UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

By Over Night Mail

March 1, 2013

Steve Oberkrom
Alcatel-Lucent EH&S
1067 NW High Point Drive
Lee's Summit, MO 64081

Re: Administrative Order on Consent
Former AT&T Richmond Works Facility

Dear Mr. Oberkrom:

Enclosed please find a true and correct copy of the RCRA Section 3008(h) Administrative Order on Consent (Consent Order) for the Former AT&T Richmond Works Facility. The Effective Date of the Consent Order is the date on which you receive the enclosed true and correct copy. I am sending the Consent Order to you via Over Night Mail for delivery on March 4, 2013. Unless I hear otherwise, the Effective Date of the Consent Order is, therefore, March 4, 2013.

If you have any questions, please call me at (215) 814-2468.

Sincerely,

Sheila Briggs-Steuteville
Senior Assistant Regional Counsel

Enclosure

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 ARCH STREET
PHILADELPHIA, PENNSYLVANIA 19103-2029

IN THE MATTER OF:	)
	)
ALCATEL-LUCENT USA INC.	) ADMINISTRATIVE ORDER
	) ON CONSENT
Former AT&T Richmond Works Facility	)
4500 S. Laburnum Avenue	)
Henrico County	)
Richmond, Virginia 23231	) U.S. EPA DOCKET NO.
	) RCRA-03-2013-0105CA
	)
	) Proceeding under Section
LSI Corporation and	) 3008(h) of the Resource
Alcatel-Lucent USA Inc.	) Conservation and Recovery
	)
RESPONDENTS	)
	)
	) Act, as amended, 42 U.S.C.
EPA I.D. No. VAD066000993	) Section 6928(h).

ADMINISTRATIVE ORDER ON CONSENT

The parties to this Administrative Order on Consent ("Order"), the United States Environmental Protection Agency ("EPA"), LSI Corporation ("LSI"), and Alcatel-Lucent USA Inc. ("Alcatel-Lucent") (collectively referred to as "Respondents"), having agreed to entry of this Order, it is therefore Ordered and Agreed that:

I. JURISDICTION

A. This Order is issued pursuant to the authority vested in the Administrator of the United States Environmental Protection Agency by Section 3008(h) of the Resource Conservation and Recovery Act of 1976, as amended by the Hazardous and Solid Waste Amendments of 1984 (collectively referred to as "RCRA"), 42 U.S.C. Section 6928(h). The authority vested in the Administrator has been delegated to the Director of the Land and Chemicals Division by EPA Delegation No. 8-32 dated June 21, 2004.

B. On March 6, 1986, EPA granted the Commonwealth of Virginia (the "Commonwealth") authorization to operate a state hazardous waste program in lieu of the federal program, pursuant to Section 3006(b) of RCRA, 42 U.S.C. Section 6926(b). On July 31, 2000,

I hereby certify that the within is a true and correct copy of the original RCRA 3008(h) filed in this matter.

Attorney for USEPA

EPA authorized revisions to the Commonwealth's authorized hazardous waste program (65 Federal Register 46606 (July 31, 2000)). The Commonwealth, however, does not have authority to enforce Section 3008(h) of RCRA. The Commonwealth has been given notice of the issuance of this Order.

C. This Order is issued to Respondents for the facility located at 4500 S. Laburnum Avenue, Henrico County, Richmond, Virginia (the "Facility") as described further in Section IV below and depicted in Figure 1 as attached to this Order and made a part of this Order.

D. Respondents consent to issuance of this Order, agree to comply with its terms and will not contest EPA's authority to issue this Order and to enforce its terms. Further, Respondents will not contest EPA's jurisdiction to: compel compliance with this Order in any subsequent enforcement proceeding, either administrative or judicial; require Respondents' compliance with the terms of this Order; or impose sanctions for violations of this Order.

II. PARTIES BOUND

A. This Order shall apply to and be binding upon EPA, Respondents and their agents, successors and assigns.

B. No change in ownership of any property covered by this Order, or in the corporate or partnership status of Respondents, shall in any way alter, diminish, or otherwise affect Respondents' obligations and responsibilities under this Order.

C. Respondents shall provide a copy of this Order to all supervisory personnel, contractors, subcontractors, laboratories, and consultants retained to conduct and/or monitor any portion of the work performed pursuant to this Order and shall do so within seven (7) calendar days of the effective date of this Order or date of such retention, whichever is later. All contracts, agreements or other arrangements with such persons shall require such persons to conduct and/or monitor the work in accordance with the requirements of this Order. Notwithstanding the terms of any such contract, agreement or arrangement, Respondents are responsible for complying with this Order and for ensuring that all such persons perform such work in accordance with this Order.

D. In the event of any change in ownership or operation of the Facility and/or in the event of any change in majority ownership or control of the Respondents, Respondents shall notify EPA in writing of the nature of any such change no later than fifteen (15) calendar days after the effective date of such change. In addition, Respondents shall provide a copy of this Order to any successor to the Respondents and/or to the Facility at least fifteen (15) calendar days prior to the effective date of such change.

III. STATEMENT OF PURPOSE

In entering into this Order, the mutual objective of EPA and Respondents is to have LSI continue to implement the corrective measures selected by EPA in the June 28, 1991 RCRA Record of Decision ("ROD"), as modified by three Explanation of Significant Differences ("ESD") dated February 13, 1992, December 11, 1992 and May 16, 2011, respectively, in accordance with the terms and conditions set forth below. The RCRA ROD and ESDs are collectively referred to as "the ROD, as modified" and are attached as Attachment 1 to this Order and made a part of this Order.

IV. FINDINGS OF FACT

A. Respondents are corporations and are "persons" as defined in Section 1004(15) of RCRA, 42 U.S.C. Section 6903(15).

B. AT&T Corp. ("AT&T") was a prior owner and/or operator of the Facility located at 4500 S. Laburnum Avenue, Henrico County, Richmond, Virginia, within the meaning of Section 3008(h) of RCRA, 42 U.S.C. Section 6928(h).

C. The Facility is a facility authorized to operate under Section 3005(e) of RCRA, 42 U.S.C. Section 6925(e), for purposes of Section 3008(h) of RCRA, 42 U.S.C. Section 6928(h).

D. AT&T filed a RCRA Hazardous Waste Part A Permit Application with EPA on October 24, 1980 seeking a permit to treat, store and/or dispose of chromium, listed as DOO7; lead, listed as D008; hazardous wastes exhibiting the characteristics of ignitability, listed as D001, and corrosivity, listed as D002; and hazardous waste from non-specific sources identified as F001, F002, F005, F007, F008 and F009.

E. 1,1,1-trichloroethane (1,1,1-TCA); 1,1-dichloroethylene (1,1-DCE); methylene chloride, and 1,1-dichloroethane (1,1-DCA) have been found in on-site groundwater at concentrations exceeding drinking water standards established by the Maximum Contaminant Levels ("MCLs") promulgated at 40 C.F.R. Part 141 pursuant to Section 1412 of the Safe Drinking Water Act, 42 U.S.C. Section 300g-1, and /or Region III's Risk Based Concentrations.

F. 1,1,1-TCA, 1,1-DCE, methylene chloride, and 1,1-DCA are "hazardous wastes" as defined in 40 C.F.R. Section 261.3 and Section 1004(5) of RCRA, 42 U.S.C. Section 6903(4).

G. Based on the findings above, EPA has determined that there are potential adverse environmental or human health impacts associated with the hazardous wastes which are present at or released at or from the Facility.

H. From 1972 to 1996, AT&T manufactured printed circuit boards at the Facility. During its manufacturing operations, AT&T used and stored chlorinated solvents, including

1,1,1-TCA, 1,1-DCE, methylene chloride and 1,1-DCA, at the Facility.

I. On September 15, 1989, EPA and AT&T entered into an Administrative Order on Consent, U.S. EPA Docket Number RCRA III-026-CA ("1989 Order"), pursuant to RCRA Section 3008(h) under which AT&T agreed, among other things, to perform a RCRA Facility Investigation ("RFI") and a Corrective Measures Study ("CMS") at the Facility.

J. On June 28, 1991, EPA selected a final remedy for the Facility in a RCRA ROD. EPA subsequently modified the RCRA ROD by three ESDs dated February 13, 1992, December 11, 1992 and May 16, 2011, respectively.

K. On October 24, 1994, EPA issued a Final Administrative Order, U.S. EPA Docket No. RCRA-III-076-CA ("1994 Order"), pursuant to RCRA Section 3008(h), to AT&T requiring AT&T to implement corrective measures at the Facility in accordance with the RCRA ROD as modified by the first two ESDs dated February 13, 1992 and December 11, 1992, respectively.

L. On February 15, 1996, AT&T notified EPA that it had assigned the assets of the Facility to Lucent Technologies Inc. ("Lucent"), a wholly-owned subsidiary of AT&T.

M. On September 20, 1996, EPA issued an Initial Administrative Order, U.S. EPA Docket No. RCRA-III-084-CA ("1996 Order"), pursuant to RCRA Section 3008(h), to Lucent requiring Lucent to implement corrective measures at the Facility including the construction of a groundwater pump and treat system and attainment of the established cleanup goals at all identified points of compliance, as specified in the RCRA ROD and as modified by the first two ESDs. The 1996 Order became final on October 24, 1996.

N. As required by the 1996 Order, Lucent constructed the groundwater pump and treat system at the Facility and began operating and maintaining the system.

O. In 1996, Lucent sold the Facility to Viasystems Technologies Corporation ("Viasystems"). Viasystems ceased manufacturing operations at the Facility in June 2001. The Facility property remained idle for several years and on August 23, 2006, Viasystems sold the Facility to Laburnum Investments, LLC, a subsidiary of Forest City Commercial Construction Group, for redevelopment into the White Oak Village Shopping Center.

P. In February 2001, Lucent created a new company named Agere Systems Inc. ("Agere"). While Lucent was responsible to EPA for complying with all terms and conditions of the 1996 Order, Agere contractually agreed to perform the operation and maintenance of the groundwater remediation system on behalf of Lucent.

Q. On November 30, 2006, Lucent merged with Alcatel and Alcatel-Lucent USA Inc. ("Alcatel-Lucent") was formed.

R. On April 2, 2007, Agere was acquired by LSI. As part of this acquisition, LSI agreed to continue the operation and maintenance of the groundwater remediation system on

behalf of Alcatel-Lucent. Currently, while Alcatel-Lucent is responsible to EPA for complying with all terms and conditions of the 1996 Order, LSI operates the groundwater remediation system under the oversight of EPA and the Virginia Department of Environmental Quality ("VDEQ").

V. CONCLUSIONS OF LAW AND DETERMINATIONS

EPA hereby determines that there is or has been a release of hazardous waste and/or hazardous constituents within the meaning of 3008(h) of RCRA, 42 U.S.C. Section 6928(h), into the environment from the Facility and that the corrective action and/or other response measures required by this Order are necessary to protect human health or the environment.

VI. WORK TO BE PERFORMED

A. EPA acknowledges that Respondents may have completed some of the tasks required by this Order and that Respondents may have available some of the information and data required by this Order. This previous work may be used to meet the requirements of this Order, upon submission to and formal approval by EPA.

B. All work undertaken pursuant to this Order shall be developed and performed, as appropriate and approved by EPA, in accordance with: the Scope of Work for Interim Measure(s); the June 30, 2000 EPA-approved Sampling and Analysis Plan; the Scope of Work for Corrective Measures Implementation; the Scope of Work for Health and Safety Plan; and RCRA, its implementing regulations and relevant EPA guidance documents. EPA's Scopes of Work and relevant guidance are available at:

http://www.epa.gov/reg3wcmd/ca/ca_resources.htm, and are incorporated by reference.

C. "Days" shall mean calendar days unless otherwise specified.

D. EPA recognizes that Respondents have entered into agreements under which LSI has contractually agreed with Alcatel-Lucent to implement the ROD, as modified, including the operation and maintenance of the groundwater remediation system at the Facility. EPA will not seek performance of the work under this Order from Alcatel-Lucent unless EPA determines, in its sole discretion not subject to Dispute Resolution, that LSI has failed to adequately perform such work. In the event that EPA determines that there has been failure by or on behalf of LSI to timely cure or correct any non-performance, Alcatel-Lucent shall upon written notice by EPA, commence or resume performance of the work under Section VI, "Work to be Performed," and all of LSI's rights and obligations under this Order shall also become applicable to Alcatel-Lucent. EPA's determinations that LSI has failed to perform under this Paragraph VI.D. is not subject to any review or challenge, judicial or otherwise, by the Respondents through Section XIV, "Dispute Resolution," or in any other manner. Other than those limitations outlined above, this Paragraph VI.D. does not seek to limit Respondents' rights to seek dispute resolution on other matters, including the assessment of stipulated penalties, that are otherwise provided for by

this Order.

E. Pursuant to Section 3008(h) of RCRA, 42 U.S.C. Section 6928(h), without any prejudice to EPA's rights to enforce this Order against Respondents, LSI agrees to and is hereby ordered to finance and perform the following acts in the manner and by the dates specified below:

1. INTERIM MEASURES (IM)

a. Commencing on the Effective Date of this Order and continuing thereafter, in the event LSI identifies an immediate or potential threat to human health and/or the environment at or from the Facility or discovers new releases of solid wastes or hazardous wastes at or from the Facility not previously identified, LSI shall notify the EPA Project Coordinator orally within forty-eight (48) hours of such identification or discovery and notify EPA in writing within three (3) calendar days of discovery summarizing the nature and extent of such release and/or the immediacy and magnitude of the potential threat(s) to human health and/or the environment. With respect to any such identification or discovery relating to the groundwater treatment system including the groundwater treatment plant and related property, extraction wells, monitoring wells and all associated piping ("Treatment System") at the Facility, upon written request of EPA, LSI shall submit to EPA an IM Workplan in accordance with the IM Scope of Work. If EPA determines that immediate action is required, the EPA Project Coordinator may orally authorize LSI to act prior to EPA's receipt of the IM Workplan. Upon receipt of EPA approval of the IM Workplan, LSI shall implement the EPA-approved workplan in accordance with the terms and conditions set forth therein.

b. Commencing on the Effective Date of this Order and continuing thereafter, if EPA identifies an immediate or potential threat to human health and/or the environment at or from the Treatment System or discovers new releases of solid wastes or hazardous wastes at or from the Treatment System not previously identified, EPA will notify LSI in writing. Within ten (10) days of receiving EPA's written notification, LSI shall submit to EPA an IM Workplan in accordance with the IM Scope of Work that identifies interim measures which will mitigate or eliminate the threat. If EPA determines that immediate action is required, the EPA Project Coordinator may require LSI to act prior to LSI's receipt of EPA's written approval.

c. Each IM Workplan required herein shall ensure that the interim measures are designed to mitigate immediate or potential threat(s) to human health and/or the environment, and should be consistent with the objectives of, and contribute to the performance of the ROD, as modified.

d. Each IM Workplan required herein shall be prepared in accordance with the IM Scope of Work and shall include the following sections as appropriate and approved by EPA: Interim Measures Objectives, Data Collection Quality Assurance, Data Management, Design Plans and Specifications, Operation and Maintenance, Project

Schedule, Interim Measures Construction Quality Assurance, and Reporting Requirements.

e. Concurrent with submission of an IM Workplan, LSI shall submit to EPA an IM Health and Safety Plan.

2. CORRECTIVE MEASURE(S) IMPLEMENTATION

The ROD, as modified, is appended here as Attachment 1, and is incorporated into and made enforceable under this Order. The ROD, as modified, is supported by an Administrative Record which contains the documents and information upon which EPA based its selection of corrective measures for the Facility. In addition to the corrective measures selected in the ROD, as modified, in order to accelerate the groundwater restoration process, LSI may evaluate additional corrective measures such as chemical and biological treatment at identified source areas in groundwater and submit any such additional corrective measures to EPA for review and approval. If EPA determines that any such additional corrective measures are appropriate, EPA will solicit public comments on any such additional corrective measures prior to including them in the final remedy for the Facility. Subject to EPA review and approval, LSI shall implement such additional corrective measures at the Site in accordance with Paragraph VI.E.3, below.

a. CORRECTIVE MEASURES OPERATION AND MAINTENANCE

(1) Within sixty (60) days of the effective date of this Order, LSI shall modify, and submit for EPA approval, the Operation and Maintenance ("O&M") Plan developed for the groundwater pump and treat system pursuant to the 1996 Order. The Modified O&M Plan shall reflect the current location of and conditions at the groundwater pump and treat system. The Modified O&M Plan shall be developed in accordance with the Scope of Work for CMI, Task II.B. Upon receipt of EPA approval of the Modified O&M Plan, LSI shall implement the EPA-approved Modified O&M Plan in accordance with the terms and schedules contained therein.

(2) Within sixty (60) days of the effective date of this Order, LSI shall modify, and submit for EPA approval, the Health and Safety (H&S) Plan developed for the Facility pursuant to the 1996 Order. The Modified H&S Plan shall reflect the current conditions at the Facility. The Modified H&S Plan shall be developed in accordance with the Scope of Work for Health and Safety Plans. Upon receipt of EPA approval of the Modified H&S Plan, LSI shall implement the EPA-approved S&H Plan in accordance with the terms and schedules contained therein.

(3) Commencing on February 1, 2013 and continuing thereafter until the Clean-Up Goals set forth in the ROD, as modified, at all identified Points of Compliance have been achieved and LSI can demonstrate no

further exceedence of the Clean-Up Goals for a subsequent period of three years, LSI shall continue to submit bi-annually a Bi-Annual O&M Assessment Report in the form consistent with Bi-Annual O&M Assessment Reports submitted pursuant to the 1996 Order.

(4) In accordance with the ROD, as modified, if after five (5) consecutive years of pumping and treating, concentrations of volatile organic constituents listed in Paragraph IV. E., above, in groundwater have attained equilibrium conditions, as set forth in the ROD, as modified, LSI may request that EPA to modify the Cleanup-Goals.

(5) Commencing on the Effective Date of this Order and continuing thereafter, LSI may request EPA prepare and issue a determination that the Clean-Up Goals have been achieved. LSI shall provide EPA with all available documentation and information to support such request. EPA shall review such request and notify LSI, in writing, of its determination and the basis therefore. If EPA agrees that LSI has met the Clean-Up Goals at all Points of Compliance and fulfilled the requirements of the ROD, as modified, and of this Order, LSI may cease the operation of the pump and treat system. However, LSI must continue the groundwater monitoring program in accordance with the June 30, 2000 EPA-approved Sampling and Analysis Plan, until LSI can demonstrate that Clean-Up Goals have not been exceeded for a period of three consecutive years after the operation of the pump and treat system has ceased.

b. INSTITUTIONAL CONTROLS

(1) Within forty-five (45) days of the Effective Date of this Order, LSI shall provide Henrico Health Department written notification to prohibit well drilling under Virginia's Private Well Regulations, 12VAC 5-630-380. The notification shall describe the nature and extent, including a map, survey description, and geographic coordinates, of the Facility-related contaminated groundwater located on Facility property and off-site. LSI shall update the notice every two years to reflect the latest plume boundary. A copy of the notification will be provided to EPA and VDEQ;

(2) No later than one (1) year after the Effective Date of this Order and every year thereafter until LSI has met the Cleanup-Goals at all Points of Compliance and fulfilled the requirements of the ROD, as modified, LSI shall visually inspect the Facility for compliance with the activity and use limitations listed in the ROD, as modified, and provide EPA and VDEQ with a written report documenting such compliance and

(3) To the extent that land and/or groundwater use restrictions are required by the selected corrective measures in the ROD, as modified, on property not owned or controlled by Respondents, LSI shall:

(a) Within sixty (60) days of the Effective Date of this Order, use best efforts to secure from the owner(s) of such property an agreement by such owner(s) to execute and record in the Circuit Court Clerk's Office, Henrico County, Commonwealth of Virginia, an environmental covenant in substantially the form attached as Attachment 2 ("Covenant"). The Covenant shall be executed pursuant to the Virginia Uniform Environmental Covenants Act, § 10.1-1238 et seq. of the Code of Virginia ("UECA").

(b) Within sixty (30) days from obtaining consent under Paragraph VI.E.2.b.(3)(a), immediately above, submit to EPA for review and approval a draft Covenant, in substantially the form attached as Attachment 2, for EPA review and written approval;

(c) Within forty-five (45) days of EPA's written approval of the Covenant, record the Covenant with the Circuit Court Clerk's Office for Henrico County; and

(d) Within forty-five (45) days of recording the Covenant, provide EPA with a certified copy of the original recorded Covenant showing the clerk's recording stamps.

(e) For purposes of Paragraph VI.E.2.b.(3)(a) of this Order, "best efforts" include the payment of reasonable sums of money in consideration of access, access easements, land/water use restrictions, restrictive covenants, and/or an agreement to release or subordinate a prior lien or encumbrance. If a consent to execute and record any environmental covenant required by Paragraph VI.E.2.b.(3)(a) of this Order is not obtained within sixty (60) days of the date of entry of this Order or (b) any environmental covenant required by Paragraph VI.E.2.b.(3)(a) of this Order is not submitted to EPA in draft form within sixty (60) days of the date of entry of this Order, LSI shall promptly notify EPA in writing, and shall include in that notification a summary of the steps that LSI has taken to attempt to comply with Paragraph VI.E.2.b.(3)(a) of this Order. EPA may, as it deems appropriate, assist LSI in obtaining land and/or groundwater use restrictions. EPA reserves any right it may have to require that LSI reimburse EPA for all costs incurred by EPA in obtaining land and groundwater use restrictions, including, but not limited to, attorney's fees and the amount of any just compensation and costs incurred by EPA. Provided that EPA has determined that LSI has used good faith efforts to obtain the Covenants required by Paragraph VI.E.2.b.(3)(a) of this Order, LSI shall not be deemed in violation of Paragraph VI.E.2.b.(3)(a) of this Order.

3. SUBMISSIONS/EPA APPROVAL/ADDITIONAL WORK

a. EPA will review all documents submitted by LSI pursuant to this Order ("Submissions") with the exception of progress reports, and will notify LSI in writing of EPA's approval or disapproval of each such Submission. In the event of EPA's disapproval, EPA shall specify in writing any deficiencies in the Submission. Such disapproval shall not be subject to the dispute resolution procedures of Section XIV, below.

b. Within thirty (30) calendar days of receipt of EPA's comments on the Submission, or ten (10) calendar days in the case of an IM Workplan, LSI shall submit to EPA for approval a revised Submission, which responds to any comments received and/or corrects any deficiencies identified by EPA. In EPA's sole discretion, not subject to Dispute Resolution, upon written request by LSI, EPA may meet or confer with LSI during the 30-day or 10-day period described above to discuss LSI's Submission. Said meeting or conference shall not extend, postpone or affect in any way any obligation of LSI under this Order, unless EPA determines otherwise. In the event that EPA disapproves of the revised Submission, LSI may invoke the dispute resolution procedures of Section XIV, below. In the event EPA disapproves the revised Submission, EPA reserves the right to revise such Submission and seek to recover from LSI the costs of such revision, in accordance with CERCLA and any other applicable law. Any Submission approved or revised by EPA under this Order shall be deemed incorporated into and made an enforceable part of this Order.

c. Beginning on the Effective Date of this Order and throughout the period that this Order is effective, LSI shall continue to provide EPA with bimonthly (every two months) progress reports consistent with the form and schedule established for such progress reports in the 1996 Order.

d. Three (3) hard copies and one (1) electronic copy of all Submissions required by this Order, except for the bimonthly progress reports referred to in Paragraph VI.E.3.c, immediately above, shall be hand-delivered or sent by Overnight Mail, Return Receipt Requested, to the Project Coordinator designated pursuant to Section XI, "PROJECT COORDINATORS," below. Two (2) copies of the bimonthly progress reports referred to in Paragraph VI.E.3.c, immediately above, shall be hand-delivered or sent by Overnight Mail, Return Receipt Requested, to the Project Coordinator designated pursuant to Section XI, "PROJECT COORDINATORS," below.

e. All work performed pursuant to this Order shall be under the direction and supervision of a professional engineer or geologist with expertise in hazardous waste site investigation. Within ten (10) calendar days after the Effective Date of this Order, LSI shall submit to EPA, in writing, the name, title, and qualifications of the engineer or geologist and of any contractors or subcontractors to be used in carrying out the terms of this Order. Notwithstanding LSI's selection of an engineer, geologist, contractor or subcontractor, nothing in this Order shall relieve LSI of its obligation to comply with the

terms and conditions of this Order. EPA shall have the right to disapprove at any time the use of any professional engineer, geologist, contractor or subcontractor selected by LSI. EPA's disapproval shall not be subject to review under Section XIV, "DISPUTE RESOLUTION," below, or otherwise. Within fifteen (15) calendar days of receipt from EPA of written notice disapproving the use of any professional engineer, geologist, contractor or subcontractor, LSI shall notify EPA, in writing, of the name, title and qualifications of the personnel who will replace the personnel disapproved by EPA. LSI shall notify EPA ten (10) days prior to changing voluntarily its engineer or geologist, and/or contractors or subcontractors to be used in carrying out the terms of this Order, and shall submit to EPA in writing, the name, title, and qualifications of such person(s).

f. EPA may determine that certain tasks and deliverables including, but not limited to, investigatory work or engineering evaluation require additional work. These tasks and deliverables may or may not have been in the Plans, Workplans or Reports previously approved by EPA. If EPA determines that such additional work is necessary, EPA shall request, in writing, that LSI perform the additional work and shall specify the reasons for EPA's determination that additional work is necessary. Within fifteen (15) calendar days after the receipt of such request, LSI shall have the opportunity to meet or confer with EPA to discuss the additional work EPA has requested. In the event that LSI agrees to perform the additional work, this Order shall be modified in accordance with Section XXII, "SUBSEQUENT MODIFICATION," below, and such work shall be performed in accordance with this Order. In the event LSI declines or fails to perform the additional work, EPA reserves the right to order LSI to perform such additional work; to perform such additional work itself and to seek to recover from LSI all costs of performing such additional work.

VII. QUALITY ASSURANCE

A. Throughout all sample collection and analysis activities, LSI shall use EPA-approved quality assurance, quality control, and chain-of-custody procedures, as specified in the EPA-approved Workplans. In addition, LSI shall:

1. Ensure that laboratories used by LSI for analyses perform such analyses according to the EPA methods included in "Test Methods for Evaluating Solid Waste" (SW-846, November 1986) or other methods deemed satisfactory to EPA. If methods other than EPA methods are to be used, LSI shall submit all analytical protocols to be used for analyses to EPA for approval at least thirty (30) calendar days prior to the commencement of analyses and shall obtain EPA approval prior to the use of such analytical protocols.

2. Ensure that laboratories used by LSI for analyses participate in a quality assurance/quality control program equivalent to that which is followed by EPA. As part of such a program, and upon request by EPA, such laboratories shall perform analyses of samples provided by EPA to demonstrate the quality of the analytical data.

3. Inform the EPA Project Coordinator at least fourteen (14) calendar days in advance of any laboratory analysis regarding which laboratory will be used by LSI and ensure that EPA personnel and EPA authorized representatives have reasonable access to the laboratories and personnel used for analysis.

VIII. ON- SITE AND OFF-SITE ACCESS

A. As of the Effective Date of this Order and continuing thereafter, Respondents shall provide to EPA and its employees, agents, consultants, contractors and other authorized and/or designated representatives, for the purposes of conducting and/or overseeing the work required by this Order, or by any approved Workplan prepared pursuant hereto or pursuant to the 1996 Order, access to all property owned or controlled by Respondents where Work must be undertaken. Such access shall permit EPA and its employees, agents, consultants, contractors and other authorized and designated representatives to conduct all activities related to this Order including, but not limited to:

1. Monitoring the Work;
2. Verifying data and information submitted to EPA;
3. Conducting investigations relating to contamination at or near the Facility;
4. Obtaining samples;
5. Assessing the need for, planning, or implementing additional response actions at or near the Facility;
6. Inspecting and copying records, operating logs, contracts, or other documents maintained or generated by Respondents or their agents; and
7. Assessing Respondents' compliance with this Order.

B. To the extent that work required by this Order, or by any EPA-approved Workplan prepared pursuant hereto, must be done on property not owned or controlled by LSI, LSI shall use its best efforts to obtain site access agreement(s) from the present owner(s) and/or lessee(s) of such property, as appropriate, within thirty (30) calendar days of receipt of EPA approval of any Workplan pursuant to this Order which requires work on such property. For purposes of this paragraph, "best efforts" shall include, at a minimum, but shall not be limited to: a) a certified letter from LSI to the present owner(s) or lessee(s) of such property requesting agreements to permit LSI, EPA, and its authorized representatives access to such property; and b) the payment of reasonable sums of money in consideration of access. "Reasonable sums of money" means the fair market value of the right of access necessary to implement the requirements of this Order. In the event that such agreements for access are not obtained within thirty (30) calendar days after receipt of EPA approval of any Workplan pursuant to this Order which requires work on property which is not owned or controlled by LSI, LSI shall notify EPA, in writing, within seven (7) calendar days after the conclusion of such thirty-day period, regarding both the efforts undertaken to obtain access and the inability to obtain such agreements. In the event that LSI fails to obtain off-site access, despite the exercise of best

efforts, EPA, in its discretion, may assist LSI in obtaining off-site access. LSI shall reimburse EPA for all costs incurred by EPA in obtaining access, including, but not limited to, attorneys fees and the amount of any just compensation and costs incurred by EPA.

C. Nothing in this Order limits or otherwise affects EPA's rights of access and entry pursuant to applicable law, including, but not limited to, RCRA and CERCLA.

IX. SAMPLING AND DATA/DOCUMENT AVAILABILITY

A. LSI shall submit to EPA the results of all sampling and/or tests or other data generated by, or on behalf of, LSI in accordance with the requirements of this Order.

B. LSI shall notify EPA, in writing, at least fourteen (14) calendar days in advance of any field activities, including but not limited to, well drilling, installation of equipment, or sampling. At the request of EPA, LSI shall provide or allow EPA or its authorized representatives to take split or duplicate samples of all samples collected by LSI pursuant to this Order. Nothing in this Order shall limit or otherwise affect EPA's authority to collect samples pursuant to applicable law, including, but not limited to, RCRA and CERCLA.

C. LSI may assert a business confidentiality claim covering all or part of any information submitted to EPA pursuant to this Order in the manner described in 40 C.F.R. Section 2.203(b). Any assertion of confidentiality shall be adequately substantiated by LSI when the assertion is made in accordance with 40 C.F.R. Section 2.204(e)(4). Information subject to a confidentiality claim shall be disclosed only to the extent allowed by, and in accordance with, the procedures set forth in 40 C.F.R. Part 2, Subpart B. If no such confidentiality claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA without further notice to LSI. LSI shall not assert any confidentiality claim with regard to any physical, sampling, monitoring, or analytical data.

D. If LSI wishes to assert a privilege with regard to any document which EPA seeks to inspect or copy pursuant to this Order, LSI shall identify the document, the privilege claimed, and the basis therefor in writing. For the purposes of this Order, privileged documents are those documents exempt from discovery from the United States in litigation under the Federal Rules of Civil Procedure. LSI shall not assert a privilege with regard to analytical, sampling and monitoring data.

X. RECORD PRESERVATION

Respondents agree that they shall preserve, during the pendency of this Order and for a minimum of at least six (6) years after its termination, all data, records and documents in its possession or in the possession of its divisions, officers, directors, employees, agents, contractors, successors, and assigns which relate in any way to this Order or to hazardous waste management and/or disposal at the Facility. After six (6) years, Respondents shall make such

records available to EPA for inspection or shall provide copies of such records to EPA prior to any proposed destruction of such records. Respondents shall notify EPA at least thirty (30) calendar days prior to the proposed destruction of any such records, and shall provide EPA with a reasonable opportunity to inspect, copy and/or take possession of any such records. Respondents shall not destroy any record to which EPA has requested access for inspection and/or copying until EPA has obtained such access or withdrawn its request for such access. Nothing in this Section X shall in any way limit the authority of EPA under Section 3007 of RCRA, 42 U.S.C. Section 6927, or any other access or information-gathering authority.

XI. PROJECT COORDINATORS

A. EPA hereby designates Russell Fish as the EPA Project Coordinator. Within ten (10) calendar days of the effective date of this Order, LSI shall notify EPA, in writing, of the Project Coordinator it has selected. LSI's legal counsel shall not serve as LSI's Project Coordinator. Each Project Coordinator shall be responsible for overseeing the implementation of the Order. The EPA Project Coordinator will be EPA's primary designated representative at the Facility. To the maximum extent possible, all communications between LSI and EPA, and all documents, reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Order, shall be directed through the Project Coordinators.

B. Each party agrees to provide at least seven (7) calendar days written notice to the other party prior to changing Project Coordinators.

C. If EPA determines that conditions or activities at the Facility, whether or not in compliance with this Order, have caused or may cause a release or threatened release of hazardous wastes, hazardous constituents, hazardous substances, pollutants or contaminants which threaten or may pose a threat to the public health or welfare or to the environment, EPA may direct that LSI stop further implementation of this Order for such period of time as may be needed to abate any such release or threatened release and/or to undertake any action which EPA determines is necessary to abate such release or threatened release.

D. The absence of the EPA Project Coordinator from the Facility shall not be cause for the delay or stoppage of work.

XII. NOTIFICATION

A. Unless otherwise specified, reports, correspondence, approvals, disapprovals, notices, or other submissions relating to or required under this Order shall be in writing and shall be sent as follows:

1. Three copies of all documents to be submitted to the EPA shall be sent to:

   Russell Fish
   U.S. Environmental Protection Agency
   Region III, Mail Code 3LC20
   1650 Arch Street
   Philadelphia, Pennsylvania 19103-2029
   Telephone # 215-814-3226
   E-mail: fish.russell@epa.gov

2. Documents to be submitted to LSI shall be sent to:

   Global Director, EH&S Assurance
   LSI Corporation
   1110 American Parkway, NE, Room 12K-305
   Allentown, PA 18109
   (610) 712-1647

3. Documents to be submitted to Alcatel-Lucent shall be sent to:

   Steve Oberkrom
   Alcatel-Lucent EH&S
   1067 NW High Point Drive
   Lee's Summit, MO 64081
   Phone: 816-282-8670
   E-mail: Steve.Oberkrom@alcatel-lucent.com

4. One copy of all documents to be submitted to VDEQ shall be sent to:

   Jutta Schneider
   Office of Remediation Programs
   Virginia Department of Environmental Quality
   629 East Main Street
   Richmond, Virginia 23219
   Telephone # 804-698-4099

B. Any notice, report, certification, data presentation, or other document submitted by LSI pursuant to this Order which discusses, describes, demonstrates, or supports any finding or makes any representation concerning LSI's compliance or noncompliance with any requirement of this Order shall be certified by a responsible corporate officer or a duly authorized representative of a responsible corporate officer. A "responsible corporate officer" means: (a) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making

functions for the corporation, or (b) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. A person is a "duly authorized representative" only if: (1) the authorization is made in writing by a person described above; (2) the authorization specifies either an individual or position having responsibility for overall operation of the regulated facility or activity (a duly authorized representative may thus be either a named individual or any individual occupying a named position); and (3) the written authorization is submitted to the Project Coordinator designated by EPA in Section XI, "Project Coordinators," of this Order.

C. The certification required by paragraph B, above, shall be in the following form:

I certify that the information contained in or accompanying this [type of submission] is true, accurate, and complete.

As to [the/those identified portion(s)] of this [type of submission] for which I cannot personally verify [its/their] accuracy, I certify under penalty of law that this [type of submission] and all attachments were prepared in accordance with procedures designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, or the immediate supervisor of such person(s), the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Signature : _____

Name : _____

Title : _____

XIII. DELAY IN PERFORMANCE/STIPULATED PENALTIES

A. Unless there has been a written modification of a compliance date by EPA, or excusable delay as defined below in Section XV, "*FORCE MAJEURE* AND EXCUSABLE DELAY," in the event that LSI fails to comply with any requirement set forth in this Order, LSI shall pay stipulated penalties, as set forth below, upon receipt of written demand by EPA. Compliance by LSI shall include commencement or completion, as appropriate, of any activity, plan, study or report required by this Order in an acceptable manner and within the specified time schedules in and approved under this Order. Stipulated penalties shall accrue as follows:

1. For failure to commence, perform or complete work as prescribed in this Order: $500 per day for one to seven days or part thereof of noncompliance, and $1,000 per day for each day of noncompliance, or part thereof, thereafter;

2. For failure to submit any draft or final Workplan, plans, or reports as required by this Order: $500 per day for one to seven days or part thereof of noncompliance, and $1,000 per day for each day of noncompliance, or part thereof, thereafter;

3. For failure to submit bi-monthly progress reports as required by this Order: $250 per day for one to seven days or part thereof of noncompliance, and $500 per day for each day of noncompliance, or part thereof, thereafter;

4. For failure to submit other deliverables as required by this Order: $250 per day for one to seven days or part thereof of noncompliance, and $500 per day for each day of noncompliance, or part thereof, thereafter;

5. For any failure to comply with the provisions of this Order after receipt of notice of noncompliance by EPA: $1,000 per day for one to seven days or part thereof of noncompliance, and $1,500 per day for each day of noncompliance, or part thereof, thereafter, in addition to any stipulated penalties imposed for the underlying noncompliance;

6. For any failure to comply with this Order not described in subparagraphs 1 through 5, above: $250 per day for one to seven days or part thereof of noncompliance, and $500 per day for each day of noncompliance, or part thereof, thereafter.

B. All penalties shall begin to accrue on the date that complete performance is due or a violation occurs, and shall continue to accrue through the final day of or correction of the violation. Nothing in this Order shall prevent the simultaneous accrual of separate stipulated penalties for separate violations of this Order.

C. All penalties owed to EPA under this Section XIII shall be due within thirty (30) calendar days of receipt of a demand for payment unless LSI invokes the dispute resolution procedures under Section XIV, below. Such notification shall describe the noncompliance and shall indicate the amount of penalties due. Interest shall begin to accrue on the unpaid balance at the end of the thirty (30) calendar day period and shall accrue at the United States Tax and Loan Rate.

D. All penalty payments shall be made by certified or cashier's check payable to the Treasurer of the United States of America and shall be remitted to:

US Environmental Protection Agency
Fines and Penalties
Cincinnati Finance Office
PO Box 979077
St. Louis, MO 63197-9000

All payments shall reference the name of the Facility, the name and address of the party making the payment, and the EPA Docket Number of this Order. Copies of the transmittal of payment shall be sent simultaneously to the EPA Project Coordinator and the Regional Hearing Clerk (3RC00), U.S. Environmental Protection Agency, Region III, 1650 Arch Street, Philadelphia, Pennsylvania 19103-2029.

E. LSI may dispute EPA's demand for payment of stipulated penalties for any alleged violation of this Order by invoking the dispute resolution procedures below under Section XIV, "DISPUTE RESOLUTION." Stipulated penalties shall continue to accrue, but need not be paid, for any alleged noncompliance which is the subject of dispute resolution during the period of such dispute resolution. To the extent that LSI does not prevail upon resolution of the dispute, LSI shall remit to EPA within seven (7) calendar days of receipt of such resolution any outstanding penalty payment, including any accrued interest, in the manner described above in Paragraph D of this Section. To the extent LSI prevails upon resolution of the dispute, no penalties shall be payable.

F. Neither the filing of a petition to resolve a dispute nor the payment of penalties shall alter in any way LSI's obligation to comply with the requirements of this Order.

G. The stipulated penalties set forth in this Section XIII shall not preclude EPA from pursuing any other remedies or sanctions which may be available to EPA by reason of Respondents' failure to comply with any of the requirements of this Order.

XIV. DISPUTE RESOLUTION

A. If LSI disagrees, in whole or in part, with any EPA disapproval, modification or other decision or directive made by EPA pursuant to this Order, LSI shall notify the Director of the Land and Chemicals Division, Region III, in writing of its objections, and the basis therefor, within fourteen (14) calendar days of receipt of EPA's disapproval, decision or directive. Such notice shall set forth the specific points of the dispute, the position which LSI asserts should be adopted as consistent with the requirements of this Order, the basis for LSI's position, and any matters which it considers necessary for EPA's determination. EPA and LSI shall have an additional fourteen (14) calendar days from the receipt by EPA of the notification of objection, during which time representatives of EPA and LSI may confer in person or by telephone to resolve any disagreement. If an agreement is reached, the resolution shall be written and signed by an authorized representative of each party. In the event that resolution is not reached within this fourteen (14) calendar day period, EPA will furnish to LSI, in writing, its decision on the pending dispute.

B. The invocation of dispute resolution procedures under this Section XIV shall not extend, postpone or affect in any way any obligation of LSI under this Order unless EPA determines otherwise. Stipulated penalties with respect to the disputed matter shall continue to accrue but payment shall be stayed pending resolution of the dispute. Notwithstanding the stay of payment, stipulated penalties shall accrue from the first day of noncompliance with any applicable provision of this Order. In the event that LSI does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XIII, "DELAY IN PERFORMANCE/STIPULATED PENALTIES."

C. Notwithstanding any other provisions of this Order, no action or decision by EPA, including, without limitation, decisions of the Director of the Land and Chemicals Division, Region III, pursuant to this Order, shall constitute final agency action giving rise to any right to judicial review prior to EPA's initiation of judicial action to compel Respondents' compliance with this Order.

XV. FORCE MAJEURE AND EXCUSABLE DELAY

A. LSI shall perform the requirements of this Order in the manner and within the time limits set forth in this Order, unless the performance is prevented or delayed by events which constitute a force majeure. LSI shall have the burden of proving such a force majeure. A force majeure is defined as any event arising from causes not reasonably foreseeable and beyond the control of LSI, which cannot be overcome by due diligence and which delays or prevents performance in the manner or by a date required by this Order. Such events do not include increased costs of performance, changed economic circumstances, reasonably foreseeable weather conditions or weather conditions which could have been overcome by due diligence, or failure to obtain federal, state, or local permits.

B. LSI shall notify EPA, in writing, within seven (7) calendar days after they become or should have become aware of any event which LSI claims constitutes a force majeure. Such notice shall estimate the anticipated length of delay, including necessary demobilization and remobilization, its cause, measures taken or to be taken to prevent or minimize the delay, and an estimated timetable for implementation of these measures. Failure to comply with the notice provision of this Section XV shall constitute a waiver of LSI's right to assert a force majeure claim with respect to such event. In addition to the above notification requirements, LSI shall undertake all reasonable actions to prevent or to minimize any delay in achieving compliance with any requirement of this Order after they become or should have become aware of any event which may delay such compliance.

C. If EPA determines that there is excusable delay because the failure to comply or delay has been or will be caused by a force majeure, the time for performance of that requirement of this Order may be extended, upon EPA approval, for a period equal to the delay resulting from such force majeure. This shall be accomplished through an amendment to this Order pursuant to Section XXII, "SUBSEQUENT MODIFICATION." Such an extension shall

not alter the schedule for performance or completion of any other tasks required by this Order, unless these tasks are also specifically altered by amendment of the Order. In the event that EPA and LSI cannot agree that any delay or failure has been or will be caused by a force majeure, or if there is no agreement on the length of the extension, LSI may invoke the dispute resolution procedures set forth in Section XIV, "DISPUTE RESOLUTION."

XVI. RESERVATION OF RIGHTS

A. EPA expressly reserves all rights and defenses that it may have, including the right both to disapprove of work performed by Respondents pursuant to this Order, to require that Respondents correct and/or perform any work disapproved by EPA, and to request that Respondents perform tasks in addition to those stated in the Scope(s) of Work and Workplans approved pursuant to the 1996 Order or this Order. Respondents expressly reserve all rights and defenses they may have regarding such requests for the performance of tasks in addition to those stated in this Order or the Scope(s) of Work and Workplans approved pursuant to this Order or the 1996 Order.

B. EPA hereby reserves all of its statutory and regulatory powers, authorities, rights and remedies, both legal and equitable, including any which may pertain to Respondents' failure to comply with any of the requirements of this Order, including, without limitation, the assessment of penalties under Section 3008(h)(2) of RCRA, 42 U.S.C. Section 6928(h)(2). This Order shall not be construed as a covenant not to sue, or as a release, waiver or limitation of any rights, remedies, powers and/or authorities, civil or criminal, which EPA has under RCRA, CERCLA, or any other statutory, regulatory or common law authority. Respondents hereby reserve all of their rights, defenses and remedies, both legal and equitable, concerning any and all claims which EPA may have under RCRA, CERCLA, or any other statutory, regulatory or common law authority except as otherwise expressly agreed in this Order.

C. Compliance by Respondents with the terms of this Order shall not relieve Respondents of their obligations to comply with RCRA or any other applicable local, state, or federal laws and regulations.

D. The signing of this Order and Respondents' consent to comply shall not limit or otherwise preclude EPA from taking additional enforcement action pursuant to RCRA, including but not limited to Sections 3008(a) or (h) of RCRA, 42 U.S.C. §§ 6928(a) or (h), or any other authority, should EPA determine that such action is warranted. Respondents' consent to comply with this Order shall not limit or otherwise preclude any and all defenses that they may have to such an enforcement action by EPA, except as otherwise expressly agreed in this Order.

E. EPA reserves the right to perform any portion of the work consented to in this Order or any additional site characterization, feasibility study, and response/corrective actions it deems necessary to protect public health or welfare or the environment. EPA may exercise its authority under RCRA, CERCLA or any other authority to undertake or require the performance of response actions at any time. EPA reserves the right to seek reimbursement from Respondents for costs incurred by the United States in connection with any such response actions.

Notwithstanding compliance with the terms of this Order, Respondents are not released from liability, if any, for the costs of any response actions taken by EPA, provided, however, that Respondents reserve and retain all rights and defenses which they may have regarding EPA claims or requests for response action or response costs, except as otherwise expressly agreed in this Order.

F. EPA reserves whatever rights it may have under CERCLA or any other law, or in equity, to recover from Respondents any costs incurred by EPA in overseeing the implementation of this Order.

XVII. COST ESTIMATES AND ASSURANCES OF FINANCIAL RESPONSIBILITY

A. Estimated Cost of the Work

1. Thirty (30) days after the effective date of this Order, LSI shall submit to EPA for approval detailed written estimates, in current dollars, of the cost of hiring a third party to perform the work under Section VI "WORK TO BE PERFORMED" (Cost Estimate). The Cost Estimate must account for the costs of all foreseeable work, including all investigations and reports, construction work, monitoring, and other long term care work, etc. All Cost Estimates shall be consistent with the requirements of 40 C.F.R. § 264.142 and § 264.144. References in these regulations to closure and post-closure shall mean the Work to be Performed under Section VI of this Order.

2. LSI shall annually adjust the Cost Estimate for inflation and for changes in the scope of the Work to be Performed until the work required by this Order is completed. Within thirty (30) days after the anniversary date of the Effective Date of this Order, LSI shall submit each annual Cost Estimate to EPA for review.

3. If at any time EPA determines that a cost estimate provided pursuant to this Section XVII is inadequate, EPA shall notify LSI in writing, stating the basis for its determination. If at any time LSI becomes aware of information indicating that any Cost Estimate provided pursuant to this Section is inadequate, LSI shall notify EPA in writing of such information within ten (10) days. Within thirty (30) days of EPA's notification, or within thirty (30) days of becoming aware of such information, as the case may be, LSI shall submit a revised Cost Estimate to EPA for review.

B. Assurances of Financial Responsibility for Completing the Work

1. Within sixty (60) days after EPA approves the initial Cost Estimate, LSI shall establish financial assurance for the benefit of the EPA. In the event that EPA approval of LSI's initial Cost Estimate is not received within thirty (30) days after submittal, LSI shall have sixty (60) days to establish financial assurance in the amount of the Cost Estimate submitted under Paragraph XVII.A.1. For subsequent annual Cost Estimates submitted under Paragraph XVII.A.2, in the event that EPA approval of LSI's annual Cost Estimate is not received within thirty (30) days after submittal, LSI shall

establish and maintain the financial assurance in the amount of the annual Cost Estimate submitted under Paragraph XVII.A.2. within ninety (90) days after the anniversary date of the Effective Date of this Order. LSI shall maintain adequate financial assurance until EPA releases LSI from this requirement under Section XXIV "TERMINATION AND SATISFACTION." LSI shall update the financial instrument or financial test demonstration to reflect changes to the Cost Estimate within ninety (90) days after the anniversary date of the Effective Date of this Order. LSI may use one or more of the financial assurance forms described in subparagraphs i - vi below. Any and all financial assurance documents shall be satisfactory in form and substance as determined by EPA.

i. A trust fund established for the benefit of EPA, administered by a trustee;

ii. A surety bond unconditionally guaranteeing performance of the Work in accordance with this Order, or guaranteeing payment at the direction of EPA into a standby trust fund that meets the requirements of the trust fund in subparagraph i above;

iii. An irrevocable letter of credit, payable at the direction of the Director, Land and Chemicals Division, into a standby trust fund that meets the requirements of the trust fund in subparagraph i above;

iv. An insurance policy that provides EPA with rights as a beneficiary, issued for a face amount at least equal to the current Cost Estimate, except where costs not covered by the insurance policy are covered by another financial assurance instrument;

v. A corporate guarantee, executed in favor of the EPA by one or more of the following: (1) a direct or indirect parent company, or (2) a company that has a "substantial business relationship" with either Respondent (as defined in 40 C.F.R. § 264.141(h)), to perform the Work to Be Performed under Section VI of this Order or to establish a trust fund as permitted by subparagraph i above; provided, however, that any company providing such a guarantee shall demonstrate to the satisfaction of the EPA that it satisfies the financial test requirements of 40 C.F.R. § 264.143(f) with respect to the portion of the Cost Estimate that it proposes to guarantee.

vi. A demonstration by LSI that it meets the financial test criteria of 40 C.F.R. § 264.143(f) with respect to the Cost Estimate, provided that all other requirements of 40 C.F.R. § 264.143(f) are satisfied.

2. LSI shall submit all original executed and/or otherwise finalized instruments to the EPA Region III Regional Hearing Clerk (3RC00), U.S. Environmental Protection Agency, Region III, 1650 Arch Street, Philadelphia, Pennsylvania 19103-2029 within thirty (30) days after date of execution or finalization as required to make the

documents legally binding. LSI shall also provide copies to the EPA Project Manager.

3. If at any time LSI provides financial assurance for completion of the work required under Section VI, "Work to be Performed" ("Work") by means of a corporate guarantee or financial test, LSI shall also comply with the other relevant requirements of 40 C.F.R. § 264.143(f), 40 C.F.R. § 264.151(f), and 40 C.F.R. § 264.151(h)(1) relating to these methods, and will promptly provide any additional information requested by EPA from LSI or a corporate guarantor within seven (7) calendar days of its receipt of such request from EPA or the corporate guarantor.

4. For purposes of the corporate guarantee or the financial test described above, references in 40 C.F.R. § 264.143(f) to "the sum of current closure and post-closure costs and the current plugging and abandonment cost estimates" shall mean "the sum of all environmental remediation obligations, including, but not limited to, obligations under the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9601 et seq., RCRA; the Underground Injection Control Program promulgated pursuant to the Safe Drinking Water Act, 42 U.S.C. §§ 300f et seq., and the Toxic Substances Control Act, 42 U.S.C. §§ 2601, et seq., and any other federal or state environmental obligation guaranteed by such company or for which such company is otherwise financially obligated in addition to the Cost Estimate.

5. LSI may combine more than one mechanism to demonstrate financial assurance for the Work to Be Performed under Section VI of this Order.

6. LSI may satisfy its obligation to provide financial assurance for the Work by providing a third party who assumes full responsibility for the Work and otherwise satisfies the obligations of the financial assurance requirements of this Order; however, that LSI shall remain responsible for providing financial assurance in the event such third party fails to do so and any financial assurance from a third party shall be in one of the forms provided in subparagraphs XVII.B.1.(i) through (vi) above.

7. If at any time EPA determines that a financial assurance mechanism provided pursuant to this Section XVII is inadequate, EPA shall notify LSI in writing. If at any time LSI becomes aware of information indicating that any financial assurance mechanism(s) provided pursuant to this Section is inadequate, LSI shall notify EPA in writing of such information within ten (10) days. Within ninety (90) days of receipt of notice of EPA's determination, or within ninety (90) days of LSI becoming aware of such information, LSI shall establish and maintain adequate financial assurance for the benefit of the EPA which satisfies all requirements set forth in this Section. Any and all financial assurance documents provided pursuant to this Order shall be submitted to EPA for review in draft form at least forty-five (45) days before they are due to be filed and shall be satisfactory in form and substance as determined by EPA.

8. LSI's inability or failure to establish or maintain financial assurance for completion of the Work shall in no way excuse performance of any other requirements of

this Order.

9. Modification of Amount and/or Form of Performance Guarantee

i. Reduction of Amount of Financial Assurance. If LSI believes that the Cost Estimate has diminished below the amount covered by the existing financial assurance provided under this Order, LSI may, at the same time that LSI submits the annual Cost Estimate, submit a written proposal to EPA for approval to reduce the amount of the financial assurance to equal the revised Cost Estimate.

ii. Change of Form of Financial Assurance. If LSI desires to change the form or terms of financial assurance, LSI may, at the same time that LSI submits the annual Cost Estimate, submit a written proposal to EPA for approval to change the form of financial assurance. The written proposal shall specify all proposed instruments or other documents required in order to make the proposed financial assurance legally binding and shall satisfy all requirements set forth in this Section. Within ten (10) days after receiving written approval of the proposed revised or alternative financial assurance, LSI shall execute and/or otherwise finalize all instruments or other documents required in order to make the selected financial assurance legally binding. LSI shall submit all executed and/or otherwise finalized instruments or other documents required in order to make the selected financial assurance legally binding to the EPA Region III Regional Hearing Clerk (3RC00), U.S. Environmental Protection Agency, Region III, 1650 Arch Street, Philadelphia, Pennsylvania 19103-2029, with a copy to EPA's Project Manager, as provided in Section XII "NOTIFICATIONS" above.

10. Release of Financial Assurance. LSI may submit a written request to the Director, Land and Chemicals Division that EPA release LSI from the requirement to maintain financial assurance under this Section once EPA and LSI have both executed an "Acknowledgment of Termination and Agreement to Record Preservation and Reservation of Rights" pursuant to Section XXIV "TERMINATION AND SATISFACTION" of the Order. The Director, Land and Chemicals Division shall notify LSI and the provider(s) of the financial assurance that LSI is released from all financial assurance obligations under this Order.

XVIII. OTHER CLAIMS

Nothing in this Order shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person, firm, partnership, or corporation, or other entity for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous constituents, hazardous substances, hazardous wastes, solid wastes, pollutants, or contaminants found at, taken to, or taken from the Facility.

XIX. OTHER APPLICABLE LAWS

All actions required to be taken pursuant to this Order shall be undertaken in accordance with the requirements of all applicable local, state, and federal laws and regulations. LSI shall obtain or require its authorized representatives to obtain all permits and approvals necessary under such laws and regulations.

XX. INDEMNIFICATION OF THE UNITED STATES GOVERNMENT

LSI agrees to indemnify and save and hold harmless the United States Government, its agencies, departments, agents, and employees, from any and all claims or causes of action arising from or on account of acts or omissions of LSI or its agents, independent contractors, receivers, trustees, and assigns in carrying out activities required by this Order. This indemnification shall not be construed in any way as affecting or limiting the rights or obligations of LSI or the United States under their various contracts. The United States shall not be deemed to be a party to any contract entered into by LSI for the purpose of carrying out any activities required by this Order.

XXI. NOTICE OF NON-LIABILITY OF EPA

EPA shall not be deemed a party to any contract involving LSI and relating to activities at the Facility and shall not be liable for any claim or cause of action arising from or on account of any act, or the omission of LSI, its officers, employees, contractors, receivers, trustees, agents or assigns, in carrying out the activities required by this Order.

XXII. SUBSEQUENT MODIFICATION

A. Except as provided in Paragraph C of this Section XXII, below, this Order may be amended only by mutual agreement of EPA and Respondents. Any such amendment shall be in writing, shall be signed by an authorized representative of each party, shall have as its effective date the date on which it is signed by EPA, and shall be incorporated into this Order.

B. Any reports, plans, specifications, schedules, other submissions and attachments required by this Order are, upon written approval by EPA, incorporated into this Order. Any noncompliance with such EPA-approved reports, plans, specifications, schedules, other submissions, and attachments shall be considered a violation of this Order and shall subject Respondents to the provisions of Section XIII, "DELAY IN PERFORMANCE/STIPULATED PENALTIES"

C. Minor modifications in the studies, techniques, procedures, designs or schedules utilized in carrying out this Order and necessary for the completion of the project may be made by written agreement of the Project Coordinators. Such modifications shall have as an effective date the date on which the agreement is signed by the EPA Project Coordinator.

D. No informal advice, guidance, suggestions, or comments by EPA regarding reports, plans, specifications, schedules, and any other writing submitted by Respondents shall be

construed as relieving Respondents of their obligation to obtain written approval, if and when required by this Order.

XXIII. SEVERABILITY

If any provision or authority of this Order or the application of this Order to any party or circumstance is held by any judicial or administrative authority to be invalid, the application of such provision to other parties or circumstances and the remainder of this Order shall not be affected thereby and shall remain in full force.

XXIV. TERMINATION AND SATISFACTION

The provisions of this Order shall be deemed satisfied upon LSI's receipt of written notice from EPA that LSI has demonstrated, to the satisfaction of EPA, that the terms of this Order, including any additional tasks determined by EPA to be required pursuant to this Order, have been satisfactorily completed. This notice shall not, however, terminate Respondents' obligation to comply with any continuing obligations hereunder including, but not limited to, Sections X, "RECORD PRESERVATION;" XVI, "RESERVATION OF RIGHTS;" XVIII, "OTHER CLAIMS;" XIX, "OTHER APPLICABLE LAWS," and XX, "INDEMNIFICATION OF THE UNITED STATES GOVERNMENT."

XXV. SURVIVABILITY/PERMIT INTEGRATION

A. Subsequent to the issuance of this Order, a RCRA permit may be issued to the Facility incorporating the requirements of this Order by reference into the permit.

B. No requirement of this Order shall terminate upon the issuance of a RCRA permit unless such requirement is expressly replaced by a requirement in the permit.

XXVI. ATTORNEYS' FEES

Respondents shall bear their own costs and attorneys fees.

XXVII. EFFECTIVE DATE/WAIVER OF HEARING

The effective date of this Order shall be the date on which a true and correct copy of this Order is received by Respondents. Because this Order was entered with the consent of all parties, Respondents waive their right to request a public hearing pursuant to Section 3008(b) of RCRA, 42 U.S.C. Section 6928(b).

XXVIII. COUNTERPARTS

This Order may be signed in any number of counterparts (including facsimile and electronic transmission counterparts), each of which shall be an original, with the same effect as if the signatures were upon the same instrument.

IT IS SO AGREED AND ORDERED:

THE UNDERSIGNED PARTY enters into this Administrative Order on Consent, Docket Number RCRA-03-2013-0105CA.

For EPA

By: _____ Date: 2.25.13

John A. Armstead
Director
Land and Chemicals Division
Region III, U.S. Environmental Protection Agency

THE UNDERSIGNED PARTY enters into this Administrative Order on Consent, Docket Number RCRA-03-2013-0105CA.

For Alcatel-Lucent USA Inc.

By: T D Morrison
V.P. Real Estate

Date: 2-7-13

THE UNDERSIGNED PARTY enters into this Administrative Order on Consent, Docket Number RCRA-03-2013-0105CA.

For LSI Corporation

By: _____ Date: 2/7/2013

THE UNDERSIGNED PARTY enters into this Administrative Order on Consent, Docket Number RCRA-03-2012-0269CA.

For LSI Corporation

By: _____ Date: 1/9/2013

Scott Houthuysen
Global Director, EH&S

Approved as to form by LSI Legal

THE UNDERSIGNED PARTY enters into this Administrative Order on Consent, Docket Number RCRA-03-2012-0269CA.

For Alcatel-Lucent USA Inc.

By: T D Morrison
V. P. Real Estate

Date: 1-29-13

RESOURCE CONSERVATION AND RECOVERY ACT
RECORD OF DECISION

FACILITY NAME AND LOCATION

AT&T Microelectronics
4500 Laburnum Avenue
Richmond, Virginia 23231

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected Corrective Measure for the AT&T Richmond Works Facility in Richmond, Virginia. This decision is based on the Administrative Record file for this facility.

DESCRIPTION OF THE CORRECTIVE MEASURE

This action addresses onsite and offsite groundwater contamination, and offsite surface water contamination.

The major components of the selected Corrective Measure are to implement pumping and treatment of groundwater from twelve (12) groundwater extraction wells and from the abandoned electrical man-hole, EM-4. AT&T also has the option of using the abandoned man-hole, EM-4, as a point of discharging treated groundwater upon receiving an EPA injection permit for this action.

DECLARATION

The selected Corrective Measure is necessary to protect human health or the environment from releases of hazardous waste within the meaning of Section 3008(h) of RCRA, 42 U.S.C. Section 6928(h), from the AT&T facility to the environment. The selected Corrective Measure will attain groundwater and surface water clean-up standards, will reduce or eliminate to the maximum extent possible further releases of hazardous waste, and provides for proper management of wastes generated during implementation of the Corrective Measure. Furthermore, the selected Corrective Measure will be effective and reliable, both in the long term and short term; will result in the reduction of toxicity, mobility or volume of hazardous waste; and will be implementable and cost-

effective in comparison to the other corrective measure alternatives presented in the EPA approved Corrective Measure Study for the Facility. Finally, the selected Corrective Measure utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

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

6/28/91
DATE

AT&T Richmond Works
4500 Laburnum Avenue
Richmond, VA 23231

Purpose of EPA's Record of Decision

On September 15, 1989, EPA and AT&T Technologies, Inc., now known as AT&T Microelectronics (AT&T) entered into a Consent Order pursuant to Section 3008(h) of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6928(h). Under the terms of this Consent Order, AT&T was required to complete an on-site and off-site investigation in order to determine the nature and extent of contamination from the AT&T Richmond Works located at 4500 Laburnum Avenue, Henrico County, Richmond, Virginia (Facility or Richmond Works) and to conduct a study which evaluates various clean-up alternatives.

AT&T has completed these investigations and has submitted to EPA for approval a Hydrogeological Investigation Draft Phase III Final Report, which is the functional equivalent of a RCRA Facility Investigation (RFI) report and a Corrective Measures Study (CMS), which evaluated the use of several remedial technologies. EPA has determined that the Hydrogeological Investigation reports satisfies all the conditions for both a RFI and CMS. In addition, eight (8) Corrective Measures Alternatives (CMAs) were evaluated in detail for contaminant remediation.

This Record Of Decision describes the eight CMAs and presents EPA's justification for selecting the preferred Corrective Measures Alternative for the Facility. This document will summarize the findings of the contaminant investigations and the Corrective Measures Study conducted by AT&T as well as EPA's rationale for its selection of the EPA preferred Corrective Measure.

On May 28, 1991, a Public Notice soliciting public comment regarding EPA's preliminary identification of CMA-6 as the preferred Corrective Measure appeared in both Richmond newspapers: the Richmond Times-Dispatch, and the Richmond News Leader. In addition, on June 26, 1991, EPA held a public meeting in the Eastern Government Center in Richmond, Virginia to respond to oral comments. As a result of these activities, EPA received written and oral comments. All comments received are addressed in this Record of Decision.

The Regional Administrator, EPA Region III, has made a final determination selecting CMA-6 as the Corrective Measure to be implemented at the AT&T Richmond Works Facility. This ROD presents EPA's justification for the selection of CMA-6.

Background

AT&T Richmond Works, is located in eastern Henrico County, Virginia. The Facility is bounded on the north by Interstate 64 (I-64), and on the southwest by South Laburnum Avenue. North of I-64 is Gillie Creek, which generally flows from east to west. A map showing the location of the Facility is provided as Attachment 1.

The Facility covers approximately 120 acres in a mixed residential, commercial, and industrial area. The primary business conducted at the Richmond Works is the manufacturing of printed circuit boards using a wide range of electroless/ electroplating, etching and coating processes.

In 1986, during the repair of a fire main, AT&T discovered what it believed to be releases of organic substances. In March 1987, Camp, Dresser and McKee ("CDM") was engaged by AT&T to conduct a hydrogeological investigation and analysis at the Facility. AT&T began soil gas, well water and surface water sampling in May 1987 ("Phase I" Investigation). The soil gas analyses showed the presence of 1,1,1-trichloroethane ("TCA") and methylene chloride ("MEC") near the solvent tank farm and the solvent recovery area of the Facility. The soil surrounding the fire main was excavated and pipes were replaced and in the latter case a sump in the solvent recovery area was repaired. Samples of groundwater from the Facility and surface water in Gillie Creek have shown to contain chlorinated organic compounds.

To date, AT&T has completed Phases I, II and III (the Phase II and III of the Hydrogeological Investigation were continuations of the Phase I Hydrogeological Investigation) of its Hydrogeologic Investigation, which included the installation of 35 groundwater monitoring wells on-site, and 2 groundwater monitoring wells off-site. After having satisfied all the requirements of a RCRA Facility Investigation (RFI) and a Corrective Measures Study (CMS) thru completion of the Phase I-III Hydrogeologic Investigation, EPA approved AT&T's Phase I, II, and III Hydrogeologic Investigation as the equivalent of an RFI/CMS for the Facility.

The results of the Hydrogeologic Investigations conducted by AT&T have shown that:

1. The Facility is underlain by two known water bearing zones which lie between clay layers. The surface clay layer extends approximately 15 feet beneath the surface, followed by the surficial water bearing zone that is an average of 20 feet in thickness. Beneath the surficial water bearing zone is a clay layer approximately 200 feet thick, underlain by the second water

bearing zone, located in the Patuxent Formation. Contamination from the Facility's previous operations have impacted the surficial water bearing zone, which is not used as a water supply. To date, the major producing aquifer in the Patuxent Formation, where the municipal water supply is drawn, has not been impacted.

2. The volatile organic compounds ("VOCs") found in soil and in groundwater consists of TCA, MEC, 1,1-dichloroethane ("DCA"), and 1,1-dichloroethene ("DCE"). The VOCs found in surface water near the Facility consist of TCA, DCA and DCE.

3. Soil, surface water, and groundwater have been impacted by VOCs. Based on sampling results from March 1989, the highest concentration of VOCs in groundwater was 1229 parts per million ("ppm"), based on sampling results from October, 1989, the highest concentration of VOCs in soil was 35 ppm, and based on sampling results from March, 1989, the highest concentration of VOCs in surface water was from an intermittent seep which had a concentration of 1.3 ppm. This intermittent seep is located in the sidewall of a natural drainage way to Gillie Creek that receives stormwater runoff from the Facility.

4. The area off-site of the Facility, north of I-64, adjacent to Gillie Creek, has been designated as wetlands. A biota assessment was conducted at these wetlands. This assessment revealed that there is no adverse effect on the wetlands from the release of VOCs from the Richmond Works.

Additional information regarding the characterization and distribution of VOCs in the groundwater, surface water, and the soil, may be found in the Administrative Record. A map showing the location of all monitoring wells and extent of groundwater contamination is provided as Attachment 2.

Scope of Corrective Action

The Corrective Measures Alternatives planned for the Facility will remediate the soil, groundwater, and surface water. The VOCs in the soil are below EPA health-based levels therefore the contaminated soil will be remediated by the flushing mechanism of infiltrated rain water. Groundwater will be remediated by pumping and treatment technology. Groundwater from the Facility recharges into Gillie Creek as surface water. Therefore Gillie Creek will be remediated when the groundwater is remediated.

Description of the Corrective Measure Alternatives

Initially AT&T evaluated five methods of remediating the contaminants at the Richmond Works. These five methods for remediation are: natural attenuation, barrier wall containment, groundwater pumping and treatment, soil gas extraction, and soil excavation and treatment. Upon evaluation of all these methods of remediation, AT&T concluded, with the concurrence of EPA, that groundwater pumping and treatment from the surficial water bearing zone alone is the preferred method of remediation, because the other technologies would be less effective in remediating groundwater at this Facility. With the exception of natural attenuation (i.e., the no action alternative), all eight (8) Corrective Measure Alternatives (CMAs) that AT&T proposed, utilize the groundwater pumping and treatment method of remediation.

Contaminated groundwater will be pumped from extraction wells and from the abandoned electrical man-hole in which VOCs are detected. This man-hole is of interest because it is immediately adjacent to the sump that had once been a source of VOCs in the environment. The treatment of contaminated groundwater will involve air-stripping, and to prevent cross-media contamination, the resultant off-gases from the air-stripper will be passed through a granulated activated carbon unit. The emissions from the air stripper and from the granulated activated carbon unit will comply with the requirements of the Clean Air Act, 42 U.S.C. §§ 7401-7642, as amended. The treated groundwater will be beneficially used on-site as makeup water in the following order of preference: 1) cooling towers; 2) boilers, and; 3) scrubbers.

In each of the groundwater pump and treat CMAs below, additional pumping from the abandoned electrical man-hole (EM-4) has been proposed because contaminated water collects in the man-hole. Upon the approval from the U.S. Environmental Protection Agency, AT&T may also use the abandoned man-hole, EM-4, as a point of injection of treated groundwater into the surficial water bearing zone. The injection of the treated groundwater into the surficial water bearing zone will increase hydraulic gradients near the source of contamination, will aid in the flushing of contaminants trapped within the contaminated soil, and may result in a shorter time for complete remediation at the Facility. Pumping contaminated groundwater from the electrical man-hole will cease when injection begins. However, until such permission is expressly obtained from EPA, AT&T shall remove contaminated water that collects inside the abandoned man-hole, EM-4, and treat it as described above.

CMA-1, the no action alternative, utilizes remediation through natural attenuation alone. It has been used as a reference for comparing the performance of the other seven CMAs. Each of the other seven CMAs (i.e., CMA-2, CMA-3, CMA-3A, CMA-3B, CMA-4, CMA-5, and CMA-6) are alternatives which require the pumping and treatment of groundwater. These CMAs differ in the number and in the configuration of extraction wells. A groundwater and surface water sampling and analyses program is also included in each CMA. The eight (8) alternatives are discussed in more detail below.

CMA-1

CMA-1, is an alternative for remediation that relies solely on natural attenuation. This alternative has not been selected by EPA because remediation through natural attenuation alone is the least effective of all the other seven CMAs. In addition, contaminated groundwater will continue to discharge into Gillie Creek.

CMA-2

The components of CMA-2 consist of: the extraction of groundwater from four (4) groundwater extraction wells located near the source of contamination and the extraction of water collected in the abandoned electrical man-hole, EM-4. An illustration of the orientation of the groundwater extraction wells for CMA-2 is shown in Attachment 3. This alternative is not recommended by EPA because the groundwater capture zone in this alternative is the smallest among all the other CMA's. Therefore, significant portions of the groundwater contaminant plume could not be captured and remediated. For this reason, CMA-2 has not been selected as EPA's preferred CMA.

CMA-3

CMA-3 consists of: the extraction of groundwater from four (4) groundwater extraction wells located near the source of contamination, the extraction of groundwater from three (3) groundwater extraction wells located near the northeastern boundary of the Richmond Works, and the extraction of water collected in the abandoned electrical man-hole, EM-4. An illustration of the orientation of groundwater extraction wells for CMA-3 is shown in Attachment 4. Based on computer generated groundwater modeling, this alternative, if implemented, could not capture contaminated groundwater in the northwestern portion of the groundwater contaminant plume. For this reason, CMA-3 has not been selected as EPA's preferred CMA.

CMA-3A

CMA-3A consists of: four (4) groundwater extraction wells located near the source of contamination, three (3) groundwater extraction wells located near the northeastern boundary of the Richmond Works, four (4) groundwater extraction wells located off-site on the boundary of I-64, directly opposite from the northwestern boundary of the Richmond Works, and the extraction of water collected in the abandoned electrical man-hole, EM-4. An illustration of the orientation of groundwater extraction wells for CMA-3A is shown in Attachment 5. Because the groundwater extraction wells are located very near the wetlands there exists a possibility that the wetlands, an ecologically sensitive area will be disturbed. Although, groundwater modeling demonstrates that this alternative will capture more contaminated groundwater than CMA-6, the orientation of the groundwater extraction wells will cause the destruction of the wetlands. Therefore this alternative has not been selected as EPA's preferred CMA.

CMA-3B

CMA-3B consists of: four (4) groundwater extraction wells located near the source of contamination, three (3) groundwater extraction wells located near the northeastern boundary of the Richmond Works, five (5) groundwater extraction wells located off-site in the wetlands by Gillie Creek, and includes the extraction of water collected in the abandoned electrical man-hole, EM-4. An illustration of the orientation of the groundwater extraction wells for CMA-3B is shown in Attachment 6. This remedy, if implemented will disturb the wetlands, which is an ecologically sensitive area. In addition, due to the natural erosion of the surficial water bearing zone near Gillie Creek, the surficial water bearing zone at the proposed location of the extraction wells is very thin (no more than several feet thick), which makes groundwater extraction infeasible. For these reasons, CMA-3B has not been selected as EPA's preferred CMA.

CMA-4

CMA-4 consists of: the extraction of groundwater from eight (8) groundwater extraction wells, to be spaced along the entire northern boundary of the Richmond Works, and the extraction of water collected in the abandoned electrical man-hole, EM-4. An illustration of the orientation of the groundwater extraction wells is shown in Attachment 7. This alternative has not been initially selected by EPA because groundwater modeling demonstrates that the remedy is not as effective in capturing contaminated groundwater near the source of the contamination as the other alternatives which include extraction wells that are located near the source of the contamination. Therefore, CMA-4

has not been selected as EPA's preferred alternative.

CMA-5

CMA-5 consists of: the extraction of groundwater from eight (8) groundwater extraction wells, in the same orientation as CMA-4, the extraction of groundwater from four (4) groundwater extraction wells near the source of contamination, and the extraction of water collected in the abandoned electrical man-hole, EM-4. An illustration of the orientation of the groundwater extraction wells is shown in Attachment 8. Based on computer generated groundwater modeling, the arrangement of groundwater extraction wells in CMA-5 would result in portions of the contaminant plume having very low hydraulic gradients. These areas with low hydraulic gradients, or "dead zones", would greatly lengthen the time it would take to remediate those areas. Hence, CMA-5 would be less effective than CMA-3 and CMA-6, and it has therefore not been selected by EPA as EPA's preferred CMA.

CMA-6

CMA-6 has the same number of groundwater extraction wells as CMA-5, but the orientation (location) of the groundwater extraction wells in CMA-6 has been optimized to produce more favorable groundwater hydraulic conditions. In addition, water collected in the electrical man-hole, EM-4, will be removed for treatment. An illustration of the orientation of the groundwater extraction wells for CMA-6 is shown in Attachment 9. Computer generated groundwater modeling shows that CMA-6 is more effective in capturing the groundwater contaminant plume than CMA-2, CMA-3, CMA-4 and CMA-5. Thus, CMA-6 has been selected as EPA's final corrective measure.

Clean-up Goals/Points of Compliance

The contaminated soil is below health-based levels but are above natural background levels. Therefore, soils will be remediated by natural attenuation. Clean-up goals have been established in order to determine when groundwater remediation has been completed. For the Facility, clean-up goals have been established that are either Maximum Contaminant Levels (MCLs) or 10^{-6} cancer risk levels. MCLs are federally enforceable drinking water standards developed under the Safe Drinking Water Act, 42 U.S.C. §§ 300f - 300j -11, as amended and codified in 40 C.F.R. Part 141. The 10^{-6} cancer risk based level represents the concentration of a carcinogen such that a person of average weight drinking two liters/day of water containing that concentration of the contaminant would have no more than a one in one million chance of developing cancer from drinking the water during a 70-year life span.

When establishing clean-up goals, it is also necessary to identify the groundwater monitoring wells, and surface water locations at which the compliance with the goals will be measured. These points of compliance shall be: monitoring wells #10, #17, and #28; surface water stations #15, #21, and #67; and Henrico County Municipal Well #143-20.

The following table illustrates the clean-up goals for the four contaminants in groundwater and surface water.

Contaminant	Clean-up goal (in ppm)	Rationale
TCA	0.200	MCL
DCE	0.007	MCL
MEC	0.005	10^{-6} Cancer Risk
DCA	0.0004	10^{-6} Cancer Risk

EPA acknowledges that, due to the high concentrations of VOCs in the groundwater and the kinetics of chemical and physical desorption of contaminants in soil and groundwater, it may be technically impossible to attain the clean-up goals. It is quite possible that concentrations of VOCs in the groundwater may reach a level at which, regardless of the pumping and treatment that is undertaken and the length of time pumping and treatment is implemented, an equilibrium concentration of VOCs in the groundwater is attained. This equilibrium concentration may exceed the required clean-up goal. To account for this possibility, EPA has provided AT&T the opportunity to petition EPA to modify the clean-up goal as described below.

If after five (5) years of groundwater pumping and treatment, concentrations of TCA, DCE, MEC, and DCA in groundwater have remained constant, AT&T may petition EPA to revise the clean-up goals. In such a case, an acceptable clean-up goal may be a stable VOC concentration in which the change in VOC concentration over time is negligible. If a stable concentration of a VOC in groundwater is reached, a study will be conducted by AT&T to determine the effect that the remaining VOC's have on groundwater quality at the downgradient property boundary.

After every five (5) year period of groundwater pumping and treatment, EPA shall evaluate the effectiveness of this Corrective Measure. Based on EPA's evaluation, EPA may require AT&T to perform additional studies and/or to perform modifications to the existing Corrective Measure. In the event that EPA requires AT&T to perform additional studies and/or to perform modifications to the existing Corrective Measure, EPA will provide an opportunity for public comment prior to the initiation of change(s) to the existing Corrective Measure.

Health Risk and Length of Time Needed for Remediation of CMA-6

Due to the high VOC concentrations in the groundwater and the kinetics of desorption, it is very difficult to predict exactly when the clean-up goals will be achieved. However, based on computer generated groundwater modeling, AT&T predicts that CMA-6 would take between 23-25 years of continuous pumping and treatment of groundwater before the clean-up goals, as discussed above, can be achieved. Computer modeling predicts that surface water will attain clean-up goals within 6 months of the implementation of CMA-6.

EPA has determined that CMA-6 is protective of human health and the environment. Risk of the groundwater contaminant plume impacting human health and/or the environment will be greatly reduced by virtue of the capture zone created by CMA-6. Of the CMAs proposed by AT&T, as discussed above, CMA-6 is the most effective means of remediating groundwater at the Facility.

Actual or threatened releases of hazardous constituents from this Facility, if not addressed by the preferred Corrective Measures Alternative or another CMA may present a current or potential threat to human health and the environment.

Preferred Corrective Measure Alternative and EPA's Rationale for Selection of this Corrective Measure

AT&T recommended CMA-6 or CMA-3 as its preferred CMA. Based on the decision criteria that are identified in more detail below, EPA has determined that CMA-6 will be protective of human health and the environment.

EPA prefers CMA-6 because it utilizes proven technologies and is protective of human health and the environment. EPA is also confident that this corrective measure can be effectively employed to remediate the groundwater contaminant plume, surface water and contaminated soil at the Richmond Works.

A more detailed evaluation of CMA-6 is provided below. The evaluation is based upon the following criteria: performance, reliability, implementability, health and safety, environmental, and cost.

1. Performance: The pump and treat system described in CMA-6 will utilize twelve (12) groundwater extraction wells. According to computer generated modeling, CMA-6 will create a groundwater capture zone of 157 acres, and, after achieving the clean-up goals, is expected to recover a total of 243.8 gallons of VOCs. Water that infiltrates through the soil through precipitation will also help remove VOCs that are trapped in the soil.

2. Reliability: The selected alternative of pump and treat with air stripping for VOC removal from groundwater is a proven technology. Its reliability has been demonstrated at numerous other facilities. Due to the relatively simple nature of the pump and treat system, non-operation durations resulting from system failures will be minimal.

3. Implementability: Hydrologic and operational conditions at the Facility are ideal for the use of a pump and treat system. The shallow nature of the surficial water bearing zone (approximately 20 feet thick) and the relative ease of drilling into the soil for well installation allows CMA-6 to be implemented quickly. In addition, the existence of an air stripper and carbon adsorption unit to treat the air emissions which were in use prior to AT&T's conversion to aqueous based processes, will drastically reduce the amount of construction for the treatment units.

4. Health and Safety: The removal of VOCs in groundwater, will also reduce the levels of VOCs in Gillie Creek and in the soil. By eliminating potential routes of exposure, human health and safety will be enhanced. To prevent cross-media contamination, the off-gases from the air-stripper will be passed through an activated carbon unit prior to release into the atmosphere. The emissions from the air stripper and the granulated activated carbon unit will meet the requirements of the Clean Air Act. In addition, a groundwater and surface water sampling program will be initiated to evaluate the effectiveness of CMA-6.

5. Environmental: Operation of the on-site pump and treat system will minimize the adverse impact of the VOC contamination on the environment. The overall level of contamination and the size of the contaminated areas will be significantly reduced. This reduction will serve as a benefit to current and future users of the groundwater resources within the immediate area.

6. Costs: The total estimated capital and annual operation and maintenance costs associated with CMA-6 will be $850,675 and $328,670, respectively. In addition, the estimated present value cost of implementing CMA-6 for thirty years is $4.55 million.

Public Comments and Agency's Responses

During the public comment period from May 28, 1991, to June 26, 1991, EPA received two letters commenting on EPA's Statement of Basis for this Facility. These two letters are attached with this Record of Decision, as Attachment 10. At the public meeting in Richmond, Virginia on June 26, 1991, EPA also received oral comments. These comments and EPA's respective responses to both

the oral and written comments are as follows.

Henrico County's Oral and Written Comment:

Henrico County, in a letter to EPA (Attachment 10), stated that the county has "reviewed the preferred corrective measure alternative, find it to be acceptable, and urge that EPA approve the preferred alternative". At the public meeting, Mr. Haywood Wigglesworth, a representative of Henrico County, speaking on behalf of the President of the Board of Supervisors of Henrico County, read the letter that was sent to EPA. Mr. Wegglamt also expressed his own personal view which mirrored the statement made by the Board of Supervisors.

EPA's Response to Henrico County's Comment:

EPA acknowledges Mr. Wigglesworth and Henrico County's findings, and is finalizing CMA-6 as the final selected remedy.

AT&T's Written Comments:

AT&T, in a letter to EPA, made five comments on the Statement of Basis. This letter is found in Attachment 10 to this Record of Decision. These comments are:

1. On the second last paragraph on page 2 of EPA's Statement of Basis, the words, "The soil surrounding the solvent tank farm..." should be replaced with, "The soil surrounding the fire main...".

2. In paragraph 3 on page 3 of EPA's Statement of Basis, the sentence, "That seep is located in a storm drain which feeds into Gillie Creek", should be replaced with, "This intermittent seep is located in the sidewall of a natural drainage way to Gillie Creek that receives stormwater runoff from the facility."

3. In the beginning of paragraph 3 of page 4 of EPA's Statement of Basis, to provide additional information, a substitution is suggested to replace the first two sentences. The substitution is, "Contaminated groundwater will be pumped from extraction wells and from an abandoned electrical manhole in which VOCs are detected. This manhole is of interest because it is immediately adjacent to the sump that had once been a source of VOCs in the environment."

4. In the last sentence of paragraph of page 4 of EPA's Statement of Basis, implies that treated groundwater will preferentially be fed to the scrubbers, which is not the case. The first preference is to use treated groundwater as makeup water in the cooling towers. Therefore, the following sentence

should be substituted: "Treated groundwater will be beneficially used on-site as makeup water in the following order of preference: 1) cooling towers, 2) boilers, and 3) scrubbers."

5. "The proposed clean-up goal of DCA. 0.0004 ppm is below the detection limit and well below the practical quantitation level for this compound."

EPA's Response to AT&T's Comments:

EPA has inserted AT&T's letter of comments in Attachment 10 of this Record of Decision. The following are EPA's responses to each of AT&T comments.

1. In this Record of Decision, the words "solvent tank farm" have been replaced with, "fire main".

2. The sentence, "That seep is located in a storm drain which feeds into Gillie Creek.", is not meant to suggest that VOCs are being discharged to the storm sewer. In fact, the description, "storm sewer" was never mentioned in the Statement of Basis. It is recognized that the seep is located on the sidewall of an unlined passage way for storm water. However, in the spirit of cooperation, EPA has made the change AT&T requested in this Record of Decision.

3. For clarification purposes, AT&T's suggested substitution has been incorporated into this Record of Decision.

4. The sentence, "The treated groundwater will be fed into the Facility's existing air scrubbers and/or boilers, and will be used as non-contact cooling water in the existing cooling towers.", does not imply that treated groundwater will be preferentially be fed to the scrubbers. However, in the spirit of cooperation, EPA has made the change AT&T requested in this Record of Decision.

5. AT&T's statement that "The proposed clean-up goal of DCA. 0.0004 ppm is below the detection limit and well below the practical quantitation level for this compound.", is not true. For example, the detection level for 1,1-DCA is 0.00007 ppm when either EPA Method 601 or 8010 is used. In addition, when either EPA Method 601 or 8010 is used, the practical quantitation limit should also not exceed 0.00035 ppm. Thus, the proposed clean-up goal of 0.0004 ppm is within the detection limit and within the practical quantitation limit for this compound.

Oral Comments From AT&T's Contractor:

Mr. Christopher Clarkson from CDM, an AT&T contractor, made two oral comments. These two comments are:

1. What was meant by the EPA statement, "The Reasonable Maximum Exposure scenario of drinking groundwater is 8.7 $X10^{-1}$", and how the risk is related to the MCL.

2. Mr. Clarkson remarked that the Henrico County municipal well would never be impacted by VOCs due to the fact that the municipal well that is extracting from the deep aquifer, is isolated from the surficial aquifer.

EPA's Response to AT&T's Contractor:

The following were responses made to AT&T's contractor:

1. The Reasonable Maximum Exposure level was calculated from the arithmetic average of the analytical results obtained from the three most contaminated monitoring wells at Richmond Works. In accordance with EPA risk assessment guidance, this averaged concentration level was then used to determine the Reasonable Maximum Exposure level.

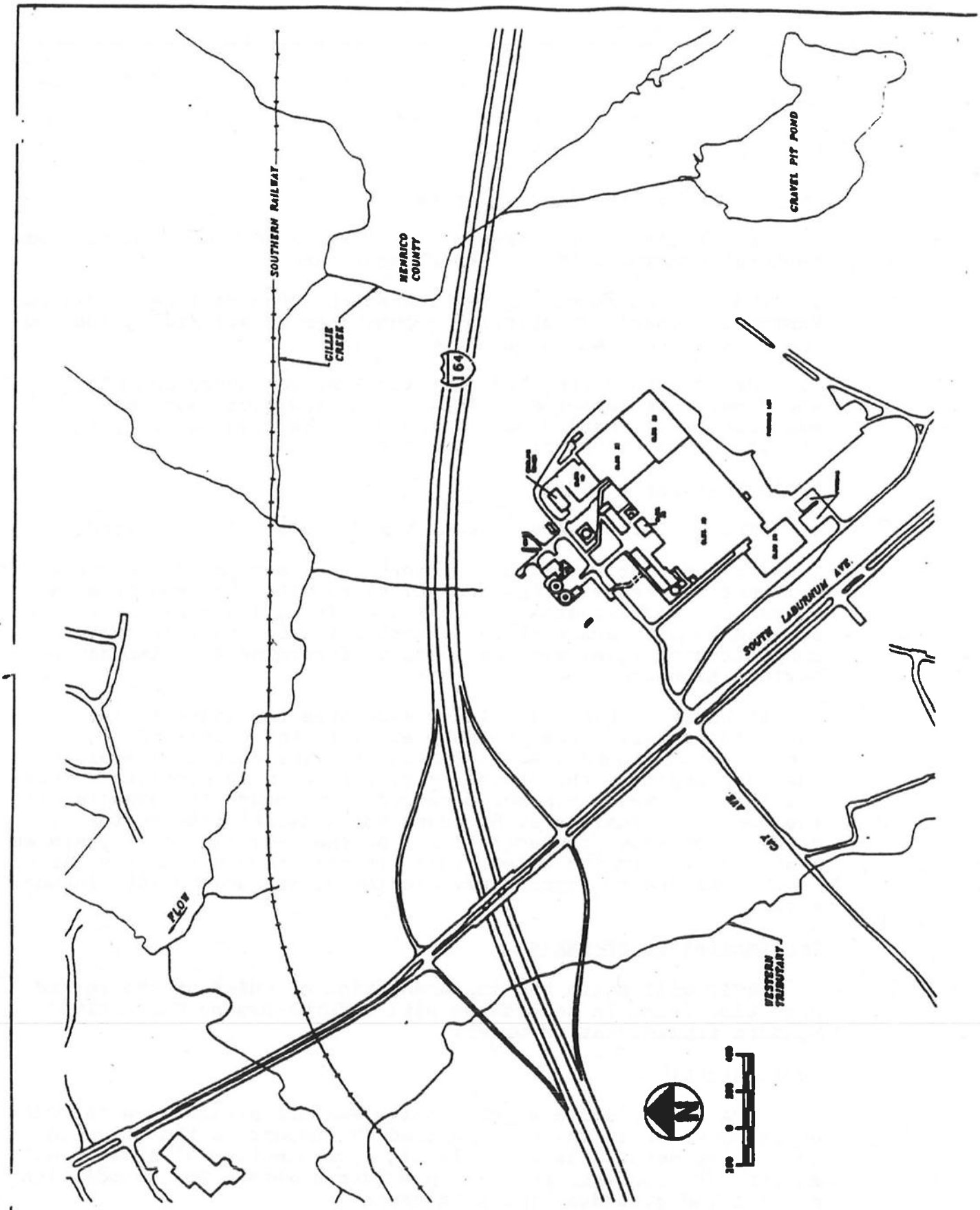
2. Although a thick clay layer separates the contaminated surficial aquifer from the deep aquifer, the chance of contaminated groundwater migrating from the surficial aquifer to the deep aquifer, though unlikely, remains a possibility. This possibility, which has not occurred, may occur, for example, if the deep well casings at Richmond Works deteriorate to form a pathway for cross contamination. As the deep aquifer is used as a source of drinking water, this scenario though unlikely, is one of the reasons to support remediation of groundwater at Richmond Works.

Implementation of CMA-6

AT&T will begin the implementation of CMA-6 at the agreed upon time-frame in accordance with a forth-coming Corrective Measure Implementation Order.

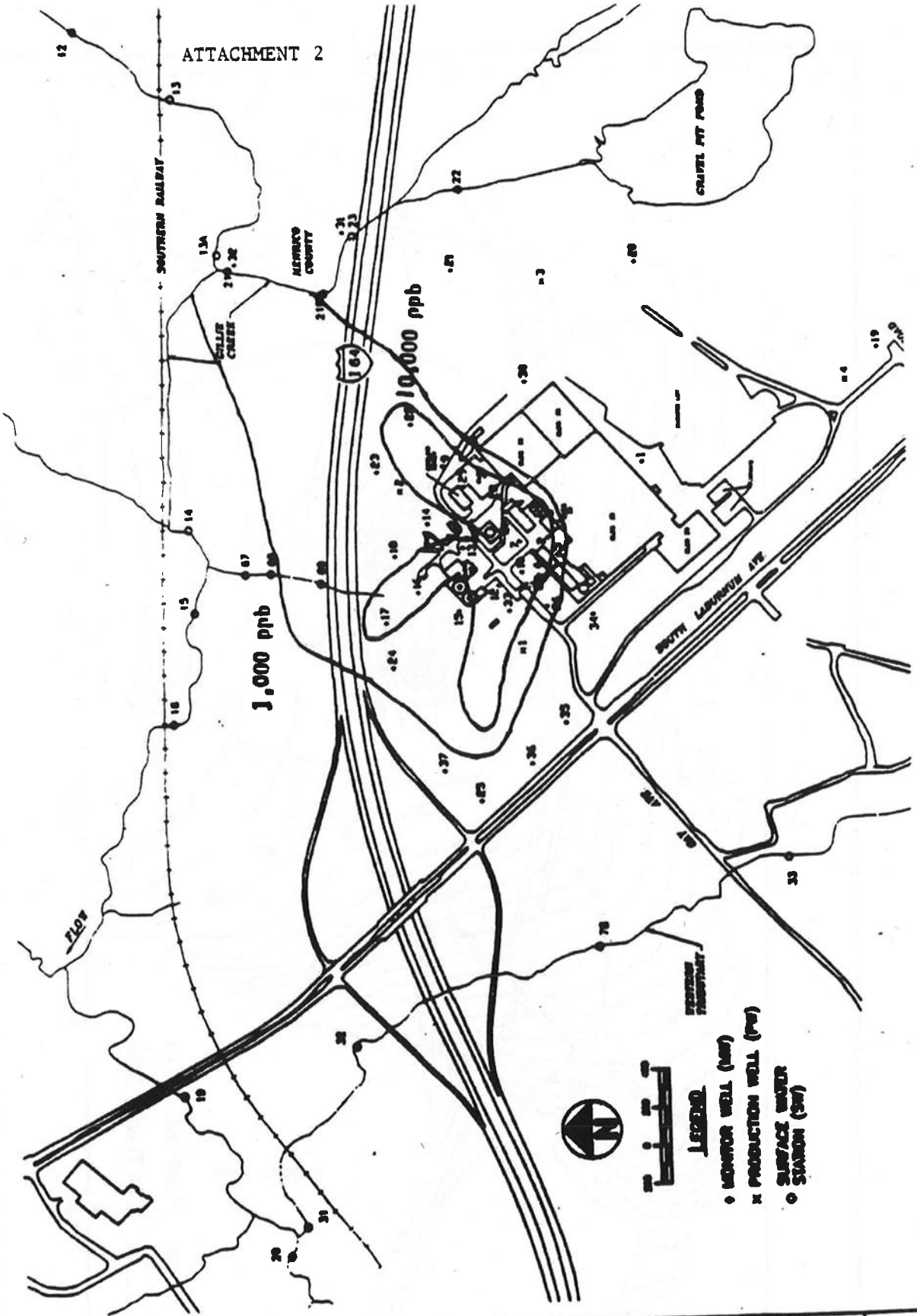
Declaration:

EPA hereby declares Corrective Measure Alternative #6 (CMA-6) as provided in the EPA approved CMS Report as the selected Corrective Measure is not only highly protective of human health and the environment, but also provides a method for remediation of soil and groundwater contaminants.



CDM environmental engineers, scientists, planners & management consultants	AT&T RICHMOND WORKS	Figure No.
	RICHMOND WORKS VICINITY MAP	I-1

ATTACHMENT 2



CDM environmental engineers, scientists, planners & management consultants	AT&T RICHMOND WORKS	Figure No.
	APPROXIMATE DISTRIBUTION OF VOCs IN GROUNDWATER	I-2

ATTACHMENT 3

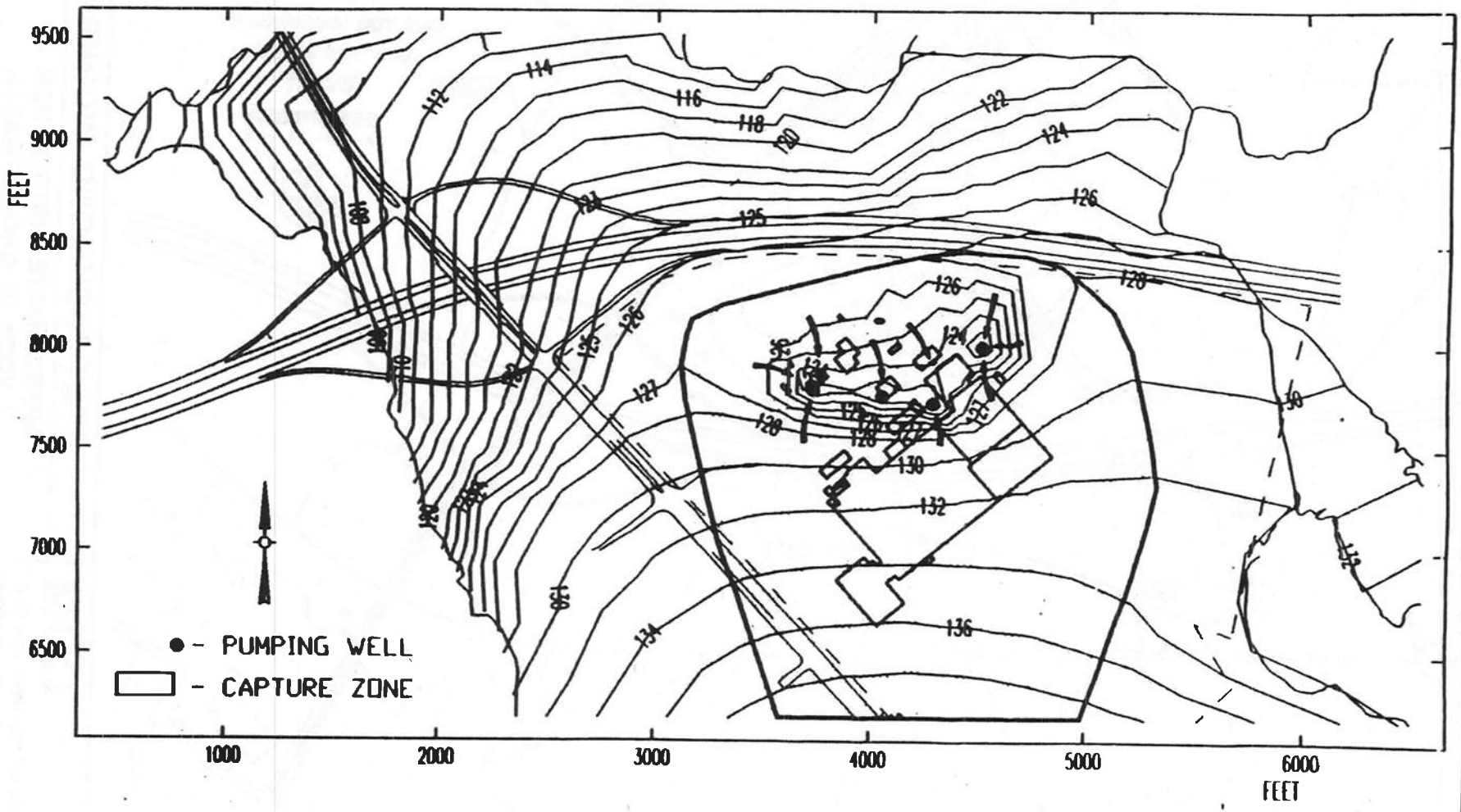


Figure No.	AT&T RICHMOND WORKS ALTERNATIVE 2 WATER SURFACE ELEVATIONS (FEET-NGVD) SOURCE WELLS ONLY WITH CAPTURE ZONES	CDM
3		

ATTACHMENT 4

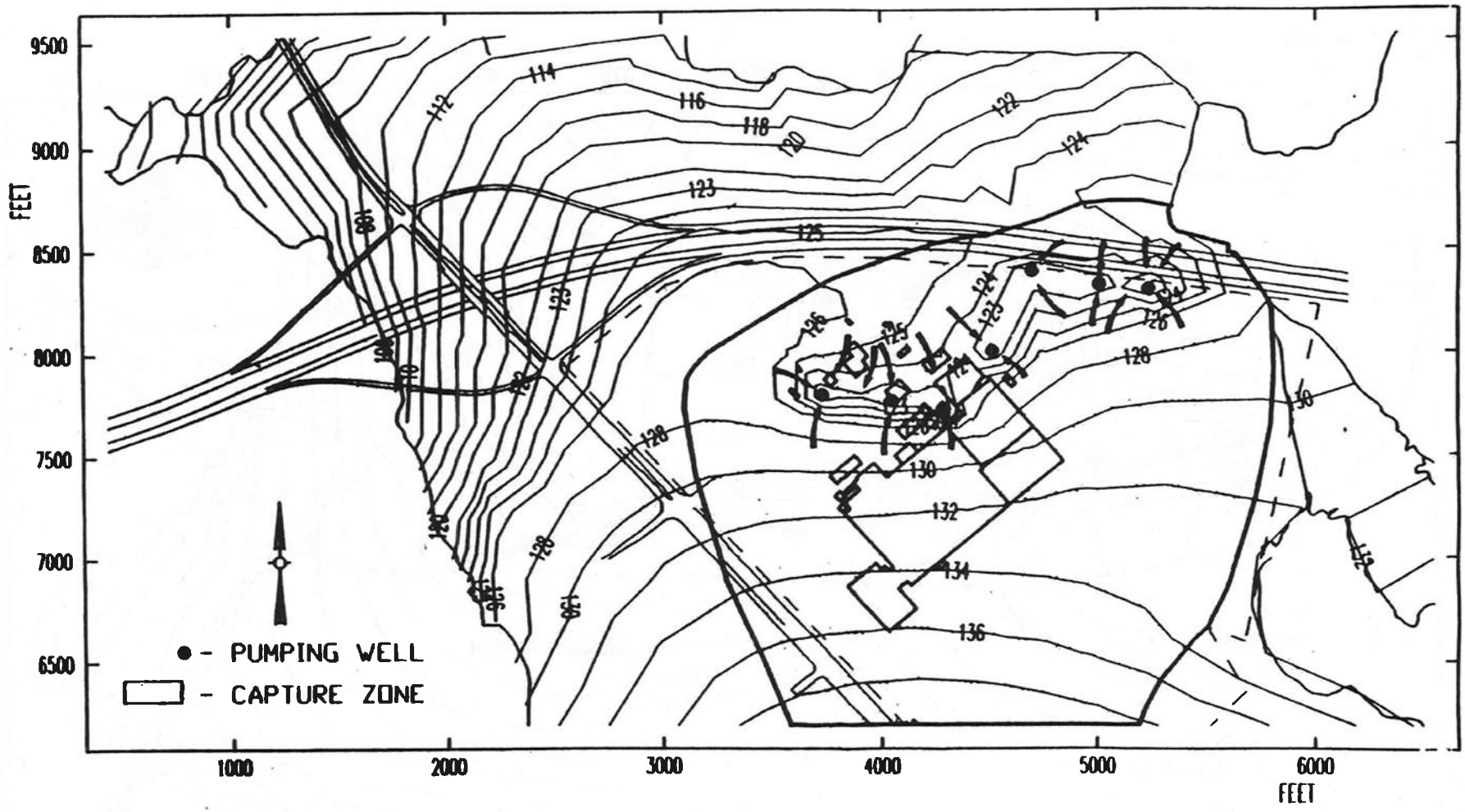
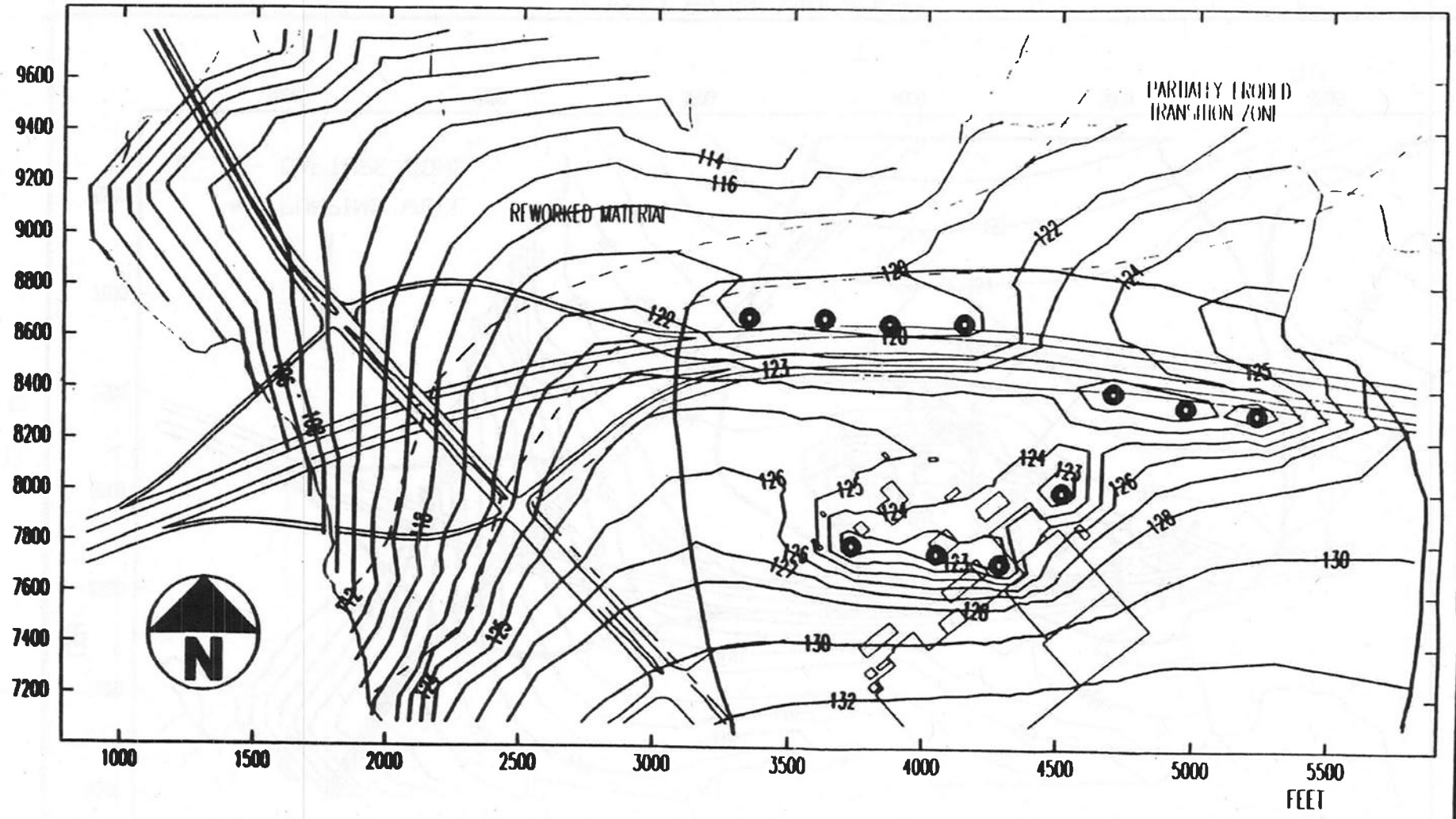


Figure No.	AT&T RICHMOND WORKS ALTERNATIVE 3 WATER SURFACE ELEVATIONS (FEET-NGVD) SOURCE WELLS AND GILLIE PLUME WELLS WITH CAPTURE ZONES	CDM
4		

ATTACHMENT 5



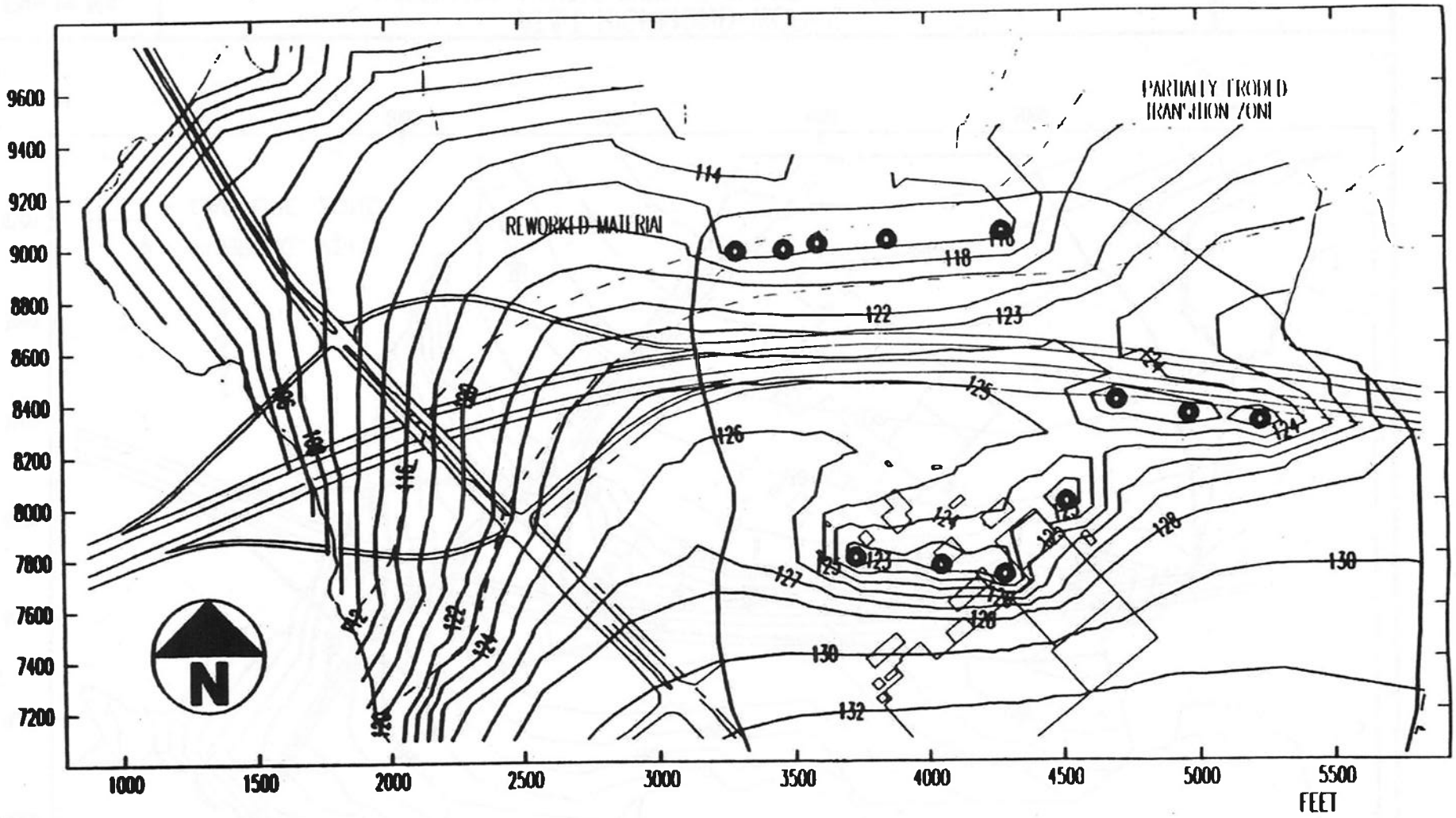
CDM

AT&T RICHMOND WORKS

ALTERNATIVE 3A–WATER SURFACE ELEVATIONS (FEET–NGVD)
WITH CAPTURE ZONES

FIGURE NO.
2-5

ATTACHMENT 6



CDM

AT&T RICHMOND WORKS

ALTERNATIVE 3B–WATER SURFACE ELEVATIONS (FEET–NGVD)
WITH CAPTURE ZONES

FIGURE NO.
2-6

ATTACHMENT 7

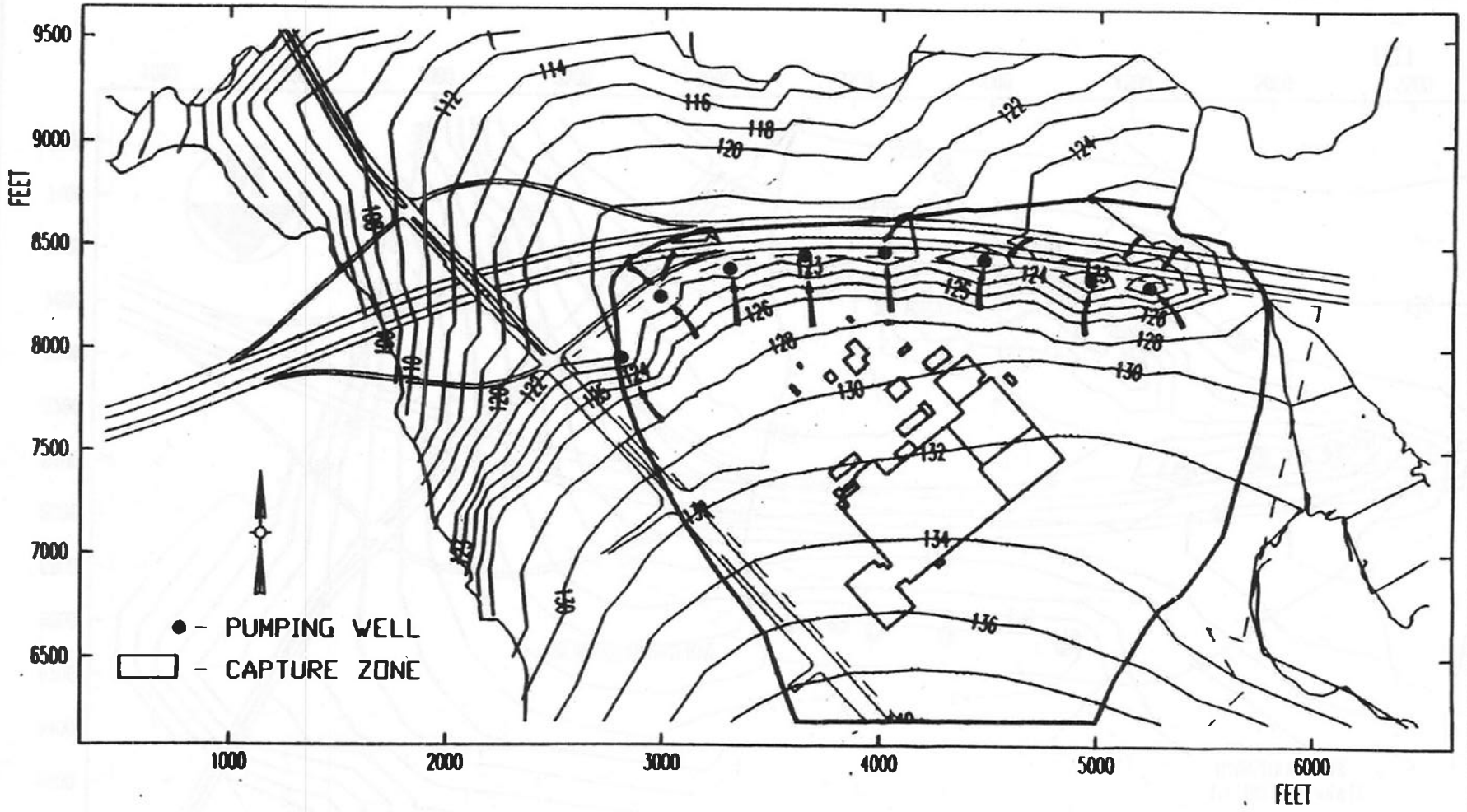


Figure No.	AT&T RICHMOND WORKS ALTERNATIVE 4 WATER SURFACE ELEVATIONS (FEET-NGVD) BOUNDARY WELLS ONLY WITH CAPTURE ZONES	CDM
5		

ATTACHMENT 6

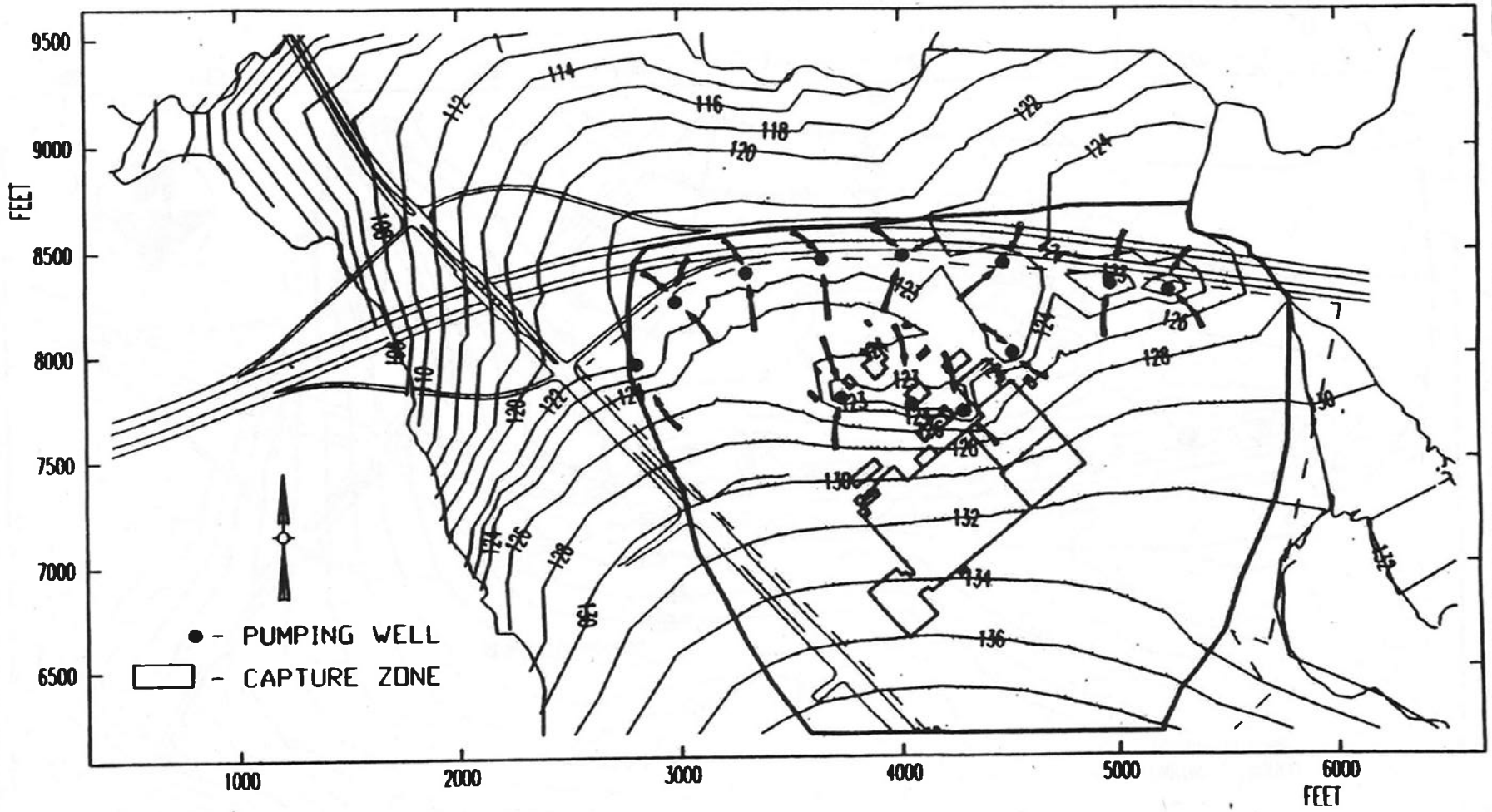
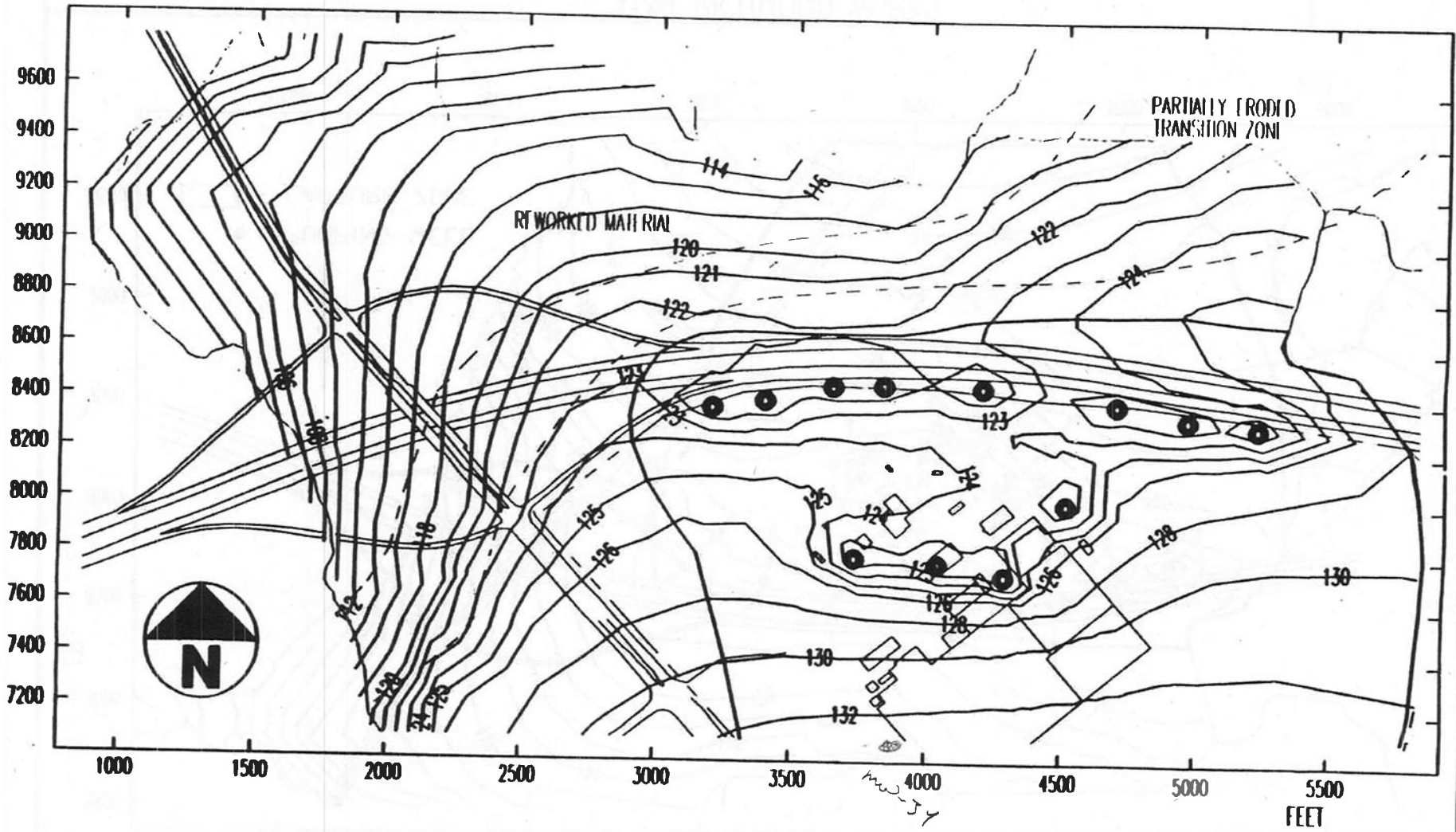


Figure No.	AT&T RICHMOND WORKS ALTERNATIVE 5 GROUNDWATER ELEVATIONS (FEET-NGVD) SOURCE WELLS AND BOUNDARY WELLS WITH CAPTURE ZONES	CDM
6		

ATTACHMENT 9



CDM

AT&T RICHMOND WORKS

ALTERNATIVE 6–WATER SURFACE ELEVATIONS (FEET–NGVD) WITH CAPTURE ZONES

FIGURE NO. 2-7

THIRD EXPLANATION OF SIGNIFICANT DIFFERENCES
FORMER LUCENT TECHNOLOGIES RICHMOND WORKS FACILITY
RICHMOND, VIRGINIA

I. INTRODUCTION

On July 9, 2009, EPA published a proposed Third Explanation of Significant Differences ("ESD") to explain to the public why it proposed modifying the selected corrective measure for the former Lucent Technologies Richmond Works facility ("Facility") to require institutional controls and access; to summarize the information that supports the modification, and to affirm that the selected corrective measure, as modified, is consistent with the criteria EPA uses to evaluate corrective measures under the RCRA Corrective Action Program.

Consistent with public participation provisions under RCRA, EPA requested comments from the public on the ESD. The thirty (30)-day public comment period began on July 9, 2009 and ended on August 10, 2009. Based on a comment provided by Laburnum Investment, LLC ("Laburnum") during the public comment period, EPA delayed finalizing the ESD to allow for an evaluation of whether vapor intrusion controls are necessary in existing buildings at the Facility. In December 2010, AECOM, on behalf of LSI Corporation, submitted an Indoor Air Sampling Report ("Report") to EPA for review and approval. EPA approved the Report on December 29, 2010 and determined that vapor intrusion controls are not necessary in any of the existing buildings.

In addition, based on comments received during the public comment period, EPA is making minor modifications to and clarifying certain aspects of the ESD as described in more detail in Attachment A, PUBLIC COMMENTS AND EPA RESPONSES. Section III, "DESCRIPTION OF THIRD SIGNIFICANT DIFFERENCES AND THE BASIS FOR CURRENT CHANGES TO THE SELECTED CORRECTIVE MEASURE," below, incorporates those minor modifications and clarifications.

This ESD and the documents supporting its issuance will become part of the Administrative Record for the Facility, which is located at the EPA Region III RCRA Records Center, 1650 Arch Street, Philadelphia, Pennsylvania.

II. SUMMARY OF SITE HISTORY, CONTAMINATION AND THE SELECTED REMEDY

The Facility is located on approximately 120 acres in eastern Henrico County, about five miles east of Richmond, Virginia. The Facility was constructed in approximately 1972 by Western Electric Co., a division of American Telephone & Telegraph ("AT&T"). AT&T manufactured printed circuit boards at the Facility and, during its manufacturing operations, used and stored chlorinated solvents at the Facility.

In 1986, during the repair of a fire main, AT&T discovered releases of chlorinated solvents. The soil surrounding the fire main was excavated, pipes were replaced and a sump in

the former solvent recovery area of the plant was repaired. In 1989, the large-scale storage and use of methylene chloride ("MEC") and 1,1,1 trichloroethane ("1,1,1-TCA") at the Facility was discontinued when it was discovered that those contaminants were in the shallow groundwater table.

Subsequently, on June 28, 1991, EPA issued a Record of Decision ("RCRA ROD") for the Facility requiring, among other things, the installation, operation and maintenance of a groundwater treatment system. The RCRA ROD also establishes the following clean-up goals for the contaminants in groundwater at the Facility:

Contaminant	Clean-up Goal (micrograms/liter)
1,1,1-TCA	200.0
1,1-DCE	7.0
MEC	5.0
1,1-DCA	0.4

On February 13, 1992 and again on December 11, 1992, EPA issued an Explanation of Significant Differences ("1992 ESDs") to the RCRA ROD, documenting, among other things, a change to the cleanup goal for 1,1-DCA, from 0.4 micrograms per liter to 4.0 micrograms per liter.

In 1996, AT&T assigned the assets of the Facility to Lucent Technologies, Inc. ("Lucent"), a newly-formed, wholly-owned subsidiary of AT&T. In September 24, 1996, EPA under the authority of Section 3008(h) of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. Section 6928(h), issued an Initial Administrative Order, which became final on October 24, 1996 ("Order"), to Lucent requiring Lucent to complete the construction of the groundwater remediation system, as specified in the RCRA ROD and as modified by the 1992 ESDs, and to operate and maintain the groundwater remediation system.

While Lucent remains the named Respondent under the Order, and, therefore, is responsible for complying with all terms and conditions of the Order, sometime in 1996, Lucent sold the Facility to Viasystems Technologies Corporation ("Viasystems"). Viasystems ceased manufacturing operations at the Facility sometime in June 2001. The Facility property remained idle for several years and on August 23, 2006, Viasystems sold the Facility to Laburnum Investments, LLC, a subsidiary of Forest City Commercial Construction Group, for redevelopment into the White Oak Village Shopping Center.

In February 2001, Lucent created a new company named Agere Systems Inc. ("Agere"). While Lucent is responsible to EPA for complying with all terms and conditions of the Order, Agere contractually agreed to perform the operation and maintenance of the groundwater remediation system on behalf of Lucent. On April 2, 2007, Agere was acquired by LSI Corporation ("LSI"). As part of this acquisition, LSI agreed to continue the operation and maintenance of the groundwater remediation system on behalf of Lucent. Currently, LSI operates the groundwater remediation system under the oversight of EPA and the Virginia

Department of Environmental Quality ("VDEQ").

III. DESCRIPTION OF THIRD SIGNIFICANT DIFFERENCES AND THE BASIS FOR CURRENT CHANGES TO THE SELECTED CORRECTIVE MEASURE

This ESD modifies the selected corrective measure, as modified by the 1992 ESDs, to include institutional controls and access.

1. Institutional Controls

Given that some residual contamination remains on-site, in order to protect human health and the environment and maintain the integrity of the selected corrective measure as described in the RCRA ROD, as modified by the 1992 ESDs, EPA has determined that institutional controls, in the form of deed notices, restrictive covenants, enforceable orders and/or other mechanisms, are needed to ensure the following:

(a) that prospective purchasers of Facility property are notified of the environmental conditions at the Facility and of EPA's selected corrective measure, as modified by the 1992 ESDs, for the Facility;

(b) that EPA will be provided with a "Certified, True and Correct Copy" of any instrument that conveys any interest in the Facility property or any portion thereof;

(c) that the Facility property will not be used in a way that will adversely affect or interfere with the integrity and protectiveness of the selected corrective measure, as modified by the 1992 ESDs, including but not limited to the groundwater treatment system and associated wells and piping;

(d) that no new structure will be constructed over the contaminated groundwater plume or the 100-foot buffer zone around the contaminated groundwater plume, unless a vapor barrier designed to prevent exposures to any vapors emanating from the groundwater plume is installed in the new structures or unless it is demonstrated to EPA that a vapor barrier is not necessary to protect human health or the environment and EPA provides prior written approval for construction without a vapor barrier;

(e) that Facility property will not be used for residential purposes unless it is demonstrated to EPA that such use will not pose a threat to human health or the environment and EPA provides written approval for such use;

(f) on Facility property located above the groundwater plume or the 100-foot buffer zone around the contaminated groundwater plume, that there will be no earth moving activities, including soil excavation and drilling, below the water table unless it is demonstrated to EPA that such activities will not pose a threat to human health or the environment or adversely affect or interfere with the selected corrective measure, as modified by the 1992 ESDs, and EPA provides prior written approval to conduct such activities;

(g) that groundwater at the Facility will not be used for any purpose other than to implement the selected corrective measure, as modified by the 1992 ESDs, unless it is demonstrated to EPA that such use will not pose a threat to human health or the environment or adversely affect or interfere with the selected corrective measure, as modified by the 1992 ESDs, and EPA provides prior written approval for such use;

(h) that no new wells will be installed on Facility property unless it is demonstrated to EPA that such wells are necessary to implement the selected corrective measure and EPA provides prior written approval to install such wells;

(i) that surveys are provided for: (1) the perimeter constituting the legal boundary of the Facility, (2) all subdivided parcels within the perimeter of the Facility and (3) the horizontal extent of the contaminated groundwater plume originating from the Facility. These geographic areas represent separate polygons which shall be described and provided to EPA and VDEQ in the following ways:

- Survey description (metes & bounds); and,
- Longitude/latitude of vertices of each polygon (in decimal degrees to at least seven decimal places, using a World Geodetic System (WGS) 1984 datum, and indicating west longitude as a negative number);

(j) that notification to prohibit well drilling under Virginia's Private Well Regulations, 12VAC 5-630-380, will be provided to the Henrico Health Department in writing describing the nature and extent, including a map, survey description, and geographic coordinates, of the Facility-related contaminated groundwater located on Facility property and off-site. The notice will be updated every two years to reflect the latest plume boundary. A copy of the notification will be provided to EPA and VDEQ at the same time as, and may be incorporated into, the Bi-Annual Operations and Assessment Report; and

(k) that compliance with institutional controls implemented for the Facility shall be evaluated on a biennial basis. A report documenting the findings of the evaluation shall be provided to EPA and VDEQ.

The institutional controls will remain in effect until the groundwater clean-up goals as set forth in the ROD, as modified by the 1992 ESDs, for the Facility have been obtained, and an instrument signed by EPA and VDEQ, stating that such goals have been obtained, has been recorded in the records of the Recorder's Office for Henrico County.

2. Access

EPA will be requiring that the current Facility owners and lessees, and their successors, provide Lucent, EPA, the VDEQ, and their representatives, with access to the Facility at all reasonable times for the purpose of conducting any activity related to the implementation,

maintenance and/or monitoring of the selected corrective measure, as modified. Access shall be provided via easements, real covenants, enforceable orders and/or other mechanisms requiring such access.

IV. SUPPORT AGENCY REVIEW

VDEQ has been consulted regarding the modification to the selected corrective measure for the Facility as described above and concurs with this ESD.

V. AFFIRMATION OF DECLARATION

The selected corrective measure, as modified by the 1992 ESDs and this Third ESD remains appropriate and protective of human health and the environment.

VI. ADMINISTRATIVE RECORD

The Administrative Record supporting the issuance of this ESD will be available for public review on Mondays through Fridays, from 9:00 a.m. to 5:00 p.m., by contacting the EPA Project Manager, Mr. Russell Fish, at:

U.S. Environmental Protection Agency
Region III (3WC31)
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Telephone: 215-814-3226

5/16/11
Date

Abraham Ferdas, Director
Land and Chemicals Division
U.S. EPA Region III

ATTACHMENT A
RESPONSE TO COMMENTS
THIRD EXPLANATION OF SIGNIFICANT DIFFERENCES
FORMER LUCENT TECHNOLOGIES RICHMOND WORKS FACILITY
RICHMOND, VIRGINIA

I. PUBLIC COMMENTS AND EPA RESPONSES

EPA received comments from LSI Corporation and Laburnum Investment, LLC on the Third Explanation of Significant Differences (ESD) for the former Lucent Technologies Richmond Works facility (Facility). EPA's responses to those comments are set forth below:

II. EPA RESPONSES TO COMMENTS RECEIVED FROM LSI CORPORATION

Comment 1: How is the ESD binding to any current and subsequent parcel owners/lessees, or what mechanism will EPA use for notification, oversight, and enforcement of the individual property owners at the site?

EPA Response:
The ESD is a decision document. It is not an enforcement mechanism. Once the ESD is effective, EPA will use enforceable mechanisms, such as orders, covenants and/or agreements to have the institutional controls and access requirements implemented.

Comment 2: How will EPA track and monitor current and future property owners?

EPA Response: EPA and VDEQ will conduct periodic inspections to ensure compliance with the selected remedy.

Comment 3: How will EPA ensure that information relevant to the environmental conditions at the site, including the Order and appropriate Institutional Controls, is transmitted to all current and future property owners and lessees associated with the site?

EPA Response: EPA anticipates that institutional controls will be implemented, in part, through environmental covenants entered consistent with the Commonwealth of Virginia's Uniform Environmental Covenant Act. The owners of Facility property will be required to record a covenant on their respective deeds thereby notifying future owners of the environmental conditions at the Facility. In addition, EPA anticipates that the environmental covenants will require each owner to notify its current and potential lessees of the environmental conditions at the Facility.

Comment 4: How will the ESD handle the development that has already occurred on the property? All of the planned construction above the plume has been completed (the only parcels that have not yet been built out are outside of the plume).

EPA Response: EPA was actively involved in overseeing the demolition of the former manufacturing plant and the re-development of the current commercial shopping complex. EPA's oversight involvement during these tasks ensured that the Facility's groundwater treatment system was not negatively impacted and that the remedy remained protective and human health and the environment.

With respect to the potential for vapor intrusion in existing buildings, EPA has collected data representative of breathing air conditions and has determined that there are no unacceptable risks posed by vapor intrusion at the existing buildings.

Comment 5: Under item III 1. (d), will EPA require proof that vapor barriers were installed in all buildings constructed since 1996?

EPA Response: No. For existing buildings, please see EPA's response to comment 4, immediately above.

Comment 6: Who is responsible (both administratively and financially) for items III 1. (a) notifying prospective purchasers of environmental conditions, (b) notifying EPA of property transfers, (i) survey, (j) Henrico County notification to prohibit well drilling, and (k) biennial compliance documentation report? Under the Order, LSI would be willing to provide County notification prohibiting well drilling and perform biennial inspections and reporting, but the current configuration and ownership of the individual parcels are unknown at this time, and thus the other items would be best provided by the property owner(s) outside of the jurisdiction of the Order.

EPA Response: EPA has not yet determined what entity(ies) will be responsible for implementing each of the institutional controls. EPA believes that LSI is in the best position to implement the institutional controls listed as items III 1. (j) and (k) in the ESD. Therefore, once the ESD becomes effective, EPA will consider modifying the Order to require Lucent to implement those institutional controls. With respect to the other institutional controls listed in the ESD, EPA will consider which entity is best capable of implementing them and will consider enforceable mechanisms, such as orders, covenants and/or agreements to require implementation.

Comment 7: Does the survey referenced in III 1. (i) intend to include the individual parcels or only the complete Facility?

EPA Response: EPA is clarifying the ESD to require a separate survey for each subdivided parcel within the Facility; a survey of the perimeter of the legal boundary of the entire Facility, and a survey of the horizontal extent of the contaminated groundwater plume.

III. EPA RESPONSES TO COMMENTS RECEIVED FROM LABURNUM INVESTMENT, LLC

Comment 1:

Excerpt from ESD:

> *(a) that prospective purchasers of Facility property are notified of the environmental conditions at the Facility and of EPA's selected corrective measure, as modified by the 1992 ESDs, for the Facility;*

Laburnum agrees to provide notice of the environmental conditions at the Facility and of EPA's selected corrective measure, as modified by the 1992 ESDs for the Facility. In the event EPA is proposing that anyone other than Laburnum furnish this notice, Laburnum requests the right to review the form and content of the notice prior to it being provided to any prospective purchaser.

EPA Response: EPA anticipates that prospective purchasers will be notified of the environmental conditions at the Facility through environmental covenants to be entered consistent with the Commonwealth of Virginia's Uniform Environmental Covenant Act, as discussed above in EPA's response to LSI Corporation's Comment 3. For properties owned by Laburnum, EPA will require Laburnum to submit to EPA for review and approval a covenant notifying future owners of the environmental conditions at the Facility and of EPA's selected corrective measures. Upon EPA approval, Laburnum will be required to record the covenant on its deed(s).

Comment 2:

Excerpt from ESD:

> *(c) that the Facility property will not be used in a way that will adversely affect or interfere with the integrity and protectiveness of the selected corrective measures, as modified by the 1992 ESDs;*

Laburnum believes that their current development (the White Oak Village Shopping Center) is not in conflict with this item, but requests that the U.S. EPA acknowledge such condition so as not to confuse potential lenders, tenants or buyers.

EPA Response: EPA agrees that the development of the White Oak Village Shopping Center did not conflict with item III.1(c) in the ESD. As stated in EPA's response to LSI Corporation's Comment 4, above, EPA was actively involved in overseeing the development of the White Oak Village Shopping Center and has determined that EPA's selected corrective measures for the Facility remain protective and human health and the environment.

Comment 3:

Excerpt from ESD:

> *(d) that no new structure will be constructed unless a vapor barrier is installed in the new structures or unless it is demonstrated to EPA that a vapor barrier is not necessary to protect human health and EPA provides prior written approval for construction without a vapor barrier;*

Although Laburnum has already conducted an analysis of this condition and satisfied itself that a vapor barrier is not necessary, we understand the desire of the U.S. EPA to incorporate this process for management of future construction. However, the existing groundwater plume only comprises a portion of the Property and has been completely delineated through remedial activities and groundwater monitoring from 1995 to the present. Therefore, the requirement of a vapor barrier or demonstration that a vapor barrier is not necessary should be, in part, based on the location of the structure in relation to the horizontal extent of the groundwater plume. Laburnum believes that this item should be modified to indicate that new building location outside the plume are not subject to this requirement. Because item "i" from the ESD establishes that the groundwater plume must be defined through a professional survey, Laburnum believes that any new building being proposed for construction outside such area should not require further approval from the Agency. We would recommend a modification to item "d" of the ESD to indicate that as long as the location of the proposed building is outside the surveyed groundwater plume this requirement will not apply.

EPA Response: EPA agrees that the requirement for a vapor barrier should be based on the location of the structure in relation to the horizontal extent of the groundwater plume. Given that there may be man-made or natural preferential pathways along which soil vapor could migrate laterally beyond the plume boundary, EPA has determined that a buffer of 100 feet will be added to the perimeter of the horizontal extent of the contaminated groundwater plume originating from the Facility. Future building locations outside of the plume and the 100-foot buffer zone around the plume will not be subject to this requirement. EPA has modified the ESD accordingly.

EPA maintains the right to require structures located outside of the plume and the 100-foot buffer zone around the plume to have vapor barriers if new information becomes available or there is a change in Facility conditions indicating that such action is necessary to protect human health or the environment.

Comment 4:

Excerpt from ESD:

> *(f) that there will be no earth moving activities, including soil excavation and drilling below the water table unless it is demonstrated to EPA that such activities will not pose a threat to human health or the environment or adversely affect or interfere with the selected corrective measure, as modified by the 1992*

ESDs, and EPA provides written approval to conduct such activities;

Similar to our proposed modification in item "d" above, Laburnum believes that the required horizontal delineation of the plume boundary, as described in modification (i), provides a margin by which the modifications noted in (f) can be applied. Therefore, we would recommend a modification to item "f" of the ESD to indicate that as long as the earth moving activities are outside the surveyed groundwater plume this requirement will not apply.

EPA Response: EPA agrees that the restriction on earth moving activities, including soil excavation and drilling below the water table, does not apply to such activities outside of the surveyed groundwater plume, including the100-foot buffer zone referred to in EPA's response to Laburnum's Comment 3, above. However, EPA is also concerned with protecting the integrity and protectiveness of the groundwater collection system, which in some instances extends beyond the boundary of the delineated plume. EPA has modified item III.1. (f) in the ESD to clarify that the earth moving restrictions apply to property located above the plume and/or the 100-foot buffer zone. In addition, EPA has modified item III.1.(c) to clarify that the integrity and protectiveness of groundwater treatment system and associated wells and piping must be maintained.

Comment 5:

Excerpt from ESD:

(i) that the perimeter constituting the legal boundary of the Facility will be surveyed. Best efforts shall be made to define and survey the horizontal extent of the contaminated groundwater plume originating from the Facility. These two geographic areas represent separate polygons which shall be described and provided to EPA and VDEQ in the following ways:

Survey description (metes & bounds); and,
Longitude/latitude of vertices of each polygon (in decimal degrees to at least seven decimal places, using a World Geodetic System (WGS) 1984 datum, and indicating west longitude as a negative number.

Laburnum believes that the defined and surveyed horizontal extent of the contaminated groundwater plume will serve to provide boundaries for application of modifications (d) and (f), described above. We also recommend that the survey be modified after each regular reporting period that includes new site-wide groundwater monitoring data to reflect any substantive changes in the extent of the groundwater contamination plume.

EPA Response: As stated above, EPA agrees that the surveyed horizontal extent of the contaminated groundwater plume with the addition of a 100 foot buffer zone will serve to

provide a boundary for application of the institutional controls listed as items III.1.(d) and (f) in the ESD. EPA concurs that the survey and corresponding groundwater contour mapping shall be modified to reflect any substantive changes in the extent of the groundwater contamination plume. EPA considers the Bi-Annual Operations and Maintenance Report to be an appropriate time for making substantive changes to the horizontal extent of the contaminated plume.

Tax Map or GPIN No.: _____

Prepared by: _____

Remediation Program Site ID #:_____

UECA ENVIRONMENTAL COVENANT

This environmental covenant is made and entered into as of the ___ day of _____, _____, by and between [insert Grantor] (hereinafter referred to as the "Grantor" or "Owner") whose address is [insert address], and [insert Grantee], (hereinafter referred to as the "Grantee" or "Holder") whose address [insert address].

The Environmental Protection Agency, Region III, whose address is 1650 Arch Street, Philadelphia, PA 19103 (hereinafter referred to as the "EPA") also joins in this environmental covenant.

This environmental covenant is executed pursuant to the Virginia Uniform Environmental Covenants Act, § 10.1-1238 et seq. of the Code of Virginia ("UECA"). This environmental covenant subjects the Property identified in Paragraph 1 to the activity and use limitations in this document.

1. Property affected. The property affected ("Property") by this environmental covenant is part of the former Lucent Technologies Richmond Works facility ("Former Lucent Facility") located on approximately 87 acres in eastern Henrico County, about five miles east of Richmond, Virginia, and is further described in Exhibit 1a through 1g attached hereto and made a part hereof . Exhibits 1a and1b consist of a legal description of the Property and a figure showing the Property boundary. Exhibits 1c through 1g are tables of the geographic coordinates (in decimal degrees, WGS84) of all of the tracts and outparcels described in the legal description of the Property.

2. Description of Contamination & Remedy.

a. The Administrative Record pertaining to this Covenant is located at:

EPA, Region III
Land and Chemicals Division
RCRA File Room
1650 Arch Street
Philadelphia, Pennsylvania 19103

b. The Property is subject to the Corrective Action Program under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA) of 1976, and the Hazardous and Solid Waste Amendments ("HSWA") of 1984, 42 U.S.C. §§ 6901 et seq.

In approximately 1972, Western Electric Co., a division of American Telephone & Telegraph ("AT&T") constructed a manufactured printed circuit board facility on the Property. During its manufacturing operations, AT&T used and stored chlorinated solvents at the Former Lucent Facility.

In 1986, during the repair of a fire main, AT&T discovered releases of chlorinated solvents at the Former Lucent Facility. The soil surrounding the fire main was excavated, pipes were replaced and a sump in the former solvent recovery area of the plant was repaired. In 1989, the large-scale storage and use of methylene chloride ("MEC") and 1,1,1 trichloroethane ("1,1,1-TCA") at the Former Lucent Facility was discontinued when it was discovered that the groundwater beneath the Former Lucent Facility was contaminated with various hazardous wastes which included MEC; 1,1,1-TCA; 1,1-dichloroethane ("1,1-DCE"); and 1,1-dichloroethane ("1,1-DCA").

Subsequently, on June 28, 1991, EPA issued a Record of Decision ("RCRA ROD"), in which it selected a corrective measure for the Property. EPA subsequently modified the selected corrective measure by three Explanations of Significant Differences ("ESDs") issued on February 13, 1992, December 11, 1992 and May 16, 2011, respectively. EPA's selected corrective measure for the Former Lucent Facility, including the Property, as modified, provides for the installation, operation and maintenance of a groundwater treatment system as well as implementation and maintenance of institutional controls which will prohibit the use of groundwater in order to protect human health and the environment and maintain the integrity of EPA's selected corrective measure.

The groundwater treatment system is intended to contain and reduce the area of the contaminated groundwater plume ("Plume") beneath the Former Lucent Facility, including the Property. EPA's selected corrective measure requires that the area of the contaminated groundwater plume be monitored by the collection of groundwater samples twice per year. The current delineation is depicted in the Plume Map attached hereto as Exhibit 2a. The Plume Map may be amended as provided in Section 6, below.

EPA has determined that institutional controls must be implemented to prevent human exposure to hazardous wastes in the groundwater and to maintain the integrity of the groundwater treatment system by restricting use of groundwater at the Property and prohibiting certain activities on the Property, as described herein in Section 3, immediately below.

3. Activity & Use Limitations.

a. The Property is subject to the following activity and use limitations, which shall run with the land and become binding on Grantor(s) and any successors, assigns, tenants, agents, employees, and other persons under its (their) control, until such time as this covenant may terminate as provided by law:

1) The Property will not be used for residential purposes unless it is demonstrated to EPA that such use will not pose a threat to human health or the environment and EPA provides prior written approval for such use;

2) The Property will not be used in a way that will adversely affect or interfere with the integrity and protectiveness of EPA's selected corrective measure, including, but not limited to the groundwater treatment system and associated wells and piping;

3) Groundwater underneath the Property will not be used for any purpose other than to implement the selected corrective measure, as modified, unless it is demonstrated to EPA that such use will not pose a threat to human health or the environment or adversely affect or interfere with the selected corrective measure, as modified, and EPA provides prior written approval for such use; and

4) No new wells will be installed on the Property unless it is demonstrated to EPA that such wells are necessary to implement the selected corrective measure, as modified, and EPA provides prior written approval to install such wells.

b. The portion of the Property located above the Volatile Organic Compounds (VOC) plume boundary along with a 100-foot buffer zone, as depicted on Exhibit 2a is subject to the following activity and use limitations, which shall run with the land and become binding on Grantor(s) and any successors, assigns, tenants, agents, employees, and other persons under its (their) control, until such time as this covenant may terminate as provided by law:

1) No new structure will be constructed, unless a vapor barrier designed to prevent vapors from emanating from the Plume at levels presenting an unacceptable risk to human health into the new structures is installed in the new structures or unless it is demonstrated to EPA that a vapor barrier is not necessary to protect human health or the environment and EPA provides prior written approval for construction without a vapor barrier;

2) No earth moving activities, including soil excavation and drilling, will be conducted below the water table unless it is demonstrated to EPA that such activities will not pose a threat to human health or the environment or adversely affect or interfere with the selected corrective measure, as modified, and EPA provides prior written approval to conduct such activities;

c. The geographic coordinates that define the boundary of the activity and use limitations listed as Paragraph 3.a., immediately above are attached as Exhibits 1c through 1g, and are depicted on Exhibit 1b.

d. The geographic coordinates that define the boundary of the activity and use limitations listed in Paragraph 3.b., immediately above, is attached as Exhibits 2b and 2c for Area 1 and Area 2 respectively and aredepicted on Exhibit 2a.

EPA anticipates that the area subject to the activity and use limitations listed as 3.b., above, will decrease in size over time as a result of the continued operation and maintenance of the groundwater treatment system. The geographic coordinates defining such area may be amended as provided in Section 6, below.

4. Access by the Holder, EPA and the Virginia Department of Environmental Quality ("DEQ"). In addition to any rights already possessed by the Holder, EPA and DEQ, this environmental covenant grants to the Holder, EPA and DEQ a right of reasonable access to the Property in connection with implementation, inspection, or enforcement of this environmental covenant.

5. Recording & Proof & Notification.

a. Within ninety (90) calendar days after the date of the Agency's approval of this UECA environmental covenant, the Grantor shall record, or cause to be recorded, this environmental covenant with the Clerk of the Circuit Court for each locality wherein the Property is located. The Grantor shall likewise record, or cause to be recorded, any amendment, assignment, or termination of this UECA environmental covenant with the applicable Clerk(s) of the Circuit Court within ninety (90) calendar days of their execution. Any UECA environmental covenant, amendment, assignment, or termination recorded outside of these periods shall be invalid and of no force and effect.

b. The Grantor shall send a file-stamped copy of this environmental covenant, and of any amendment, assignment, or termination, to EPA and DEQ within sixty (60) calendar days of recording. Within that time period, the Grantor also shall send a file-stamped copy to the chief administrative officer of each locality in which the Property is located, any persons who are in possession of the Property who are not the Grantors, any signatories to this covenant not previously mentioned, and any other parties to whom notice is required pursuant to the Uniform Environmental Covenants Act.

c. Within 1 month after the transfer of the Property or a portion thereof, the then current owner of the Property shall submit to EPA and DEQ, written notification of such transfer.

6. Termination or Amendment. This environmental covenant is perpetual and runs with the land unless terminated or amended (including assignment) in accordance with UECA.

In accordance with § 10.1-1246 of the Code of Virginia, upon the request of Grantee, EPA and Grantee will amend Exhibit 4 of this environmental covenant to include the then-current EPA-approved Plume Map and/or the EPA-approved geographic coordinates which define the area subject to the activity and use limitations listed as 3.b. and which are set forth in Section 3.d., above.

7. Enforcement of environmental covenant. This environmental covenant shall be enforced in accordance with § 10.1-1247 of the Code of Virginia.

ACKNOWLEDGMENTS:

GRANTOR AND HOLDER

_____ {Name of Owner}, Grantor and Holder

Date By (signature): _____
Name (printed): _____
Title: _____

COMMONWEALTH OF VIRGINIA {*other state, if executed outside Virginia}*

CITY/COUNTY OF _____

On this ___ day of _____, 20__, before me, the undersigned officer, personally appeared _____ {*Owner, Grantor and Holder}* who acknowledged himself/herself to be the person whose name is subscribed to this environmental covenant, and acknowledged that s/he freely executed the same for the purposes therein contained.

In witness whereof, I hereunto set my hand and official seal.

My commission expires: _____

Registration #: _____

_____

Notary Public

AGENCY

APPROVED by the Environmental Protection Agency as required by § 10.1-1238 et seq. of the Code of Virginia.

Date By (signature): _____
Name: John A. Armstead
Title: Director, Land and Chemicals Division
EPA, Region III

SEEN AND RECEIVED by the Department of Environmental Quality

{INSTRUCTIONS: In accordance with 9VAC15-90-40, notice and payment of a fee to DEQ is required for every UECA environmental covenant in Virginia. However, when DEQ is not the

Agency or Holder, no approval of the UECA document by DEQ is necessary or will be provided.}

Date

By (signature): _____

Name (printed): _____

Title: _____

{END of Virginia UECA Template}

D. The department requires submittal of the appropriate fee in accordance with the fee schedule provided in 9VAC15-90-40 before the department approves or signs a UECA environmental covenant. The department may require submittal of this fee before the department reviews a UECA document.