notify OEPA not less than 48 hours in advance of any sample collections activity.

OEPA or its authorized representative shall have the authority to enter and freely move about all property at the Site at all reasonable times for the purposes of, inter alia: inspecting and copying records, operating logs,

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and contracts related to the Site; reviewing the progress of TRW in carrying out the terms of this Consent Order; conducting such tests as the Project Coordinators deem necessary; and verifying the data submitted to OEPA by TRW.

All parties with access to the Site pursuant to this paragraph shall comply with all approved health and safety plans. Nothing herein shall act to limit the statutory authority of OEPA to conduct inspections and gather information.

#### IX. RECORD PRESERVATION

OEPA and TRW agree that each shall preserve, during the pendency of this Consent Order and for a minimum of six (6) years after its termination, all records and documents in their possession or in the possession of their divisions, employees, agents, accountants, contractors, or attorneys which relate in any way to the Site, despite any document retention policy to the contrary. After this six year period, TRW shall notify OEPA within 30 calendar days prior to the destruction of any such documents. Upon request by any party, other parties shall make available to the requesting party such records or copies of any such records.

#### X. DISPUTE RESOLUTION

The Project Coordinators shall, wherever possible, operate by consensus, and in the event that there is a disapproval of any report or disagreement about the conduct of the work performed under this Order, the Project Coordinators shall negotiate in good faith for 5 business days to resolve the differences.

In the event that the Project Coordinators are unable to reach consensus on the disapproval or disagreement in 5 business days, then each Project Coordinator shall reduce his position to written form within 5 business days of

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the end of the good faith negotiations referenced above. Those written positions shall be immediately exchanged by all Project Coordinators.

Following the exchange of written positions, the parties shall have an additional 5 business days to resolve their differences. In the event that disagreement remains after the 5 day period, the OEPA Project Coordinators shall specify in writing the steps or actions needed to be taken by TRW to meet the concerns of the OEPA.

TRW shall have 5 business days to consider taking the steps or actions specified by the OEPA Project Coordinator. After this 5 day period, those measures may be rendered an "action of the Director" of the OEPA (upon approval by the OEPA Director) and notice thereof shall be provided to the Respondent.

#### XI. RESERVATION OF RIGHTS

Nothing herein shall waive OEPA's right to seek to enforce this Consent Order under Chapter 3734, 3745 and 6111 of the Ohio Revised Code.

Nothing herein shall waive OEPA's right to take any action authorized by Ohio Revised Code Sections 3734.20 through 3734.26 or any other law.

Nothing herein shall waive TRW's right to seek to enforce any remedies or assert any defenses against the OEPA or others in connection with the Site and (or) this Consent Order.

#### XII. REIMBURSEMENT OF COSTS

At the end of the project, OEPA shall submit to TRW an accounting of all response and oversight costs incurred by it with respect to this Consent Order. TRW shall, within 30 calendar days of receipt of that accounting, remit a check to OEPA for the amount of those costs. OEPA presently estimates that its costs associated with this project will be approximately \$5,000. In no event, however, shall the cumulative total of oversight costs exceed \$10,000 for OEPA.

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The checks shall be made payable to Treasurer, State of Ohio; Hazardous Waste Cleanup Special Account, and shall be addressed to:

Ohio Environmental Protection Agency  
Division of Solid and Hazardous Waste Management  
Attn: Fiscal Officer  
P.O. Box 1049  
Columbus, Ohio 43216-1049

A copy of the transmittal letter should be sent to the Project Coordinator.

OEPA reserves the right to bring an action against TRW pursuant to Section 107 of CERCLA and equivalent state law for recovery of all response and oversight costs incurred by the State of Ohio related to this Consent Order and not reimbursed by TRW, as well as any other past and future costs incurred by the State of Ohio in connection with response activities conducted pursuant to CERCLA at this site.

#### XIII. OTHER CLAIMS

Nothing herein is intended to release any claims, causes of action or demands in law or equity against any person, firm, partnership, or corporation not a signatory to this Consent Order for any liability it may have arising out of or relating in any to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous substances, hazardous waste, pollutants, or contaminants found at, taken to, or taken from the Site.

OEPA recognizes and agrees that TRW shall have a right to contribution, indemnity and(or) any other available remedies against any person found to be a responsible person or otherwise liable for contribution, indemnity and(or) other available remedies for any amounts which have been or will be expended by TRW or paid to the OEPA under this Administrative Order or otherwise in connection with any claims asserted by the OEPA and(or) others against TRW in connection with the Site.

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#### XIV. INDEMNIFICATION

TRW agrees to indemnify and save and hold OEPA, its agents and employees, harmless from any and all claims or causes of action arising from or on account of acts or omissions of TRW, its agents or assigns, in carrying out the activities pursuant to this Consent Order. OEPA shall not be party to any contract involving TRW for work accomplished pursuant to this Order. Consistent with federal, state, and common laws, nothing in this Order shall render TRW liable for any act or omission of OEPA.

#### XV. PUBLIC COMMENT, EFFECTIVE DATE AND MODIFICATION

As soon as possible after the execution of this Order, OEPA shall make such Order available to the public for review and comment pursuant to OEPA policy.

This Consent Order may be amended by mutual agreement of OEPA and TRW. Such amendments shall be in writing and shall have as the effective date, that date on which such amendments are signed by the last party.

#### XVI. RELEASE AND COVENANT NOT TO SUE

Upon termination of this Consent Order pursuant to Section XVII of this Consent Order, and reimbursement to OEPA as provided in Section XII, OEPA covenants not to sue TRW for costs incurred by OEPA associated with the conduct and completion of the activities called for in this Consent Order except as otherwise reserved herein, and TRW shall be released from obligations embodied in this Consent Order with the exception of maintenance, monitoring and reporting requirements and subject to Section XI above.

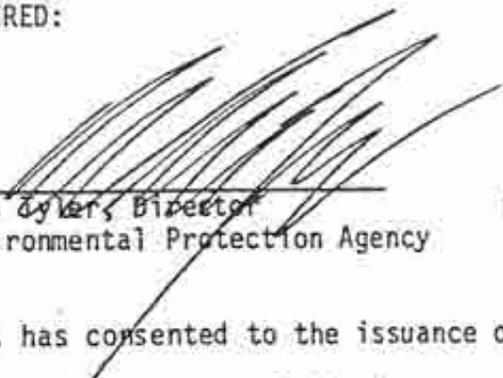
#### XVII. TERMINATION AND SATISFACTION

The provisions of this Consent Order shall be deemed satisfied upon TRW's receipt of written approval from OEPA of the final report pursuant to paragraph V. D. above.

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IT IS SO ORDERED:

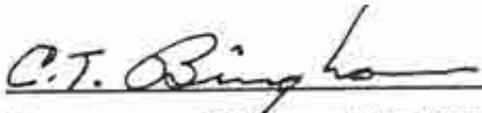
By:

  
Warren W. Tyler, Director  
Ohio Environmental Protection Agency

June 3, 1985  
Date

TRW Inc. has consented to the issuance of this Order, and hereby waives any right it may have to appeal the issuance of this Order.

By:

  
C.T. Bingham  
Manager, ACG Operating Services  
Title

Date

Ohio Environmental Protection Agency  
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RI/FS EQUIVALENT

Pursuant to guidance from Ohio EPA and USEPA, TRW has created a "Remedial Investigation/Feasibility Study Equivalent" (RI/FS Equivalent) plan. The plan is the result of extensive sampling, lab analysis and field work, as well as desk research and analysis and engineering bench work. The results of these efforts were reported to the government agencies in a series of reports during 1983 and 1984. These reports, listed below, are, collectively, the RI/FS Equivalent.

The RI/FS Equivalent is the basis upon which the remedial action was chosen and contains within it, the description of surface remedial activities contemplated at the Minerva site.

The reports and letter that comprise the RI/FS Equivalent are:

- ✓ Report #1: CLEMENT ASSOCIATES, INC. 1983a. "Characterization, Risk Assessment and Remedial Action Plan for a PCB Spill at the TRW Site in Minerva, Ohio." Prepared for TRW Inc. June 20, 1983. *VOC*
- ✓ Report #2: CLEMENT ASSOCIATES, INC. 1983b. "Enclosure to letter of December 20, 1983 from Mr. William R. Phillips (TRW) to Mr. Basil C. Constantelos (USEPA)." Prepared for TRW Inc. December 20, 1983.
- ✓ Report #3: CLEMENT ASSOCIATES, INC. 1984. "Characterization, Risk Assessment, and Remedial Action Plan for Volatile Organic Contamination at the TRW Site in Minerva, Ohio." Prepared for TRW Inc. August 27, 1984.
- ✓ Report #4: O'BRIEN AND GERE (OBG). 1983, "Preliminary Engineering Design, Minerva, Ohio Site." In Clement Associates, Inc. (1984), "Characterization, Risk Assessment, and Remedial Action Plan for Volatile Organic Contamination at the TRW Site in Minerva, Ohio", Appendix B. December 28, 1983. *year 20*

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to  
Appendix  
B7  
page*

Letter and attachments, dated May 8, 1985, from O'Brien and Gere (OBG) to David Petrovski of USEPA, re: TRW Surface Remediation at Minerva, Ohio.

A summary of intended surface remedial actions, not intended to include the greater detail inherent in the actual RI/FS Equivalent, is as follows:

- o Excavation and removal of surface soil in the areas known as the swale, rubble pile, South property and wax ditch. A clay cap will replace the excavated materials.
- o Drainage and treatment of the South Pond water with subsequent solidification of the pond sediment.
- o Construction of a secure cell on the plant property for the interment of the excavated materials and solidified pond sediments.

The areas to be excavated, the depth of the excavation and the details of the design of the secure cell are contained in Report #4.

In addition to excavation and construction, the remediation plan will require the following monitoring activities during construction and for a period of 30 years thereafter:

During Remediation

- o Monthly monitoring of six selected downgradient wells on the South Property and one upgradient well. In addition, two wells immediately downgradient of the secure cell will also be monitored.
- o Monthly monitoring of surface water at two points on the stream emanating from West Lake (upgradient and downgradient of the swale) and two points in Sandy Creek (upgradient and downgradient of the confluence between Sandy Creek and the stream emanating from West Lake).
- o Monthly monitoring of sediment runoff of the confluence of the swale and the stream emanating from West Lake at the junction of Sandy Creek and the stream emanating from West Lake.

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- o Weekly monitoring of the leachate volume generated at the secure cell sump (and more frequent monitoring during storm events). The leachate will be collected for disposal off site as required.

After Site Closure (1-10-85) ? (~10/85)

- o Weekly monitoring of the volume of leachate collected in the secure cell sump for 6 months and monthly monitoring thereafter. Leachate production, adjusted for temperature and evaporation considerations, will be graphed against time and climate conditions to determine the overall performance of the cell. Monitoring frequencies may be revised as operating experience dictates. When one truckload of leachate has collected, it will be disposed of off site.
- o Leachate quality will be monitored quarterly for 30 years following closure of the secure cell. Samples will be collected for chemical analysis from the secure cell sump. The sampling frequency may be modified as operating experience dictates.
- o Continued semiannual monitoring of three selected ground water wells on the South Property and the three wells associated with the secure cell. Sampling frequencies may be modified as operating experience dictates.
- o Continued semiannual monitoring of sediments of the two sediment monitoring stations established during surface remediation. Sampling frequencies may be modified as operating experience dictates.

Analysis to be performed on groundwater, surface water, and leachate samples collected for chemical analysis during remediation and after all closure include:

- o PCBs ✓
- o Volatile organics ✓
- o pH ✓
- o Specific conductance ✓
- o Total organic halogen (TOX) ✓

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All monitoring and inspection records will be kept on file for 30 years following closures of the secure cell.

HS ENA

Ground Conditions

Source Cell

55-P&amp;TSR-16

AUG 02 1985

Mr. William R. Phillips  
Vice President and Senior Counsel  
TRW Aircraft Components  
23555 Euclid Avenue  
Cleveland, Ohio 44117

Dear Mr. Phillips:

This letter refers to the telephone conferences of June 26-27, 1985, between representatives of TRW, Inc., O'Brien & Gere, Inc., and the United States Environmental Protection Agency (U.S. EPA) regarding the approval conditions attached to the TSCA 40 CFR 761.75 authorization dated May 31, 1985, for a secure landfill to be constructed at the TRW manufacturing facility in Minerva, Ohio in accordance with the TRW application.

Attached to this letter are Amended Approval Conditions and waivers for the TRW Minerva, Ohio Secure Landfill which incorporated the discussed modifications and which supersede the original approval conditions included with the May 31, 1985, TSCA authorization.

Please contact Mr. David Petrovski of my staff at (312) 886-6002, if you should have any questions regarding this matter.

Sincerely yours,

/s/ original signed by  
**Valdas V. Adamkus**

Valdas V. Adamkus  
Regional Administrator

Enclosure

cc: Warren Tyler, Director OEPA  
Andrew Resetar, TRW  
Edward Kurent, TRW  
C. T. Bingham, TRW

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bcc: Constantelos, WND  
Little, RA  
Karl, WND  
✓ Petrovski, ESU

ADAMS

PETROVSKI

SINOR

CONNELL

BRENER

WRICH

ULLRICH

SANDERS

55-P&TSB-16:PETROVSKI:9j:3-2291:7/23/85

Amended Approval Conditions for the Secure Landfill  
at the TRW Minerva, Ohio Manufacturing Facility

1. These approval conditions apply to the secure landfill design dated May 6, 1985, and to the amendments outlined in the O'Brien and Gere letter dated July 1, 1985, to the TRW Aircraft Components Group, submitted under TSCA 40 CFR Section 761.75(b), and supersedes the original approval conditions attached to the May 31, 1985, TSCA authorization. In addition, this approval applies only to the one time disposal of the PCB-contaminated soils, sediments, wax residues, and associated debris generated by the remediation of the TRW manufacturing facility in Minerva, Ohio, as described in the TRW application. In this context, the "application" shall be defined as all data and materials which have been received by the U.S. EPA from TRW regarding the TRW Minerva, Ohio, manufacturing site.
2. Only materials generated by the on-site remediation program as described in the TRW application and the PCB contaminated material (approximately 1,000 yards) from the adjacent "Old Park" area as outlined in the February 27, 1985, TRW letter to the U.S. EPA shall be placed in the on-site secure landfill.

Acceptance and placement of any other toxic or hazardous contaminated materials from other sites, either within or outside of the TRW Corporation, is strictly prohibited.

3. The following changes shall be incorporated into the design and construction of the secure landfill modifying the Contract Drawings dated May 6, 1985:
  - a. The northeast and southeast suction lysimeters as presently indicated on Contract Drawing 3A, dated May 6, 1985, shall be translated 30 feet west to the north-south center line of the secure landfill;
  - b. The two suction lysimeters along the west side of the secure landfill as presently indicated on Contract Drawing 3A, dated May 6, 1985, shall be translated 50 feet west of their present position;
  - c. The northwest suction lysimeter as presently indicated on Contract Drawing 3A, dated May 6, 1985, shall be placed 110 feet west and 90 feet north of the center of the secure landfill; and,
  - d. The southwest suction lysimeter as presently indicated on Contract Drawing 3A, dated May 6, 1985, shall be placed 110 feet west and 90 feet south of the center of the secure landfill.

The two suction lysimeters along the east side of the secure landfill as indicated on Contract Drawing 3A, dated May 6, 1985, shall remain as presently placed. The translation of the four suction lysimeters as defined above in statements 3b, 3c, and 3d, will place the four suction lysimeters on a linear traverse parallel to the base of the leachate collection system, with a separation distance between the suction lysimeters of 60 feet.

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4. A total of nine monitoring wells shall be incorporated into the design and construction of the secure landfill modifying the Contract Drawings dated May 6, 1985. The nine monitoring wells shall be constructed of teflon or stainless steel pipe. Eight of the monitoring wells shall be screened through a 10 foot interval, with 4 feet above and 6 feet below the mean groundwater level, while the ninth monitoring well (well h) to be placed 80 feet south of the center line of the secure landfill, shall be screened through the saturated five foot interval extending from 15 feet below grade to total depth. The placement of the nine monitoring wells shall be measured as offsets from the corners of the approximate limits of the proposed secure landfill as shown on Contract Drawing 2A as follows:
- a. One well 80 feet south and 20 feet west of the northwest corner of the secure landfill;
  - b. One well 80 feet south and 20 feet east of the northeast corner of the secure landfill;
  - c. One well 60 feet north and 20 feet east of the southeast corner of the secure landfill;
  - d. One well 20 feet south and 60 feet west of the southeast corner of the secure landfill;
  - e. One well 60 feet north and 20 feet west of the southwest corner of the secure landfill;
  - f. One well 80 feet north of the perimeter and along the north-south center line of the secure landfill;
  - g. One well 20 feet south of the perimeter and along the north-south center line of the secure landfill;
  - h. One well 80 feet south of the perimeter and along the north-south center line of the secure landfill; in addition, this well shall be screened from 15 feet below grade to total depth as stated above; and,
  - i. One well 20 feet south and 60 feet east of the southwest corner of the secure landfill.

Future evaluation of landfill monitoring data may require the placement of additional ground water monitoring wells.

5. The nine monitoring wells described in approval condition number 4 shall be constructed in accordance with the design criteria given in 40 CFR Section 761.75(b)(6)(ii)(B).

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6. Background water samples shall be taken from monitoring wells f and h described in approval condition number 4, before placement of the PCB-contaminated materials into the secure landfill.

The remaining monitoring wells (a,b,c,d,e,g and i) shall be installed and sampled immediately after placement of the final cap materials.

7. Water samples shall be obtained monthly from each of the nine monitoring wells described in approval condition number 4. This water sampling program will be initiated immediately upon the completion of landfill closure and shall be conducted as follows:

Twice per year (September 1 and March 1), water samples from each of the 9 monitoring wells will be analyzed individually. During the 10 remaining months of the year, 2 groundwater sample composites shall be prepared as given below and subsequently analyzed.

Composite I: Monitoring Wells b,c and f

Composite II: Monitoring Wells a,d,e,g,h and i

8. The water from the surface water drainage channel as shown on Contract Drawing 6, dated May 6, 1985, shall be sampled quarterly, with sampling to be initiated immediately after placement of the top soil. Water may be collected in a wet well at the lower portion of the drainage channel and should be sampled after a significant precipitation event. A significant precipitation event is defined as any one-day rainfall which produces a one-inch depth of runoff over the area of the secure landfill.
9. Any leachate initially obtained from the leachate collection system shall be sampled immediately upon detection. The leachate collection system shall be sampled monthly after closure.
10. The suction lysimeters shall be checked monthly for the presence of any free liquids. Any such liquids will be withdrawn and composited from all lysimeters once per month and analyzed for the parameters stated in approval condition 11.
11. All water and leachate samples shall be analyzed for the following parameters.
- a. PCBs
  - b. pH
  - c. Specific Conductivity
  - d. Chlorinated Organics
  - e. Volatile Organics Scan
12. The sampling and testing of groundwater, surface water, and leachate, as described in approval conditions 7, 8, 9, 10, and 11, shall continue for a minimum of 30 years or until the TRW secure landfill is no longer

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considered by the U.S. EPA as a possible hazard to health or to the environment.

13. Should the secure landfill monitoring program, as described in approval conditions 7, 8, 10, and 11 detect the presence of PCBs, their chemical derivatives, or volatile organics above the background levels determined in approval condition 6, the U.S. EPA shall be notified immediately, and a U.S. EPA approved remedial action program shall be initiated within six months.

An acceptable test for statistical significance such as the "Student T Test" or its equivalent will apply in determining whether a substantial change from background conditions has occurred.

14. The placement of the cap material to final grades shall be completed no later than 45 days from the final placement of PCB contaminated materials in the secure landfill.
15. Completion of the final cover and construction of the chain link fence shall be completed no later than one year after the date of the May 31, 1985, TSCA approval.
16. No additional modifications or variances may be made to the secure landfill design or its operation as described in the TRW application without the approval of the Regional Administrator of Region V.
17. An annual report, which shall include the following information in accordance with 40 CFR Section 761.75(c)(3)(ii), shall be sent to the PCB Disposal Coordinator of Region V:
- A summary of the analytical data from all groundwater monitoring locations and leachate collection systems specified in this approval;
  - The quantity of leachate produced monthly by the leachate collection system;
  - Groundwater table maps, generated biannually from groundwater elevation data obtained during the September 1 and March 1 groundwater sampling procedures; and,
  - Such additional information as the PCB Disposal Site Coordinator may require.

The first annual report shall be received by U.S. EPA no later than one year from the May 31, 1985, TSCA approval.

18. U.S. EPA reserves the right for its employees or agents to inspect the TRW secure landfill at any time.

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WAIVERS FOR THE TRW MINERVA, OHIO SECURE LANDFILL

Under the authority of 40 CFR Section 761.75(c)(4), the U.S. EPA grants the following two waivers of 40 CFR Section 761.75(b) requirements. These waivers are granted on the basis that they should not present an unreasonable risk of injury to health or the environment.

1. 40 CFR Section 761.75(b)(3) states that "the bottom of the landfill liner system or natural in-place soil barrier shall be at least fifty feet from the historical high water table". While the hydrologic conditions of the TRW site do not satisfy this requirement, the landfill will possess a lysimeter leak detection system and an extensive system of monitoring wells. This will allow early detection and remediation should groundwater contamination occur.
2. 40 CFR Section 761.75(b)(6)(ii)(A) requires three monitoring wells equally spaced on a line through the center of the disposal area extending from the area of highest water table elevation to the area of lowest water table elevation. Although, three of the nine monitoring wells described on approval condition number 4 are on a line through the center of the disposal area extending from the area of highest water table elevation to the lowest, they are not equally spaced. In consideration of the surface contamination south of the landfill site, the separation distance between the two in-line monitoring wells south of the landfill perimeter was limited to 60 feet.

The following is  
NOT PART of current order -  
For historical info only re. Service  
Order.

The following are previous  
orders, all cancelled as  
NCEP cancelled & order withdrawn

To: Vicki Depina	From: S. M. Johnson
Dept/Agency: State of Ohio	Phone #: DSEPA
Fax #: 330-487-0769	Fax #: 312-353-4788
NSN 7540-01-317-7368	5099-101 GENERAL SERVICES ADMINISTRATION

**JUL 17 1985**

Mr. William R. Phillips  
 Vice President and Senior Counsel  
 TRW Aircraft Components  
 2955 Euclid Avenue  
 Cleveland, Ohio 44117

Dear Mr. Phillips:

This letter constitutes an amendment by the United States Environmental Protection Agency (U.S. EPA) of the approval conditions attached to the U.S. EPA authorization, under, 40 CFR 6761.75, dated May 31, 1985, to conduct remedial action and on-site disposal into a solid waste secure landfill to be constructed at the TRW manufacturing facility in Minerva, Ohio, as defined in the TRW applications dated June 20, 1983, December 20, 1983, and May 6, 1985.

As Mr. David Petrovski of my staff discussed with you during a phone conversation on June 7, 1985, the quarterly monitoring interval stated in approval conditions 7, 8, 9, and 10 is in error. In accordance with 40 CFR 6761.75(b)(7), sampling and analysis programs authorized under TSCA must be conducted monthly.

This letter formally amends the quarterly monitoring interval stated in approval conditions 7, 8, 9, and 10, and requires TRW to sample and analyze monthly.

Please contact Mr. David Petrovski or Mr. William Adams of my staff at (312) 886-6002, should you have further questions regarding this matter.

Sincerely yours,

**/s/ original signed by**  
**Valdas V. Adamkus**

Valdas V. Adamkus  
 Regional Administrator

cc: Warren Tyler, Director DEPA  
 Andrew Pasetar, TRW  
 Edward Kurent, TRW  
 Charles Ringham, TRW

cc: Constantinos, PhD  
 Little, RA  
 Lynch, RA  
 Adams, FSD  
 Petrovski, FSD  
 Simon, ESD

Connell, ESD  
 Bremer, ESD  
 Vrich, ESD  
 Sanders, ESD  
 Primes, ORII  
 Ulrich, ORII

45-BATES-16-PEYROVSKI-03-3-2001-0710/016



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
230 SOUTH DEARBORN ST.  
CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF:

5S-P&TSB-16

MAY 31 1985

Mr. William R. Phillips  
Vice President and Senior Counsel  
TRW Aircraft Components  
23555 Euclid Avenue  
Cleveland, Ohio 44117

Dear Mr. Phillips:

We have reviewed your application dated June 20, 1983, amended on December 20, 1983, and your revised design application dated May 6, 1985, received May 21, 1985, to the United States Environmental Protection Agency (U.S. EPA), Region V for the construction and operation of a solid waste secure landfill under the Toxic Substances Control Act (TSCA) 40 CFR Section 761.75. According to your application, the facility will be used for the disposal of polychlorinated biphenyl (PCB) contaminated soils, solidified pond sediments, wax residues, and associated debris generated by the remediation of the TRW manufacturing facility at Minerva, Ohio. It has been determined that your application, including waiver requests, satisfies the criteria for PCB landfill design as given in 40 CFR Section 761.75(b).

This letter constitutes U.S. EPA authorization to conduct remedial action and on-site disposal into a solid waste secure landfill to be constructed at the TRW Plant in Minerva, Ohio, as established in your application. The 18 conditions of this approval and two waivers are given in the enclosure to this letter.

It is the responsibility of TRW to ensure that all applicable provisions of the U.S. EPA PCB regulations are followed. Any violation of the attached conditions of approval may subject TRW to enforcement action. Furthermore, this authorization only pertains to the solid waste secure landfill design, operation and maintenance, and does not relieve TRW of the responsibility to comply with all Federal, State, or local environmental regulations.

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Please contact Mr. David Petrovski or Mr. William Adams of my staff at (312) 886-6002, if you should have any questions regarding this matter.

Sincerely yours,

*Alan Levine (Acting)*  
Valdas V. Adamkus  
Regional Administrator

Enclosure

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APPROVAL CONDITIONS FOR THE SECURE LANDFILL AT THE  
TRW MINERVA, OHIO MANUFACTURING FACILITY

1. This approval applies only to the submitted secure landfill design dated May 6, 1985 under TSCA 40 CFR Section 761.75(b) and to the one time disposal of the PCB contaminated soils, sediments, wax residues and associated debris generated by the remediation of the TRW manufacturing facility in Minerva, Ohio, as described in the TRW application. In this context, the "application" shall be defined as all data and materials which have been received by the U.S. EPA from TRW regarding the TRW Minerva, Ohio, manufacturing facility.
2. Only materials generated by the on-site remediation program as described in the TRW application shall be placed in the on-site secure landfill. Acceptance and placement of any other toxic or hazardous contaminated materials from other sites, either within or outside of the TRW Corporation, is strictly prohibited.
3. The following changes shall be incorporated into the design and construction of the secure landfill modifying the Contract Drawings dated May 6, 1985:
  - a. The northeast and southeast suction lysimeters as presently indicated on Contract Drawing 3A, dated May 6, 1985, shall be translated 30 feet west to the north-south center line of the secure landfill;
  - b. The two suction lysimeters along the west side of the secure landfill as presently indicated on Contract Drawing 3A, dated May 6, 1985, shall be translated 50 feet west of their present position;
  - c. The northwest suction lysimeter as presently indicated on Contract Drawing 3A, dated May 6, 1985, shall be placed 110 feet west and 90 feet north of the center of the secure landfill; and,
  - d. The southwest suction lysimeter as presently indicated on Contract Drawing 3A, dated May 6, 1985, shall be placed 110 feet west and 90 feet south of the center of the secure landfill.

The two suction lysimeters along the east side of the secure landfill as indicated on Contract Drawing 3A, dated May 6, 1985, shall remain as presently placed. The translation of the four suction lysimeters as defined above in statements 3b, 3c, and 3d, will place the four suction lysimeters on a linear traverse parallel to the base of the leachate collection system, with a separation distance between the suction lysimeters of 60 feet.

4. Eight additional monitoring wells shall be incorporated into the design and construction of the secure landfill modifying the Contract Drawings dated May 6, 1985. The eight additional monitoring wells shall be 25 feet in total depth and shall be constructed of teflon or stainless steel

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pipe. Seven of the additional monitoring wells shall be screened through a five foot saturated interval starting two feet below the mean low seasonal ground water level, while the eighth additional monitoring well, to be placed 80 feet south of the center line of the secure landfill, shall be screened through the five foot subsurface interval extending from 19 to 24 feet, i.e., to one foot above total depth. The placement of the eight additional monitoring wells shall be as follows:

- a. One well 80 feet south and 20 feet west of the northwest corner of the secure landfill;
- b. One well 80 feet south and 20 feet east of the northeast corner of the secure landfill;
- c. One well 60 feet north and 20 feet east of the southeast corner of the landfill;
- d. One well 20 feet south and 60 feet west of the southeast corner of the landfill;
- e. One well 60 feet north and 20 feet west of the southwest corner of the landfill;
- f. One well 80 feet north of the perimeter and along the north-south center line of the secure landfill;
- g. One well 20 feet south of the perimeter and along the north-south center line of the secure landfill; and,
- h. One well 80 feet south of the perimeter and along the north-south center line of the secure landfill; in addition, this well shall be screened through the 19 to 24 foot subsurface interval as stated above.

Future evaluation of landfill monitoring data may require the placement of additional ground water monitoring wells.

5. The eight additional monitoring wells described in approval condition number 4 shall be constructed in accordance with the design criteria given in 40 CFR Section 761.76(b)(6)(ii)(B).
6. Background water samples shall be taken from each of the eight additional monitoring wells described in approval condition number 4 before placement of the PCB contaminated materials into the secure landfill.
7. Water samples shall be obtained quarterly from each of the eight additional monitoring wells described in approval condition number 4 and existing monitoring wells 15, 16, and 17 shown on Contract Drawing 2A dated May 6, 1985. This water sampling program shall be initiated immediately upon the completion of landfill closure.

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8. The water from the surface water drainage channel as shown on Contract Drawing 6, dated May 6, 1985, shall be sampled quarterly, with sampling to be initiated immediately after placement of the top soil. Water may be collected in a wet well at the lower portion of the drainage channel and should be sampled after a significant precipitation event. A significant precipitation event is defined as any one-day rainfall which produces a one-inch depth of runoff over the area of the secure landfill.
9. Any leachate initially obtained from the leachate collection system shall be sampled immediately upon detection. The leachate collection system shall be sampled quarterly after closure.
10. The suction lysimeters shall be sampled immediately upon the detection of leachate and shall be sampled quarterly after closure.
11. In addition to the chemical parameters list in 40 CFR Section 761.75(b) (6)(iii) all water and leachate samples shall be analyzed for volatile organics (i.e., a volatile organic scan).
12. The sampling and testing of ground water, surface water, and leachate, as described in approval conditions 7, 8, 9, 10, and 11, shall continue for a minimum of 30 years or until the TRW secure landfill is no longer considered by the U.S. EPA as a possible hazard to health or to the environment.
13. Should the secure landfill monitoring program, as described in approval conditions 7, 8, 9, 10, 11, and 12, detect the presence of PCBs, their chemical derivatives, or volatile organics above the background levels determined in approval condition 6, the U.S. EPA shall be notified immediately, and a U.S. EPA approved remedial action program shall be initiated within six months.
14. The final cover on the secure landfill shall be completed no later than 45 days from the final placement of the PCB contaminated materials in the landfill.
15. Completion of the final cover and construction of the chain link fence shall be completed no later than one year after the date of this approval.
16. No additional modifications or variances may be made to the secure landfill design or its operation as described in the TRW application without the approval of the Regional Administrator of Region V.
17. An annual report, which should include the following information in accordance with 40 CFR Section 761.75(c) (3) (ii), shall be sent to the PCB disposal coordinator of Region V.
  - a. a summary of the analytical data from all groundwater monitoring locations and leachate collection systems specified in this approval; and,

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- b. Such additional information as the PCB Disposal Site Coordinator may require.

The first annual report shall be received by U.S. EPA no later than one year from the date of this approval.

18. U.S. EPA reserves the right for its employees or agents to inspect the TRW secure landfill at any time.

WAIVERS FOR THE TRW MINERVA, OHIO SECURE LANDFILL

Under the authority of 40 CFR Section 761.75(c)(4), the U.S. EPA grants the following two waivers of 40 CFR Section 761.75(b) requirements. These waivers are granted on the basis that they should not present an unreasonable risk of injury to health or the environment.

1. 40 CFR Section 761.75(b)(3) states that "the bottom of the landfill liner system or natural in-place soil barrier shall be at least fifty feet from the historical high water table". While the hydrologic conditions of the TRW site do not satisfy this requirement, the landfill will possess a lysimeter leak detection system and an extensive system of monitoring wells. This will allow early detection and remediation should groundwater contamination occur.
2. 40 CFR Section 761.75(b)(6)(ii)(A) requires three monitoring wells equally spaced on a line through the center of the disposal area extending from the area of highest water table elevation to the area of lowest water table elevation. Although, three of the eight additional monitoring wells described on approval condition number 4 are on a line through the center of the disposal area extending from the area of highest water table elevation to the lowest, they are not equally spaced. In consideration of the surface contamination south of the landfill site, the separation distance between the two in-line monitoring wells south of the landfill perimeter was limited to 60 feet.

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