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AN ENVIRONMENTAL LAW PRACTICE

December 2, 1999

Via Overnight Mail
Thomas Cinti, Esquire
Regional Counsel's Office
U.S. Environmental Protection Agency
1650 Arch Street
Philadelphia, PA 19103

Re: 1180 Church Road, North Penn Area 7, Lansdale, PA

Dear Tom:

As we agreed, we are writing to summarize the reasons why Liberty Property Development Corp., Liberty Property Limited Partnership, Rouse & Associates – 1180 Church Road, Rouse & Associates – 1180 Church Road Limited Partnership and 900 Church Road Land Limited Partnership (formerly known as Rouse & Associates – Church Road Land Limited Partnership) (hereinafter collectively referred to as "Liberty Property")[1] qualify for the defense to liability provided in

[1] The Agreement of Sale for the 1180 Church Road property, dated November 20, 1986, was between Elan Associates (the "Seller") and Rouse & Associates – 1180 Church Road, a Pennsylvania partnership. This Agreement of Sale was subsequently assigned to Rouse & Associates – 1180 Church Road Limited Partnership, by Agreement dated December 3, 1986, and this limited partnership is the entity which obtained title to the property through a deed dated December 29, 1986. The original 1180 Church Road property, which was the subject of the Agreement of Sale with Elan Associates, consisted of approximately 52 acres.

In 1987, Rouse & Associates – Church Road Land Limited Partnership (which later changed its name to 900 Church Road Land Limited Partnership) purchased two additional parcels, consisting of approximately 20 acres neighboring the 1180 Church Road property. These parcels were owned by Pennbrook Industrial Center and consisted of undeveloped land.

In 1994, in connection with a public offering, Liberty Property Limited Partnership became the general partner of Rouse & Associates – 1180 Church Road Limited Partnership, the entity that owned the 1180 Church Road property, and the undeveloped parcels were conveyed to Liberty Property Development Corp. In June 1999, in connection with the proposed sale of the 1180 Church Road property, this property was conveyed to its general partner, Liberty Property Limited Partnership. EPA has previously concluded that because of Willard Rouse's relationship to these Liberty Property entities, all of these entities are sufficiently related so that the prospective purchaser policy was not applicable to the Liberty Property entities. For the same reason, all of these entities should be viewed as related in determining the applicability of the

Section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3) (the "innocent landowner defense"), and, therefore, should not be considered a responsible party for the volatile organic compound ("VOC") groundwater contamination at the North Penn Area 7 Superfund Site. After reviewing the relevant history and factors, we shall also explain why, for similar reasons, it is appropriate for EPA to enter a de minimis settlement with Liberty Property under Section 122(g)(1)(B) of CERCLA, 42 U.S.C. § 9622(g)(1)(B).

Innocent Landowner Defense

Under Section 107(b)(3) of CERCLA, there is no CERCLA liability for a person otherwise liable who can show that the release or threat of release of hazardous substances was caused by an act or omission of a third party other than one whose act or omission occurs in connection with a contractual relationship, existing directly or indirectly, with such person. See 42 U.S.C. § 9607(b)(3). To qualify for this defense, such a person must also establish that "(a) he exercised due care with respect to the hazardous substance concerned, taking into consideration the characteristics of such hazardous substance, in light of all relevant facts and circumstances, and (b) he took precautions against foreseeable acts or omissions of any such third party and the consequences that could foreseeably result from such acts or omissions." Id.

As we are sure EPA would concede, Liberty Property did not utilize, process or dispose of trichloroethylene (TCE) or tetrachloroethylene (PCE) at the Property, which substances are the contaminants of concern at the North Penn Area 7 Superfund Site. Several environmental studies at the Property (which will be discussed further below) have concluded that the VOC-contamination in the groundwater at the Property is coming from an off-site source. Therefore, Liberty Property had no contractual relationship, either direct or indirect, with the third party who caused the release of hazardous substances. If EPA concurs with the previous environmental investigations at the Property which have all concluded that the groundwater contamination is coming from an off-site source, then our innocent landowner inquiry can end here and EPA must agree that Liberty Property is not a responsible party.

To the extent EPA is uncertain as to whether a prior owner of the Property may have disposed of TCE or PCE on the Property, despite there being no evidence to support such a conclusion, then our inquiry into whether Liberty Property qualifies for the innocent landowner defense will move to whether Liberty Property made appropriate inquiries at the time it purchased the Property, what it learned from its inquiries and whether it exercised due care with respect to the information generated from these inquiries. See 42 U.S.C. § 9601(35) and § 9607(b)(3).

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innocent landowner defense. Thus, our analysis will focus on the investigation conducted and knowledge of the buyer in 1986. Moreover, since there had never been any development on the two neighboring parcels, we will concentrate on the inquiries made in connection with the original 1180 Church Road property (hereinafter sometimes referred to as the "Property").

Property Ownership

Until approximately 1965, a brickyard operated on part of the Property. In 1965, Philco-Ford, Inc. built a television tube manufacturing facility on the Property. The Zenith Corporation purchased the Property in 1972 and operated the television tube manufacturing facility until 1975. After the manufacturing facility's closure, the building was leased to various tenants for warehousing. In July 1983, Zenith sold the Property to the Montgomery County Industrial Development Authority. The Authority in turn resold the Property to Elan Associates, a real estate investment company. As discussed in footnote 1, Rouse & Associates – 1180 Church Road Limited Partnership purchased the Property from Elan Associates in December 1986. At the time of the purchase, one building, the manufacturing facility building, and 10 former sludge lagoons were located on the Property.

Investigation and Knowledge Regarding Property at Time of Purchase

At the time Rouse & Associates acquired the Property, the Seller, Elan Associates, had already entered into an agreement with Upper Gwynedd Township to close the sludge lagoons. These lagoons had been created and used in the previous television tube manufacturing operations. At least as early as June 1983, environmental assessment of the lagoons on the Property had begun. The earliest known report, prepared by AGES Corp. for the property owner in June 1983, assessed the condition of the lagoons and developed alternatives for the environmentally safe disposal of the lagoon contents. See Attachment A. AGES' study included sampling of the aqueous contents of all 10 lagoons for the presence of metals and other pollutants, including VOCs. All samples yielded results below the level of VOC detectability. The only contaminants of concern identified by the sampling were heavy metals, which are not contaminants of concern in the groundwater in the North Penn Area 7 Superfund Site.

Pursuant to Elan's agreement with Upper Gwynedd Township, Elan developed a closure plan for the lagoons. Since the site was closed in 1975, the lagoons were not subject to RCRA. Nevertheless, Elan's contractor, American Resources Consultants ("ARC"), submitted its Lagoon Closure Plan to the Pennsylvania Department of Environmental Resources ("DER") in August 1986, and DER treated the contemplated closure as if it were being conducted pursuant to RCRA. The Closure Plan called for the equivalent of "clean closure" under RCRA. DER approved the Closure Plan on December 29, 1986. See Attachment B. Rouse & Associates acquired the Property on the following day, December 30, 1986, conditioned upon Elan's completion of the approved plan.

At the time Liberty Property purchased 1180 Church Road, it engaged in an inquiry of the Property consistent with good commercial and customary practices for that time. As you know, while CERCLA was enacted in 1980, the Superfund Amendments and Reauthorization Act, which added Section 101(35) and the description of what type of inquiry is needed to qualify for the innocent landowner defense, was not enacted until 1986. In mid-1986, when Liberty Property was performing its due diligence, the practice of performing a "Phase I" was

not yet routinely followed when purchasing real estate. Nonetheless, Liberty Property engaged in a thorough review of the environmental information that was available regarding the Property. Liberty Property's investigation included reviewing records provided by the Seller concerning environmental conditions at the Property, having discussions with the director of the North Penn Water Authority regarding the groundwater contamination in the area, and obtaining representations and warranties and an indemnification from the Seller concerning the environmental condition of the Property.

As part of Liberty Property's due diligence, Liberty Property reviewed environmental reports and documents provided by the Seller. The AGES' June 1983 report, entitled "Zenith Lagoon Study," discussed above, revealed the presence of heavy metals but did not show the presence of VOCs in the lagoons. Liberty Property believed then, and believes today, that it was reasonable to assume that any hazardous substances generated at this Property as a result of the previously conducted manufacturing operations would be found in these lagoons. Liberty Property made sure that that its purchase of the Property was conditioned upon the proper closure of these lagoons and that this closure would be approved by DER. During the due diligence period, Liberty Property also met and spoke with DER on a number of occasions. Liberty Property assumed that because DER, the State environmental agency, was involved with the Property and was overseeing the closure of the lagoons, that DER would have raised concerns if in fact there were other contamination issues at the Property; instead, DER approved the lagoon closure plan. Thus, it seemed to Liberty Property that the only environmental concerns associated with the Property were the lagoons.

Liberty Property endeavored to exercise due care with respect to the hazardous substances it knew to be on the Property by addressing the lagoons in the Agreement of Sale with Elan. Paragraph 16 of the Agreement specifies that the Seller must obtain approval from DER of "a plan to remove any hazardous or toxic substances located in the Lagoons and to rehabilitate the Land so that the condition thereof does not negatively impact upon the environment." This paragraph also specifies that Seller's obligations will not be deemed satisfied until "samples from the required monitoring wells in the vicinity of the Lagoons and from the sub-base soils indicate satisfactory water and soil quality and DER has provided a written certification or acknowledgment . . . that the Land is free from substances causing a negative impact upon the environment." In essence, Liberty Property funded the cleanup of the lagoons because the Agreement provided that $500,000 of Seller's sale proceeds would be placed in escrow as security for Seller's proper performance of its covenants regarding the hazardous substances on the Property. Funds were released from the escrow account upon receipt of written instructions accompanied by bills from the contractors employed by the Seller to perform the closure of the lagoons.

With respect to the possibility of other potential hazardous substances on the Property, Liberty Property obtained a representation from the Seller that to the best of its knowledge there were none present. Paragraph 5, "Warranties and Representations by Seller," subparagraph (c) states:

> Seller has never filled any portion of the Land nor deposited thereon or thereunder nor permitted any other party to deposit thereon or thereunder any trash, refuse, garbage, or hazardous or toxic substances. To the best of Seller's knowledge, no party other than Seller has ever done any of the foregoing upon or under the Land, except for the substances deposited within the lagoons or former lagoons located on the Land . . . which will be cleaned and rehabilitated by Seller in accordance with paragraph 16 of this Agreement.

At the time Liberty Property purchased 1180 Church Road, it was generally aware that there was a groundwater contamination issue in the North Penn area. Consequently, Bogue Wallin, an employee of Liberty Property, contacted the director of the North Penn Water Authority ("NPWA"). Mr. Wallin was informed by the director of NPWA that it believed the sources of the groundwater contamination were a drycleaning operation on the east side of Lansdale and a metal fabricating operation located two properties over from 1180 Church Road (Spra-fin).

In the summer of 1981, NPWA had drilled seven test wells on the Property. The results of this sampling showed detectable levels of TCE in only two wells. No PCE was detected by NPWA at the Property. The well exhibiting the highest concentration in 1981-- only 1.6 ppb -- was located near Church Road. See Attachment C (Letter from Lawrence Martin, NPWA, to John Nuter, Zenith, dated October 12, 1981). A 1981 report prepared by the Wissahickon Valley Watershed Association in cooperation with NPWA demonstrates that the Property was not a potential source of groundwater TCE contamination. See Attachment D (excerpts). Rather, very elevated 1981 TCE/PCE concentrations at other facilities in the area indicated that these other facilities were the likely source(s) of VOC contamination. While this 1981 report was not made available to Liberty Property at the time it was purchasing 1180 Church Road, this report further supports that no matter how extensively it investigated the Property, all environmental work performed to date indicated that the Property was not a source of VOC contamination.[2]

Thus, from Liberty Property's review of records concerning the Property, its knowledge regarding Zenith's limited operation at the Property, and Mr. Wallin's discussion with the director of NPWA, Liberty Property did not believe that the groundwater contamination issue was a matter regarding which it needed to be concerned. In fact, at that time, Liberty Property never thought in terms of the Property being a potential "source" of any groundwater

[2] The only report which suggests that the Property was a possible source of contamination is a July 1986 report prepared by NUS Corporation for EPA. See Attachment E. The NUS Report, of course, was not available to Liberty Property when it purchased that Property. Moreover, the NUS Report was based solely on existing data provided by NPWA and other governmental entities, including the Wissahickon Study referred to above. Although the existing data did not suggest that the Property was a source, the NUS Report concluded that Zenith was a potentially responsible party. In the NUS Report, the plume was not even properly defined near the Property. Id. at 4-32, 5-4. In addition, there was no evidence of any release of TCE or PCE ever occurring at the facility located on the Property.

contamination. Liberty Property's only real concern regarding groundwater was to confirm that the Property would be on public water.

At the time Liberty Property purchased 1180 Church Road, it was not aware that EPA was investigating the Property as a possible additional source of VOCs, nor was it aware that the Property was under consideration for inclusion on the NPL.

Additional Due Care Exercised by Liberty Property

At the time Liberty Property purchased 1180 Church Road, it was only aware of the lagoon closure and heavy metal contamination concern. To address these environmental issues, Liberty Property hired its own environmental consultant, BCM, to supervise the work being performed by the Seller's consultant, ARC. In addition, it made sure DER approved each of the various steps taken during the course of the closure. In November 1988, ARC submitted a final Lagoon Closure Plan which recounted the closure activities conducted on site. See Attachment F. Pursuant to the closure procedure, each lagoon was sampled for priority pollutants; the aqueous contents were disposed of via the local wastewater treatment works and sludge was properly landfilled. Surrounding soil was tested and, as necessary, excavated. The closure activities also included the sampling of five wells installed on the Property. With regard to the levels of VOCs in the wells, ARC concluded that

> the results of BCM and ARC monitoring of the North Penn well (NP-2) . . . [have] consistently shown the impact of off-site VOC contamination. This well exhibited a significant increase in the concentration of total VOCs (101.4 vs. 1221.0 ug/l) between 1/6/87 and 9/8/88. The VOC contamination has nothing to do with either past operation, or closure of the lagoons.

Id. at 13 (emphasis added). Additionally, ARC concluded that no additional groundwater monitoring was necessary with respect to the lagoons. Id. at 19.

On January 16, 1989, DER approved the Final Closure Plan and stated that "we concur with the conclusions presented in the Closure Plan." See Attachment G (Letter from Joseph A. Feola, DER, to Edward H. Prout, Jr., ARC, dated January 26, 1989). DER then authorized and recommended that the closure activities cease and that all existing monitoring wells and borings be abandoned in accordance with industry procedures. Id. The lagoon closure was completed on February 21, 1989, when the monitoring wells were properly abandoned.

As you probably know, the Property was not included as part of the North Penn Area 7 Superfund Site until March, 1989. See 54 Fed. Reg. 13301 – 13302 (March 31, 1989). Notably, when EPA originally proposed an NPL designation for the local VOC contamination of groundwater, the only facility that was designated as part of the Site was Spra-fin, and the 1180 Church Road Property was not even mentioned. See 52 Fed. Reg. 2492, 2498 (January 22,

1987). Thus, Liberty Property was completely surprised when the 1180 Church Road Property was included as part of the Superfund Site in 1989.

Although Liberty Property did not receive any notice letter from EPA at the time, it engaged the services of another consultant, Roy F. Weston, Inc., to undertake yet another investigation and determine (1) if there was soil and/or groundwater contamination on the Property, and (2) if groundwater contamination was present, whether it was caused by previous operations at the Property or from surrounding areas. Weston's conclusions confirmed the results of the prior investigations. Weston analyzed several soil borings and samples from four wells. In a May 1990 report, Weston concluded that the lagoon closure had been successful at eliminating any hazardous concentrations of metals from the Property's soil and groundwater. See Attachment H. Weston also undertook an analysis of VOCs in the samples taken from the Property. Weston noted that the only well exhibiting a detectable level of VOCs was upgradient and located near Church Road, in the vicinity of the NPWA and ARC wells discussed above. No significant VOC contamination was found in any soil samples. Weston concluded:

> The samples were analyzed for volatile organic compounds . . . . Trichlorethene (TCE) was detected in the parking lot well at 80 ppb and in MW-1 and MW-4 at 27 ppb and 23 ppb respectively. The higher concentration of TCE in the parking lot well would confirm the fact that TCE is moving onto the site from a source south and east of Church Road rather than coming from the site. Other studies of the site all indicate that the TCE contamination was historically confined only to the area of the property adjacent to Church Road. This assessment indicates that the TCE has migrated further onto the property thus affecting MW-1 and MW-4.

Id. at 4-8 (emphasis added). A copy of this report was forwarded to EPA on October 1, 1990.[3]

When Liberty Property purchased 1180 Church Road, the purchase price it paid and the loans it obtained were based on a plan that envisioned renovating the one building on the Property and erecting at least two additional buildings. After the closing, construction began on two additional buildings and leases were entered with prospective tenants. However, once Liberty Property became aware of the inclusion of the Property in the North Penn Area 7 Superfund Site, construction on the two new buildings was immediately halted, including removing masonry walls, footers and foundations which had already been constructed. Needless to say, Liberty Property then had to engage in difficult negotiations concerning the lease agreements that had already been entered and was not able to obtain the additional funding that had been arranged for the Property.

[3] A corrected replacement page 3-5 was forwarded to EPA on December 3, 1990.

After submitting Weston's report to EPA, Liberty Property had hoped that EPA would concur that the Property is not a source of the VOC contamination at the North Penn Area 7 Superfund Site. However, apparently without any additional information, EPA sent the general partners of Rouse & Associates notice letters in June, 1995.[4] Since that time, Manko, Gold & Katcher has made repeated overtures on Liberty Property's behalf to enter into a de minimis settlement with EPA. For the most part, EPA has not responded to these overtures. See correspondence at Attachment I. Liberty Property has also attempted to sell the Property and has engaged in prospective purchaser agreement negotiations with the EPA on a number of occasions. As you know, Liberty Property had believed that once it sold the Property, it would no longer have CERCLA liability under the United States v. CDMG Realty Co. holding. Nonetheless, despite Liberty Property's belief that it is either an innocent landowner or a de minimis party, and its further belief that once it sold the Property it would have no further liability at the Site, Liberty Property has engaged in good faith negotiations concerning an Administrative Order on Consent to perform the Remedial Investigation/Feasibility Study ("RI/FS") at the Site.

Thus, from all of the above, it is clear that (1) Liberty Property had no reason to know that a release or threat of release of VOC contamination existed on 1180 Church Road at the time it purchased the Property, and (2) Liberty Property has exercised considerable due care since being notified of the potential for VOC contamination on the Property. Consequently, Liberty Property qualifies for the defense provided in Section 107(b)(3) of CERCLA in that

(1) The release or threat of release of hazardous substances at the Property involving the contaminants of concern at the North Penn Area 7 Superfund Site (TCE or PCE) was caused solely by an act of a third party with which Liberty Property had no contractual relationship (namely, either the owner or tenant of a neighboring property or a prior owner other than the Seller who transferred the Property to Liberty Property);

(2) Liberty Property has exercised due care with respect to the potential that hazardous substances are located on the Property;

(3) Liberty Property has not been in a position to take any precautions against the foreseeable acts or omissions of the third party who caused the VOC contamination (namely, an off-site owner or prior owner);

(4) At the time Liberty Property acquired the Property, it did not know and had no reason to know that TCE or PCE had been disposed of on, in, or at the Property;

[4] The other potentially responsible parties were sent notice letters six (6) years earlier. Notably, when the NPWA initiated a lawsuit concerning the VOC contaminated groundwater in 1994, it did not name either Liberty Property or Zenith as a defendant.

(5) At the time Liberty Property acquired the Property, it undertook appropriate inquiry into the previous ownership and uses of the Property consistent with good commercial or customary practice; and

(6) At the time Liberty Property acquired the Property, the presence of VOC contamination on the Property was not commonly known or reasonably ascertainable information, was not obvious, and was not likely to be detected by an appropriate inspection.

See 42 U.S.C. § 9601(35) and § 9607(b)(3); HRW Systems, Inc. v. Washington Gas Light Co., 823 F. Supp. 318, 348 (D.Md. 1993)(holding that with respect to the level of inquiry required to satisfy CERCLA's innocent landowner defense, "the standards which the Court must apply to an analysis of the appropriateness of the owner's conduct must be those which were in effect at the time of the purchase" rather than imposing "the impossibly high standard of complying with current perceptions of appropriateness in an area where perceptions change quickly"); H.R. Conf. Rep. No. 962, 99th Cong., 2d Sess. 186-87 (1986) (noting that "the duty to inquire under [CERCLA § 101(35)] shall be judged as of the time of acquisition").

Based on all of the above, we are hopeful that you will agree that Liberty Property qualifies for the innocent landowner defense and is not a responsible party at the North Penn Area 7 Superfund Site.

De Minimis Settlement

Since Liberty Property satisfies the requirements of the innocent landowner defense specified in Sections 101(35) and 107(b)(3) of CERCLA, it is appropriate for EPA to enter into a de minimis settlement with Liberty Property under Section 122(g)(1)(B) of CERCLA. See "EPA Guidance on Landowner Liability under Section 107(a)(1) and De Minimis Settlements under Section 122(g)(1)(B) of CERCLA, and Settlements with Prospective Purchasers of Contaminated Property," OSWER Directive No. 9835.9, June 6, 1989, 54 FR 34235 (August 18, 1989) (hereinafter "Landowner Liability Guidance") (superseded in part by EPA Guidance on Settlements with Prospective Purchasers of Contaminated Property). Under Section 122(g)(1)(B) of CERCLA, when the EPA determines that a settlement is "practicable and in the public interest," it "shall as promptly as possible reach a final settlement . . . if such settlement involves only a minor portion of the response costs at the facility concerned" and EPA determines that the potentially responsible party: (i) is an "owner of the real property on or in which the facility is located;" (ii) "did not conduct or permit the generation, transportation, storage, treatment or disposal of any hazardous substance at the facility;"[5] and (iii) "did not contribute to the release or threat of release . . . through any act or omission." Id.; 42 U.S.C.

[5] As stated in footnote 6 of the Landowner Liability Guidance, EPA interprets the phrase "any hazardous substance" to mean a hazardous substance which is the subject of the release or threat of release. In our case, it would refer to TCE or PCE.

§ 9622(1)(B). In addition, subparagraph B only applies if at the time of purchase the party did not have "actual or constructive knowledge that the property was used for the generation, transportation, storage, treatment or disposal of any hazardous substance."[6]

As described in more detail above, 1180 Church Road is part of the facility identified by EPA as the North Penn Area 7 Superfund Site. Since purchasing the Property, Liberty Property has not brought any TCE or PCE onto the Property, nor do we believe has its tenants. Moreover, as described in the Due Care Section above, not only has Liberty Property not contributed to the release or threat of release, it has taken appropriate actions in response to the potential for a release, including investigating conditions at the Property.

If EPA concurs that Liberty Property has demonstrated that it qualifies for the innocent landowner defense, a de minimis settlement under 122(g)(1)(B) is clearly appropriate. The Landowner Liability Guidance indicates that in such cases, "settlements requiring only that the landowner provide access and due care assurances will be appropriate." Id. at 7.

Moreover, even if EPA does not agree that Liberty Property has thoroughly and convincingly demonstrated that it qualifies for the innocent landowner defense, Liberty Property nonetheless should be viewed as having established the requirements of 122(g)(1)(B). If this is the case, Liberty Property suggests that appropriate consideration for a de minimis settlement would be (1) provision for access, (2) assurances of due care, and (3) performance of its portion of the RI/FS that has already been negotiated as part of the Administrative Order on Consent. We believe that such a settlement would be generous on Liberty Property's behalf because Liberty Property's responsibility for the RI/FS would be similar to the responsibility under the Administrative Order on Consent of true responsible parties who generated and disposed of hazardous substances at their properties. A benefit for both EPA and Liberty Property of accepting participation in the RI/FS as the consideration for the de minimis settlement would be that the details of this consideration have already been negotiated with EPA and the other potentially responsible parties.

Based on all of the above, we are hopeful you will agree that Liberty Property qualifies for the innocent landowner defense and that it is appropriate to enter into a de minimis settlement with Liberty Property. As you know, we are under some time pressure because Liberty Property would like to have this issue resolved so that it can proceed with the sale of the Property without finding itself a defendant in a lawsuit or waiving its CDMG defense, as EPA has suggested. Thus, I would sincerely appreciate it if you would review this submission as soon as possible and

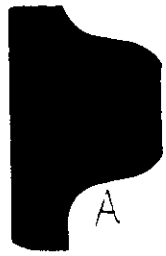
[6] For the reasons explained above, EPA interprets the phrase "any hazardous substance" in the context of actual or constructive knowledge to mean a hazardous substance which is the subject of the release or threat of release.

get back to me with your impressions. If you have any questions or I can provide you with any additional information, please give me a call. I look forward to talking to you soon.

Sincerely,

Jill Hyman Kaplan
For MANKO, GOLD & KATCHER, LLP

JHK/bad/10103-001
Enclosures
cc: Mr. Willard G. Rouse, III (w/encl.)
Mr. Ward Fitzgerald (w/encl.)
Noah D. Cutler, Esquire (w/encl.)
Joseph M. Manko, Esquire (w/o encl.)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Attachments to Letter dated December 2, 1999 from Manko, Gold & Katcher to United States Environmental Protection Agency regarding Innocent Landowner Defense and a De Minimis Settlement

ZENITH LAGOON STUDY

AGES Project No. 41383

June, 1983

AGES Applied Geotechnical and Environmental Service Corp.
1151 S. Trooper Road, Norristown, Pa. 19403
215-666-7404

FORWARD

AGES Corporation of Norristown, Pennsylvania has been retained by 1180 Church Road Realty Corp., also of Norristown, to assess the condition of aqueous and sludge material in ten lagoons on the Zenith property in Lansdale, Pennsylvania. AGES responsibility included implementation of a sampling program to quantify and qualify the lagoon material. In addition, based on estimated volumes and analytical results, AGES developed four environmentally safe disposal scenarios for the lagoon material.

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I. INTRODUCTION

This report presents results of a lagoon sampling program conducted by AGES Corporation on June 1, 2, and 10, 1983 for 1180 Church Road Realty Corporation (AGES Project No. 41383). Composite aqueous and sludge samples were taken from ten lagoons on Zenith's property in Lansdale, Pennsylvania. The site location is identified in Figure 1.

Results of the sampling program identify concentrations of EP toxic metals and volatile organics present in the lagoon material. Based on these data and volume estimates, four aqueous and sludge removal scenarios are presented. Each scenario consists of several activities, including pumping the aqueous, dewatering and/or vacuuming the sludge, and hauling and disposing of the sludge material. Costs are estimated for each activity.

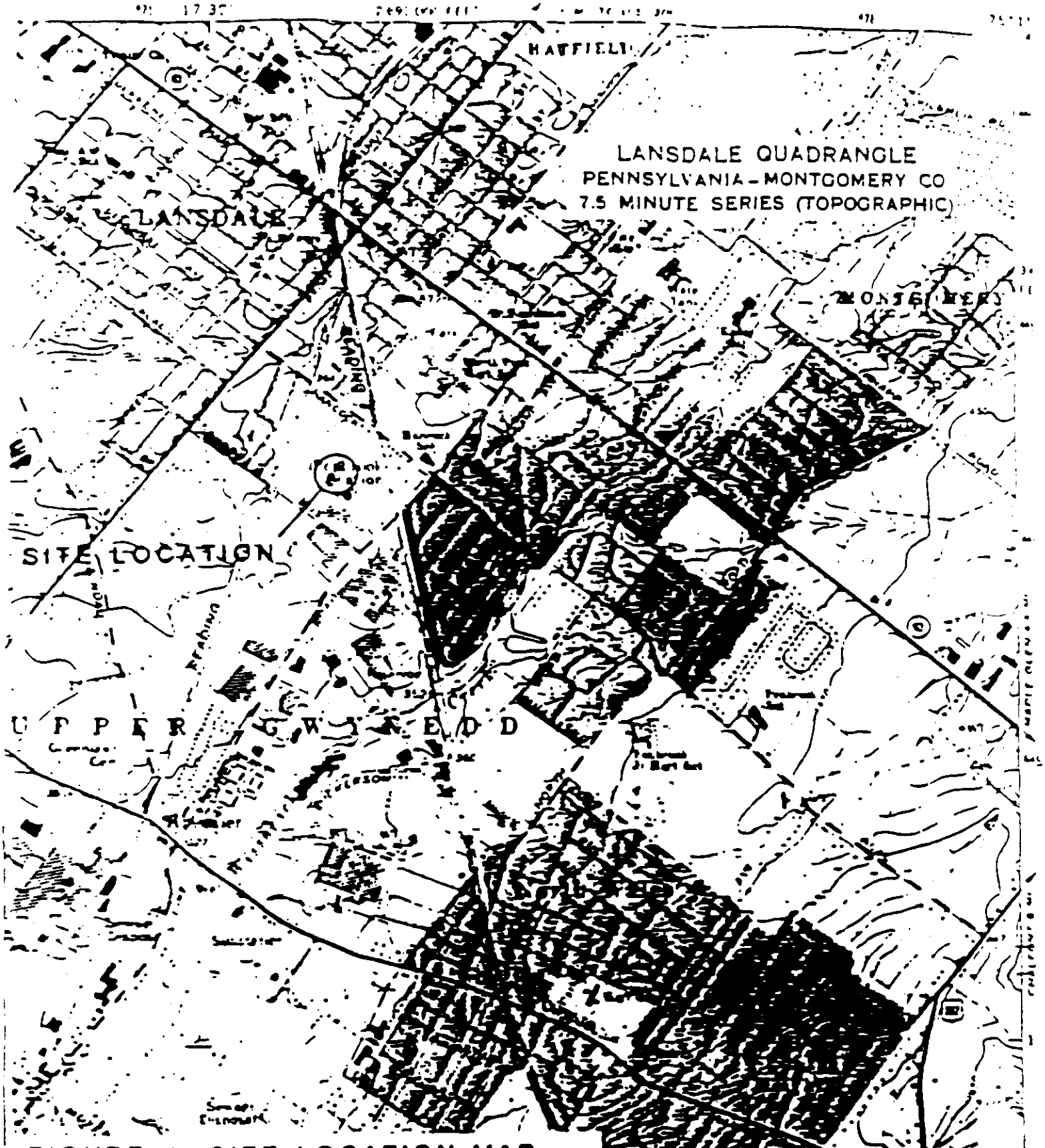


FIGURE 1. SITE LOCATION MAP,
ZENITH LAGOON STUDY,
LANSDALE, PA

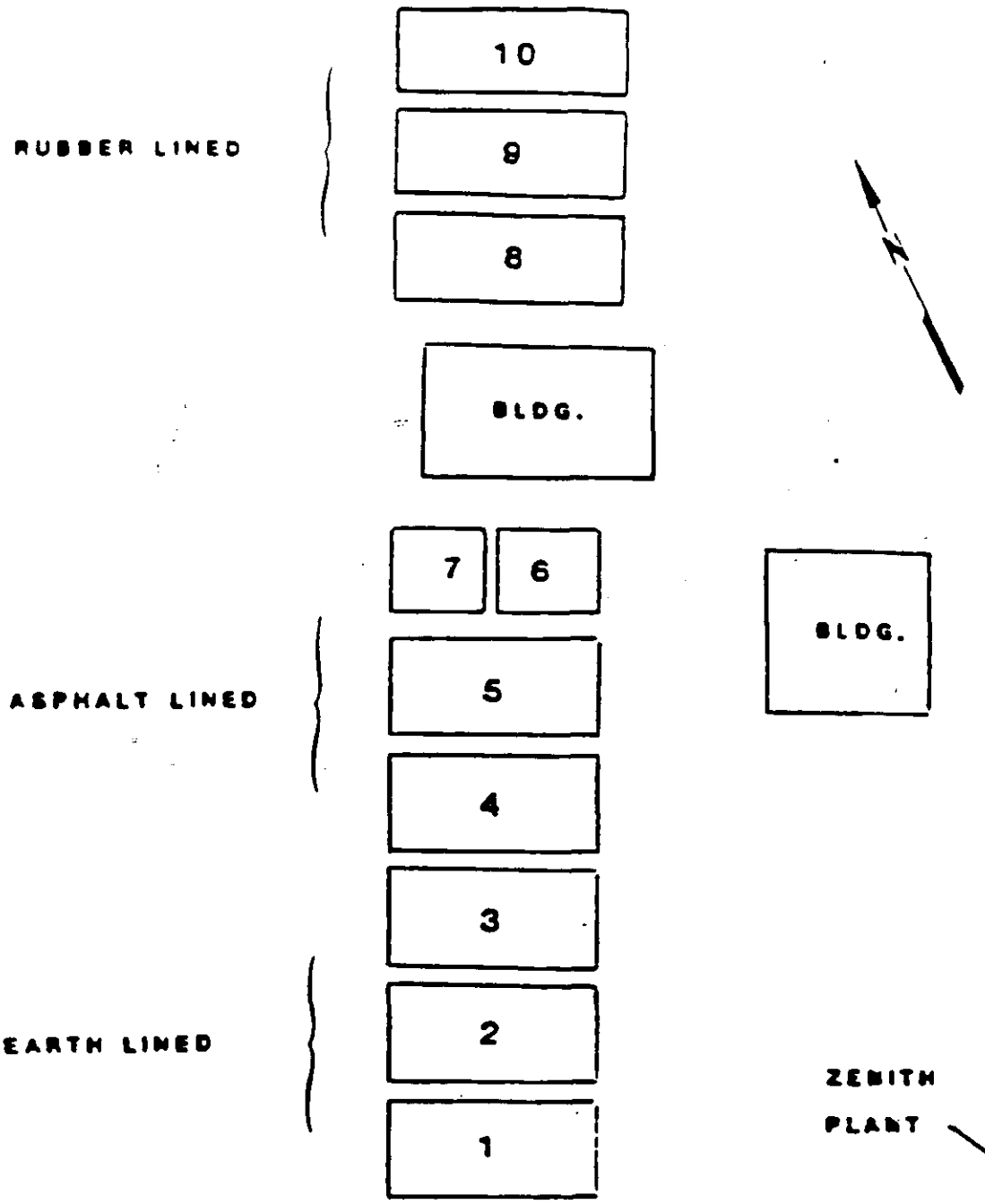
II. SAMPLING METHODOLOGY

Representative composite samples of aqueous and sludge were taken from the ten lagoons which are schematically shown in Figure 2. Aqueous perimeters as well as aqueous and sludge thickness were measured.

Sample matrics were set up for each lagoon depending on the lagoons' size and the type of sample being collected as shown in Figure 3. The sampling equipment consisted of a glass beaker attached to the end of a 15-foot telescopic rod. At each lagoon, the beaker was used to collect individual samples which were combined in gallon containers.

Duplicate 250-ml aqueous samples were collected at each point in a lagoon matrix at various depths and emptied into one clear and one amber gallon container. The aqueous in the clear container was thoroughly homogenated whereas the aqueous in the amber container was stored for future analysis, if required.

From the clean container, three quart samples were taken: one for EP toxic metals (fixed with HNO_3 to a pH of 2); one for cyanide (fixed with 10N NaOH to a pH of greater than 12); and one for total organic carbon and pH (not fixed). In addition, aqueous was poured from the clear container into two air free 40-ml vials for volatile organic analysis. All quart samples, vials, and amber colored containers were placed into ice chests in the field and kept under refrigeration until analysis.

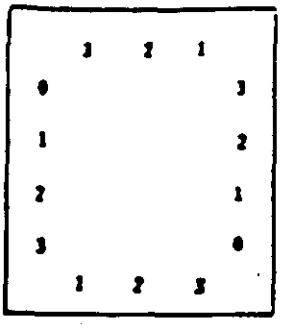
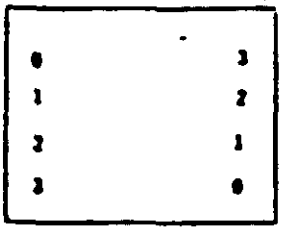
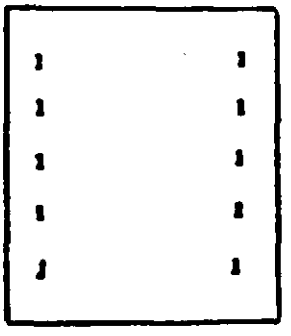


AR000325

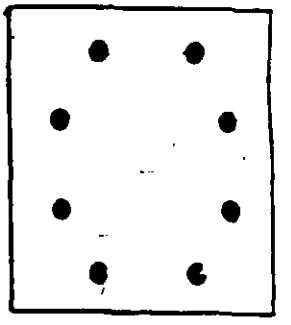
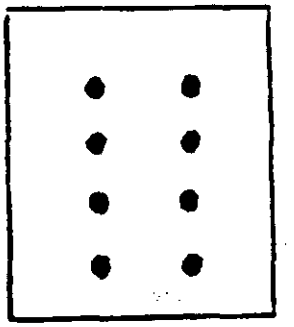
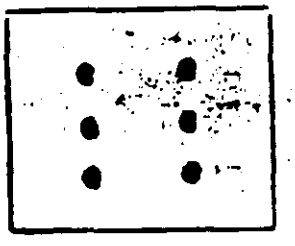
FIGURE 2. LAGOON LAYOUT,
ZENITH LAGOON STUDY,
LANSDALE, PA

AGS	SCALE NONE	Drawn By RWE	DATE 6/21/83	Drawn

AQUEOUS

DATE	LAGOON NO.	SAMPLE MATRIX*
6/1/83	1 through 4	
6/2/83	6, 8, and 9	see above
	6 and 7	
	10	
6/10/83		

SLUDGE

LAGOON NO.	SAMPLE MATRIX
1 through 4 (perimeter)	
1 through 5 and 8 through 10 (center)	
6 and 7 (center)	

*NUMBERS INDICATE DEPTH OF SAMPLE.

FIGURE 3. LAGOON SAMPLE MATRICES, ZENITH LAGOON STUDY, LANSDALE, PA

AR000326

AGS® Applied Groundwater and Environmental Services Corp.	SCALE NONE	DRAWN BY RWE	DATE 6/21/83	DRAWING 3
	PROJECT NO. 41283	APPROVED BY	SHEET NO.	

Exploratory perimeter sludge samples were taken to determine the appropriate area within each lagoon from which to collect a composite sample. These samples were not analyzed. Based on the exploratory points, composite samples were taken from the center of each lagoon using 400-ml beakers and emptied into a clear gallon container. Sludge samples were taken starting with lagoon 10 and working to lagoon 1. This sequence was selected to minimize potential contaminant carryover between lagoons. It was not necessary to homogenate or fix the sludge samples nor were duplicate samples taken. As with the aqueous samples, sludge samples were kept under refrigeration.

For each lagoon sample, AGES quality control governing sample handling was fully implemented as presented in Appendix A.

During the sludge sampling, aqueous and sludge thicknesses were measured at various sampling points. A second 15-foot telescopic rod, demarcated in six-inch increments, was used to measure depths. The rod was held perpendicular to the aqueous surface. The first resistance to downward movement was noted as the aqueous depth while the second resistance was noted as the base of the lagoon, the difference being the sludge thickness.

In the lower lagoons, 1 through 7, personnel sampled under level C protection. This level consists of tyvec suits, full face respirators, two pairs of rubber gloves, and one pair of rubber boots. The telescopic rod and glass beaker were rinsed with distilled water after each lagoon was sampled.

III. ANALYTICAL PROCEDURE

Aqueous and sludge samples were analyzed for a variety of constituents according to the analytical procedure stated in the following references:

- o *Methods for Chemical Analysis of Water and Wastes*, EPA 625/6-74-003
- o Test Methods for Evaluating Solid Wastes, SW-846, August 1980
- o Methods for Organic Chemical Analysis of Municipal and Industrial Waste Water, EPA-600/4-82-057
- o Standard Methods for the Examination of Water and Waste Water, 15th Edition, 1980.

Aqueous samples were analyzed for EP toxic metals (including arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver); 15 volatile organics (including methanol, methylene chloride, acetone, chloroform, methylethyl ketone, benzene, methylisobutyl ketone, 1,1 dichloroethane, 1,1,1 trichloroethane, 1,2 dichloroethane, trichloroethylene, tetrachloroethylene, toluene, ethyl benzene, and xylenes), total organic carbon, pH, cyanide, and total and suspended solids.

Sludge samples were analyzed for EP toxic metals (as above) and cyanide. The density of the sludge was also determined.

IV. RESULTS

Physical Measurements

Lagoons 1 through 3 have an earthen liner, as shown in Figure 4; lagoons 4 through 7 have an asphalt liner as shown in Figure 5; and lagoons 8 through 10 have a rubber liner as shown in Figure 6. Physical measurement data which yield volume estimates for each lagoon are listed in Table 1. The estimated volumes of aqueous and sludge to be removed are 4.3 million gallons and 5700 cubic yards, respectively.

Chemical Analysis

The chemical analysis of the composite aqueous samples is presented in Table 2 whereas the chemical analysis of the composite sludge samples is presented in Table 3. Appendix B contains AGES' Analytical Reports.

As the data in Table 2 indicate, the 4.3 million gallons of aqueous are relatively clean and suitable for direct discharge into a municipal sewage treatment plant. AGES' has received written approval from the Upper Gwynedd Township Authority's Wastewater Treatment Facility, to discharge this aqueous into the Upper Gwynedd Township Authority system. Appendix C contains the correspondence between AGES and the Upper Gwynedd Township Authority. Rules and regulations governing the discharge of

(LAGOON 1 NOT CLEARLY SHOWN)

AR000330

FIGURE 4. EARTHEN LAGOONS 1, 2, & 3,
ZENITH LAGOON STUDY,
LANSDALE, PA

AGS Applied Geotechnical and Environmental Services Corp.	SCALE NONE	DRAWN BY RWE	DATE 6/21/88	DRAWING 4
	PROJECT NO.	APPROVED BY		

(LAGOON 4 NOT SHOWN)

AR000331

FIGURE 5. ASPHALT LINED LAGOONS 4, 5, 6, & 7,
ZENITH LAGOON STUDY,
LANSDALE, PA

AGES® Applied Geotechnical and Environmental Services Corp.	SCALE NONE	DRAWN BY RWE	DATE 6/21/83	DRA
	PROJECT NO.	APPROVED BY		

(LAGOONS 9 & 10 NOT SHOWN)

AR000332

FIGURE 6. RUBBER LINED LAGOONS 8, 9, & 10,
ZENITH LAGOON STUDY,
LANSDALE, PA

AGS® Applied Geotechnical and Environmental Services Corp.	SCALE: NONE	DRAWN BY: RWE	DATE: 6/21/83	DRAWING: 6

TABLE 1

PHYSICAL MEASUREMENTS, ZENITH LAGOON STUDY
LANSDALE, PA

Lagoon No.	Wetted Perimeter, ft[a] Length	Width	Area ft^2	Adjusted Area ft^2[b]	Average Thickness, ft Aqueous	Sludge	Volume[c] Aqueous, gal.	Sludge, yd^3
1	129	47	6,063	4,799	7.5	4.5	269,243	800
2	129	91	11,739	10,351	6.5	6.6	503,301	2,530
3	129	91	11,739	10,643	5.1	5.2	406,037	2,050
4	128	49	6,272	4,968	7.7	< .1[d]	286,157	18
5	128	38	4,864	3,705	7.3	0.2	202,322	27
6	59	33	1,947	1,439	5.9	0.5	63,510	27
7	62	33	2,046	1,446	6.8	0.4	73,554	21
8	189	63	11,907	9,441	10.2	<0.1[d]	720,361	35
9	224	78	17,472	14,637	9.7	<0.1[d]	1,062,076	54
10	210	70	14,700	12,550	7.9	0.2	741,656	93
TOTAL							4,328,217	5,655

a - all measurements ± 3 ft.
b - Adjusted area = (Length - Aqueous Thickness) (Width - Aqueous Thickness), assuming 1:1 side slope down to top of sludge
c - Based on adjusted area
d - < was assumed to be .1 in volume estimate
e - As : vertical drop from top of sludge to on bottom

TABLE 2

CHEMICAL ANALYSIS OF COMPOSITE AQUEOUS SAMPLES
ZENITH LAGOON STUDY
LANSDALE, PA

	Lagoons, concentrations in mg/l							
Parameter	1	2	3	4	5	6	7	8/9/10
TOC	12.	102.	32.	99.	35.	31.	77.	171.
pH	9.26	8.09	8.08	8.24	8.03	9.10	10.14	6.75
Cyanide	0.002	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001
Arsenic	< 0.001	0.015	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Barium	0.14	0.080	0.060	0.32	0.62	0.44	0.68	0.040
Cadmium	< 0.002	< 0.002	< 0.002	0.005	0.005	0.003	0.012	< 0.002
Chromium, Total	< 0.010	0.029	< 0.010	< 0.010	0.010	0.010	< 0.010	< 0.010
Copper	0.006	0.15	< 0.006	0.012	0.012	0.006	0.006	0.006
Iron, Total	0.57	9.40	0.42	0.72	0.67	0.52	0.85	0.59
Lead	0.31	0.40	0.12	0.99	0.19	0.15	0.15	0.19
Mercury	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Selenium	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	0.010	0.015	0.005	0.005	< 0.005	0.005	< 0.005	< 0.005
Total Solids	318.	457.	276.	660.	202.	59.	1924.	45.
Suspended Solids	11.	58.	6.	8.	1.	4.	12.	5.

TABLE 2 (CONT'D)

CHEMICAL ANALYSIS OF COMPOSITE AQUEOUS SAMPLES
ZENITH LAGOON STUDY
LANSDALE, PA

	Lagoons, concentrations in ug/l							
Parameter	1	2	3	4	5	6	7	8/9/10
Methanol	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Acetone	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylethyl Ketone	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylisobutyl Ketone	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2 Dichloroethane	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethylene	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethylene	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethyl Ben	< 1.0	< 1.0	< 1.0	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylenes	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

TABLE 3

CHEMICAL ANALYSIS OF COMPOSITE SLUDGE SAMPLES
ZENITH LAGOON STUDY
LANSDALE, PA

	Lagoons, Concentrations in mg/l									
	Lagoon 1		Lagoon 2		Lagoon 3		Lagoon 4		Lagoon 5	
Parameter	Total	Leach	Total	Leach	Total	Leach	Total	Leach	Total	Leach
TOC	696.		3494.		5905.		12,928.		5882.	
pH	8.54		10.28		7.74		6.48		8.13	
Cyanide	57.4		9.8		5.1		177.		29.4	
Arsenic		0.006		0.016		0.004		0.001		0.003
Barium		2.44		3.78		0.084		0.144		6.72
Cadmium		0.018		0.084		0.165		0.062		0.015
Chromium, Total		0.036		0.144		< 0.018		0.018		< 0.018
Copper	3.49		5.89		7.45		5.05		3.25	
Iron, total	1695.		1866.		5308.		274.		608.	
Lead		0.625		32.8		13.9		36.3		0.18
Mercury		< 0.0002		< 0.0003		< 0.0002		< 0.0002		< 0.0002
Selenium		< 0.001		< 0.001		< 0.001		< 0.001		< 0.001
Silver		< 0.010		0.010		0.010		< 0.010		< 0.010

(CONT'D)

TABLE 3 (CONT'D)

CHEMICAL ANALYSIS OF COMPOSITE SLUDGE SAMPLES
ZENITH LAGOON STUDY
LANSDALE, PA

	Lagoons, Concentrations in mg/l									
	Lagoon 6		Lagoon 7		Lagoon 8		Lagoon 9		Lagoon 10	
Parameter	Total	Leach	Total	Leach	Total	Leach	Total	Leach	Total	Leach
TOC	7481.		4158.		2733.		8814.		9254.	
pH	9.28		8.31		7.28		6.60		6.81	
Cyanide	2333.		2033.		3.53		1.75		1.77	
Arsenic		0.003		0.002		< 0.001		0.001		0.001
Barium		30.6		40.3		1.83		0.50		0.015
Cadmium		0.022		0.040		0.088		0.018		0.015
Chromium, Total		0.450		< 0.018		1.42		0.018		< 0.018
Copper	10.9		9.26		6.25		1.56		0.96	
Iron, Total	916.		1884.		7877.		762.		257.	
Lead		0.50		0.25		0.18		0.125		< 0.06
Mercury		< 0.0002		< 0.0002		< 0.0002		< 0.0002		< 0.0002
Selenium		< 0.001		< 0.001		< 0.001		< 0.001		< 0.001
Silver		0.010		0.010		< 0.010		< 0.010		< 0.010

sanitary and industrial wastewaters into the public sewers of the Upper Gwynedd Townshp Authority are also included in Appendix C. Essentially, up to a 100 gallon per minute discharge is permitted if the suspended solids concentration in the aqueous is less than or equal to 200 milligrams per liter. The highest level of suspended solids, which occurs in lagoon 2, is only 59 milligrams per liter (see Table 2). If, however, this limit is exceeded, the discharge flow would be limited to 20 gallons per minute. Furthermore, if the total solids concentration exceed 1,000 milligrams per liter, then no discharge would be accepted. Lagoon 7, which has 1,924 milligrams per liter of total solids (see Table 2) should be reduced to an acceptable level following dilution with make-up water in lagoon 10. The use of make-up water is explained in Phase I of the removal and disposal of aqueous and sludge (see Section V of this report).

Aqueous levels of EP toxic metals are less than 1.0 milligrams per liter, whereas all volatile organics are less than 1.0 micrograms per liter. Table 4 presents the maximum concentrations for the eight EP toxic metals.

Due to the absence of volatile organics in the aqueous, sludge samples were not analyzed for volatiles. In general, levels of EP toxic metals are below EP maximum concentrations. However, elevated concentrations of lead were detected in lagoons 2, 3,

TABLE 4

MAXIMUM CONCENTRATIONS FOR EP TOXIC METALS

Metal	Maximum Concentration in mg/l
Arsenic	5.0
Barium	100.0
Cadmium	1.0
Chromium	5.0
Lead	5.0
Mercury	0.2
Selenium	1.0
Silver	5.0

and 4. In addition, lagoons 6 and 7 were found to have elevated concentrations of cyanide. Consequently, these sludges should be considered hazardous and handled accordingly. There are approximately 4,700 cubic yards of hazardous sludge and 1,100 cubic yards of non-hazardous sludge.

The approximate quantities of lagoon material which must be removed to safeguard the environment are summarized below.

Clean Aqueous----------4.3 million gallons

Non-Hazardous Sludge (in-place):

Solid----------110 tons
Aqueous----------0.2 million gallons

Hazardous Sludge (in-place) :*

Solid----------500 tons
Aqueous----------0.9 million gallons

* containing lead or cyanide

It should be noted, however, that the condition of the soils beneath the lagoons was not investigated in this study. Therefore, it is possible that further escavation (ie., soil removal) may be required to ensure that the immediate area surrounding the lagoons is free from contamination.

V. DISCUSSION

Based on the analytical data (see Tables 2 and 3), as well as the physical layout of the lagoons, the removal and disposal of aqueous and sludge can be achieved by implementing one of several scenarios. Four scenarios are outlined below:

Scenario I

- Pump the clean aqueous to the public sewer, reserving some aqueous for use in moving the non-hazardous and hazardous sludge through the filter belt.
- Dewater the non-hazardous and hazardous sludge and box.
- Dispose of the non-hazardous sludge in-state (Location A).
- Dispose of the hazardous sludge out-of-state (Location B).

Scenario II

- Pump the clean aqueous to the public sewer, reserving some aqueous for use in moving the non-hazardous and hazardous sludge through the filter belt.
- Dewater the non-hazardous and hazardous sludge and box.
- Dispose of the non-hazardous sludge in-state (Location A).
- Dispose of the hazardous sludge containing cyanide out-of-state (Location B).
- Dispose of the hazardous sludge containing lead in-state (Location C).

Scenario III

- Pump the clean aqueous to the public sewer, reserving some aqueous for use in moving the non-hazardous and hazardous sludge containing cyanide through the filter belt and the hazardous sludge containing lead through the vacuum system.

- o Dewater the non-hazardous and hazardous sludge containing cyanide and box.
- o Dispose of the non-hazardous sludge in-state (Location A).
- o Dispose of the hazardous sludge containing cyanide out-of-state (Location B).
- o Vacuum the hazardous sludge containing lead.
- o Dispose of the hazardous sludge containing lead out-of-state (Location D).

Scenario IV

- o Pump the clean aqueous to the public sewer, reserving some aqueous for use in moving the hazardous sludge containing cyanide through the filter belt and the non-hazardous and hazardous sludge containing lead through the vacuum system.
- o Dewater the hazardous sludge containing cyanide and box.
- o Dispose of the hazardous sludge containing cyanide out-of-state (Location B).
- o Vacuum the non-hazardous and hazardous sludge containing lead.
- o Dispose of the non-hazardous and hazardous sludge containing lead out-of-state (Location D).

Depending on the scenario, it may be cost-effective to distribute the work among several phases. Each phase would be designed to safely handle the clean aqueous and the hazardous and non-hazardous sludge (including the filtered aqueous). As an example, Scenario I, which consists of three phases, is outlined below.

Phase I

- o Discharge the clean aqueous from lagoons 1 and 5 directly to the public sewer.
- o Pump the clean aqueous from lagoon 10 into lagoons 8 and 9 and discharge the excess to the public sewer. Clean aqueous from lagoons 8 and 9 are to serve as a source of make-up water in moving the sludge through the filter belt (ie., dewatering unit) whereas lagoon 10 will serve as a holding lagoon for the aqueous removed from the sludge (ie., filtered aqueous).

- o Dewater the non-hazardous sludge from lagoon 10; box the dewatered sludge and prepare it for hauling to a sanitary landfill; test the quality of filtered aqueous and if suitable, discharge it to the public sewer.

- o Dewater the non-hazardous sludge from lagoons 1 and 5; box the dewatered sludge and prepare it for hauling to a sanitary landfill; pump the filtered aqueous to lagoon 10; take composite samples and test the quality of the filtered aqueous and if suitable, discharge it to the public sewer.

Phase II

- o Discharge the clean aqueous from lagoons 2, 3, 4, 6, and 7 directly to the public sewer.

- o Dewater the hazardous sludge from lagoons 2, 3, 4, 6, and 7; box the dewatered sludge and prepare it for hauling to hazardous waste landfill; pump the filtered aqueous to lagoon 10; take composite samples and test the quality of the filtered aqueous and if suitable, discharge it to the public sewer.

Phase III

- o Discharge the clean aqueous from lagoons 8 and 9 directly to the public sewer.

- o Dewater the non-hazardous sludge from lagoons 8 and 9; box the dewatered sludge and prepare it for hauling to a sanitary landfill; pump the filtered aqueous to lagoon 10; take composite samples and test the quality of the filtered aqueous and if suitable, discharge it to the public sewer.

The estimated quanitities of lagoon material and costs associated with each phase of Scenario I are presented in Table 5. Similar estimates prepared for Scenarios II, III, and IV appear in Tables 6, 7, and 8, respectively. The total amounts in Tables 5 through 8 include user (or discharge) fees; the pumping, dewatering, and boxing of the dewatered sludge; the vacuuming of the sludge (if applicable); the hauling of the sludge; the disposal of the

TABLE 5

AQUEOUS AND SLUDGE QUANTITIES AND COST ESTIMATES FOR SCENARIO I, PHASE I, II, AND III ZENITH LAGOON STUDY, LANSDALE, PA

Lagoon Material	Cost Estimate, in Dollars			
	Phase I	Phase II	Phase III	Total
Clean Aqueous, gal	1,213,221	1,332,559	1,782,437	4,328,217
Sludge(in-place)[a];gal	185,840	938,942	17,978	1,142,760
solids, tons	99	499	10	608
aqueous, gal	173,748	877,848	16,808	1,068,404
Activity				
Discharge Clean Aqueous @ $1.443/1,000 gal	1,751	1,923	2,572	6,246
Dewater Sludge and Box @ $0.223/gal of sludge (in-place)	41,442	209,384	4,009	254,835
Haul Hazardous Sludge @ $85.00/ton	NA	42,415	NA	42,415
Disposal of Hazardous Sludge @ $45.00/ton	NA	22,455	NA	22,455
Haul Non-Hazardous Sludge @ $100.00/20 tons	500	NA	200	700
Disposal of Non-Hazardous Sludge @ $30.00/ton	2,970	NA	300	3,270
Discharge Filtered Aqueous @ $1.443/1,000 gal	251	1,267	25	1,543
Engineering Support	4,700	28,000	750	33,450
Total	$51,614	$305,444	$7,856	$364,914

[a] Used 8.85 lb/gal for sludge (measured); 8.33 lb/gal for aqueous (assumed @ 70 F); and 12% solids by weight for sludge in-place (assumed).

APPENDIX A

QUALITY CONTROL PROTOCOL

A.1 Sample Handling and Identification

Each sample container is labeled immediately. The use of the sample labels are necessary to prevent misidentification of samples. Gummed paper labels or tags are adequate. The label includes the following information:

- Name of Collector
- Date and Time of Collection
- Place of Collection
- Collector's sample number, which uniquely identifies the sample

The sample is refrigerated between 4 and 6 C (39.2 and 42.8 F).

A.2 Field Reports

All field information relevant to the sampling program is recorded in the field and transformed into a field report at the office. Entries include the following:

- Purpose of sampling (i.e., technical support or monitoring)
- Location and address of sampling site
- Name and address of sampling site
- Name and address of field contact (if applicable)
- Type of waste (i.e., oil, aqueous, oil/aqueous, or sludge)
- Number and volume of sample taken
- Location of sampling point including pertinent field observations
- Date and time of collection

- o Collector's sample identification number(s)
- o References such as maps or photographs of the sampling site

Sampling situations vary widely. No general rule can be given as to the extent of information that must be recorded. A good rule, however, is to record sufficient information so that someone can reconstruct the sampling situations without reliance on the collector's memory.

A.3 Chain of Custody Record

To establish the documentation necessary to trace sample possession from the time of collection, a chain of custody record is filled out and accompanys every sample. The record contains the following minimum information:

- o Collector's sample number
- o Signature of collector
- o Date and time of collection
- o Place and address of collection
- o Waste type
- o Signatures of persons involved in the chain of possession
- o Inclusive dates of possession

A.4 Sample Analysis Request Sheet

The sample analysis request sheet accompanys the sample on delivery to the laboratory. The field portion of this form is completed by the person collecting the sample whereas the laboratory portion of this form is completed by laboratory personnel and includes:

- o Name of person receiving the sample
- o Laboratory sample number
- o Date of sample receipt
- o Sample allocation
- o Analysis to be performed

A.5 Sample Delivery to the Laboratory

Preferably, the sample is delivered in person to the laboratory for analysis as soon as practicable.

The sample is accompanied by the chain of custody record and by a sample analysis request sheet.

The sample is delivered to the laboratory's sample custodian who is authorized to receive samples.

A.6 Inspection of Sample and Assignment of Laboratory Numbers

The custodian inspects the condition of the sample and notes his findings on the sample analysis request sheet. If any problem (such as a leaking container) is detected, the sample is rejected on the basis that it is no longer a representative sample. The custodian also reviews the chain of custody record and sample analysis request sheet and resolves any discrepancies prior to analysis. Samples receive a laboratory number, which are consecutively recorded in the laboratory log book, and are stored under refrigeration until analysis.

AG

A.7 Assignment of Sample for Analysis

The laboratory supervisor assigns the sample for analysis. A chemist reviews the information on the sample analysis request sheet. He decides on the sample allocation and delineates the types of analyses to be performed on each allocation. He is prepared to testify that the sample is in his possession or secured in the laboratory at all times from the moment it was received from the custodian until the analyses were performed.

The chemist records in his laboratory notebook the identifying information about the sample and the date of analysis. This is in addition to analytical data and calculations.

AG

APPENDIX B

AGES ANALYTICAL REPORTS
AQUEOUS AND SLUDGE SAMPLES
ZENITH LAGOON STUDY
LANSDALE, PA

AGES LABORATORIES
1151 S Trooper Road Norristown, PA 19403 (215) 666-7404

Engineering Consultants – Analytical Services

ANALYTICAL REPORT
June 16, 1983

Zenith
1180 Church Rd. Realty Corp.
Box 1189
Norristown, PA 19428

AGES Project No. 41383

Re: Analysis of Lagoon Samples
Submitted 6/2/83
AGES Lab I.D. #830678

	Aqueous 1	Aqueous 2	Aqueous 3	Aqueous 4
TOC	12.	102.	32.	99.
pH	9.26	8.09	8.08	8.24
Cyanide	0.002	<0.001	<0.001	<0.001
Total Solids	318.	457.	276.	660.
Suspended Solids	11.	58.	6.	8.
Arsenic	<0.001	0.015	<0.001	<0.001
Barium	0.14	0.080	0.060	0.32
Cadmium	<0.002	<0.002	<0.002	0.005
Chromium, Total	<0.010	0.029	<0.010	<0.010
Copper	0.006	0.15	<0.006	0.012
Iron, Total	0.57	9.40	0.42	0.72
Lead	0.31	0.40	0.12	0.99
Mercury	<0.0001	<0.0001	<0.0001	<0.0001
Selenium	<0.001	<0.001	<0.001	<0.001
Silver	0.010	0.015	0.005	0.005

The results are expressed as mg/l except pH.

AR000351

Re: Analysis of Lagoon Samples
Submitted 6/2/83
AGES Lab I.D. #830678

The above samples, Aqueous 1, 2, 3 and 4 were analyzed for volatile organics by the Purge and Trap method. The analysis was performed with a gas chromatograph equipped with a flame ionization detector. Sample components were identified by comparison of peak retention times with the standard compounds listed below. The results of the analysis are:

	Aqueous 1	Aqueous 2	Aqueous 3	Aqueous 4
Methanol	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	<1.0	<1.0	<1.0	<1.0
Acetone	<1.0	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0	<1.0
Methylethyl Ketone	<1.0	<1.0	<1.0	<1.0
Benzene	<1.0	<1.0	<1.0	<1.0
Methylisobutyl Ketone	<1.0	<1.0	<1.0	<1
1,1-Dichloroethane	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0	<1.0
Trichloroethylene	<1.0	<1.0	<1.0	<1.0
Tetrachloroethylene	<1.0	<1.0	<1.0	<1.0
Toluene	<1.0	<1.0	<1.0	<1.0
Ethyl Benzene	<1.0	<1.0	<1.0	<1.0
Xylenes	<1.0	<1.0	<1.0	<1.0

The results are expressed as ug/l.

Re: Analysis of Lagoon Samples
Submitted 6/2/83
AGES Lab I.D. #830678

	Aqueous 5	Aqueous 6	Aqueous 7	Aqueous 8/9/10
TOC	35.	31.	77.	171.
pH	8.03	9.10	10.14	6.75
Cyanide	0.002	<0.001	<0.001	<0.001
Total Solids	202.	59.	1924.	45.
Suspended Solids	1.	4.	12.	5.
Arsenic	<0.001	<0.001	<0.001	<0.001
Barium	0.62	0.44	0.68	0.040
Cadmium	0.005	0.003	0.012	<0.002
Chromium, Total	0.010	0.010	<0.010	<0.010
Copper	0.012	0.006	0.006	0.006
Iron, Total	0.67	0.52	0.85	0.59
Lead	0.19	0.15	0.15	0.19
Mercury	<0.0001	<0.0001	<0.0001	<0.0001
Selenium	<0.001	<0.001	<0.001	<0.001
Silver	<0.005	0.005	<0.005	<0.005

The results are expressed as mg/l except pH.

AGES

Re: Analysis of Lagoon Samples
Submitted 6/2/83
AGES Lab I.D. #830678

The above samples, Aqueous 4, 5, 7 and 8/9/10 were analyzed for volatile organics by the Purge and Trap method. The analysis was performed with a gas chromatograph equipped with a flame ionization detector. Sample components were identified by comparison of peak retention times with the standard compounds listed below. The results of the analysis are:

	Aqueous 5	Aqueous 6	Aqueous 7	Aqueous 8/9/10
Methanol	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	<1.0	<1.0	<1.0	<1.0
Acetone	<1.0	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0	<1.0
Methylethyl Ketone	<1.0	<1.0	<1.0	<1.0
Benzene	<1.0	<1.0	<1.0	<1.0
Methylisobutyl Ketone	<1.0	<1.0	<1.0	<1.
1,1-Dichloroethane	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0	<1.0
Trichloroethylene	<1.0	<1.0	<1.0	<1.0
Tetrachloroethylene	<1.0	<1.0	<1.0	<1.0
Toluene	<1.0	<1.0	<1.0	<1.0
Ethyl Benzene	<1.0	<1.0	<1.0	<1.0
Xylenes	<1.0	<1.0	<1.0	<1.0

The results are expressed as ug/l.

Respectfully submitted,

AGES Laboratories

Jack Thorne
Laboratory Manager

JT/bbk

AGES LABORATORIES
11515 Trumper Road Norristown PA 19403 (215) 666-7404
Engineering Consultants – Analytical Services

ANALYTICAL REPORT
June 28, 1983

Zenith
1180 Church Rd. Realty Corp.
Box 1189
Norristown, PA 19428

AGES Project No. 41383

Re: Analysis of Sludge Samples
Submitted 6/10/83
AGES Lab I.D. #830725

	Sample #1 - Total (As Received)	Sample #1 - E.P. Toxicity-Leachate
TOC	696. mg/kg	-
pH	8.54	-
Cyanide	57.4 mg/kg	-
Suspended Solids	100560. mg/kg	-
Arsenic	-	0.006 mg/l
Barium	-	2.44 mg/l
Cadmium	-	0.018 mg/l
Chromium, Total	-	0.036 mg/l
Copper	3.49 mg/kg	-
Iron	1695. mg/kg	-
Lead	-	0.63 mg/l
Mercury	-	<0.0002 mg/l
Selenium	-	<0.001 mg/l
Silver	-	<0.010 mg/l

AR000355

Re: Analysis of Sludge Samples
Submitted 6/10/83
AGES Lab I.D. #830725

	Sample #2 - Total (As Received)	Sample #2 - E.P. Toxicity-Leachate
TOC	3494. mg/kg	-
pH	10.28	-
Cyanide	9.8 mg/kg	-
Suspended Solids	99520. mg/kg	-
Arsenic	-	0.016 mg/l
Barium	-	3.78 mg/l
Cadmium	-	0.084 mg/l
Chromium, Total	-	0.14 mg/l
Copper	5.89 mg/kg	-
Iron	1866. mg/kg	-
Lead	-	32.8 mg/l
Mercury	-	<0.0003 mg/l
Selenium	-	<0.001 mg/l
Silver	-	0.010 mg/l

	Sample #3 - Total (As Received)	Sample #3 - E.P. Toxicity-Leachate
TOC	5985. mg/kg	-
pH	7.74	-
Cyanide	5.2 mg/kg	-
Suspended Solids	125668. mg/kg	-
Arsenic	-	0.004 mg/l
Barium	-	0.084 mg/l
Cadmium	-	0.17 mg/l
Chromium, Total	-	<0.018 mg/l
Copper	7.45 mg/kg	-
Iron	5308. mg/kg	-
Lead	-	13.9 mg/l
Mercury	-	<0.0002 mg/l
Selenium	-	<0.001 mg/l
Silver	-	0.010 mg/l

AGES

AR000356

Re: Analysis of Sludge Samples
Submitted 6/10/83
AGES Lab I.D. #830725

	Sample #4 - Total (As Received)	Sample #4 - E.P. Toxicity-Leachate
TOC	12928. mg/kg	-
pH	6.48	-
Cyanide	177. mg/kg	-
Suspended Solids	39380. mg/kg	-
Arsenic	-	0.001 mg/l
Barium	-	0.14 mg/l
Cadmium	-	0.062 mg/l
Chromium, Total	-	0.018 mg/l
Copper	5.05 mg/kg	-
Iron	274. mg/kg	-
Lead	-	36.3 mg/l
Mercury	-	<0.0002 mg/l
Selenium	-	<0.001 mg/l
Silver	-	<0.010 mg/l

	Sample #5 - Total (As Received)	Sample #5 - E.P. Toxicity-Leachate
TOC	5882. mg/kg	-
pH	8.13	-
Cyanide	29.4 mg/kg	-
Suspended Solids	13940. mg/kg	-
Arsenic	-	0.023 mg/l
Barium	-	6.72 mg/l
Cadmium	-	0.015 mg/l
Chromium, Total	-	<0.018 mg/l
Copper	3.25 mg/kg	-
Iron	608. mg/kg	-
Lead	-	0.18 mg/l
Mercury	-	<0.0002 mg/l
Selenium	-	<0.001 mg/l
Silver	-	<0.010 mg/l

AG

Re: Analysis of Sludge Samples
Submitted 6/10/83
AGES Lab I.D. #830725

	Sample #6 - Total (As Received)	Sample #6 - E.P. Toxicity-Leachate
TOC	7481. mg/kg	-
pH	9.28	-
Cyanide	2333. mg/kg	-
Suspended Solids	111340. mg/kg	-
Density	1.06 gm/cc	-
Arsenic	-	0.003 mg/l
Barium	-	30.6 mg/l
Cadmium	-	0.022 mg/l
Chromium, Total	-	0.45 mg/l
Copper	10.9 mg/kg	-
Iron	916. mg/kg	-
Lead	-	0.50 mg/l
Mercury	-	<0.0002 mg/l
Selenium	-	<0.001 mg/l
Silver	-	0.010 mg/l

	Sample #7 - Total (As Received)	Sample #7 - E.P. Toxicity-Leachate
TOC	4158. mg/kg	-
pH	8.31	-
Cyanide	2033. mg/kg	-
Suspended Solids	71340. mg/kg	-
Arsenic	-	0.002 mg/l
Barium	-	40.3 mg/l
Cadmium	-	0.040 mg/l
Chromium, Total	-	<0.010 mg/l
Copper	9.26 mg/kg	-
Iron	1884. mg/kg	-
Lead	-	0.25 mg/l
Mercury	-	<0.0002 mg/l
Selenium	-	<0.001 mg/l
Silver	-	0.010 mg/l

AGES

Re: Analysis of Sludge Samples
Submitted 6/10/83
AGES Lab I.D. #830725

	Sample #8 - Total (As Received)	Sample #8 - E.P. Toxicity-Leachate
TOC	2733. mg/kg	-
pH	7.28	-
Cyanide	3.53 mg/kg	-
Suspended Solids	16430. mg/kg	-
Arsenic	-	<0.001 mg/l
Barium	-	1.83 mg/l
Cadmium	-	0.088 mg/l
Chromium, Total	-	1.42 mg/l
Copper	6.25 mg/kg	-
Iron	7877. mg/kg	-
Lead	-	0.18 mg/l
Mercury	-	<0.0002 mg/l
Selenium	-	<0.001 mg/l
Silver	-	<0.010 mg/l

	Sample #9 - Total (As Received)	Sample #9 - E.P. Toxicity-Leachate
TOC	8814. mg/kg	-
pH	6.60	-
Cyanide	1.75 mg/kg	-
Suspended Solids	9780. mg/kg	-
Arsenic	-	0.001 mg/l
Barium	-	0.50 mg/l
Cadmium	-	0.018 mg/l
Chromium, Total	-	0.018 mg/l
Copper	1.56 mg/kg	-
Iron	762. mg/kg	-
Lead	-	0.13 mg/kg
Mercury	-	<0.0002 mg/l
Selenium	-	<0.001 mg/l
Silver	-	<0.010 mg/l

AG

Re: Analysis of Sludge Samples
Submitted 6/10/83
AGES Lab I.D. #830725

	Sample #10 - Total (As Received)	Sample #10 - E.P. Toxicity-Leachate
TOC	9254. mg/kg	-
pH	6.81	-
Cyanide	1.77 mg/kg	-
Suspended Solids	4080. mg/kg	-
Arsenic	-	0.001 mg/l
Barium	-	0.015 mg/l
Cadmium	-	0.015 mg/l
Chromium, Total	-	<0.018 mg/l
Copper	0.96 mg/kg	-
Iron	257. mg/kg	-
Lead	-	<0.06 mg/l
Mercury	-	<0.0002 mg/l
Selenium	-	<0.001 mg/l
Silver	-	<0.010 mg/l

Respectfully submitted,

AGES Laboratories

Jack Thorne
Laboratory Manager

JT/bbk

APPENDIX C

CORRESPONDENCE BETWEEN AGES AND UPPER GYWNEDD TOWNSHIP AUTHORITY

AND

RULES AND REGULATIONS GOVERNING THE DISCHARGE OF SANITARY AND INDUSTRIAL WASTEWATERS INTO THE PUBLIC SEWERS OF THE UPPER GWYNEDD TOWNSHIP AUTHORITY

AGES Applied Geotechnical and Environmental Service Corp
1151 S Trooper Road Norristown, Pa 19403
215-666-7414

June 2, 1963

Earl Warbrick, Administrator
Upper Gwynedd Township Authority
Box 1307
North Wales, PA 19459

Re: Zenith Site Study
AGES Project No. 41383

Dear Mr. Warbrick:

This letter is to request permission to discharge water effluent from the ten lagoons located on the Zenith property into the Upper Gwynedd Township Sewer System. AGES Corporation is representing 1180 Church Road Realty Corporation, which is purchasing the Zenith property.

Please advise us as to what information your Authority needs to evaluate this request and, if possible, the guidelines under which discharge would be permitted. Your prompt response would be much appreciated. If you have any questions, please do not hesitate to call. Thank you for your cooperation.

Sincerely yours,

AGES CORP.

Robert W. Elfstrom, Jr.

Robert W. Elfstrom, Jr.

RWE/pab
cc: Mr. Dvorak

Upper Gwynedd Township Authority

Wastewater Treatment Facility

June 8,1983

Mr. Robert W. Elfstrom,Jr.
Applied Geotechnical and Environmental Service Corp.
1151 S. Trooper Road
Norristown,Pa. 19403

Dear Mr. Elfstrom:

Re: Zenith Site Study
AGES Project No. 41383

This letter is to grant permission for the discharge of the waste water effluent from the ten lagoons located on the Zenith property into the Upper Gwynedd Township Authority system. The conditions of the discharge would be that the flow should not exceed and be limited to 100 gallons per minute. Should the suspended solids in the lagoon flow exceed 200 mg./per liter, we request that the pumping rate be lowered to 20 gallons per minute. If the solids in the lagoon effluent release exceed 1,000 mg./per liter, then no flow would be accepted from that lagoon.

Enclosed is a copy of the Rules and Regulations covering the discharge of industrial waste water into the Authority system which may be helpful in specifying acceptability for discharge into the public collection system.

Please advise the Authority when any pumping is to occur, so that we may monitor the influence of the discharge on the operation of the treatment plant.

If any additional information is required, please contact the Authority.

Sincerely,

UPPER GWYNEDD TOWNSHIP AUTHORITY

Earl R. Warbrick
Administrator

ERW/b

Enc.

AR000363

RULES AND REGULATIONS GOVERNING THE DISCHARGE OF SANITARY AND INDUSTRIAL WASTEWATERS INTO THE PUBLIC SEWERS OF THE UPPER GWYNEDD TOWNSHIP AUTHORITY

GENERAL PURPOSE

The Upper Gwynedd Township Authority has provided facilities for the collection and treatment of sewage to promote the health, safety and convenience of the people it serves and for the safeguard of the waters and watercourses of the Commonwealth of Pennsylvania.

Provision has been made in the design, construction and operation of such facilities to accommodate certain types and quantities of industrial wastes in excess of, and in addition to, normal domestic sewage.

To implement this provision, the Upper Gwynedd Township Authority has prepared these Rules and Regulations to provide the Authority with control over the quality and quantity of the sanitary and industrial wastewaters admitted to its sewerage system and Wastewater Treatment Plant.

Now, therefore, be it promulgated by the Upper Gwynedd Township Authority, as follows:

ARTICLE I

Definitions

Unless the context specifically indicates otherwise, the meaning of terms used in these Rules and Regulations shall be as follows:

Sec. 1 "Authority" shall mean the Upper Gwynedd Township Authority which owns and operates the sewage works serving Sewer District No. 1 in Upper Gwynedd Township, Montgomery County, Pennsylvania with a Wastewater Treatment Plant located off Township Line Road west of Swedesford Road, and having as mailing address: P.O. Box 203, North Wales, Pennsylvania 19454.

Sec. 2 "B.O.D." (denoting Biochemical Oxygen Demand) shall mean the quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedure in five (5) days at 20°C, expressed in milligrams per liter (mg/l).

Sec. 3 "Color" shall mean the "true Color" due to substances in the industrial wastes after removing the suspended matter by filtration.

Sec. 4 "Department of Environmental Resources" shall mean the Department established by the Pennsylvania State Legislature in Act 275, effective on January 19, 1971.

Sec. 5 "Garbage" shall mean solid wastes from the domestic and commercial preparation, cooking, and dispensing of food, and from the handling, storage and sale of produce.

Sec. 6 "Industrial Wastes" shall mean the liquid wastes from commercial and industrial processes and operations as distinct from sanitary or domestic sewage.

Sec. 7 "Person" shall mean any individual, firm, company, corporation, association, society or group.

Sec. 8 "pH" (denoting hydrogen ion potential) shall mean the logarithm of the reciprocal of the weight of hydrogen ions in grams per liter of solution.

Sec. 9 "Properly Shredded Garbage" shall mean the garbage that has been shredded to such a degree that all particles will be carried freely under the flow conditions normally prevailing in public sewers, with no particles greater than 1/2 inch in any dimension.

Sec. 10 "Public Sewer" shall mean a sewer in which all owners of abutting properties have equal rights, and is controlled by public authority.

Sec. 11 "Receiving Stream" shall mean that body of water, stream, or watercourse receiving the discharged waters from the Wastewater Treatment Plant or formed by the discharge of the Wastewater Treatment Plant.

Sec. 12 "Sanitary or Domestic Sewage" shall mean water-borne wastes normally discharging into the sanitary conveniences of dwellings (including apartment houses and hotels), office buildings, factories and other industrial establishments, free of indu. trial wastes and ground, surface and storm waters.

Sec. 13 "Sanitary Sewer" shall mean a sewer which carries sewage and to which storm, surface, and ground waters are not intentionally admitted.

Sec. 14 "Sewage" shall mean a combination of all of the waterborne wastes from residences, business buildings, institutions, and industrial establishments, together with such ground, surface and storm waters as may be present.

Sec. 15 "Sewage Works" shall mean all facilities for collecting, pumping, treating, and disposing of sewage.

Sec. 16 "Sewer" shall mean a pipe or conduit for carrying sewage.

Sec. 17 "Sewerage System" shall mean the system of sanitary sewers and appurtenances for the collection, transportation, and pumping of sewage.

Sec. 18 "Shall" is mandatory; "May" is permissive.

Sec. 19 "Slug" shall mean any discharge of sewage which in concentration of any given constituent or in quantity of flow exceeds for any period of duration longer than fifteen (15) minutes more than five (5) times the average twenty-four (24) hour concentration or flows during normal operation.

Sec. 20 "Surcharge" shall mean the charge, in addition to the normal sewage service charge, which is made on persons whose wastes are greater in strength than the concentrations established herein.

Sec. 21 "Suspended Solids" shall mean solids that either float on the surface of, or are in suspension in water, sewage or other liquids, and which are removable by laboratory filtering.

Sec. 22 "Wastewater Treatment Plant" shall mean any arrangement of devices and structures used for treating sewage.

Sec. 23 "Watercourse" shall mean a channel in which a flow of water occurs, either continuously or intermittently.

ARTICLE II

Prohibitive Use of Sanitary Sewers

Sec. 1 No person shall discharge or cause to be discharged to any sanitary sewer any water-bearing waste other than domestic sewage that is not approved by the Authority in accordance with the provisions in these Rules and Regulations.

Sec. 2 No person shall discharge or cause to be discharged to any sanitary sewer any storm water, surface water, ground water, roof runoff, or subsurface drainage.

Sec. 3 No person shall discharge or cause to be discharged to any sanitary sewer any cooling water or unpolluted industrial process water unless, in the opinion of the Department of Environmental Resources, such discharges direct to the watercourses of the Commonwealth may result in the pollution thereof.

Sec. 4 No person shall discharge or cause to be discharged any of the following described waters or wastes to any public sewers:

(a) Any gasoline, benzene, naphtha, fuel oil, or other flammable or explosive liquid, solid, or gas.

(b) Any waters or wastes containing toxic or poisonous solids, liquids, or gases in sufficient quantity, either singly or by interaction with other wastes, to injure or interfere with any sewage treatment process, constitute a hazard to humans or animals, create a public nuisance, or create any hazard in the receiving waters of the Wastewater Treatment Plant, including but not limited to cyanides in excess of two (2) mg/l as CN in the wastes as discharged to the public sewer.

(c) Any waters or wastes having a pH lower than 5.5 or higher than 9.0, or having any other corrosive property capable of causing damage or hazard to structures, equipment, and personnel of the sewage works.

(d) Solid or viscous substances in quantities or of such size capable of causing obstruction to the flow in sewers, or other interference with the proper operation of the sewage works such as, but not limited to, ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, whole blood, paunch manure, hair and fleshings, entrails and paper dishes, cups milk containers, etc. either whole or ground by garbage grinders.

(e) Any garbage that has not been properly shredded.

(f) Any gas from internal combustion engines or any other noxious or malodorous gas or substance capable of causing a public nuisance or hazard to life or preventing entry into a sanitary sewer for its maintenance and repair.

Sec. 5 No person shall discharge or cause to be discharged to any sanitary sewer any waters or wastes containing any materials, substances, or constitutents in excessive or unusual quantities or concentrations above that of normal domestic sewage, if in the opinion of the Authority they:

(1) Can harm the sewage works or treatment processes.

(2) Can have an adverse effect on the receiving stream.

(3) Contain substances which are not amenable to treatment or reduction by the sewage treatment processes employed.

(4) Are amenable to treatment only to such degree that the Wastewater Treatment Plant effluent or the receiving stream cannot meet the requirements of the Department of Environmental Resources.

(5) Can endanger life, limb or public property.

(6) Constitute a nuisance.

In arriving at the acceptability of the constituency of such waters or wastes, the Authority shall give consideration to such factors as the quantities of subject wastes or waters in relation to flows and velocities in the sewers, materials of construction of the sewage works, nature of the sewage treatment processes, capacity of the Wastewater Treatment Plant, degree of treatability of the waters or wastes in the Treatment Plant, and other pertinent factors. The materials and types of flow which can exert or cause such problems are:

(a) Any liquid or vapor having a temperature higher than one hundred fifty (150) °F (65°C).

(b) Any water or waste containing fats, wax, grease, or oils, whether emulsified or not, in excess of one hundred (100) mg/l or containing substances which may solidify or become viscous at temperatures between thirty-two (32) and one hundred fifty (150) °F (0° and 65°C).

(c) Any water or waste, such as metal-finishing waste, containing more than the following concentrations of the following toxic or poisonous chemicals or substances:

(1)	Cadmium (Cd)	-	1.0 mg/l
(2)	Cyanide (CN)	-	2.0 mg/l
(3)	Chrome (Cr hex)	-	1.0 mg/l
(4)	Chrome (Cr tri)	-	2.0 mg/l
(5)	Copper (Cu)	-	1.0 mg/l
(6)	Iron (Fe)	-	15.0 mg/l
(7)	Nickel (Ni)	-	1.0 mg/l
(8)	Zinc (Zn)	-	2.0 mg/l
(9)	Arsenic (As)		Only in such
(10)	Barium (Ba)		limited concen-
(11)	Lead (Pb)		trations as is
(12)	Selenium (Se)		approved by the
(13)	Silver (Ag)		Authority.

(d) Any water or waste containing dyes or other coloring matter, in such concentrations exceeding limits which may be established by the Authority as necessary, after treatment of the composite sewage, to prevent discoloration of the Wastewater Treatment Plant effluent.

(e) Any water or waste containing phenols or other taste-or-odor-producing substances, in such concentrations exceeding limits which may be established by the Authority as necessary, after treatment of the composite sewage, to meet the requirements of the Department of Environmental Resources.

(f) Any radioactive wastes having greater than the allowable release specified by the current U.S. Bureau of Standards Handbook dealing with the handling and release of radioactivity or as further modified by the Department of Environmental Resources.

(g) Excessive or unusual concentrations of dissolved solids such as the calcium, magnesium and sodium salts of the chlorides, fluorides, nitrates and sulfates.

(h) Excess strength of wastes, including:

(1) Suspended Solids over 350 mg/l
(2) B.O.D. over 300 mg/l
(3) Phosphates (as PO_4) over 33 mg/l
(4) Chlorine Demand over 30 mg/l

(i) Existence of slugs in the discharge.

Sec. 6 No statement contained in this Article shall be construed as prohibiting any special Agreement between the Authority and any person whereby that person, at his own expense, may or shall provide such pre-treatment or flow control facilities as necessary to modify a proposed discharge of waters and wastes so as to be within the acceptable limits enumerated in Section 5.

ARTICLE III

Permissible Use of Sanitary Severs

Sec. 1 Any person proposing to discharge any materials, substances, waters, or industrial wastes, other than domestic sewage, into the sewerage system or any sewer connected thereto shall make written Application to the Authority for acceptance of the waste. The Applicant shall submit the following data:

(1) The manufacturing process or processes which are the sources of the industrial wastes.

(2) Expected average, maximum and minimum daily rates of flow.

(3) Proposed schedule of such discharges.

(4) Expected chemical characteristics of the industrial wastes.

(5) Flow diagram showing the route of and method of conveying the industrial wastes from their source to the proposed point or points of connection to the severs owned by the industry and, in turn, to the sewerage system of the Authority.

(6) Facilities, as outlined in Article IV, available or proposed to be available for inspecting, observing, measuring, sampling and testing of the proposed industrial wastes.

(7) Any other pertinent information that may be requested by the Authority or offered by the Applicant.

Sec. 2 If the application shows that the industrial wastes proposed to be discharged to the sanitary severs contain the materials, substances, waters, wastes or characteristics enumerated in Article II or contain other materials, substances, waters or wastes which may have a deleterious effect on the sewage works, the sewage treatment processes, or the receiving stream, or create a hazard to life or limb or create a public nuisance, the Authority may:

(a) Reject the industrial waste.
(b) Accept the industrial waste on same basis as normal domestic sewage.
(c) Accept the industrial waste but require additional payment or surcharge to defray additional costs to the Authority for handling and treating the Applicant's industrial waste.
(d) Require the applicant to pretreat the industrial waste to an acceptable level or condition.
(e) Require the applicant to provide control over the quantities times and rates of industrial wastes discharged to the sanitary sewer.

Sec. 3 Should the Authority require pre-treatment and/or flow control facilities prior to the acceptance of the industrial wastes to the sanitary sewer, the Applicant shall submit to the Authority for review and approval plans and specifications for such facilities showing:

(1) Pertinent details of the construction.

(2) Schematic flow diagram with the route of conveying the wastes from their sources to and through the pre-treatment plant and/or flow controlling facilities to the point or points of connection to the sanitary sewer.

(3) Names and expected quantities of treatment chemicals and their points of application.

(4) Methods of controlling the chemical feeds and waste flows.

(5) Expected average, maximum, and minimum daily rates of flow from the treatment and/or flow controlling facilities.

(6) Proposed schedule of such discharges.

(7) Expected chemical characteristics of the effluent from such facilities.

(8) Waste control facilities outlined in Article IV, if in variance with that presented in the Application.

(9) Any other pertinent information that may be requested by the Authority or offered by the Applicant.

Sec. 4 Should the Authority require grease, oil and sand interceptors or oil reclaimers, the Applicant shall submit to the Authority for review and approval design and pertinent data for such devices. The devices provided shall be of acceptable capacity, watertight, constructed of impervious materials and capable of withstanding abrupt and extreme changes in temperature. They shall be equipped with readily removable access covers and shall be located so as to be readily and easily accessible for cleaning and inspection.

Sec. 5 The plans, specifications, and other pertinent information required under Sections 3 and 4 above and submitted to the Authority for review and approval must have the approval of the Authority prior to any construction or installation of such facilities and they shall be subject to the requirements of all applicable codes, ordinances and laws.

Sec. 6 If the plans, specifications, and other pertinent information submitted to the Authority for review have been approved by the Authority, there shall be executed between the Authority and the Applicant a formal Agreement setting forth in detail the characteristics of the industrial wastes, both before and after pretreatment.

the flow conditions under which the facilities are to operate and discharge the pre-treated and/or flow controlled wastes to the sanitary sewers, any conditions which are applicable to and perhaps unique to the operations of the particular industry, and any special or unique condition with respect to the physical connection or connections to the sanitary sewers.

Sec. 7 Any approval by the Authority of pre-treatment and/or flow control facilities furnished by the Applicant shall be contingent upon the ability of the proposed facilities to perform as required. Should the proposed facilities fail to do so, the Authority shall have the right to either require the Applicant to submit a new Application with the revisions he proposes to make, or the Authority may reject the waste. The Authority's approval is also subject to revision and change depending upon the change in concentration of a constituent in the sewage delivered to the Wastewater Treatment Plant.

Sec. 8 The cost of preparing and submitting all data and any other information for any Application, for Plans and Specifications for the pre-treatment and/or flow control facilities to be provided by the Applicant at his own expense, and the Applicant's part in obtaining a formal Agreement, as set forth herein, shall be borne by the Applicant.

Sec. 9 No connection for the discharge of any untreated industrial wastes, any pre-treated industrial wastes, or any flow-controlled industrial wastes or any other industrial wastes to the sewers system of the Authority shall be made until a Letter of Accept has been issued or a formal Agreement has been executed and signed by the Authority and the Applicant, until all requirements of all applicable codes, ordinances and laws have been met, and the pre-treatment and/or flow control facilities as constructed and installed have been inspected and approved by the Authority.

Sec. 10 All pre-treatment and/or flow control facilities provided by the Applicant shall be maintained continuously in satisfactory and effective operation by the Applicant or Owner.

Sec. 11 Any person who discharges industrial wastes, treated or untreated, to the sewerage system of the Authority and who contemplates alterin the type or quantity of wastes as described in his Application, referred to in the Letter of Acceptance, or as stated in the formal Agreement with the Authority, shall notify the Authority, in writing at least fifteen (15) days prior to such intended changes, stating the quantity and quality of the contemplated wastes and the expected chemical characteristics of such wastes after passing through any existing preliminary treatment facilities.

Sec. 12 If the Authority thereafter considers the wastes sufficiently in variance in quantity and/or quality from that described at the time the Letter of Acceptance was written or the formal Agreem was executed, the Authority reserves the right to inform the person that the contemplated wastes shall be considered as new industrial wastes and therefore subject to a new Letter of Acceptanc or new formal Agreement starting with a new Application as set forth in this Article of these Rules and Regulations.

ARTICLE IV

Control of Admissible Waste to Sewerage System

Sec. 1 Any person discharging industrial wastes into the sewerage system shall provide a suitable control structure where the wastes may be observed and sampled. When required by the Authority, the control structure shall include facilities for the measurement and recording of flow rates, continuous automatic sampling of the wastes, continuous measurement and recording of the pH of the wastes, and any other device or equipment the Authority deems necessary for the proper control of a particular industrial waste.

Sec. 2 The control structure shall be located downstream from any preliminary treatment, equalization, storage or other works, near the outlet of the industrial wastes sewer into a sanitary sewer on the person's property, or on a sanitary sewer connected to the sewerage system. Such a control facility shall be accessible and safely located. It shall be of such design and construction as to facilitate inspecting, observing, measuring, sampling, and testing of the industrial wastes as required for the control of the industrial wastes discharged to a sanitary sewer.

Sec. 3 Where, in the opinion of the Authority, direct measurement of industrial wastes flow is not justified, the volume of wastes may be determined as follows:

(a) Water meter on the process water line.
(b) Estimated from water utility meter readings.
(c) Any other mutually agreed upon basis.

Sec. 4 Plans for the construction of the control facility, including any measuring and sampling devices as may be required by the Authority, shall be submitted to and must be approved by the Authority prior to any construction or installation. The facility shall be constructed and installed by the person at his own expense and shall be maintained by him so as to be accessible and safe at all times.

Sec. 5 All sampling, testing, and analyzing of the industrial wastes shall be made by the Authority in accordance with the latest edition of "Standard Methods for the Examination of Water and Wastewater" prepared and published jointly by the American Public Health Association, the American Water Works Association and the Water Pollution Control Federation. Sampling of the industrial wastes may be accomplished manually or by the use of mechanical equipment to obtain a composite sample representative of the total daily flow of industrial wastes being discharged to the sanitary sewer. All measuring, testing and sampling shall be taken at the control structure. In the event that no such facility has been required, the control manhole shall be considered either as the last manhole on the sanitary sewer of the owner just ahead of the point where it is connected to the public sanitary sewer or at the

nearest downstream manhole on the public sewer below the point where the sanitary sewer of the owner is connected. Samples shall be taken at intervals established by the Authority as necessary to the control of the industrial wastes discharges. All expenses for the sampling and the analyses shall be borne by the owner.

ARTICLE V

Powers and Authority of Inspectors

Sec. 1 The members of the Authority and duly authorized employees of the Authority bearing proper credentials and identification shall be permitted to enter all properties for the purpose of inspection, observation, measurement, sampling, and testing in accordance with the provisions of these Rules and Regulations. The members of the Authority or their representatives shall have no authority to inquire into any processes used in the industry other than those having a direct bearing on the kind and source of discharges to the sanitary sewers and facilities for waste treatment.

Sec. 2 While performing the necessary work on the private properties referred to in Section 1 above, the members of the Authority or duly authorized employees of the Authority shall observe all safety rules applicable to the premises established by the owne The owner shall be held harmless for injury or death to the members of the Authority or duly authorized employees. The Authority shall indemnify the owner against loss or damage to its property by the members of the Authority or duly authorized employees and against liability claims and demands for personal injury or property damage asserted against the owner and growing out of any inspection, observation, measurement, sampling, and testing, except such as may be caused by negligence or failure of the owner to maintain safe conditions as specified in these Rules and Regulations.

ARTICLE VI

Surcharges

Sec. 1 As provided in Article III Section 2, the Authority may accept industrial wastes but require additional payment or surcharge to defray additional costs to the Authority for treating the wastes.

Sec. 2 Industrial wastes which the Authority, at its discretion, may accept but subject to surcharge are those containing:

(1) Suspended Solids over 350 mg/l
(2) B.O.D. over 300 mg/l

(3) Phosphates (as PO_4) over 33 mg/l
(4) Chlorine Demand over 30 mg/l
(5) Any other constituent in strength greater than that found in normal domestic sewage.

Sec. 3 Prior to acceptance of any such industrial waste, the Applicant shall enter into an agreement with the Authority setting forth the basis for payment of the surcharge.

ARTICLE VII

Penalties

Sec. 1 Any person violating any of the provisions of these Rules and Regulations shall become liable to the Authority for any expense, loss, or damage occasioned by the Authority by reason of such violation.

ARTICLE VIII

Validity

Sec. 1 All Rules and Regulations or parts of Rules and Regulations in conflict with these Rules and Regulations are hereby repealed.

Sec. 2 The validity of any section, clause, sentence, or provision of these Rules and Regulations shall not affect the validity of any other part of the Rules and Regulations, which can be given effect without the invalidated part or parts.

ARTICLE IX

Effective Date

Sec. 1 These Rules and Regulations shall be in full force and effect on and after June 7th, 1972.

UPPER GWYNEDD TOWNSHIP AUTHORITY

TABLE 6

AQUEOUS AND SLUDGE QUANTITIES AND COST ESTIMATES FOR SCENARIO II, ZENITH LAGOON STUDY, LANSDALE, PA

Activity	Lagoons	Quantity	Cost, in Dollars
Discharge clean aqueous @ $1.443/1000 gal aqueous	1 through 10	4,328,217 gal.	6,246
Dewater and box sludge (in-place) [a] @ $0.223/gal sludge	1 through 10	1,142,310 gal.	254,735
Discharge filtered aqueous @ $1.443/1000 gal aqueous	1 through 10	1,068,404 gal.	1,542
Haul non-hazardous sludge (boxed) [b] @ $100.00/load	1,5,8,9, & 10	109 tons	600
Disposal of non-hazardous @ $30.00/ton	1,5,8,9, & 10	109 tons	3,270
Haul hazardous sludge (boxed)			
@ $85.00/ton [b]	6 and 7	5 tons	425
@ $100.00/load	2, 3 and 4	494 tons	2,500
Disposal of hazardous (boxed)			
@ $45.00/ton	6 and 7	5 tons	225
@ $80.00/ton	2, 3, and 4	494 tons	39,520
Engineering Support	NA	NA	31,000
TOTAL			$340,063

[a] Used 8.85 lb/gal for sludge (measured); 8.33 lb/gal for aqueous (assumed @ 70 F); and 12% solids by weight for sludge in-place (assumed).

[b] Assume 20 tons equals one load.

TABLE 7

AQUEOUS AND SLUDGE QUANTITIES AND COST ESTIMATES FOR SCENARIO III, ZENITH LAGOON STUDY, LANSDALE, PA

Activity	Lagoons	Quantity	Cost, in Dollars
Discharge clean aqueous @ $1.443/1000 gal aqueous	1 through 10	3,770,939 gal.[a]	5,441
Dewater and box sludge (in-place)[b] @ $0.223/gal sludge	1,5 through 10	203,818 gal.	45,451
Discharge filtered aqueous @ $1.443/1000 gal. aqueous	1 and 5 through 10	190,556 gal.	275
Haul non-hazardous sludge (boxed)[c] @ $100.00/load	1,5,8,9, and 10	109 tons	600
Disposal of non-hazardous (boxed) @ $30.00/ton	1,5,8,9 and 10	109 tons	3,270
Haul hazardous sludge (boxed) @ $85.00/ton	6 and 7	5 tons	425
Disposed of hazardous sludge (boxed) @ $45.00/ton	6 and 7	5 tons	225
Vacuum and haul hazardous sludge (bulk liquid)[d] @ $280.00/load	2,3 and 4	1,486,074 gal	92,467

AG

TABLE 7 (CONT'D)

AQUEOUS AND SLUDGE QUANTITIES AND COST ESTIMATES FOR SCENARIO III, ZENITH LAGOON STUDY, LANSDALE, PA

Activity	Lagoons	Quantity	Cost in Dollars
Treat and disposal of hazardous sludge (bulk liquid) @ $0.12/gal [e]	2,3 and 4	1,486,074 gal	178,328
Engineering Support	NA	NA	33,000
TOTAL			$359,482

[a] Adjusted for consumption of 557,278 gallons of make-up aqueous to be used in vacuum removal of sludge from lagoons 2, 3, and 4.

[b] Used 8.85 lb/gal for sludge (measured); 8.33 lb/gal for aqueous (assumed @ 70 F); and 12% solids by weight for sludge in-place (assumed).

[c] Assume 20 tons equals one load

[d] Assume 4,500 gallons equals one load and 557,278 gallons of make up aqueous consumed in vacuum removal process (ie., a multiple of 1.6 applied to total gallons of sludge).

TABLE 8

AQUEOUS AND SLUDGE QUANTITIES AND COST ESTIMATES FOR SCENARIO IV, ZENITH LAGOON STUDY, LANSDALE, PA

Activity	Lagoons	Quantity [a]	Cost in Dollars
Discharge clean aqueous @ $1.443/1000 gal aqueous	1 through 10	3,648,649 gal	5,264
Dewater and box sludge (in-place) [b] @ 0.223/gal sludge	6 and 7	9,696 gal	2,162
Discharge filtered aqueous @ $1.443/1000 gal aqueous	6 and 7	9,065 gal	13
Haul hazardous sludge (boxed) @ $85.00/ton	6 and 7	5 tons	425
Disposal of hazardous (boxed) @ $45.00/ton	6 and 7	5 tons	2[illegible]
Vacuum and haul sludge (bulk liquid) [c] @ $280.00/load	1 through 5, 8,9,and 10	1,812,182 gal	112,840

TABLE 8 (CONT'D)

AQUEOUS AND SLUDGE QUANTITIES AND COST ESTIMATES FOR SCENARIO IV, ZENITH LAGOON STUDY, LANSDALE, PA

Activity	Lagoons	Quantity	Cost in Dollars
Treat and disposal of hazardous sludge (bulk liquid) [d] @ $0.12/gal	1 through 5, 8,9,and 10	1,812,182 gal	217,462
Engineering Support	NA	NA	34,000
TOTAL			$372,391

[a] Adjusted for consumption of 679,568 gallons of make-up aqueous to be used in vacuum removal of sludge from lagoons 2, 3, and 4.

[b] Used 8.85 lb/gal for sludge (measured); 8.33 lb/gal for aqueous (assumed @ 70 F); and 12% solids by weight for sludge in-place (assumed).

[c] Assume 4,500 gallons equals one load and 679,568 gallons of make up aqueous consumed in vacuum removal process (ie., a multiplier of 1.6 applied to total gallons of sludge).

[d] Based on suspended solids concentration of 12% and @ 0.01/1.0% of suspended solids.

sludge; and the engineering support (including analytical work). However, no cost allowance has been made for initial site preparation such as clearing the vegetation, removing any fence lines, and setting up the pumping lines and making the public sewer connection.

In the event the filtered aqueous in lagoon 10 fails to meet the influent limitations of the Upper Gwynedd Township Authority, no cost allowance has been made for possible treatment and/or special disposal techniques.

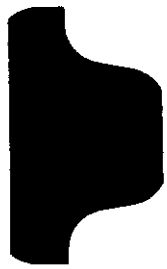
Due to the fact that the condition of the soil and ground water has yet to be determined, it is not practical to provide any cost estimates for final closure of the site.

VI. RECOMMENDATIONS

In order to determine the impact the operation and "idle" existence the ten lagoons have and may continue to have on the surrounding soil and groundwater, additional investigation is recommended. This investigation includes:

- Design and implementation of a soil boring program to determine the depth and lateral extent of potential contamination
- Subsequent containment and/or removal of the potentially contaminated area(s)
- Groundwater investigation involving the monitoring of on-site wells.

Furthermore, due to the high levels of cyanide in the sludge from lagoons 6 and 7, on-site treatment of this sludge is recommended. This treatment would essentially consist of oxidizing the cyanide to a cyanate which is a significantly less toxic substance. In the cyanate state, the disposal costs could decrease and the liability would be reduced. However, this treatment process which costs approximately $ has not been accounted for in the cost estimates for any of the scenarios.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
1875 New Hope Street
Norristown, PA 19401
215 270-1975

December 29, 1986

James LaRegina, Geologist
American Resource Consultant's Inc.
450 East Street
Doylestown, PA 18901

Re: Zenith Lagoon Closure
Upper Gwynedd Township
Montgomery County

Dear Jim:

Regarding your letter of November 10, 1986, the responses therein to our comments of October 20, 1986 are satisfactory and you may begin work at your convenience. I would appreciate it if you would notify me or Bob Young when you know the starting date of the work to be done.

Very truly yours,

Walter E. Stanley, Jr. /ms

WALTER E. STANLEY, JR.
Chief, Operations Section

cc: Bob Young
Upper Gwynedd Township
Re 30 7W363.2


C

NORTH PENN WATER AUTHORITY
200 N. CHESTNUT ST., LANSDALE, PENNA. 19446
TEL: 215-855-3617

October 12, 1981

John Nuter
Zenith Radio Corp.
1900 W. Austin Avenue
Chicago, Illinois 60639

Dear Mr. Nuter:

Enclosed is the information collected about the test holes drilled on the Zenith property, Church Road, Upper Gwynedd Township.

Only the three compounds noted were checked in the water sample analysis. The locations of the test holes on the enclosed sketch are approximate. The test holes are easy to locate if accurate mapping is needed.

I will leave the interpretation of the data to you. If you have any questions about the data or the procedures involved in obtaining this data, please feel free to call.

Sincerely,

NORTH PENN WATER AUTHORITY

Lawrence Martin

Lawrence Martin

LM/jlb
Enclosures

NAME LOCATION
TO: E. DYBSKY #25
FROM: J. NUTER 6
SHEET 1 OF 6

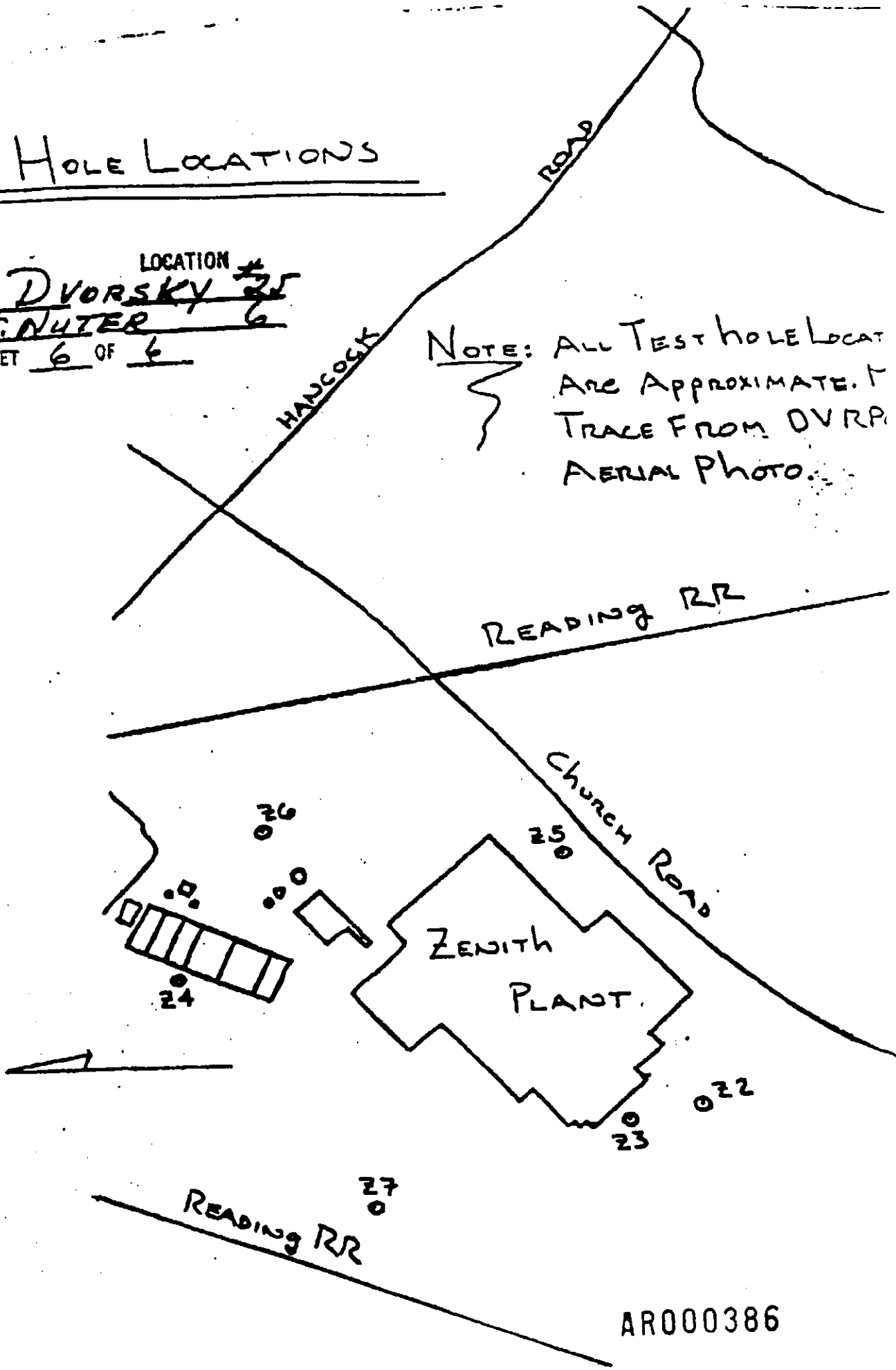
TEST HOLE LOCATIONS

NAME LOCATION #

TO: E. DVORSKY 25

FROM: J. NUTER 6

SHEET 6 OF 6



WISSAHICKON PROJECT
TEST HOLE DRILLING

WELL NO.	DATE	DEPTH (FT.)	PIPE SIZE	REMARKS (SOIL/ROCK TYPE, ETC.)
Z-1	6-11-81	7'0" to rock	4" perforated drain pipe (plastic)	red, clay-like soil very dry
Z-2	6-11-81	5'0" to rock	AS ABOVE	soil as above dry (hole in field)
Z-3	6-11-81	6'6" to rock	AS ABOVE	red, clay-like soil dry (hole inside fence
Z-4	6-11-81	9'0" to rock	AS ABOVE	soil as above - water at bottom (just inside fence behind treatment plant
Z-5	6-11-81	9'9" to rock	AS ABOVE	brown fill soil on top (2') red clay & more fill deeper lots of water
Z-6	6-11-81	7'6" to rock	AS ABOVE	red clay-like soil very dry (behind parking lo
Z-7	6-11-81	7'5" to rock	AS ABOVE	brown clay on top - red clay down the rest (back near railroad)

NAME LOCATION
TO: E. DVERSKY 25
FROM: J. NUTER 6
SHEET 2 OF 6

WISSAHICKON PROJECT

WATER LEVEL DATA

TEST HOLE #	TEST HOLE ELEVATION* (Feet)	WATER LEVEL/DATE (Feet)	WATER LEVEL/DATE (Feet)
Z-1	369.5	DRY/6-16-81	6.1/6-24-81
Z-2	362.2	4.0/6-16-81	3.9/6-24-81
Z-3	357.1	DRY/6-16-81	DRY/6-24-81
Z-4	369.9	6.4/6-16-81	7.0/6-24-81
Z-5	365.9	7.7/6-16-81	7.9/6-24-81
Z-6	376.3	2.3/6-16-81	4.7/6-24-81
Z-7	357.1	DRY/6-16-81	DRY/6-24-81

* Elevation of top of valve box cover for each test hole

NOTE: Water elevation = test hole elevation - water level

NAME LOCATION

TO: E. DVORSKY #25

FROM: J. NUTER 6

SHEET 3 6

WISSAHICKON PROJECT

TEST HOLE WATER SAMPLE DATA

TEST HOLE #	SAMPLE #	PPB		
		TCE	PCE	1-1-1
Z-1	NONE (DRY)	-	-	-
Z-2	64-81 *	<0.5	<0.5	<0.5
Z-3	NONE (DRY)	-	-	-
Z-4	61-81	0.8	<0.5	0.6
Z-5	62-81	1.6	<0.5	0.9
Z-6	60-81	<0.5	<0.5	0.6
Z-7	NONE (DRY)	-	-	-

NOTE: 1. Date sampled, 6-16-81, by pumping.

2. Date analyzed, 6-19-81 by solvent extraction/GC.

3. Date reported, 6-30-81

4. Analysis done by Quality Control Laboratory, Inc. Southampton, PA.

5. TCE, Trichloroethylene

6. PCE, Tetrachloroethylene

7. 1-1-1, 1,1,1 - Trichloroethane

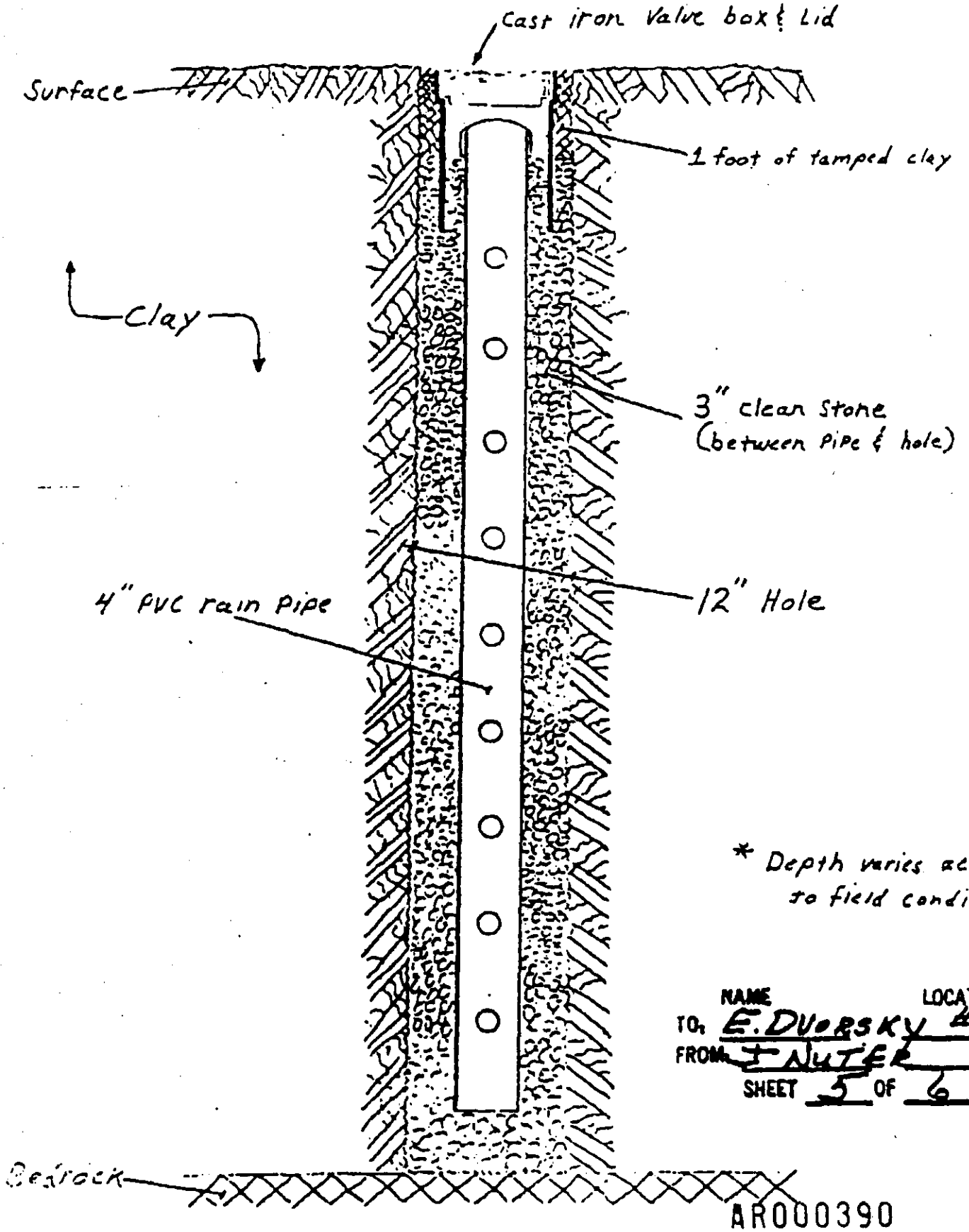
8. Only the above three (3) compounds were tested.

* DIP SAMPLE

NAME LOCATION
TO: E. Dvorsky #2
FROM: J. Nutek 6
SHEET 4 OF 6

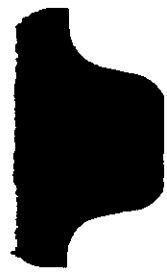
6/81

Typical Test Boring by Zenith



* Depth varies accord
to field condition

NAME LOCATION
TO: E. DUORSKY #2
FROM: J. NUTER
SHEET 5 OF 6



Wissahickon Valley
Watershed Association
12 Morris Road, Ambler, Pa. 19002 Telephone 646-8866

TCE STUDY - PHASE II SUMMARY

Following a 1979 spill of Trichloroethylene (TCE) at Superior Tube in Rahms, Pennsylvania, groundwater in the North Penn area was tested for contamination. Several water supply wells of the North Penn Water Authority were contaminated including a well known as L-22 next to the Wissahickon Creek. A 1980 study of numerous test holes drilled along the Wissahickon between Wissahickon Avenue and Sumneytown Pike revealed wide spread TCE pollution of subsurface water.

In the summer of 1981 a second phase of the TCE study was conducted. Existing deep wells in the area were pumped for eight hours, one at a time, and the water taken from the wells was then tested for Trichloroethylene, Tetrachloroethylene (PCE) and 1-1-1 Trichloroethane (1-1-1 TCE). It was hoped that the pump tests would show any relationships between wells and would identify sources of contamination.

The phase II tests demonstrates that TCE and/or PCE or 1-1-1 TCE were present in virtually all the wells tested.

The data also showed that the sources of pollution were scattered and extremely localized with at least six separate sources of contamination for the seven deep wells tested.

With the exception of a relationship between L-22 and Clearline well #2, and Clearline wells #2 and #3, no pumping of any given deep well caused a drawdown of another well. A drawdown at one well caused by pumping another would indicate a relationship between the two wells and would help explain any changes in pollution levels during the test.

Data collected during the study strongly indicates that Spra Fin is at least one probable source of the contamination of L-22.

There were also high concentrations of TCE found in test holes and/or in the soil at Teleflex, Deltron, and the former Leeds and Northrup plant on Church Road. Cleanup efforts should be undertaken or continued at these locations to eliminate the TCE concentrations which are a likely source of at least localized groundwater contamination.

The sources of the contamination of the Precision Tube, Ford, and Leeds and Northrup main plant wells should be identified through further work so clean up of those wells can take place.

TABLE 17

ANALYSIS OF WELL AND TEST HOLE WATER
SAMPLES TAKEN ON 7-20-81

WELL NO.	---- µg/l---------- TOTAL POLLUTION	TCE	PCE	1-1-1	--%Total Pollution-- TCE	PCE	1-1-1
L&N1	16.0	12.4	1.0	2.6	77.5	6.2	16.3
L&N2	14.4	13.5	<0.5	0.9	93.8	0	6.2
NWWA5	40.7	3.6	26.1	11.0	8.8	64.2	27.0
NWWA7	13.1	2.1	<0.5	11.0	16.0	0	84.0
L&NTH	373.2	358	0.7	14.5	95.9	0.2	3.9
44144	19.0	15.5	<0.5	3.5	81.6	0	18.4
Walton	980.2	972	4.4	3.8	99.2	0.4	0.4
Saner	17.6	15.0	<0.5	2.6	85.2	0	14.8
91385	4.8	4.1	<0.5	0.7	85.4	0	14.6
SF2	37,301.0	36,605	569	127	98.1	1.5	0.3.
SF(o)	10,840.1	10,666	145	29.1	98.4	1.3	0.3
SF1	898.9	871	6.7	21.2	96.9	0.7	2.4
Gillen	1.9	1.3	<0.5	0.6	68.4	0	31.6
L-22	24.7	23.8	<0.5	0.9	96.4	0	3.6
CL1	28.9	28.0	<0.5	0.9	96.9	0	3.1
Ford3	447.4	443	1.5	2.9	99.0	0.4	0.6
Ford4	1.3	<0.5	1.3	<0.5	0	100	0
PT1	6.7	3.1	2.7	0.9	46.3	40.3	13.4
PT2	43.9	38.5	2.4	3.0	87.7	5.5	6.8
Coke	357.3	348	0.7	8.6	97.4	0.2	2.4
CL3	126.1	116	<0.5	10.1	92.0	0	8.0
L-17	4.8	4.2	<0.5	0.6	87.5	0	12.5
T7	1,721.4	1,719	<0.5	2.4	99.9	0	0.1
T6	402.6	153	1.6	248	38.0	0.4	61.6
T5	42.1	37.4	<0.5	4.7	88.8	0	11.2
D1	367.0	307	0.9	59.1	83.7	0.2	16.1
32525	2.2	1.6	<0.5	0.6	72.7	0	27.3
Z2	0	<0.5	<0.5	<0.5	--	--	--
Z5	0	<0.5	<0.5	<0.5	--	--	--

NOTES: 1. All samples with concentrations less than the laboratory detection limit are assumed to be zero in calculating "Total Pollution".

2. Total Pollution is the sum (in µg/l of the PCE, TCE, and 1-1-1 concentrations.

3. Sample analysis done on 7-28-81 by Quality Control Laboratory, Southampton, PA.

E

R-585-3-6-28

SITE DISCOVERY OF GROUNDWATER CONTAMINATION IN THE NORTH PENN AREA

PREPARED UNDER

TDD NO. F3-8512-31
EPA NO.
CONTRACT NO. 68-01-6699

FOR THE

HAZARDOUS SITE CONTROL DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

JULY 7, 1986

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY	REVIEWED BY	APPROVED BY
TIMOTHY SILAR	THOMAS FROMM	GARTH GLENN
GEOLOGIST	ASSISTANT MANAGER	MANAGER, FIT III

TABLE OF CONTENTS

APPENDICES

SECTION I

1.0 INTRODUCTION

1.1 Authorization

NUS Corporation performed this work under Environmental Protection Agency Contract No. 68-01-6699. This specific report was prepared in accordance with Technical Directive Document No. F3-8512-31 for the North Penn Area site located in north-central Montgomery County, Pennsylvania.

1.2 Scope of Work

NUS FIT III was tasked to perform a high priority site discovery using available information, from the North Penn Water Authority (NPWA), EPA, and the Pennsylvania Department of Environmental Resources (PA DER). Presented herein are the findings of the available information search.

1.3 Summary

NPWA is a major water supplier in central Montgomery County. In 1979, NPWA discovered that 8 of their production wells were contaminated with the volatile organic chemicals (VOC) trichloroethylene (TCE) and tetrachloroethylene (PCE). These contaminated wells were shut down to prevent additional contamination of the distribution system. The discovery led to the initiation of an extensive research program by NPWA to locate the potential sources and responsible parties of the VOC contamination. In addition, PA DER and EPA have conducted studies in the North Penn area.

It was determined by FIT III that there are 12 distinct areas of groundwater contamination in the North Penn area. NPWA has wells in 9 of the 12 contaminated areas. To date, 18 of 53 NPWA wells are contaminated by VOCs. After reviewing EPA and PA DER files, meeting with officials from NPWA, and conducting a reconnaissance of the study area, a list of 51 potentially responsible parties was compiled. The areas of groundwater contamination, NPWA contaminated wells, and potentially responsible parties for the VOC contamination are presented herein. Section 4 discusses each contamination plume area in detail, and section 5 presents a summary of the contaminated NPWA wells and the potentially responsible parties identified.

SECTION 2

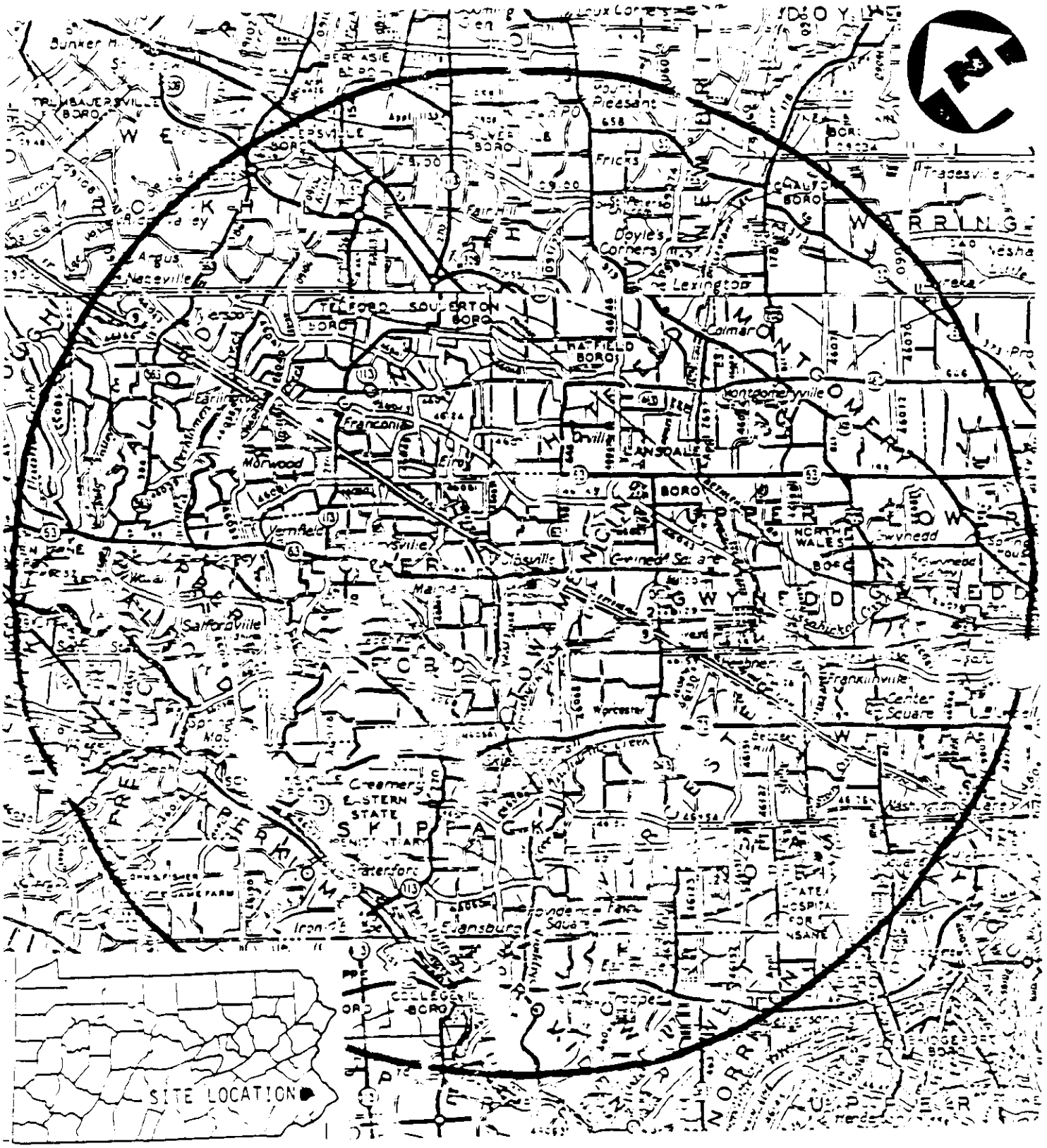
2.0 THE SITE

2.1 Location

The North Penn area is located primarily in central Montgomery County. The area includes the Perkiomenville, Collegeville, Lansdale, and Telford quadrangles. An 8.5-mile radius is utilized to encompass the study area. The center point of the radius is located about 1,000 feet south of the Pennsylvania Turnpike, Lansdale Interchange (see map, page 2-2). The radius includes the above-mentioned area plus a portion of south central Bucks County, and the eastern portion of the Doylestown and Ambler quadrangles. These areas are not served by NPWA but are of concern since they lie within a 3-mile radius of several contamination plumes (see map, page 2-3). The total area of concern is 227 square miles.[10]

The study area includes the metropolitan areas of Lansdale, Souderton, Unionville, Harleysville, Mainland, Kulpsville, Colmar, Fortuna, Skippack, Creamery, and Center Point. These towns are of primary concern since NPWA supplies water to these towns. Rural areas lie between these towns. Some are supplied by NPWA and some rely on private wells (see appendix B).[1,10]

Other metropolitan areas within the 8.5-mile radius include Norristown, Trooper, Collegeville, and Sellersville. These areas are within the area of concern but rely on groundwater sources other than NPWA for water.[1,10]



SITE LOCATION MAP

approximate scale

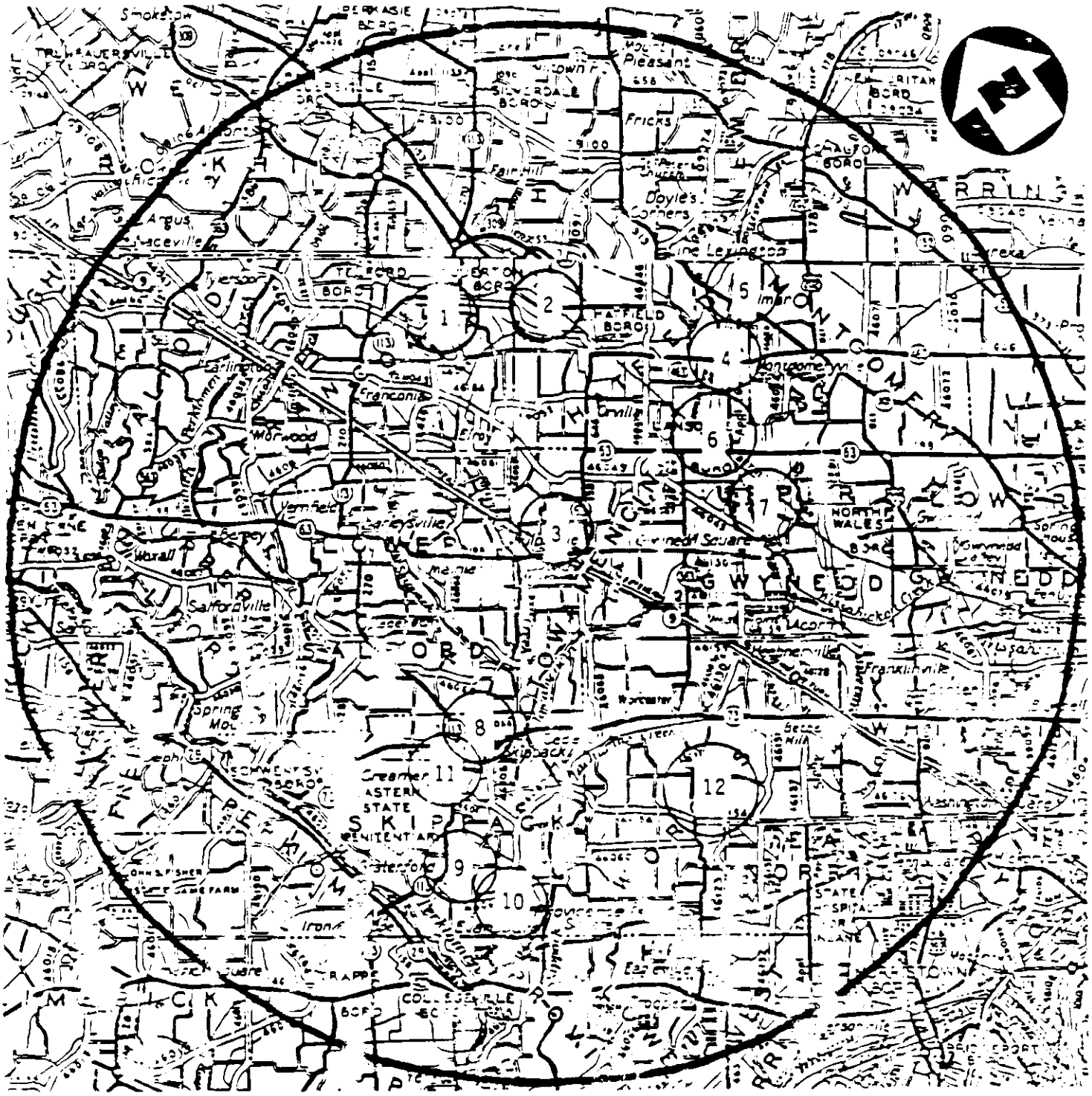
1"=2.25 miles

FROM REFERENCE 10

NUS CORPORATION

A Halliburton Company

AR000402



SITE LOCATION MAP WITH AREAS OF CONTAMINATION

approximate scale

1"=2.25 miles

FROM REFERENCE 10

NUS CORPORATION

A Halliburton Company

SECTION 3

3.0 ENVIRONMENTAL SETTING

3.1 Water Supply

This study involves NPWA; therefore, their service district is of major concern. A distribution map of NPWA is included in appendix B. Areas between NPWA distribution lines rely on private wells for water, except for Hatfield Borough, which has a municipal supply utilizing groundwater. NPWA presently utilizes 53 wells, which produce an average yield of 3.6 million gallons per day (mgd). An additional 1.6 mgd are purchased from Keystone Water Authority and North Wales Water Authority to meet daily demands. In 1984, NPWA customers included 13,384 domestic, 557 commercial, 164 industrial, 78 public, and 1 utility, with an average demand of 5.2 mgd. The majority of the NPWA distribution system is interconnected; however, there are 6 satellite systems within the NPWA distribution system (see appendix B).[1]

NPWA has 18 wells that are contaminated with VOCs. Nine of the 18 wells have VOC concentrations above the proposed limits of 5 ug/l for TCE and 10 ug/l for PCE, suggested by EPA. Five of the 9 wells that are over the proposed limit are inactive. The remaining 4 wells are either treated or mixed with cleaner water to bring the VOC concentration level below the proposed limit. NPWA loses approximately 0.6 mgd of available water due to VOC contamination.[1]

Other public water suppliers in the 8.5-mile radius study area include Hatfield Water Department, North Wales Water Authority, Telford Borough Water Authority, Schwenksville Borough Water Authority, Lower Frederick Township Water Company, Collegeville-Trappe Joint Water Works, and Keystone Water Company. These municipalities primarily use groundwater for public water supply, with the exception of Keytone Water Company, which has surface water intakes outside the study area.[20]

3.2 Surface Water

The study area is situated in the Schuylkill River drainage basin. Major creeks which flow through the study area into the Schuylkill River include Perkiomen Creek, Skippack Creek, Neshaminy Creek, Wissahickon Creek, Towamencin Creek, and Indian Creek. These creeks flow predominantly south to the Schuylkill River, which in turn flows southeast to the Delaware River. Surface water is not used for public water supply in the study area.[12]

3.3 Geology and Soils

The North Penn area lies entirely within the Triassic Lowland Section of the Piedmont Physiographic Province. Topography of the area is characterized by a gently sloping upland ranging from an altitude of 500 to 200 feet above mean sea level (MSL). The relief in the area probably reflects the resistance to weathering of the underlying bedrock. This differential weathering formed northeast-southwest trending ridges of resistant rock and intervening lowlands from the less resistant rock. The majority of the study area occupies the lowlands. Streams in the area are found in topographic low areas and collectively form a dendritic drainage pattern. Stream flow is generally northeast-southwest, parallel to the principal topographic features.[17,18]

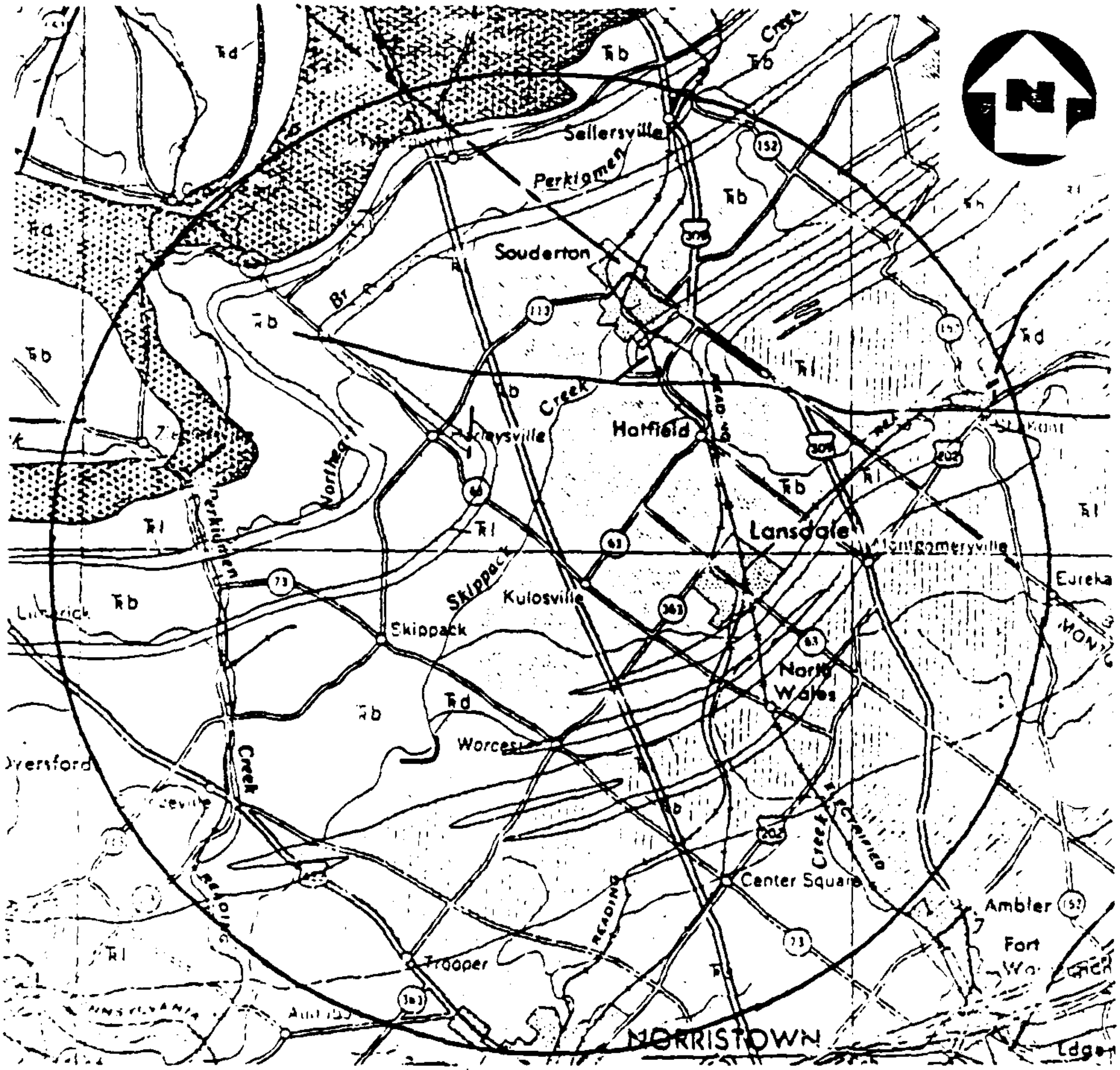
Rocks of Triassic age underlie the study area (see map, page 3-4). These rocks, known as the Newark Group, form the largest Triassic Basin in the eastern United States, extending from Nova Scotia to North Carolina. The basin was formed in a postorogenic depositional environment. Rocks of the Newark Group are generally red conglomerate, arkose, sandstone, siltstone, argillite, and shale, locally, with interbedded basaltic lava flow and intruded diabase dikes and sills. The Newark Group has been divided, proceeding from oldest to youngest, into the Stockton, Lockatong, and Brunswick Formations. The Brunswick and Lockatong Formations are of primary concern in the study area, since all contaminated areas are underlain by these 2 formations.[11,18]

The Brunswick Formation consists generally of soft reddish-brown shale, interbedded with reddish-brown sandstone, and siltstone. The shale beds are locally sandy and silty and interbedded with gray, brown, and greenish shale. Shales of the Brunswick Formation consist primarily of feldspar, illite, chlorite, quartz, and calcite and are locally micaceous. The fractures within the Brunswick are commonly filled with calcite and quartz, with occasional occurrence of barite and pyrite. Beds are generally thin with irregular and discontinuous bedding planes.[15,17,18]

The Brunswick Formation is relatively uniform, although some facie changes have been documented. In the Lansdale area, thin limestone conglomerate, limestone pebbles in a shaly matrix, subcrop. In addition, some beds of calcareous sandstone have been reported to occur within the Brunswick. The limestone conglomerate and calcareous sandstone units are unimportant to this study since they are very localized and discontinuous.

The Brunswick Formation is reported to reach a thickness of 9,000 to 16,000 feet in the area. The rocks generally strike N 45° E to N 55° E and dip 5 to 15 degrees northwest in the study area. Near the base of the Brunswick Formation, the rock is a tough, thick-bedded red argillite and is interbedded with dark-gray argillite of the Lockatong Formation. The Brunswick also grades laterally into the Lockatong Formation.[15,17,18]

The Lockatong Formation subcrops over a small portion of the study area, principally south and southeast of Lansdale, in the Souderton area, and in 2 thin bands in Salford Township. The Lockatong Formation consists principally of medium to dark gray argillite, interbedded with thin beds of gray to black shale, siltstone, and marlstone. The Lockatong consists of up to 40 percent anacline, along with dolomite, feldspar, and clay. Fractures are commonly filled with quartz, calcite, or pyrite. Bedding is generally massive, with an average dip of 10 degrees toward the northwest. The Lockatong is up to 4,000 feet thick.[15,17,18]



TRIASSIC

Diabase

Brunswick Formation or Gettysburg Formation

Lockatong Formation

Stockton Formation or New Oxford Formation

GEOLOGIC MAP OF SITE AREA (no scale)
FROM REFERENCE 11

NUS CORPORATION
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The Stockton Formation subcrops in the southernmost section of the study area. The Stockton Formation, which underlies the Lockatong Formation, consists of 3 distinct members: the lower member consists of coarse, arkosic sandstone and arkosic conglomerate; the middle member consists of medium-grained arkosic sandstone; and the upper member consists of red shale, siltstone, and very fine-grained arkosic sandstone. The thickness of the Stockton Formation ranges from 1,000 to 6,000 feet.[15,16]

A diabase sill intrudes the Brunswick Formation in the northwestern portion of the study area. The diabase is medium to coarse grained, greenish gray, and consists of 90 to 95 percent labrodorite and augite. The sill is estimated to be in excess of 1,000 feet thick. Near the diabase sill, local metamorphism of the Brunswick Formation has occurred. The shales of the Brunswick Formation are altered to dark, tough hornfels in the metamorphic zone. The width of the altered zone in the study area averages about 1 mile.[15,18]

A major structural feature in the study area is the Chalfont fault. This fault is about 4.5 miles north of Lansdale and generally trends east-west. The Chalfont fault and its associated faults appear to have significant vertical and lateral displacement, as seen by the truncation of the Lockatong Formation along the fault (see geologic map, page 3-4).[11,18]

Soils

General soil associations in the study area include the following:

Reaville-Penn-Klinesville Association is a shallow to moderately deep, well drained to somewhat poorly drained soil, which is generally underlain by shale and found on rolling uplands.[12,13]

Abbottstown-Readington-Croton Association is a deep, moderately well drained to poorly drained soil, generally underlain by shale and sandstone, and found on undulating uplands.[12,13]

Lawrenceville-Chalfont-Doylestown Association is a deep, moderately well drained to poorly drained soil that is generally formed in wind-blown silt deposits and found on undulating uplands.[12,13]

Lehigh-Brecknock-Croton Association is a moderately deep to deep, poorly drained to well drained soil, which is generally underlain by metamorphosed shale and found on uplands.[12,13]

These 4 associations are generally level to sloping and are found on undulating uplands. The location of the 4 associations does not correlate with the location of the contaminated areas or possible responsible parties.

3.4 Groundwaters

Groundwater in the North Penn area is obtained primarily from the Brunswick Formation. The Brunswick Formation is composed of very fine-grained rock; therefore, primary porosity is very low.[14,17]

Groundwater flow is largely through secondary openings that were developed after the deposition of the strata. These secondary openings are usually bedding planes, fractures, and joints. Bedding plane fractures are usually narrow and contribute little to the total permeability of the formation. Of greater importance are joints and fractures which criss-cross throughout the beds. These openings comprise a network through which water may flow. The number and size of these openings vary laterally from bed to bed. Lithologic differences within the lens-shaped deposits of the Brunswick Formation also contribute to lateral changes in flow. Therefore, the interconnected network of openings provided by joint, fractures, and bedding planes may be locally altered by structural anomalies and/or lithologic differences.[14,17]

Therefore, aquifer parameters of the Brunswick Formation may vary greatly from place to place. Depth to water-bearing zones and direction of groundwater flow are 2 factors which vary from place to place throughout the Brunswick Formation. The variable nature of Brunswick aquifers is shown in well depths (65 to 668 feet) and yields (4 to 55 gallons per minute (gpm)).[14,15,17]

The lithology and structure of the Lockatong Formation are similar to the Brunswick Formation. Groundwater flow is largely through secondary openings, bedding-planes, fractures, and joints. Since fractures are smaller and more widely spaced in the Lockatong Formation than in the Brunswick Formation, wells drilled into the Lockatong generally have lower yields than those drilled in the Brunswick.[15,16]

There is substantial formation contact and interfingering between the Lockatong and Brunswick in the North Penn area. These contact areas generally have a greater number of fractures. Fractures enhance secondary porosity; thus, there is more groundwater flow. Wells drilled in these areas generally have greater yields than those drilled solely in the Brunswick Formation.[14,15,17]

NPWA wells in the study area penetrate the Brunswick and/or Lockatong Formations. Well depths range from 216 to 668 feet. All wells are constructed as "open holes," which means that the well is cased only from the surface to 20 to 50 feet into bedrock. The rest of the well (bottom of casing to total depth) is not cased; therefore it is "open." This method of well construction allows the well to draw groundwater from all saturated openings encountered by the borehole in the uncased (open) zone. A summary of NPWA wells and some well logs can be found in appendix D.[1,14]

Two additional formations are encountered in the study area, diabase and the Stockton Formation. The water-bearing characteristics of these rocks will be discussed briefly, since they are of lesser concern for the purposes of this study.[11]

Groundwater flow in the diabase is also through secondary porosity. The best water-bearing area in the diabase is in the highly weathered upper zone, generally less than 100 feet below the surface. Well yields from the diabase range from 0.1 to 50 gpm; the average yield is 3 gpm.[14]

Groundwater flow in the Stockton Formation occurs in pore spaces between the grains and secondary openings in the rock. The lithology and sorting of the Stockton contribute to the primary porosity. This primary, intergranular porosity enables the Stockton Formation to be the most productive aquiferous formation in the study area.[15,16]

In general, groundwater flow is difficult to predict throughout the study area due to variable secondary porosity. The difficulty of predicting groundwater flow is enhanced by industrial and municipal wells which pump large quantities of water. A cone of depression generally forms around these wells, interfering with the normal movement of groundwater. However, with proper data collection and testing, groundwater flow on a local level may be predicted.

3.5 Climate and Meteorology

This area of Pennsylvania is generally considered to have warm humid summers, moderately cold winters, and ample rainfall. Temperatures generally range between 0°F to 100°F, with an average yearly temperature of 54°F. Summers are warm, with an average of 25 days per year when temperatures rise above 90°F. In general, winters are comparatively mild, with an average 101 days with minimum temperatures below the freezing point.[12,13]

Precipitation is well distributed throughout the season. The greatest monthly variation in precipitation (2 inches) occurs between the wettest month, August, and the driest month, October. Annual precipitation ranges from 43 to 47 inches in the study area. This yields a net average annual precipitation of 17 inches per year.[12,13]

3.6 Land Use

Land use throughout the 227-square-mile study area varies. Most of the land is still farmed, although an increasing number of new housing developments is depleting the farm land. Some recreational and undisturbed woodlands are also located in the study area. In addition, there are metropolitan and industrial pockets located throughout the area, such as the boroughs of Lansdale and Souderton.

3.7 Population Analysis

The greatest population densities in the study area are found within town and borough limits. These areas include, but are not limited to, Lansdale, Souderton, Telford, Hatfield, Harleysville, Collegeville, North Wales, and Norristown. The NPWA serves approximately 52,000 people.[1]

3.8 Critical Environments

There are no critical environments within the study area. Two federally endangered birds may be found as transient visitors in the area. They are the bald eagle (Haliaeetus leucocephalus), and peregrine falcon (Falco peregrinus). There are no critical habitats for these birds in the study area.[19]

In addition, the small whorled pogonia (Isotria medeoloides), an endangered plant, may exist in the study area.[19]

SECTION 4

4.0 AREAS OF CONTAMINATION

4.1 Introduction

Through the available information search, 12 areas of VOC contamination have been identified. The contaminated areas were identified by employees of NPWA. EPA and PA DER performed work at some of the contaminated areas following the initial discovery by NPWA. Therefore, NPWA resources, along with EPA and PA DER files, were utilized to identify contamination plumes and potentially responsible parties.

NPWA has 18 contaminated wells throughout 9 of the 12 contaminated areas. The remaining 3 areas were discovered and mapped solely by testing private wells. All 12 areas are discussed in the following sections. The discussion includes location and mapping of contaminated areas, wells located in each area, and potentially responsible parties of VOC contamination.

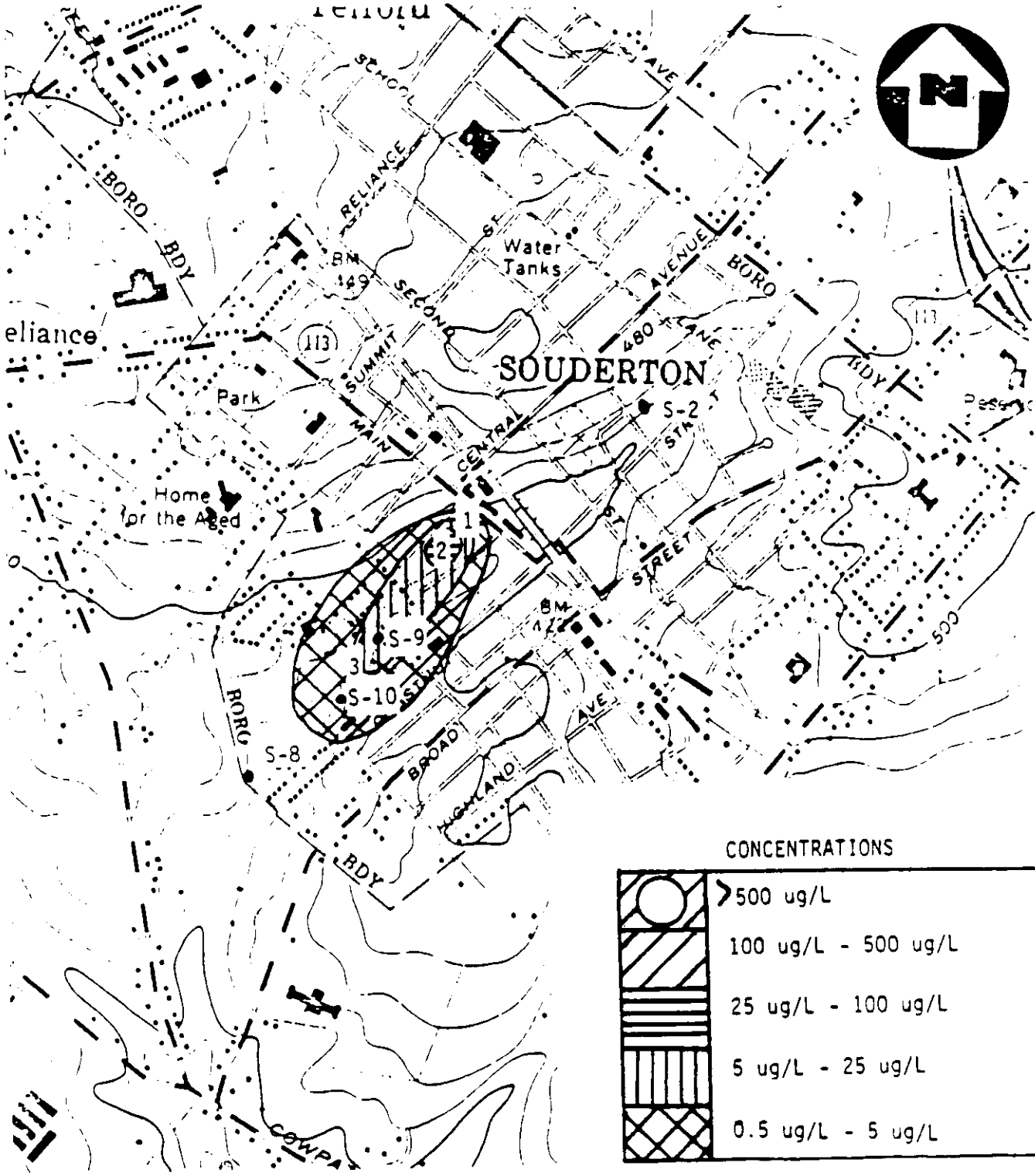
4.2 Area 1

Area 1 lies within the Souderton Borough limits in the Telford quadrangle (see map, page 4-3). The area is served by NPWA and there are no known home wells in the area. PCE contamination was discovered in this area in August 1979. Service of NPWA well S-9 was discontinued at that time. Present PCE concentrations in well S-9 are up to 24.7 ug/l, exceeding the proposed PCE limit of 10 ug/l. During a recent pump test, PCE concentrations fell from 24.7 ug/l to 10.6 ug/l after 24 hours of pumping (see page 4-4). In addition, NPWA well S-10 is contaminated with PCE with concentrations ranging from 1.2 ug/l to 2.6 ug/l (see page 4-5)[1].

Both wells S-9 and S-10 are 300 feet deep. Well S-9 has a permitted capacity of 144,000 gallons per day (gpd), while S-10 is permitted for 115,200 gpd. NPWA wells S-2 and S-8, located north and south, respectively, of the contamination plume, are not contaminated to date (see page 4-2).[1]

According to NPWA officials, potentially responsible parties for the PCE contamination include Gentle Cleaners, Incorporated, Granite Knitting Mills, Incorporated, and the Parkside Apartments. Gentle Cleaners, a dry cleaning service, is a known user of PCE. Gentle Cleaners is located at the topographic high north of the plume, thus establishing a natural pathway for contaminant movement to the low-lying areas of S-9 and S-10. Granite Knitting Mills, Incorporated is also a known user of PCE. The well on their property is reported by NPWA to be contaminated with 61 ppb of PCE. In addition, a dry cleaning service, now Parkside Apartments owned by Paul Derstein, is believed to be a potentially responsible party. The dry cleaners may have had an underground storage tank for PCE. Field identification of this tank was not verified by NUS FIT III. The Parkside Apartments are located about 100 feet south of S-9; thus, they are a likely additional source of the contamination problem.[1]

Considering the topography of the area, it can be hypothesized that there is a natural pathway for contaminant movement from Gentle Cleaners and Granite Knitting Mills to S-9 and S-10. Considering the concentrations of PCE in the Granite Mills well, there is a decreased concentration gradient moving downslope from the Granite Mill well. This supports the theory of contaminant movement from upslope (Gentle Cleaners and Granite Knitting Mills) to low-lying areas (S- and S-10).



AREA 1
(no scale)

1 GENTLE CLEANERS INC.
2 GRANITE KNITTING MILLS INC.
3 PARKSIDE APARTMENTS

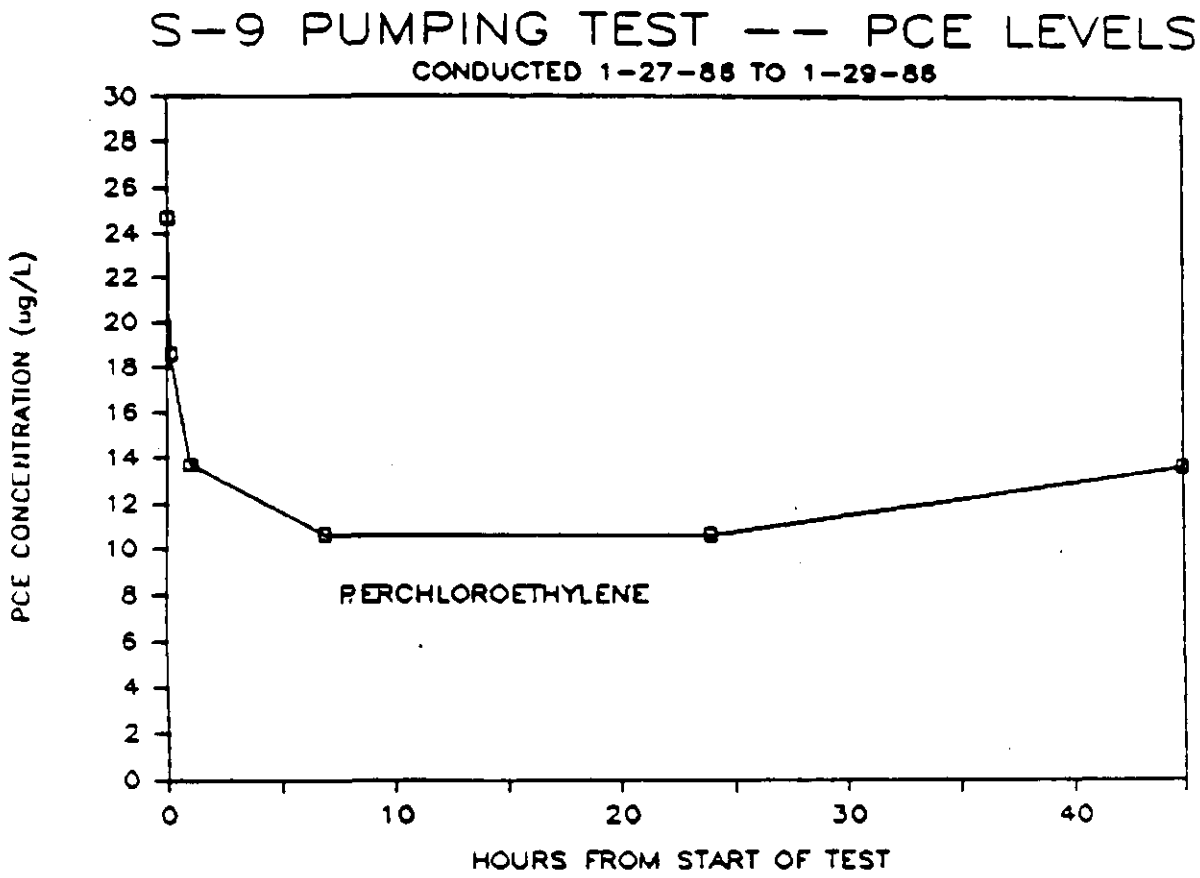
FROM REFERENCE 5

NUS CORPORATION
A Halliburton Company

AR000417

S-9 PUMPING TEST, 1986

LOCATION	DATE	MIN FR START	SAMP #	ug/L PCE	C-1,2-DCE	TCE	1,1,1-TCA
S-9 TEST, 1 MIN	27-Jan-86	0.017	261	24.7	0.7	0.7	<0.5
S-9 TEST, 10 MIN	27-Jan-86	0.17	262	18.6	0.6	0.6	<0.5
S-9 TEST, 1 HOUR	27-Jan-86	1	263	13.7	0.5	0.5	<0.5
S-9 TEST, 7 HRS	28-Jan-86	7	272	10.6	0.5	<0.5	0.5
S-9 TEST, 24 HRS	28-Jan-86	24	275	10.6	<0.5	<0.5	0.6
S-9 TEST END	29-Jan-86	45	282	13.6	<0.5	<0.5	0.6



Area #1

AR000418

From Reference 1

S-10 RESULTS FOR 1985

ug/L

	DAY #	SAMPLE #	TCE	PCE	1,1,1-TCA
07-Jan-85	7	63	0.7	1.5	<0.5
21-Jan-85	21	148	<0.5	2.1	<0.5
11-Feb-85	42	354	<0.5	1.9	<0.5
25-Feb-85	56	443	<0.5	2.3	<0.5
11-Mar-85	70	532	<0.5	2.4	<0.5
25-Mar-85	84	682	<0.5	1.7	<0.5
22-Apr-85	112	834	<0.5	1.5	<0.5
06-May-85	126	971	<0.5	1.8	<0.5
20-May-85	140	1063	<0.5	2.1	<0.5
03-Jun-85	154	1160	<0.5	2.2	<0.5
17-Jun-85	168	1247	<0.5	1.9	<0.5
24-Jun-85	175	1286	<0.5	2.6	<0.5
08-Jul-85	189	1351	<0.5	1.2	<0.5
22-Jul-85	203	1466	<0.5	1.8	<0.5
05-Aug-85	217	1534	<0.5	2.3	0.6
19-Aug-85	231	1645	<0.5	1.8	0.6
03-Sep-85	246	1759	<0.5	2.0	<0.5
16-Sep-85	259	1853	<0.5	2.2	0.5
07-Oct-85	280	1954	<0.5	1.3	<0.5
21-Oct-85	294	2123	<0.5	1.8	<0.5
04-Nov-85	308	2202	<0.5	1.3	<0.5
09-Dec-85	343	2539	<0.5	1.7	<0.5
30-Dec-85	364	2670	<0.5	2.4	<0.5

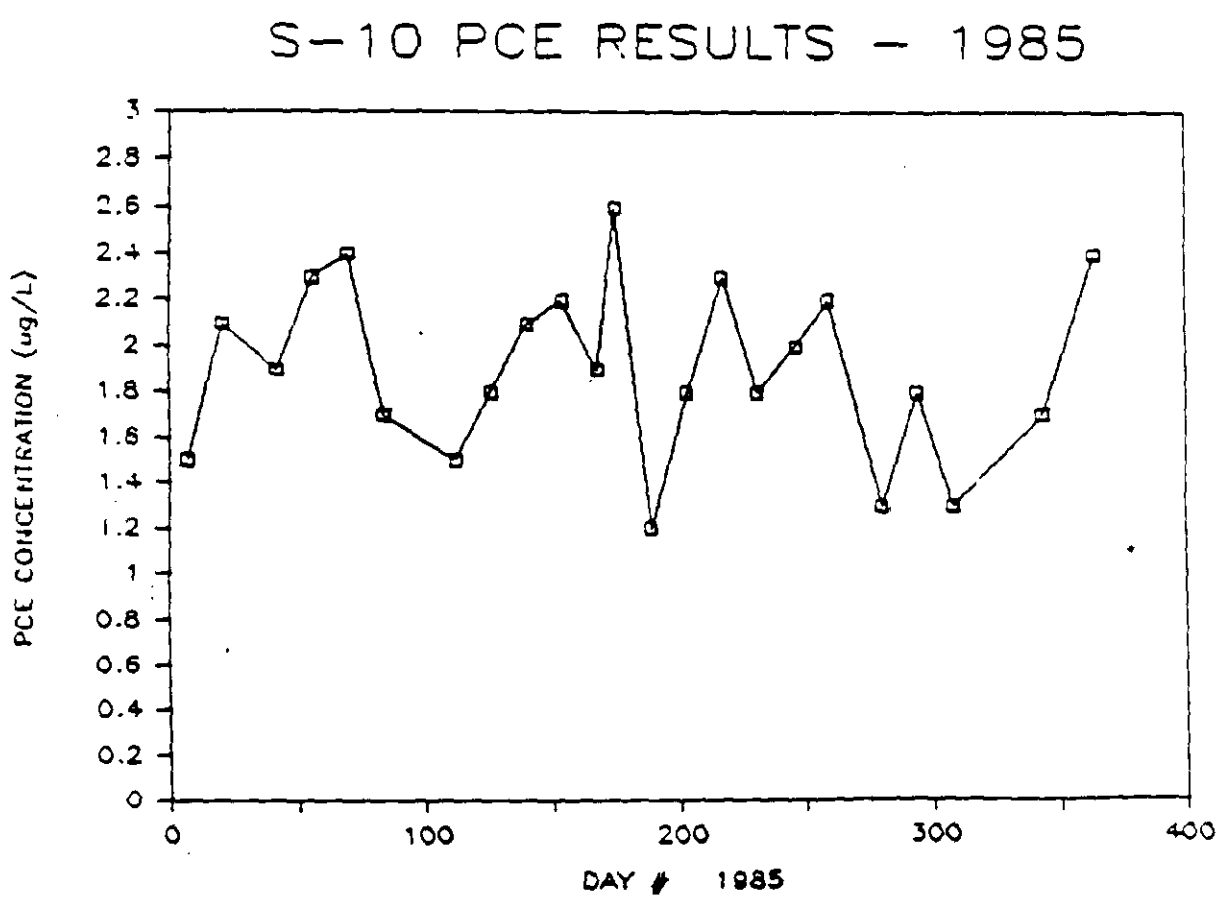


Figure #1 From Reference 1

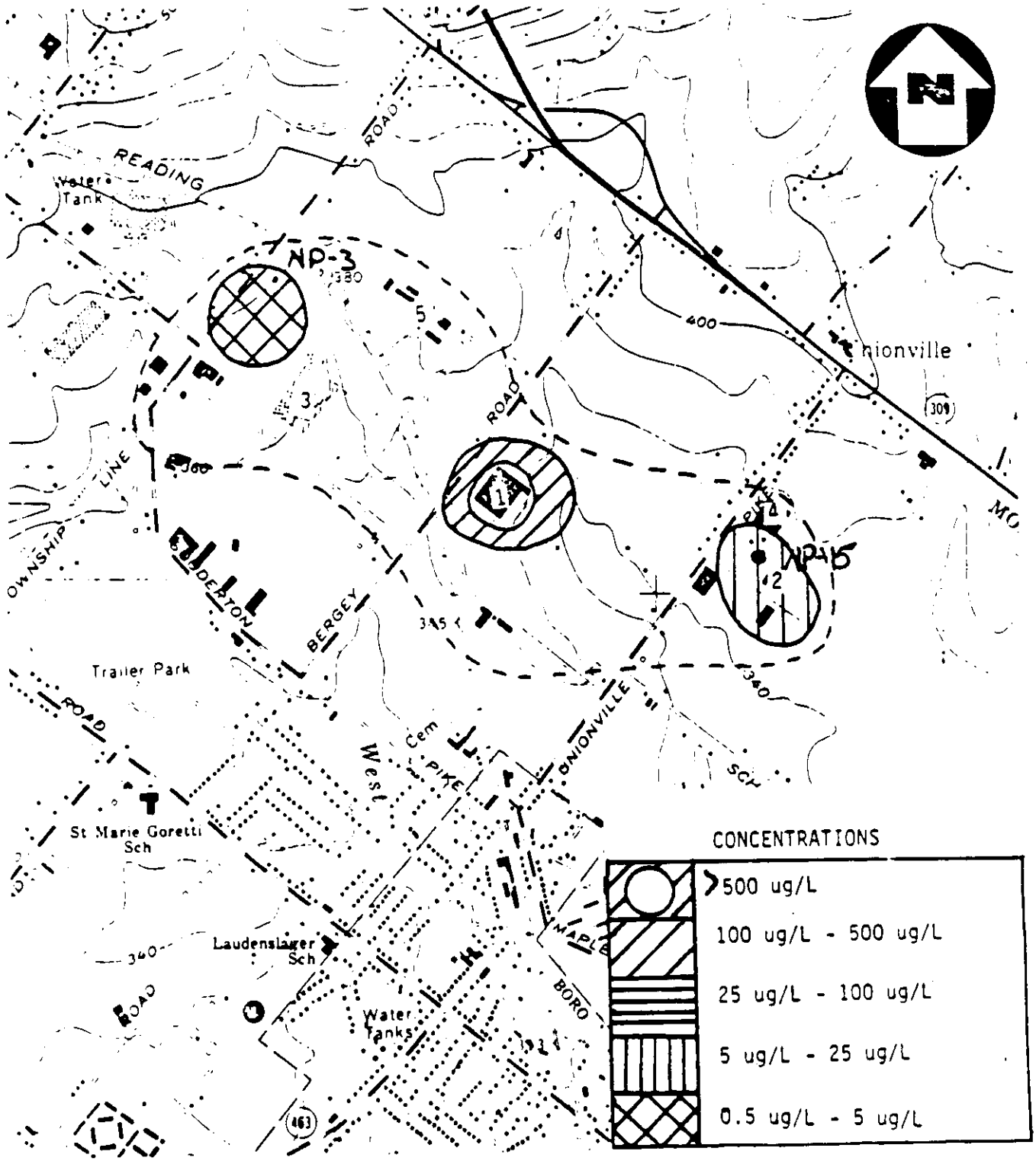
4.3 Area 2

Area 2 lies within Hatfield Township in the Telford quadrangle (see map, page 4-7). This area is served by NPWA and some residents rely on private wells. Three distinct contamination plumes have been discovered within plume boundaries. Of major concern in area 2 is NPWA well NP-15. VOCs were first reported in this well in 1982. In 1985, the highest contaminant levels in NP-15 were 4.4 ug/l 1,1-dichloroethylene, 19.2 ug/l 1,1-dichloroethane, and 4.9 ug/l 1,1,1-trichloroethane (see page 4-8). 1,1-Dichloroethane is a transformation product of 1,1,1-trichloroethane. Well NP-15 is 500 feet deep and permitted for 144,000 gpd.[1] The proposed limit for 1,1-dichloroethylene is 7 ug/l and for 1,1,1-trichloroethane it is 200 ug/l. The proposed limit for 1,1-dichloroethane has not been set.

Potentially responsible parties for the VOC contamination around NP-15, as identified by NPWA, include Waste Conversion, Incorporated and B and G Manufactures Company. Waste Conversion is a known handler of these VOCs and has been reported, by previous employees, to have a sloppy operation. B and G Manufactures, which was previously Jed Manufacturing, is also believed to be a contributor to the contamination problem near NP-15.[1,3]

Another problem in this area exists around the Ametek Corporation facility. Wells on Ametek property are contaminated with TCE in excess of 500 ug/l. An additional identified contamination plume exists along Township Line Road. This plume is located northwest of SPS Technologies, Incorporated and west of A. Steiert and Sons, Incorporated. SPS Technologies is a known user of TCE and may be contributing to the contamination problem in this area. It is unknown if Steiert and Sons, Incorporated, a brush manufacturer, uses VOCs. They have been identified as a potentially responsible party because their operation is very sloppy. Lagoons and uncovered drums are randomly located throughout the property, and stressed vegetation has been noted. This area is of concern because it is near NP-3 which, to date, is contaminated with 4 ug/l of TCE.[1]

Area 2 is a large area of contamination. Of major concern is NP-15, which is an important production well. The contaminants found in NP-15 suggest Waste Conversion, Incorporated is the major responsible party in this area.



AREA 2 (no scale)

1 AMETEK CORPORATION-HUNTER SPRING DIVISION
2 WASTE CONVERSION INC.
3 SPS TECHNOLOGIES INC.-AUTOMATED SYSTEMS DIVISION
4 B&G MANUFACTURES CO.
5 A. STEIERT & SONS INC.
FROM REFERENCE 5

NUS CORPORATION
A Halliburton Company

AR000421

NP-15 RESULTS FOR 1985

DATE	DAY #	SAMPLE #	1,1-DCE	1,1-DCA	1,1,1-TCA
				ug/L	
11-Feb-85	42	345	1.5	---	1.6
07-Mar-85	66	493	2.5	---	2.6
11-Mar-85	70	529	2.3	---	2.6
14-Mar-85	73	545	2.1	---	2.0
15-Mar-85	74	546	1.3	8.3	2.4
18-Mar-85	77	564	1.0	8.2	2.0
25-Mar-85	84	675	1.4	8.8	2.3
15-Apr-85	105	768	1.7	9.8	2.7
22-Apr-85	112	826	1.5	8.5	2.3
06-May-85	126	964	2.1	10.1	2.7
20-May-85	140	1056	2.5	11.2	3.2
03-Jun-85	154	1153	2.9	12.5	3.5
17-Jun-85	168	1239	3.3	12.4	3.3
24-Jun-85	175	1278	3.0	12.5	3.6
08-Jul-85	189	1345	4.1	13.8	3.6
22-Jul-85	203	1459	1.7	11.8	3.9
05-Aug-85	217	1527	2.4	11.9	3.7
19-Aug-85	231	1638	2.5	11.3	3.5
03-Sep-85	246	1752	3.6	15.8	4.2
16-Sep-85	259	1845	4.4	16.6	4.7
07-Oct-85	280	1947	3.3	16.5	4.5
21-Oct-85	294	2115	4.3	17.2	4.9
04-Nov-85	308	2192	3.1	16.0	3.7
09-Dec-85	343	2529	3.9	17.4	4.0
30-Dec-85	364	2664	4.3	19.2	4.3

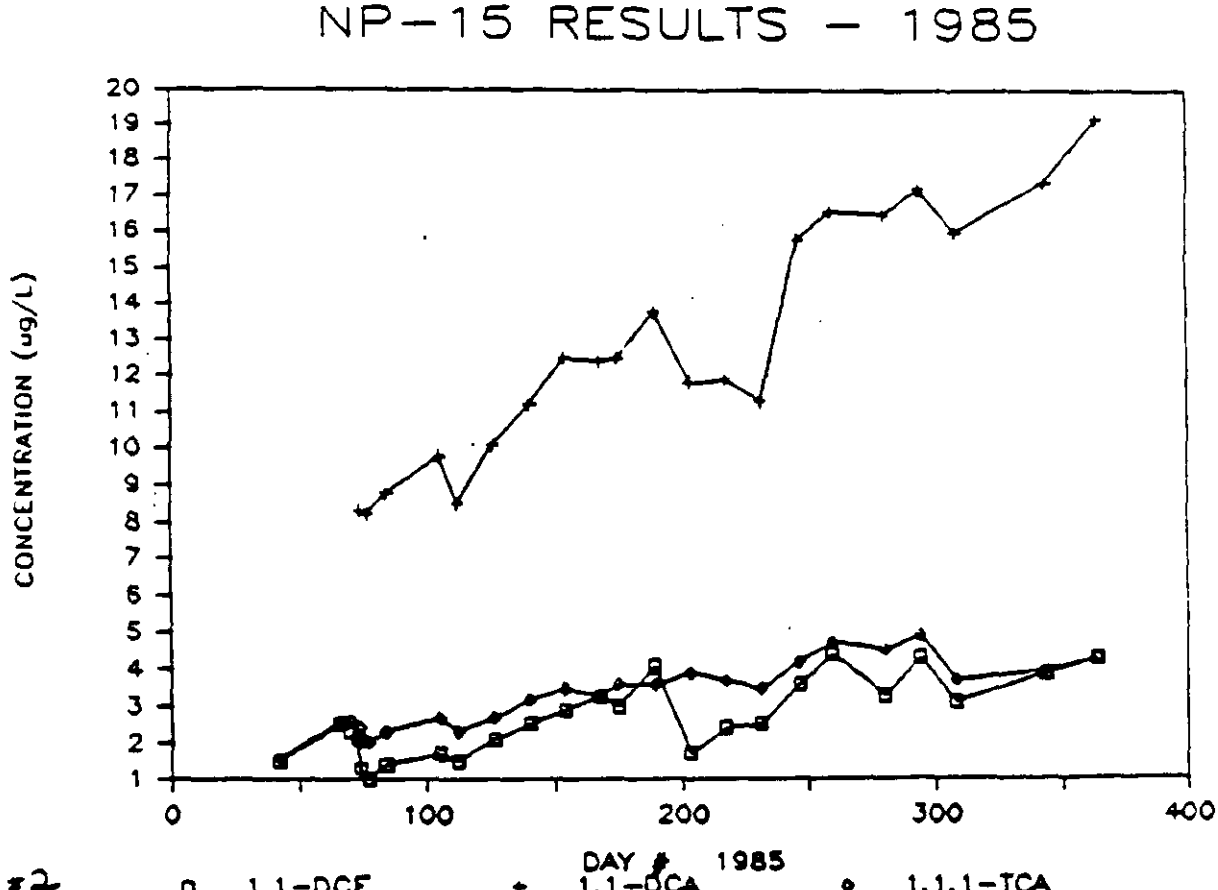


Fig #2

From Reference 1

AR000422

4.4 Area 3

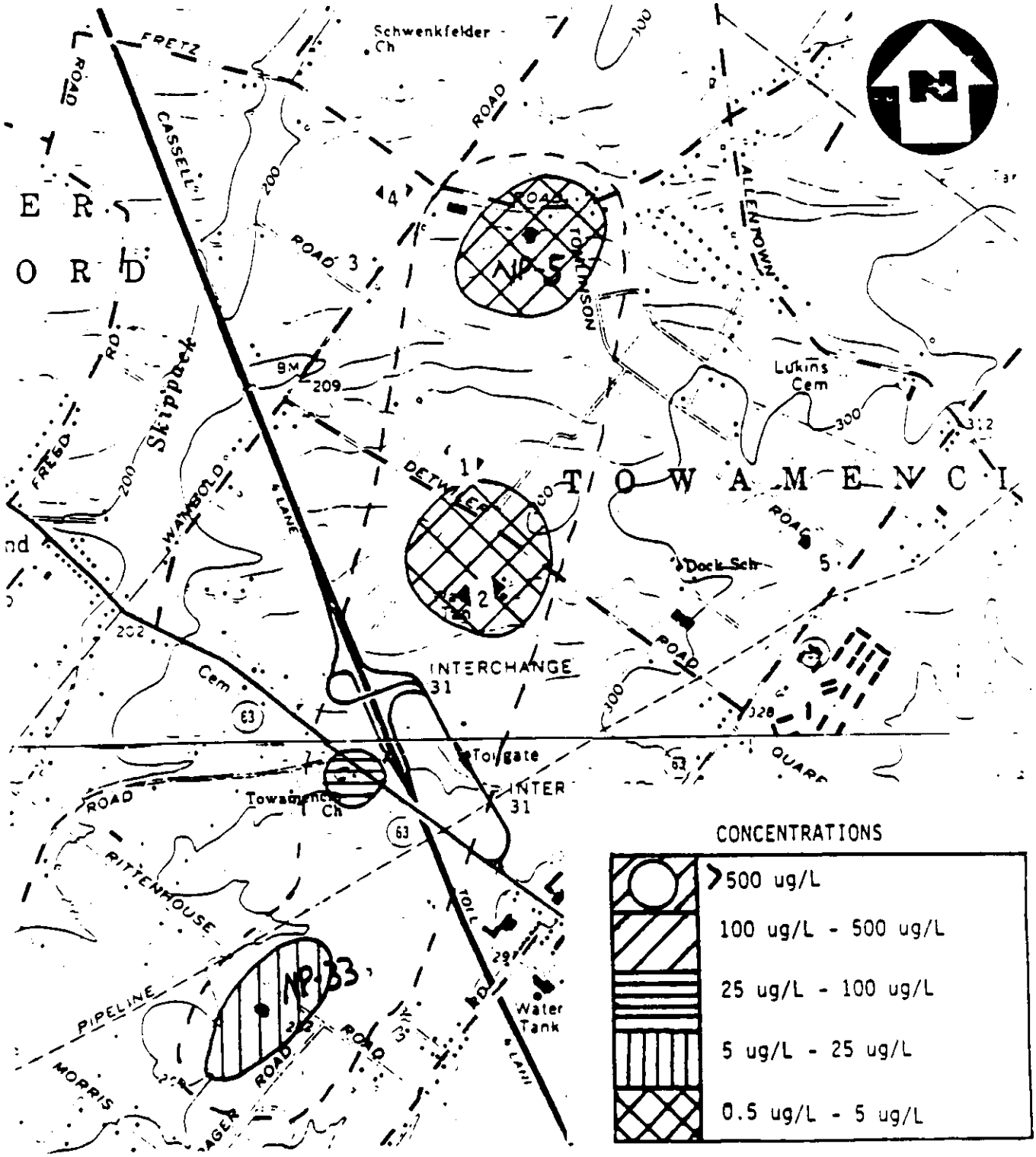
Area 3 is situated in Towamencin Township in the Telford and Lansdale quadrangles (see map, page 4-10). Three distinct plumes exist within the proposed plume boundary for area 3. Two NPWA wells are contaminated in this area.

Contamination of NPWA well NP-5 was discovered in 1980. PCE concentrations in NP-5 ranged from 1.5 ug/l to 5 ug/l in 1984 and 1985 (see pages 4-11 and 4-12). NP-5 is 630 feet deep and has a permitted capacity of 504,000 gpd.[1]

Contamination of NPWA well NP-33 was also discovered in 1980. TCE concentrations in NP-33 have ranged from 6.6 ug/l to 13.2 ug/l in 1985, well above the proposed limit of 5 ug/l (see pages 4-13 and 4-14). NP-33 is 560 feet deep and has a permitted capacity of 216,000 gpd. The concentration of TCE in NP-33 has been increasing steadily in this past year.

Another known contaminated area lies between NP-5 and NP-33. This area is located in an industrial park area. Known users of TCE and/or PCE in the area are Greene Tweed Company and Nice Bearings. At this time, it is difficult to attribute the contamination at NP-33 and NP-5 to Greene Tweed or Nice Bearing. However, considering the topographic high of these industries and the fact that Nice Bearing has a surface discharge pipe in the rear of their building (toward NP-33), these industries could be the responsible parties for the VOC contamination of the NPWA wells. In addition, NPWA feels Met-Pro Corporation, Pecora Chemical Company, and Penn Fishing Tackle Company may be potentially responsible parties in area 3.[1]

Additional study of this area is being conducted by NPWA. They are sampling wells between Green Tweed Company and Nice Bearings Division and NP-5 and NP-33 to better establish the contamination plume and concentrations. The compilation of these data should give NPWA a better understanding of contaminant movement and potentially responsible parties in the area.

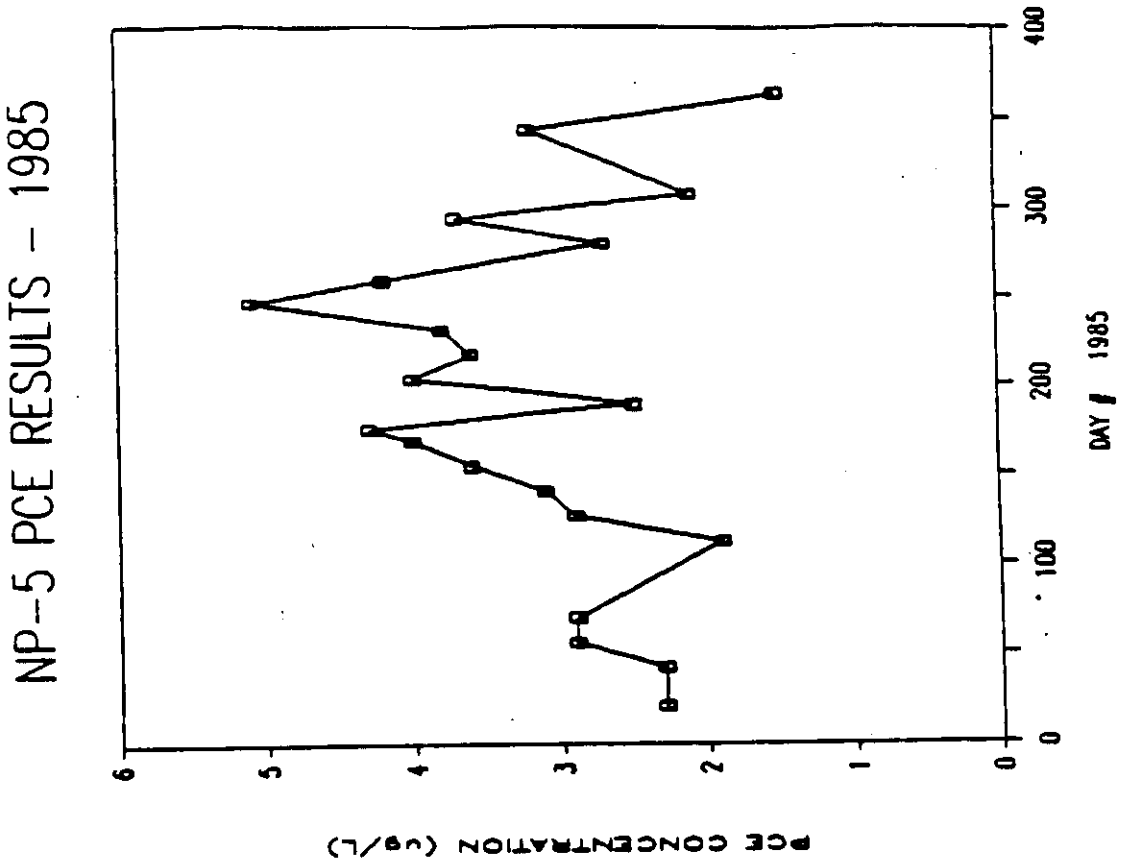


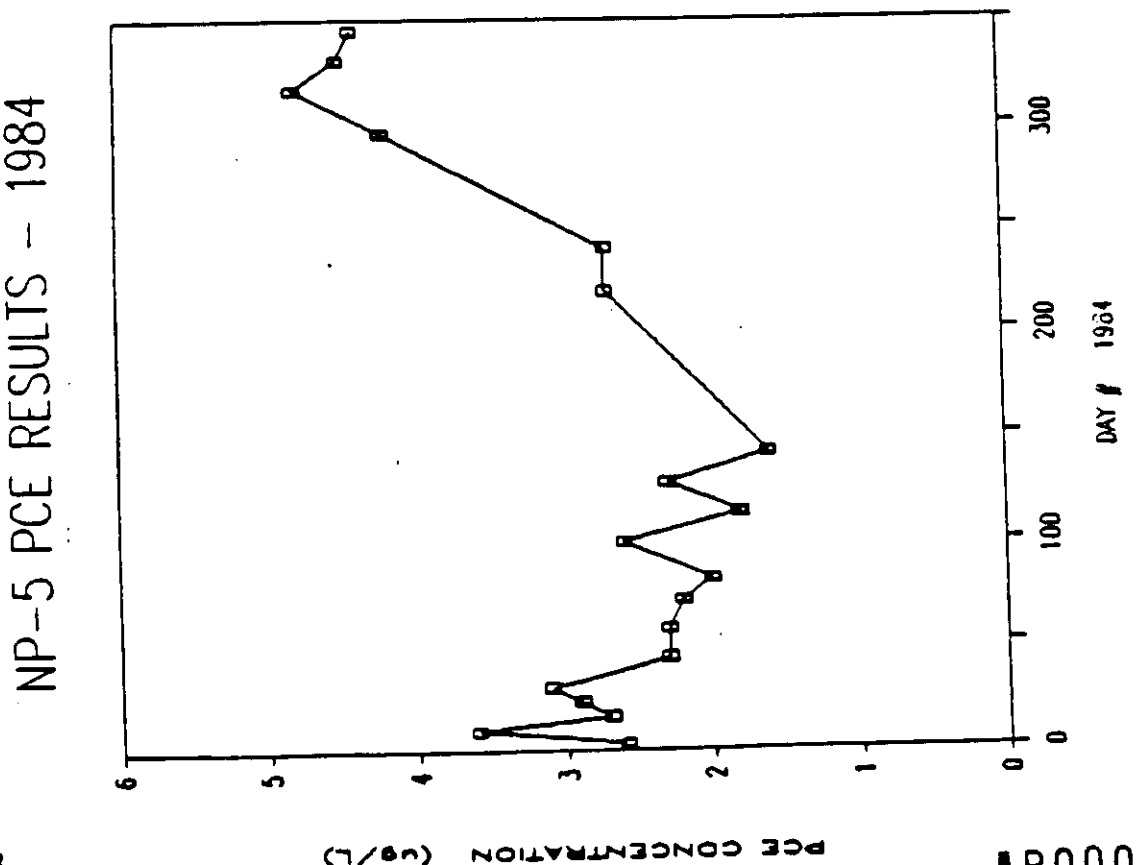
AREA 3
(no scale)

1 GREENE TWEED COMPANY
2 NICE BEARING DIVISION OF SKF INDUSTRIES
3 MET-PRO CORPORATION
4 PECORA CHEMICAL COMPANY
5 PENN FISHING TACKLE COMPANY

FROM REFERENCE 5 and 8

NUS CORPORATION
A Halliburton Company





area #3

From Reference 1

NP-5 RESULTS FOR 1984 ug/L

DATE	DAY #	SAMPLE #	TCE	PCE
03-Jan-84	3	4	0.3	2.6
09-Jan-84	9	28	0.3	3.6
16-Jan-84	16	60	0.4	2.7
23-Jan-84	23	93	<0.3	2.9
30-Jan-84	30	115	0.4	3.1
13-Feb-84	44	181	0.3	2.3
27-Feb-84	58	234	<0.3	2.3
12-Mar-84	72	264	0.6	2.2
22-Mar-84	82	322	0.4	2.0
09-Apr-84	100	455	1.5	2.6
23-Apr-84	114	539	0.2	1.8
07-May-84	128	605	0.3	2.3
21-May-84	142	696	0.2	1.6
06-Aug-84	219	987	0.3	2.7
27-Aug-84	240	1103	<0.5	2.7
22-Oct-84	296	1316	<0.5	4.2
12-Nov-84	317	1448	<0.5	4.8
26-Nov-84	331	1548	0.8	4.5
10-Dec-84	345	1665	0.8	4.4

NP-5 RESULTS FOR 1985 ug/L

DATE	DAY #	SAMPLE #	TCE	PCE
21-Jan-85	21	133	<0.5	2.3
11-Feb-85	42	343	<0.5	2.3
25-Feb-85	56	438	<0.5	2.9
11-Mar-85	70	528	<0.5	2.9
22-Apr-85	112	825	<0.5	1.9
06-May-85	126	963	<0.5	2.9
20-May-85	140	1055	<0.5	3.1
03-Jun-85	154	1151	<0.5	3.6
17-Jun-85	168	1238	<0.5	4.0
24-Jun-85	175	1277	<0.5	4.3
08-Jul-85	189	1344	<0.5	2.5
22-Jul-85	203	1458	<0.5	4.0
05-Aug-85	217	1526	<0.5	3.6
19-Aug-85	231	1636	<0.5	3.8
03-Sep-85	246	1751	<0.5	5.1
16-Sep-85	259	1844	<0.5	4.2
07-Oct-85	280	1946	<0.5	2.7
21-Oct-85	294	2144	<0.5	3.7
04-Nov-85	308	2201	<0.5	2.1
09-Dec-85	343	2528	<0.5	3.2
30-Dec-85	364	2663	<0.5	1.5

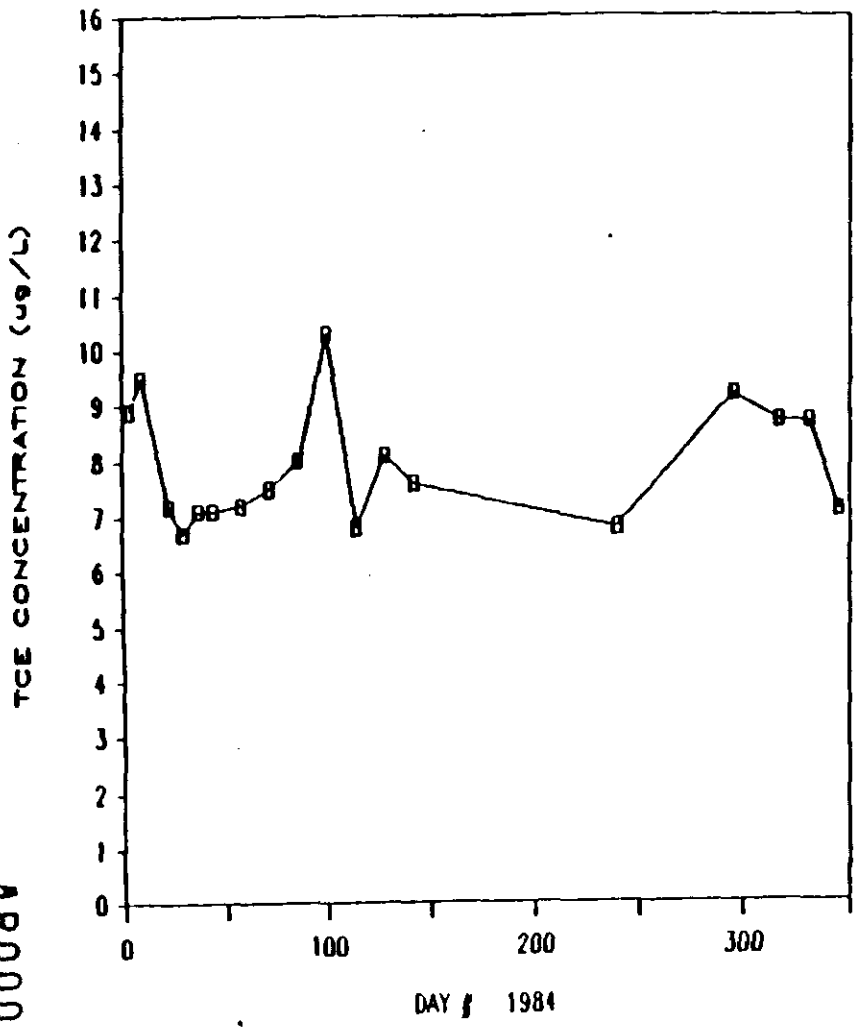
From Reference 1
Area #3

Area #3

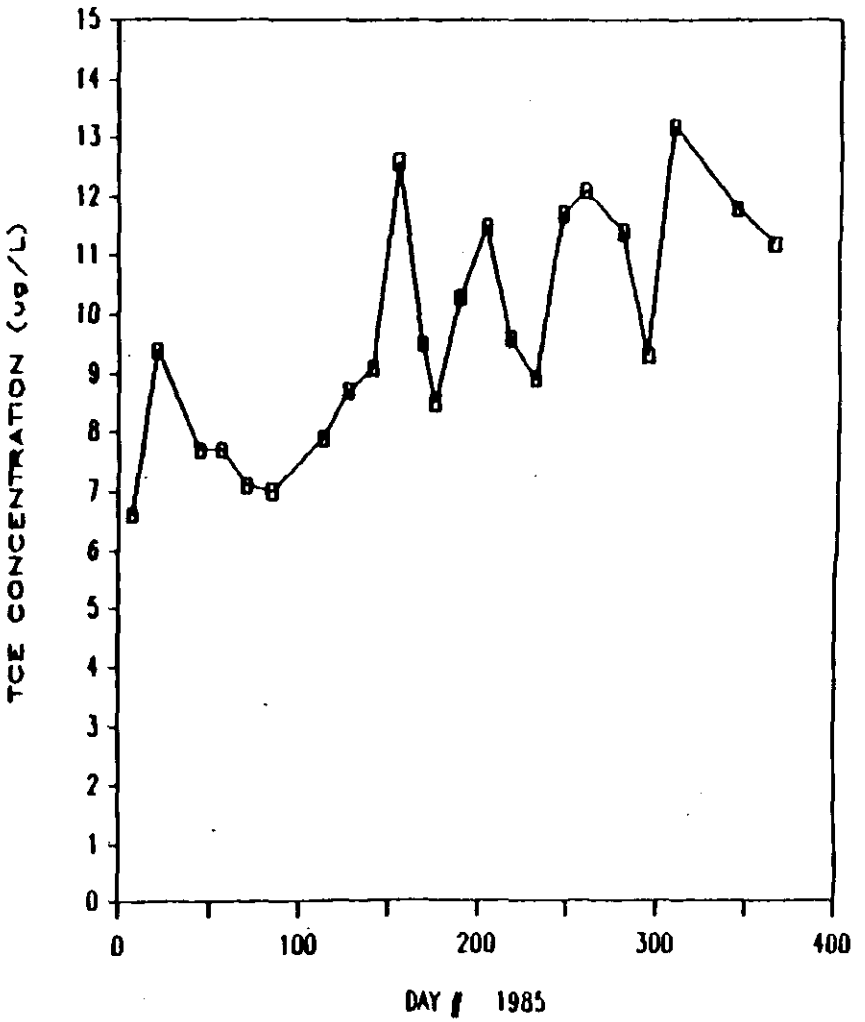
From Reference 1

4-13

NP-33 TCE RESULTS 1984



NP-33 TCE RESULTS 1985



NP-33 RESULTS FOR 1984 ug/L

DATE	DAY #	SAMPLE #	TCE	PCE
03-Jan-84	3	7	8.9	<0.3
09-Jan-84	9	31	9.5	0.3
23-Jan-84	23	95	7.2	<0.3
30-Jan-84	30	119	6.7	<0.3
06-Feb-84	37	148	7.1	<0.3
13-Feb-84	44	182	7.1	<0.3
27-Feb-84	58	238	7.2	0.5
12-Mar-84	72	2e6	7.5	0.3
26-Mar-84	86	325	8.0	0.3
09-Apr-84	100	458	10.3	0.3
23-Apr-84	114	542	6.8	<0.3
07-May-84	128	608	8.1	0.3
21-May-84	142	699	7.6	<0.3
27-Aug-84	240	1106	6.8	<0.3
22-Oct-84	296	1318	9.2	0.8
12-Nov-84	317	1451	8.7	<0.5
26-Nov-84	331	1551	8.7	<0.5
10-Dec-84	345	1e68	7.1	0.8

NP-33 RESULTS FOR 1985 ug/L

DATE	DAY #	SAMPLE #	TCE	PCE
07-Jan-85	7	61	6.6	<0.5
21-Jan-85	21	137	9.4	<0.5
13-Feb-85	44	392	7.7	<0.5
25-Feb-85	56	441	7.7	<0.5
11-Mar-85	70	530	7.1	<0.5
25-Mar-85	84	678	7.0	0.5
22-Apr-85	112	829	7.9	<0.5
06-May-85	126	967	8.7	<0.5
20-May-85	140	1059	9.1	<0.5
03-Jun-85	154	1155	12.6	<0.5
17-Jun-85	168	1241	9.5	<0.5
24-Jun-85	175	1282	8.5	<0.5
08-Jul-85	189	1348	10.3	<0.5
22-Jul-85	203	1462	11.5	<0.5
05-Aug-85	217	1530	9.6	<0.5
19-Aug-85	231	1641	8.9	<0.5
03-Sep-85	246	1755	11.7	<0.5
16-Sep-85	259	1848	12.1	<0.5
07-Oct-85	280	1950	11.4	<0.5
21-Oct-85	294	2119	9.3	0.5
04-Nov-85	308	2195	13.2	<0.5
09-Dec-85	343	2533	11.8	<0.5
30-Dec-85	364	2e66	11.2	<0.5

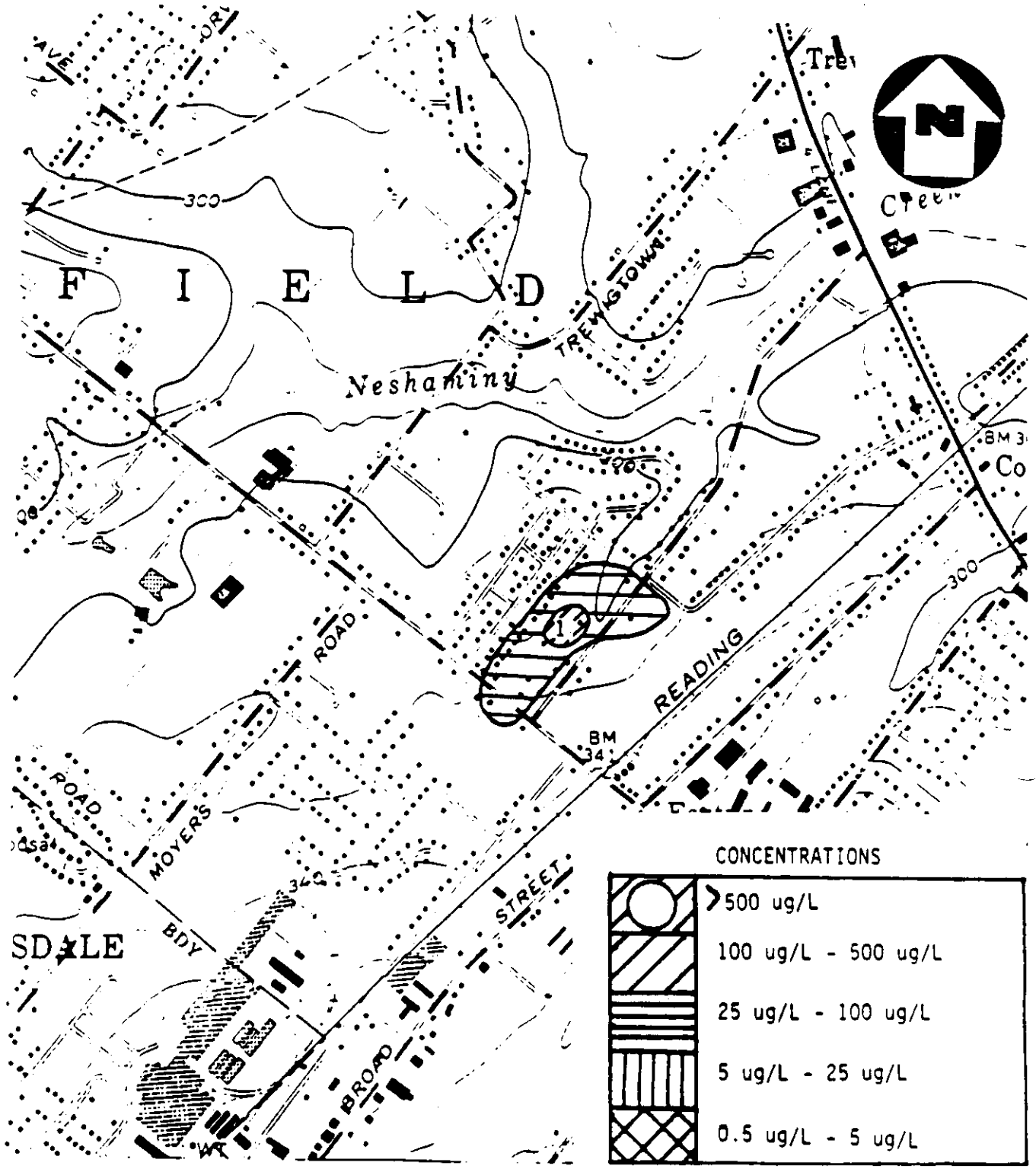
4.5 Area 4

Area 4 is situated in Hatfield Township within the Telford quadrangle (see map, page 4-16). The area does not involve any NPWA wells. Residents within the contamination plume rely on private wells or are supplied by NPWA. Several residential wells have concentrations of TCE above the proposed limit of 5 ug/l.[1]

The potentially responsible party in this area is Reclamation Resources. Reclamation Resources was operated by Leroy Beaver as a waste conversion and disposal operation. Mr. Beaver has recently sold the property to Gunther Regan, who built apartments on the property.[1,2,3]

In April 1983, NPWA tested the well at Reclamation Resources and 2 other home wells. The well at Reclamation Resources was contaminated with 180 ug/l TCE, and 16 ug/l PCE. Both home wells were above the limit for TCE of 5 ug/l.[1]

It appears Reclamation Resources has contaminated residential wells in the area. The public water system is readily available to individuals still utilizing private wells for their water supply.



AREA 4

(no scale)

1 RECLAMATION RESOURCES

FROM REFERENCE 5

NUS CORPORATION
A Halliburton Company

AR000430

4.6 Area 5

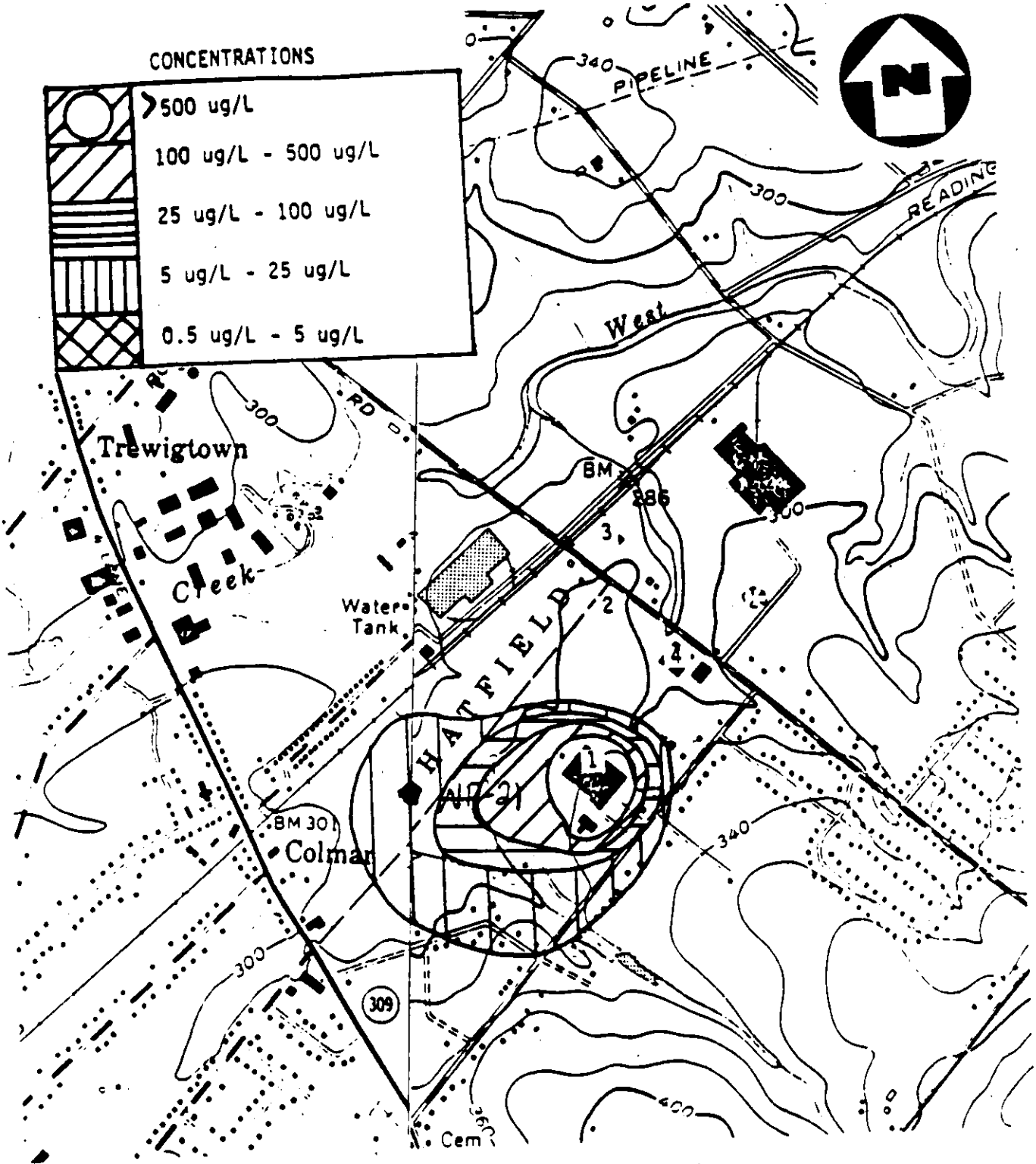
Area 5 is situated in Hatfield Township and Montgomery Township within the Telford quadrangle (see map, page 4-18). The majority of the area is not served by NPWA, but relies on private wells or is served by North Wales Water Authority. NPWA well NP-21 lies within the contamination plume. Contamination of NP-21 was first discovered in August 1979. TCE concentrations ranged from 1.6 to 19.8 ug/l during 1984 to 1985 (see pages 4-19 and 4-20). NP-21 is 500 feet deep and has a permitted capacity of 854,000 gpd.[1]

Several potentially responsible parties have been identified in this area including American Electronic Laboratories (AEL), Gas Spring Company, Brown, Boveri Electric, and Linberg Company.[1,2]

Information generated by NPWA to establish the contamination plume, along with investigations conducted by PA DER and EPA, indicated that AEL is the major potential responsible party in the area. Monitoring wells on AEL property have concentrations of TCE in excess of 500 ug/l. The contaminants have moved from AEL primarily to the south and west, thus contaminating NP-21 and probably some home wells in the area.[1,2,3]

EPA has named Linberg Company and Brown, Boveri Electric as users of TCE and/or PCE. In addition, Gas Springs Company uses TCE, which is delivered by Baron Blakeslee Division of Allied Chemical Company. On 1 occasion, an NPWA employee saw a Baron Blakeslee tank truck leaking TCE onto the ground at the Gas Springs facility.[1,2]

AEL is presently working with PA DER in an effort to correct the contamination problem in and around their facility. If home wells in the area are found to be contaminated, public water supply is available (see map in appendix B).



AREA 5 (no scale)

1 AMERICAN ELECTRONIC LABORATORIES (A.E.L.)
2 GAS SPRING COMPANY
3 BROWN, BOVERI ELECTRIC
4 LINBERG COMPANY

FROM REFERENCE 5 and 6

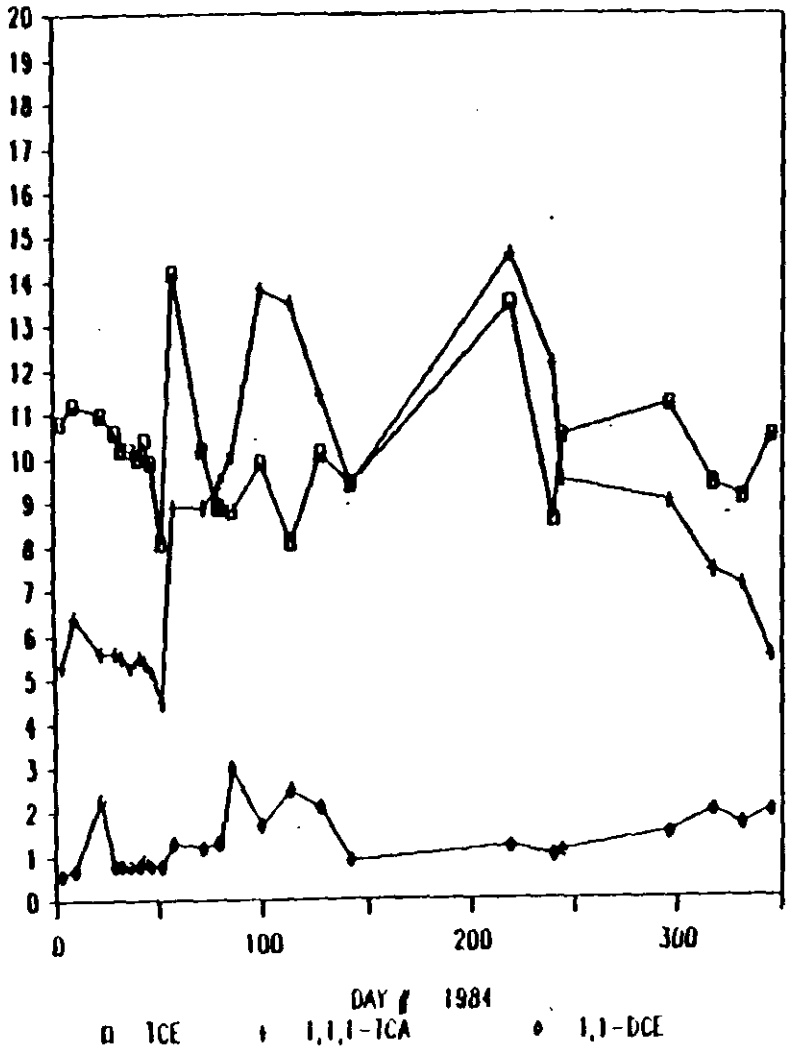
NUS CORPORATION
A Halliburton Company

Attach # 5

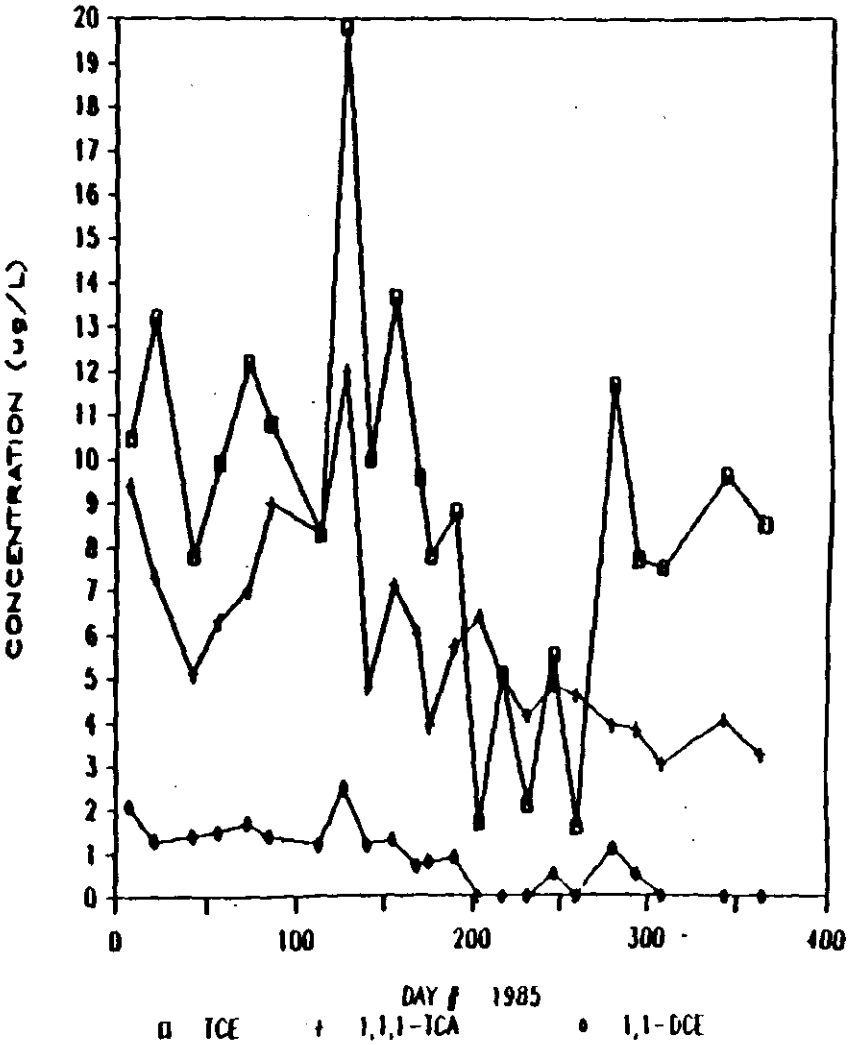
4-19

From Reference 1

NP-21 RESULTS 1984



NP-21 RESULTS 1985



NP-21 RESULTS FOR 1984 ug/L

DATE	DAY #	SAMPLE #	1,1-DCE	C-1,2-DCE	1,1,1-TCA	TCE
03-Jan-84	3	5	0.6	0.2	5.3	10.8
09-Jan-84	9	29	0.7	<0.2	6.4	11.2
23-Jan-84	23	94	2.3	0.2	5.6	11.0
30-Jan-84	30	116	0.8	0.2	5.6	10.6
02-Feb-84	33	132	0.8	<0.2	5.5	10.2
06-Feb-84	37	144	0.8	0.3	5.3	10.2
10-Feb-84	41	165	0.8	0.2	5.5	10.0
13-Feb-84	44	189	0.9	0.2	5.4	10.4
16-Feb-84	47	194	0.8	0.5	5.2	9.9
21-Feb-84	52	209	0.8	0.2	4.5	8.1
27-Feb-84	58	237	1.3	0.2	8.9	14.2
12-Mar-84	72	265	1.2	0.3	8.9	10.2
19-Mar-84	79	297	1.3	1.2	9.3	8.9
20-Mar-84	80	311	1.3	0.2	9.5	8.9
26-Mar-84	86	324	3.0	0.5	10.1	8.8
09-Apr-84	100	456	1.7	0.3	13.8	9.9
23-Apr-84	114	540	2.5	0.2	13.5	8.1
07-May-84	128	606	2.1	0.2	11.4	10.1
21-May-84	142	697	0.9	0.2	9.4	9.4
06-Aug-84	219	988	1.2	0.	14.6	13.5
27-Aug-84	240	1104	1.0	<0.5	12.1	8.6
31-Aug-84	244	1124	1.1	<0.5	9.5	10.5
22-Oct-84	296	1317	1.5	<0.5	9.0	11.2
12-Nov-84	317	1450	2.0	<0.5	7.4	9.4
26-Nov-84	331	1549	1.7	<0.5	7.1	9.1
10-Dec-84	345	1666	2.0	<0.5	5.5	10.5

NP-21 RESULTS FOR 1985 ug/L

DATE	DAY #	SAMPLE #	1,1-DCE	C-1,2-DCE	1,1,1-TCA	TCE
07-Jan-85	7	60	2.1	<0.5	9.4	10.5
21-Jan-85	21	135	1.3	<0.5	7.3	13.2
11-Feb-85	42	346	1.4	<0.5	5.1	7.8
25-Feb-85	56	439	1.5	<0.5	6.3	9.9
13-Mar-85	72	543	1.7	<0.5	7.0	12.2
25-Mar-85	84	677	1.4	<0.5	9.0	10.8
22-Apr-85	112	828	1.2	<0.5	8.3	8.3
06-May-85	126	966	2.5	<0.5	12.0	19.6
20-May-85	140	1057	1.2	<0.5	4.8	10.0
03-Jun-85	154	1154	1.3	<0.5	7.1	13.7
17-Jun-85	168	1240	0.7	<0.5	6.0	9.6
24-Jun-85	175	1280	0.8	<0.5	3.9	7.8
08-Jul-85	189	1347	0.9	<0.5	5.7	8.8
22-Jul-85	203	1460	<0.5	<0.5	0.4	1.7
05-Aug-85	217	1529	<0.5	<0.5	5.0	5.1
19-Aug-85	231	1639	<0.5	<0.5	4.1	2.1
03-Sep-85	246	1754	0.5	<0.5	4.8	5.5
16-Sep-85	259	1846	<0.5	<0.5	4.0	1.0
07-Oct-85	280	1949	1.1	<0.5	3.9	11.7
21-Oct-85	294	2117	0.5	<0.5	3.8	7.7
04-Nov-85	308	2193	<0.5	<0.5	3.0	7.5
09-Dec-85	343	2531	<0.5	<0.5	4.0	9.0
30-Dec-85	364	2665	<0.5	<0.5	3.2	8.5

From Reference 1

Area # 2

4.7 Area 6

Area 6 is situated predominantly in the borough of Lansdale and extends into Hatfield Township, Towamencin Township, and Upper Gwynedd Township. The area is located in the southern Telford and northern Lansdale quadrangle (see map, page 4-24). This area has the greatest areal extent and contamination concentrations within the North Penn study area. VOC contamination of groundwater was discovered in this area in August 1979. NPWA wells L-8, L-9, L-10, and L-25 are not in use due to high levels of VOCs. NPWA well L-23 exceeds the proposed limit for TCE of 5 ug/l and would require treatment for continued use. In addition, NPWA well L-21 is located near the plume and is contaminated with TCE, although the concentration is below the proposed limit.[1]

NPWA well L-8 is the most contaminated well in the area. Chemical contaminants include vinyl chloride (15 to 45 ug/l), TCE (300 to 2,000 ug/l), PCE (150 to 800 ug/l), cis-1,2-dichloroethylene (200 to 1,200 ug/l), 1,1,1-trichloroethane (15 to 50 ug/l), and 1,1-dichloroethylene (10 to 15 ug/l) (see page 4-25). L-8 is presently treated with a carbon-activated filter and discharges into the sewer. L-9 has TCE contamination ranges of 28 to 190 ug/l and a PCE contamination range of 4.7 to 172 ug/l (see pages 4-26 and 4-27). L-10 has TCE and PCE contamination of 25 ug/l. L-25 has TCE contamination of 34 ug/l and a PCE contamination of 12 ug/l. L-23 has a TCE concentration of 10.4-30.4 ug/l (see page 4-28). The maximum concentration of TCE in L-21 to date is 1.3 ug/l (see page 4-29).[1]

Potentially responsible parties in area 6 include J.W. Rex Company, John Evans' Sons, Incorporated, Keystone Hydraulics, Royal Cleaners, Eaton Laboratories, Lansdale Transportation, Andale Company, Philadelphia Toboggan (now HGH Corporation), and Precision Rebuilders.[1,2]

Allied Paint ✓

The Keystone Hydraulics property was previously owned by the Allied ~~Chemical~~ Paint Company Plant, and J.W. Rex owned the property prior to Allied. All 3 industries probably contributed to the VOC contamination in the area and in particular to well L-8, located across the street from the plant. In addition, Eaton Laboratories, a known user of TCE, is located near L-8. J.W. Rex is also believed to have contaminated the groundwater at its present location, on Eighth Street (see map, page 4-24).[1,2]

John Evans' and Philadelphia Toboggan, now owned by HGH Corporation, are believed to be the major sources of VOC contamination in the northeastern section of the plume. Concentrations of TCE are above 500 ug/l around and between these facilities.[1,2]

Royal Cleaners and Lansdale Transportation, now owned by Lansdale Realty, are believed to be the responsible parties for the PCE contamination plume. This plume is mapped separately and is located northeast of the main plume. The concentration of PCE in groundwater near Royal Cleaners is greater than 100 ug/l.[1,2]

Andale Company, located on Hancock Street outside the plume, may also be a potentially responsible party for VOC contamination. Andale is a known user of TCE, although there is not a remarkable groundwater contamination problem at or near their facility.[1,2]

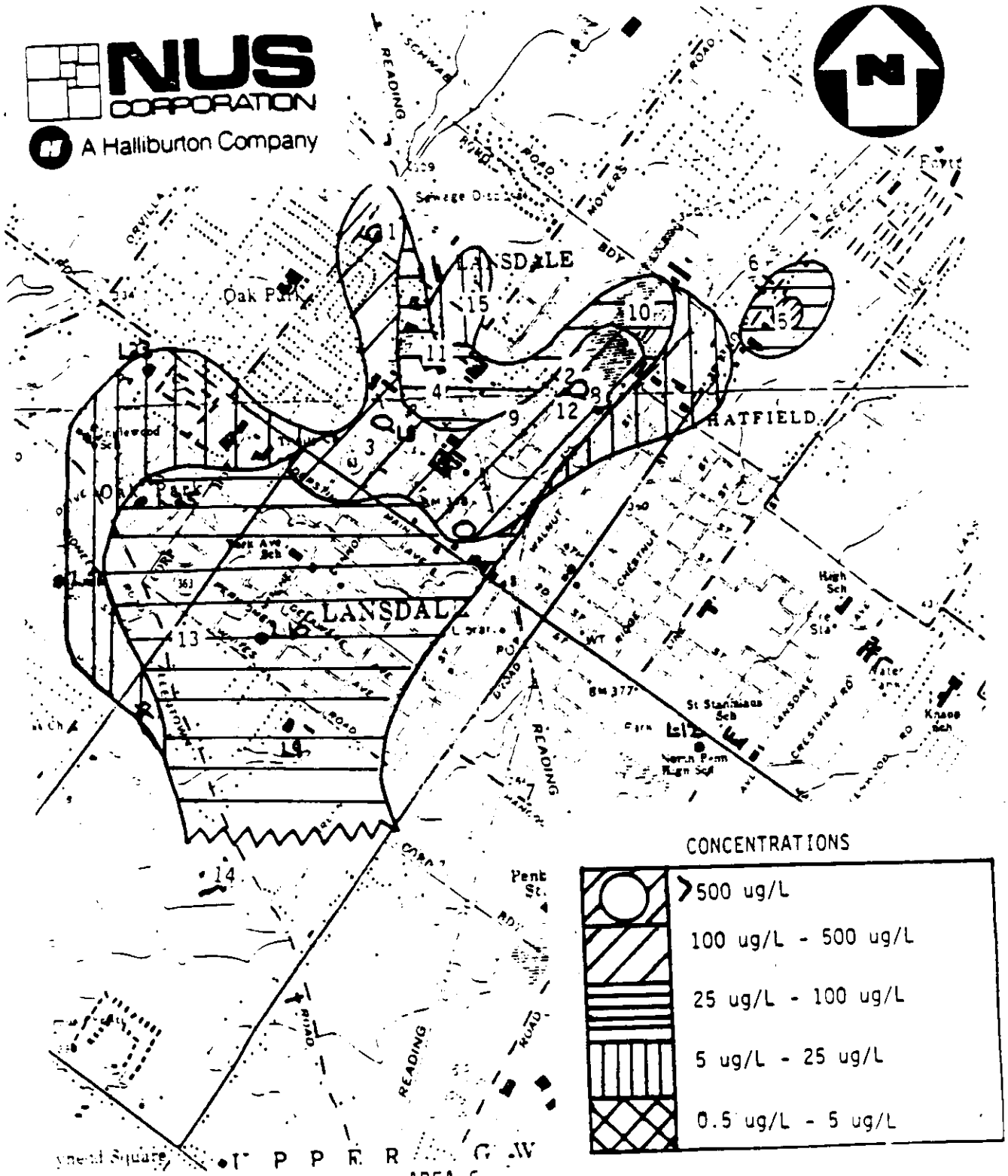
Precision Rebuilders, who now occupy the building used by K and K Laundry, may be a responsible party. Wells at their facility were reported by EPA to be grossly contaminated. It is difficult to determine if Precision Rebuilders or K and K Laundry, or both parties, are responsible for the contamination.[1,2]

In addition, Crystal Soap and Chemical Company, Decision Data Computer Company, Skee-Ball, and American Olean Tile Company could be potentially responsible parties of VOC contamination, but little is known about their operations at this time. Lehigh Valley Farms-Atlantic Processing, Incorporated may be a responsible party. TCE contamination was recently detected in their wells, but it is difficult to identify them as a party since the plume appears to be moving slowly toward their facility (southwest). William Wilson's Sons is located in the southern section of the plume and may be a potentially responsible party.[1,2]

It appears that the VOC contaminants have moved from their origin in the northern section of the plume southwest where L-9, L-10, and L-25 are located.[1]

Improper handling and disposal of VOCs has caused a major groundwater contamination problem in the industrial borough of Lansdale. NPWA has 6 wells contaminated with VOCs in this area. At this time, L-8, L-9, L-10, and L-25 are out of service due to VOC contamination. Together, these wells have a permitted capacity of 489,600 gpd. Water from L-8 is presently treated at the well head, then piped to the wastewater treatment plant for additional treatment. Water from L-23 exceeds the proposed limit for TCE of 5 ug/l and would require treatment for continued use. L-23 has a permitted capacity of 144,000 gpd. NPWA well L-21 is contaminated below the proposed limit and has a permitted capacity of 86,400 gpd. Potentially responsible parties for the VOC contamination for this area have been named and their approximate locations have been mapped on page 4-24.

NUS CORPORATION
A Halliburton Company



CONCENTRATIONS

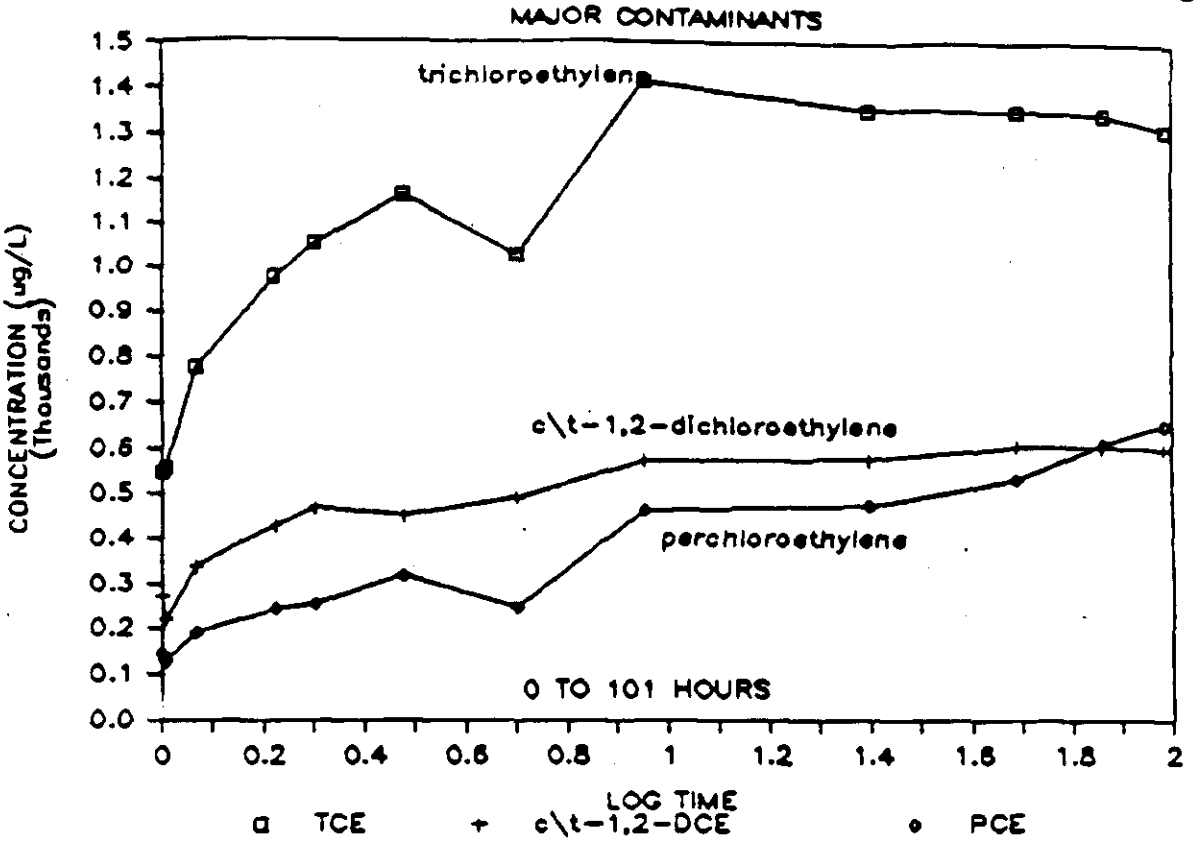
- >500 ug/L
- 100 ug/L - 500 ug/L
- 25 ug/L - 100 ug/L
- 5 ug/L - 25 ug/L
- 0.5 ug/L - 5 ug/L

AREA 6
(no scale)

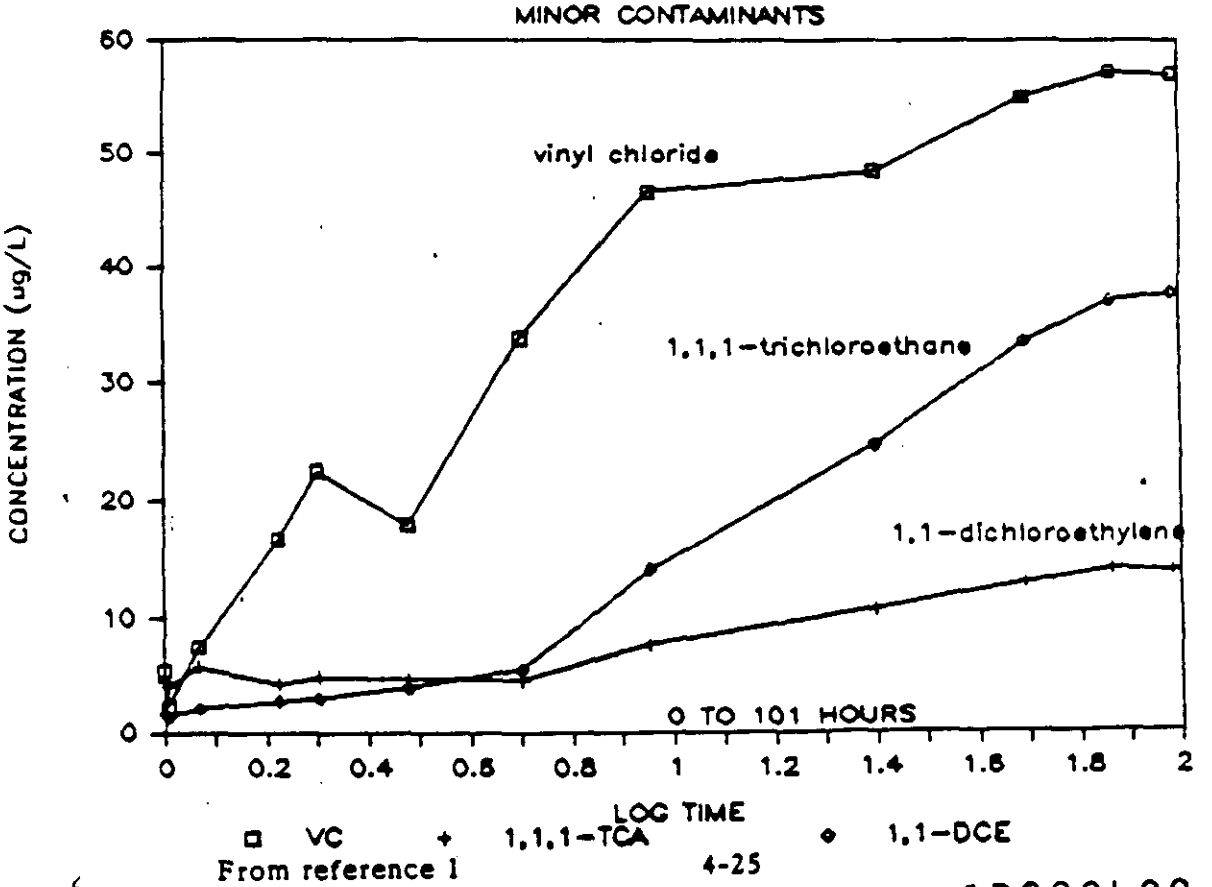
1 J.W. REX COMPANY
2 JOHN EVANS' SONS, INC.
3 KEYSTONE HYDRAULICS
4 EATON LABORATORIES
5 ROYAL CLEANERS
6 LANSDALE TRANSPORTATION
7 ANDALE COMPANY
8 H.G.H. CORPORATION
9 PRECISION REBUILDERS
10 AMERICAN OLEAN TILE COMPANY
11 DECISION DATA COMPUTER COMPANY
12 SKEE-BALL
13 WILLIAM WILSONS' SONS
14 LEHIGH VALLEY FARMS
15 CRYSTAL SOAP AND CHEMICAL CO.

FROM REFERENCE 5 and 8

L-8 PUMPING TEST - JANUARY 1986



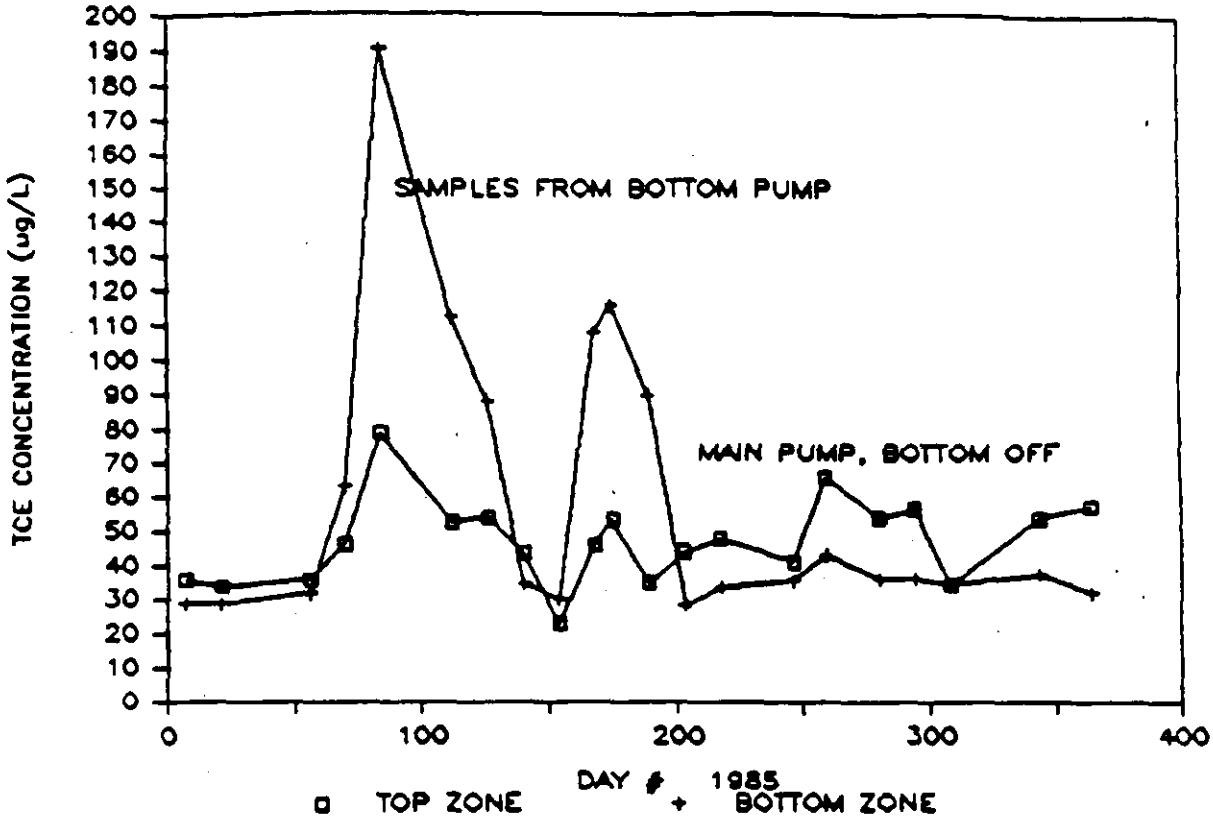
L-8 PUMPING TEST - JANUARY 1986



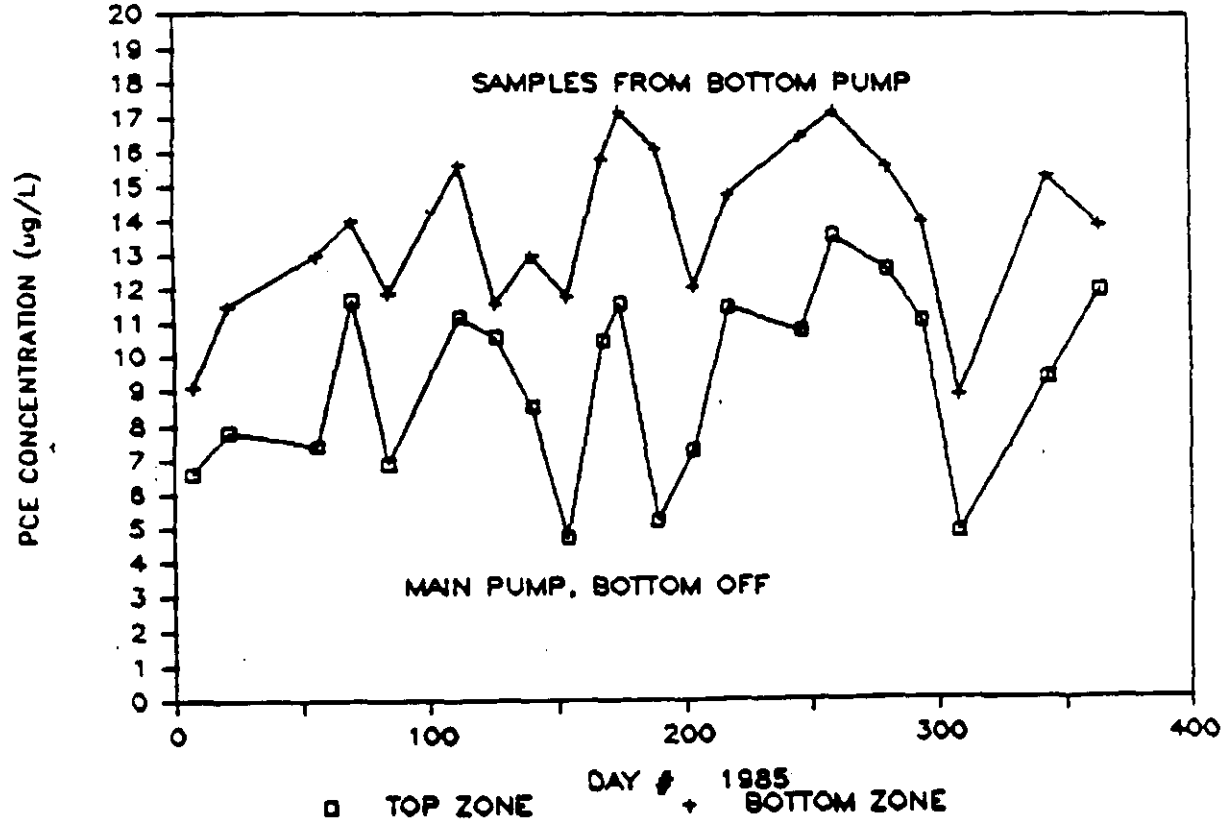
From reference 1

Area # 6

L-9 TCE RESULTS 1985

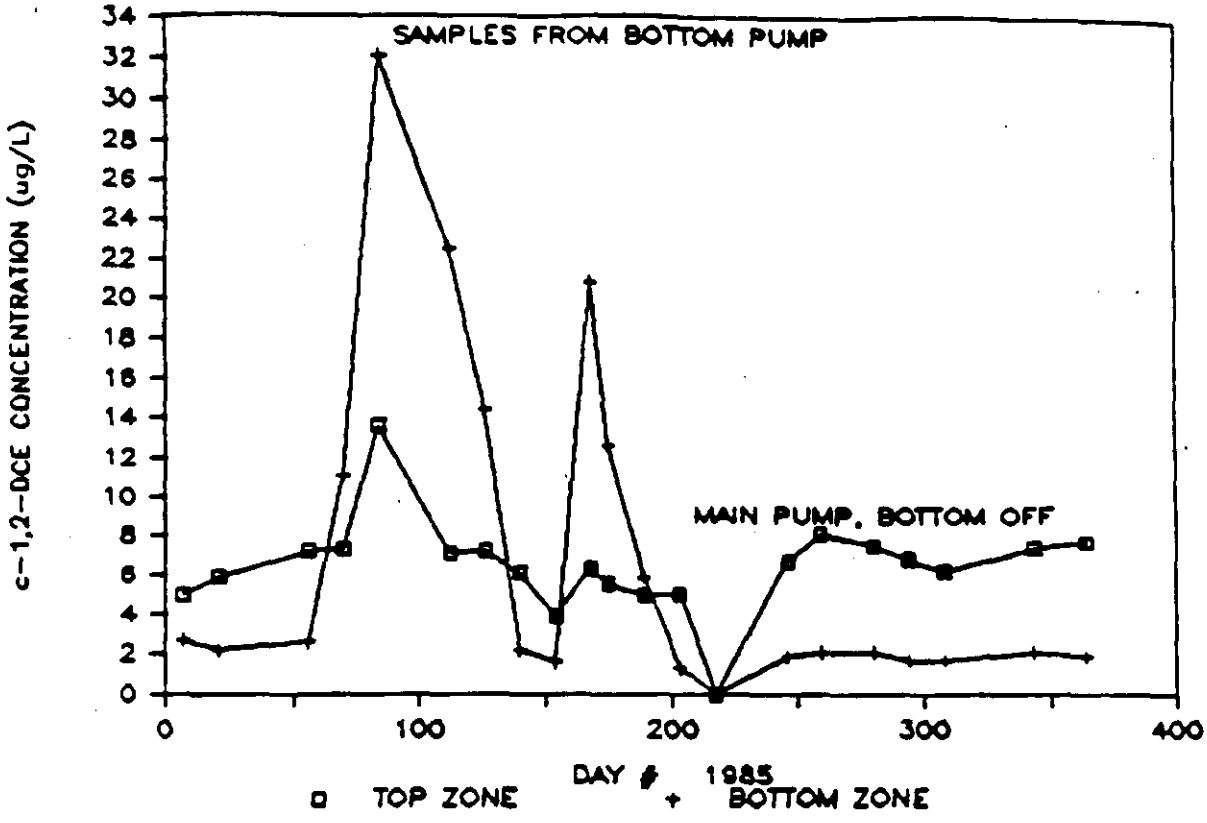


L-9 PCE RESULTS 1985

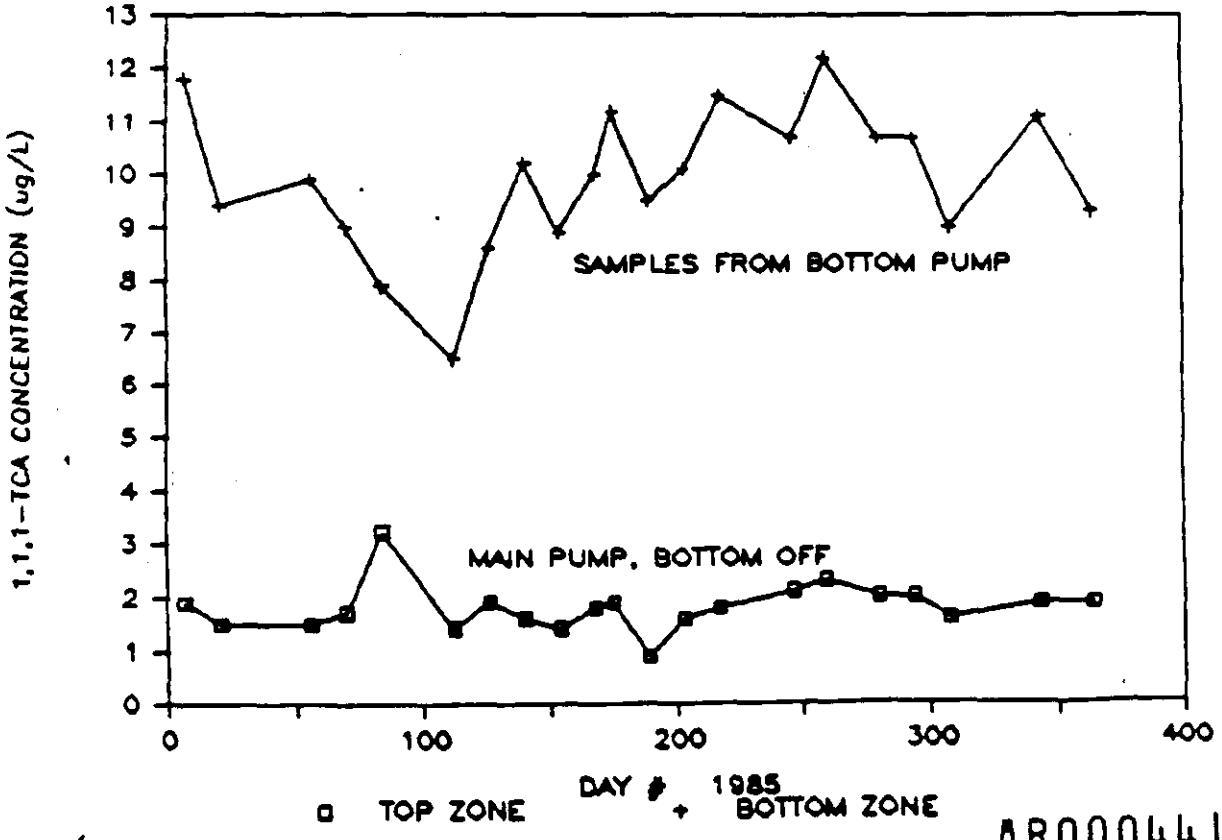


Area #6 From reference 1 4-26

L-9 c-1,2-DCE RESULTS 1985



L-9 1,1,1-TCA RESULTS 1985



Area #6

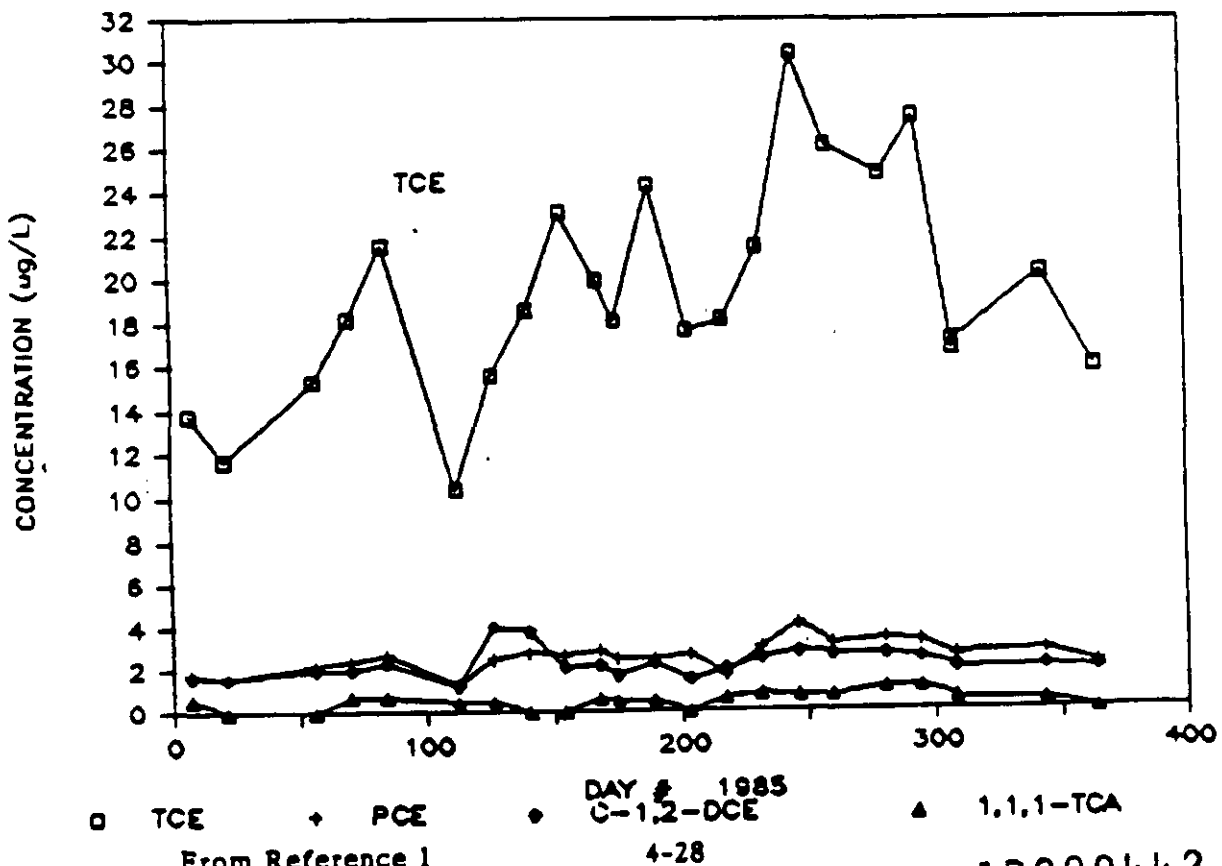
From Reference 1

AR000441

L-23 RESULTS FOR 1985

DATE	DAY #	SAMPLE #	C-1,2-DCE	1,1,1-TCA	TCE	PCE
				ug/L		
07-Jan-85	7	57	1.7	0.6	13.8	1.8
21-Jan-85	21	146	1.6	<0.5	11.7	1.6
25-Feb-85	56	436	2.0	<0.5	15.3	2.2
11-Mar-85	70	527	2.0	0.7	18.2	2.4
25-Mar-85	84	673	2.3	0.7	21.6	2.7
22-Apr-85	112	824	1.2	0.5	10.4	1.3
06-May-85	126	962	4.0	0.5	15.6	2.5
20-May-85	140	1053	3.8	<0.5	18.6	2.8
03-Jun-85	154	1149	2.1	<0.5	23.1	2.7
17-Jun-85	168	1236	2.2	0.6	20.0	2.9
24-Jun-85	175	1276	1.7	0.5	18.1	2.5
08-Jul-85	189	1342	2.3	0.5	24.4	2.5
22-Jul-85	203	1456	1.5	<0.5	17.7	2.7
05-Aug-85	217	1524	2.0	0.6	18.2	1.7
19-Aug-85	231	1635	2.5	0.8	21.5	3.0
03-Sep-85	246	1749	2.8	0.7	30.4	4.1
16-Sep-85	259	1843	2.7	0.7	26.2	3.2
07-Oct-85	280	1941	2.7	1.1	24.9	3.4
21-Oct-85	294	2113	2.5	1.1	27.5	3.3
04-Nov-85	308	2190	2.1	0.6	16.8	2.6
04-Nov-85	308	2191	2.0	0.5	17.2	2.7
09-Dec-85	343	2527	2.1	0.5	20.3	2.9
30-Dec-85	364	2662	2.0	<0.5	16.0	2.2

L-23 RESULTS 1985



From Reference 1

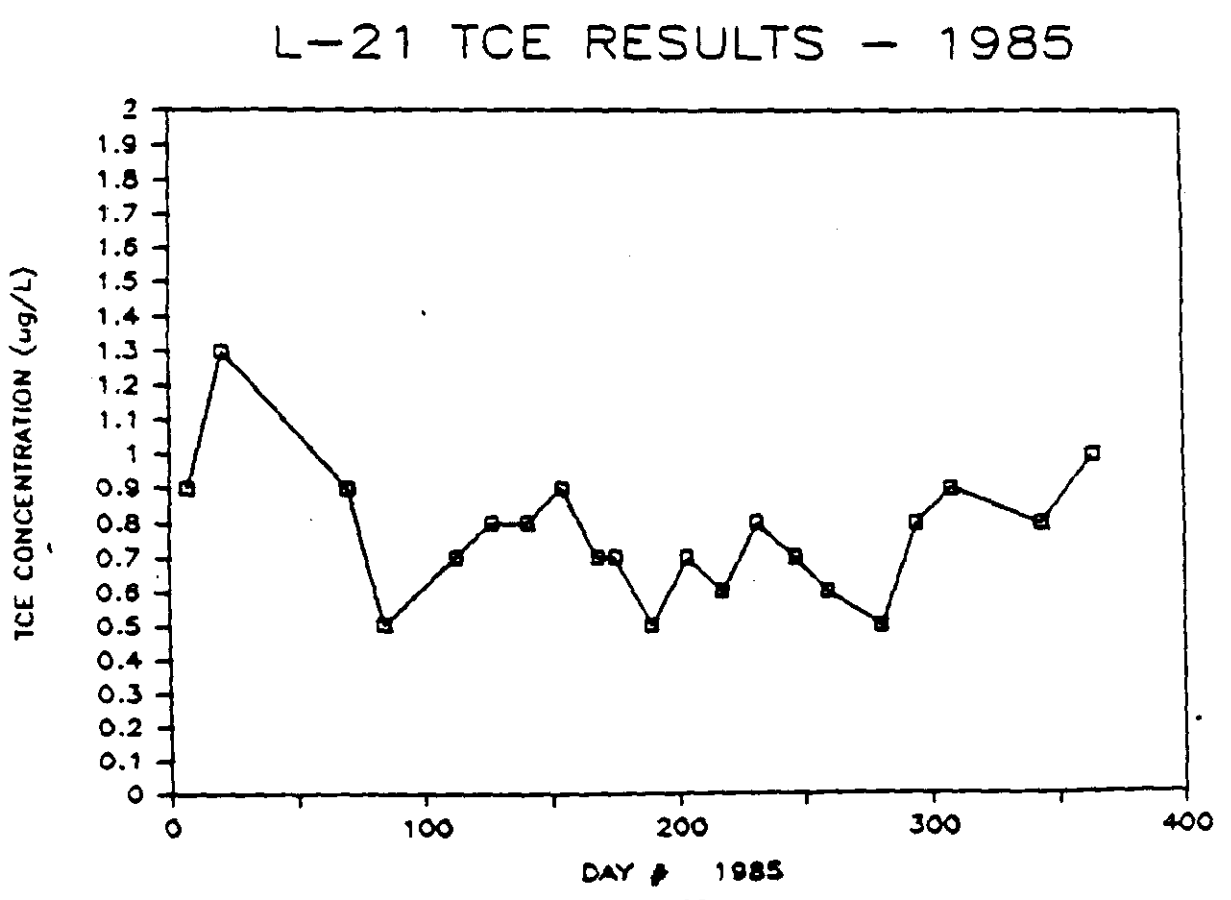
4-28

AR000442

area #6

?1 RESULTS FOR 1985

E	DAY #	SAMPLE #	ug/L TCE	PCE
Jan-85	7	53	0.9	<0.5
21-Jan-85	21	142	1.3	<0.5
11-Mar-85	70	522	0.9	<0.5
25-Mar-85	84	672	<0.5	<0.5
22-Apr-85	112	821	0.7	<0.5
06-May-85	126	959	0.8	<0.5
20-May-85	140	1049	0.8	<0.5
03-Jun-85	154	1145	0.9	<0.5
17-Jun-85	168	1232	0.7	<0.5
24-Jun-85	175	1272	0.7	<0.5
08-Jul-85	189	1338	<0.5	<0.5
22-Jul-85	203	1452	0.7	<0.5
05-Aug-85	217	1520	0.6	<0.5
19-Aug-85	231	1632	0.8	<0.5
03-Sep-85	246	1747	0.7	<0.5
16-Sep-85	259	1839	0.6	<0.5
07-Oct-85	280	1940	<0.5	<0.5
21-Oct-85	294	2108	0.8	<0.5
04-Nov-85	308	2186	0.9	<0.5
09-Dec-85	343	2523	0.8	<0.5
30-Dec-85	364	2656	1.0	0.5



From Reference 1

4-29

Area #6

4.8 Area 7

Area 7 is situated in Upper Gwynedd Township (southeast of Lansdale) within the Lansdale quadrangle (see map, page 4-32). The majority of the area is supplied by North Wales Water Authority or relies on private wells. VOC contamination was discovered in this area in August 1979. NPWA well L-22 lies within the contamination plume. The major contaminant in L-22 is TCE, with concentrations ranging from 50 to 140 ug/l (see page 4-33). Water from L-22 is treated by a granular-activated carbon plant before entering the NPWA distribution system. The well is 645 feet deep and has a permitted capacity of 252,000 gpd.[1]

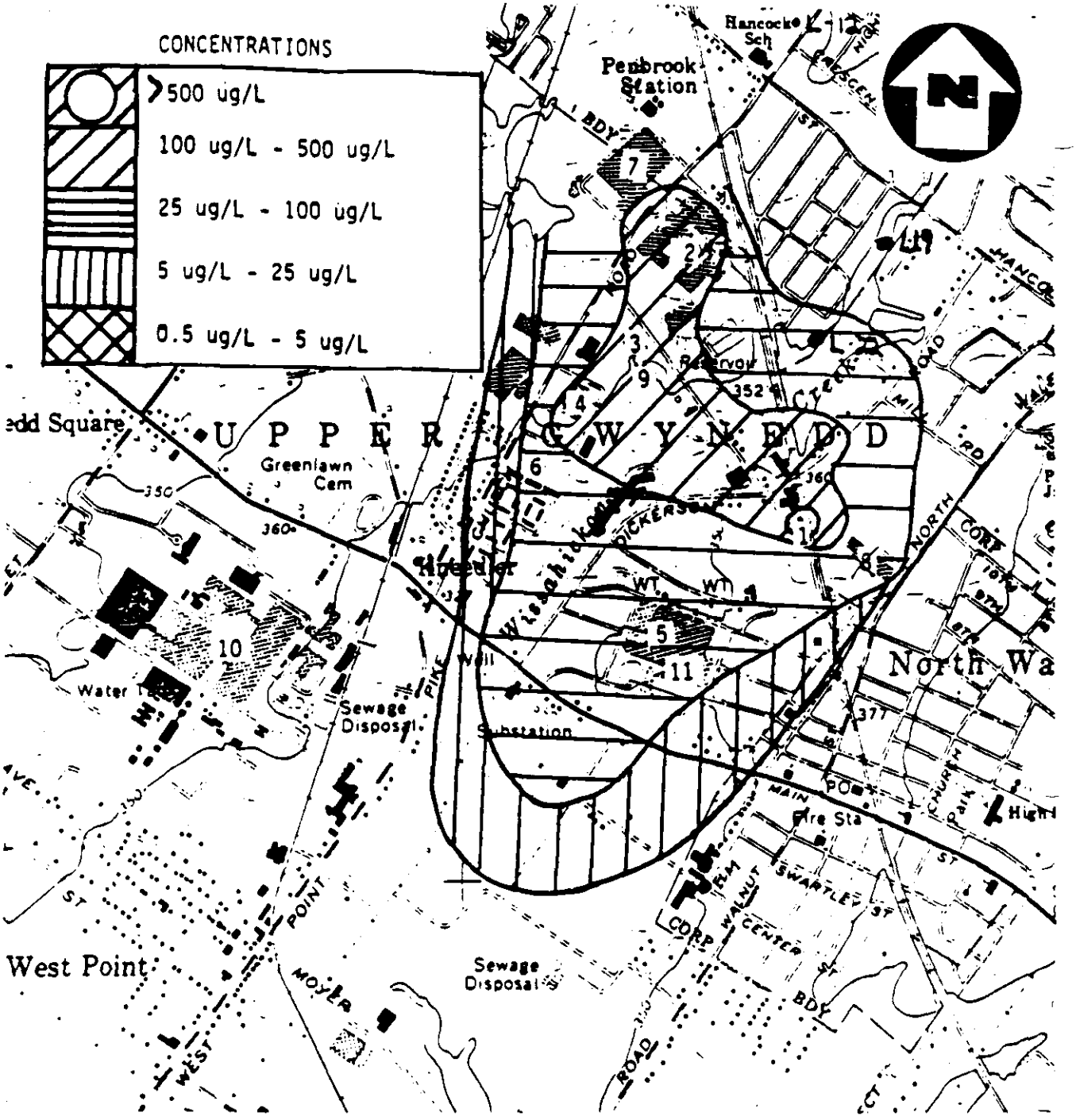
Several pump tests have been performed in this area, commonly referred to as the Wissahickon well field. A major finding was the observation that, when L-22 is not pumped, VOC contamination levels in L-17 and L-12 (located north of L-22) increase. TCE concentrations in L-17 and L-12 are 1 to 2 ug/l when L-22 is pumping. Continuous pumping of L-22 is needed to keep TCE contamination levels in L-12 and L-17 below the proposed limits of 5 ug/l. Wells L-12 and L-17 have a combined permitted capacity of 244,800 gpd.[1,14]

Many potentially responsible parties have been identified in this area. They include, but are not limited to, Spra-Fin, Incorporated, Ford Electronics and Refrigeration Corporation, Deltron Incorporated, Teleflex, Incorporated, Leeds and Northrup, Porter Instruments, Greene Tweed Company, and Zenith Electronic Corporation.[1,2]

The major source of contamination appears to be Spra-Fin, Incorporated, with TCE concentrations in excess of 13,000 ug/l in groundwater obtained from their on-site wells.

NPWA has determined, from pump tests and additional geologic and hydrogeologic data, that there is a direct hydraulic connection between the Spra-Fin, Incorporated well and NPWA well L-22.[14]

Ford, Detron, Teleflex, Leed and Northrup, Porter Instruments, Greene Tweed, and Zenith are all known users of VOCs and are considered potentially responsible parties in area 7. In addition, Brooks Instruments, Precision Tube Company, Incorporated, and Merck, Sharp, and Dohme could be potentially responsible parties. Brooks Instruments may have owned the Leeds and Northrup property at one time and/or they may have been the owner of Porter Instruments. If either condition is true, Brooks would be considered a potentially responsible party since they are a known user of TCE. It is unknown at this time if Precision Tube or Merck, Sharp, and Dohme are VOC users, but both industries have groundwater contamination below their facilities.[1]



AREA 7
(no scale)

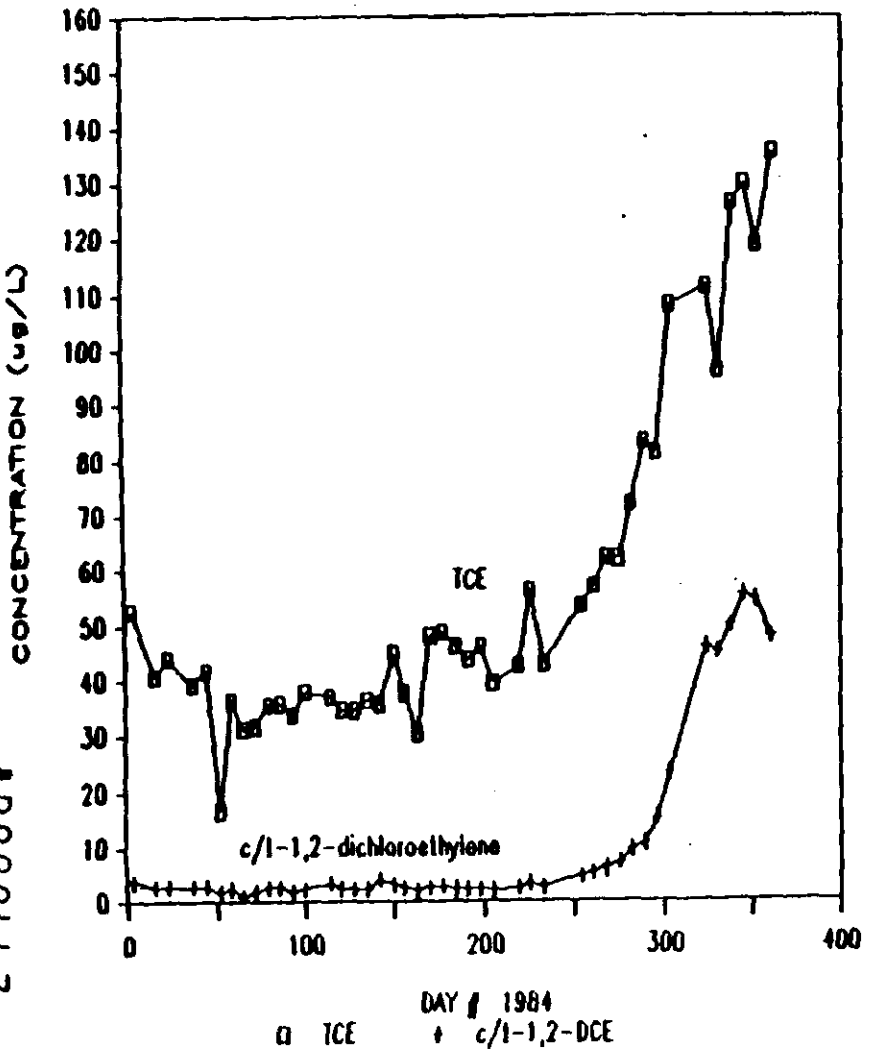
FROM REFERENCE 8

1 SPRA-FIN, Inc.
2 FORD ELECTRONICS AND REFRIGERATION CORP.
3 DELTRON INC.
4 TELEFEX, INC.-AEROSCAPE/DEFENSE DIVISION
5 LEEDS AND NORTHRUP
6 PORTER INSTRUMENTS
7 ZENITH ELECTRONICS CORP.
8 GREENE TWEED COMPANY
9 PRECISION TUBE COMPANY, INC.
10 MERCK, SHARP, AND DOHME
11 BROOKS INSTRUMENT DIVISION

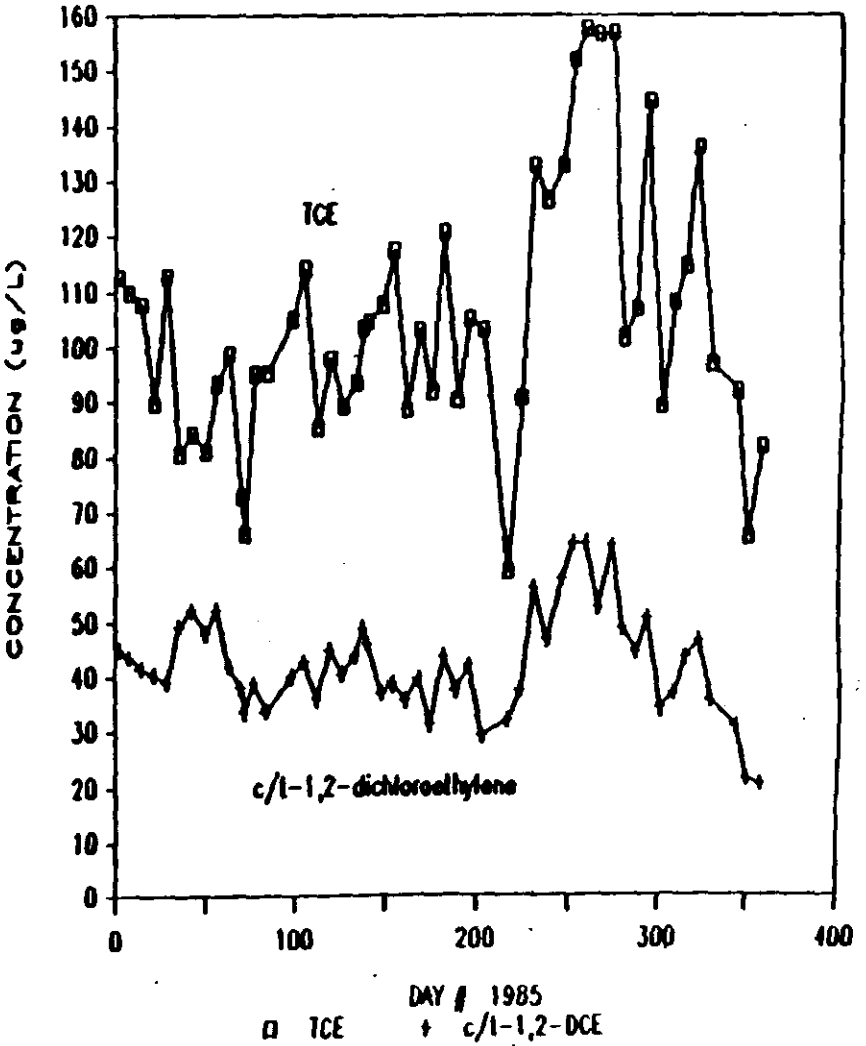
NUS CORPORATION
A Halliburton Company

From Reference 1
4-33

L-22 RAW -- 1984



L-22 RAW -- 1985



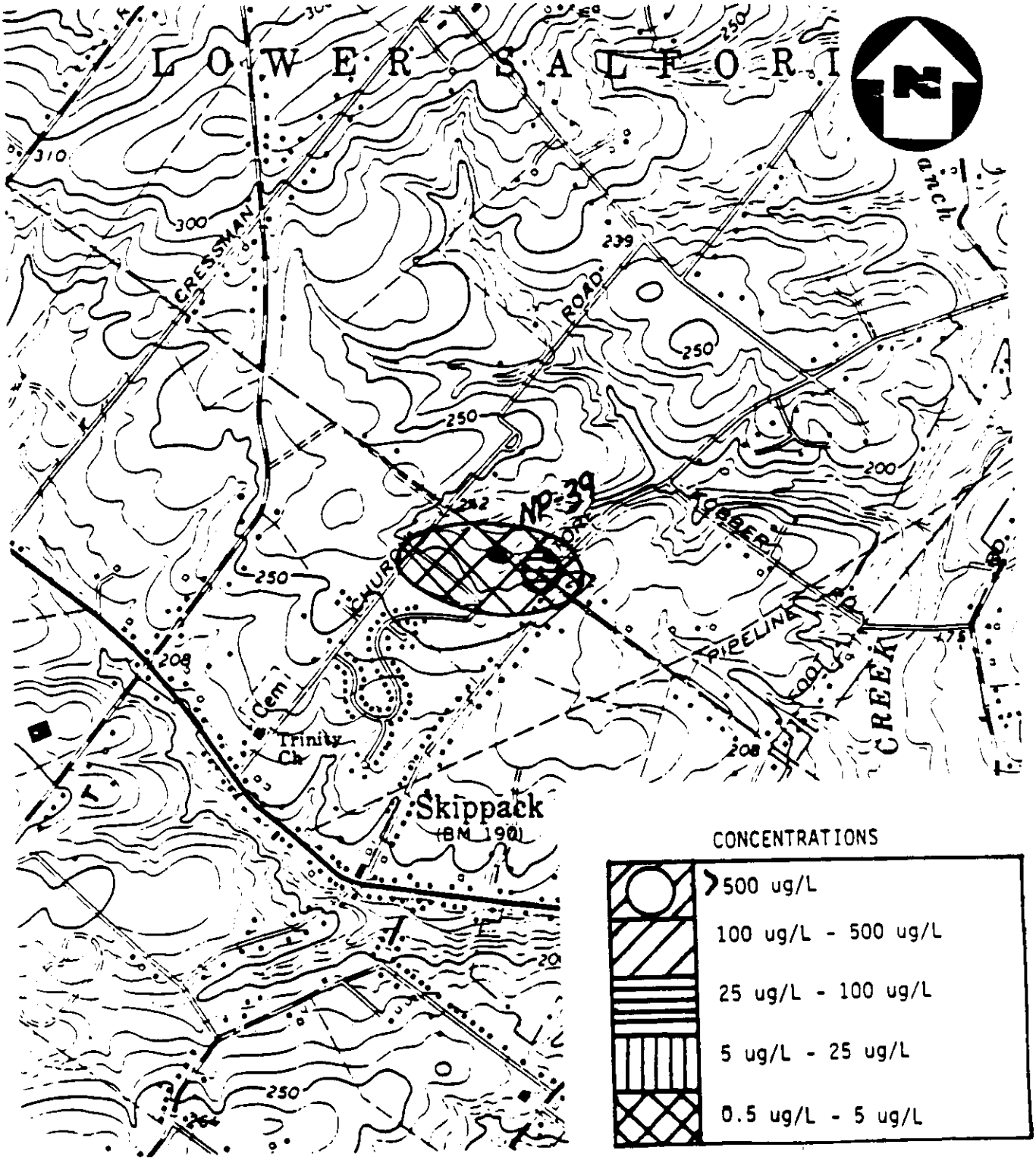
4.9 Area 8

Area 8 is situated on the Lower Salford Township and Skippack Township border just north of Skippack. The area can be located on the Collegeville quadrangle (see map, page 4-35). TCE contamination was first discovered in this area in 1980. NPWA well NP-39, which is located within the contamination plume, has a TCE concentration range of 0.5 to 4.6 ug/l (see page 4-36). NP-39 is 510 feet deep and has a permitted capacity of 360,000 gpd.[1]

Residents in the area are serviced by NPWA or rely on private wells. The Rice home well, located at 991 Store Road, was tested by NPWA. The Rice's well water contained 63.1 ug/l TCE. Potential sources of this contamination are unknown. However, numerous tanks and drums are located behind the house at 2108 Store Road (about 300 feet from the Rice home). The contents of these drums and tanks are unknown at this time.[1]

Area 8 is a small, localized TCE plume. NPWA well NP-39 has not yet exceeded the limit for TCE contamination of 5 ug/l. Efforts to find the source of contamination, prior to continued increase in VOC concentrations, are necessary so that NP-39 can continue production below the proposed limit for TCE.

In addition, individuals on home wells should consider hooking up to the public water supply if their VOC contaminant levels exceed the proposed limit.



AREA 8 (no scale)

NO KNOWN POTENTIAL RESPONSIBLE PARTIES

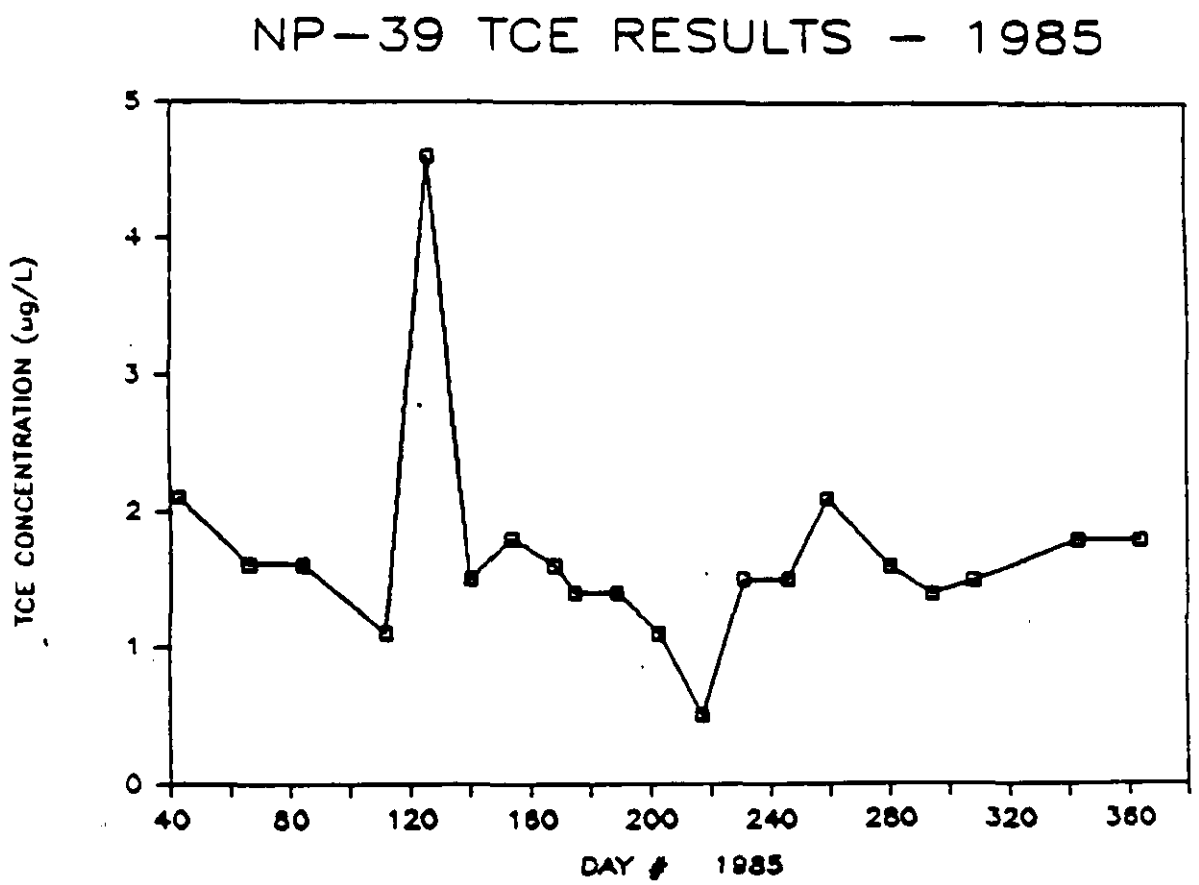
FROM REFERENCE 7

NUS CORPORATION
A Halliburton Company

AR000449

NP-39 RESULTS FOR 1985 ug/L

DATE	DAY #	SAMPLE #	TCE	PCE
12-Feb-85	43	360	2.1	<0.5
07-Mar-85	66	497	1.6	<0.5
25-Mar-85	84	681	1.6	<0.5
22-Apr-85	112	833	1.1	<0.5
06-May-85	126	970	4.6	<0.5
20-May-85	140	1062	1.5	<0.5
03-Jun-85	154	1158	1.8	<0.5
17-Jun-85	168	1245	1.6	<0.5
24-Jun-85	175	1285	1.4	<0.5
08-Jul-85	189	1356	1.4	<0.5
22-Jul-85	203	1465	1.1	<0.5
05-Aug-85	217	1533	0.5	<0.5
19-Aug-85	231	1644	1.5	<0.5
03-Sep-85	246	1758	1.5	<0.5
16-Sep-85	259	1852	2.1	<0.5
07-Oct-85	280	1953	1.6	<0.5
21-Oct-85	294	2122	1.4	<0.5
04-Nov-85	308	2199	1.5	<0.5
09-Dec-85	343	2538	1.8	<0.5
30-Dec-85	364	2669	1.8	<0.5



Area #8 From Reference 1

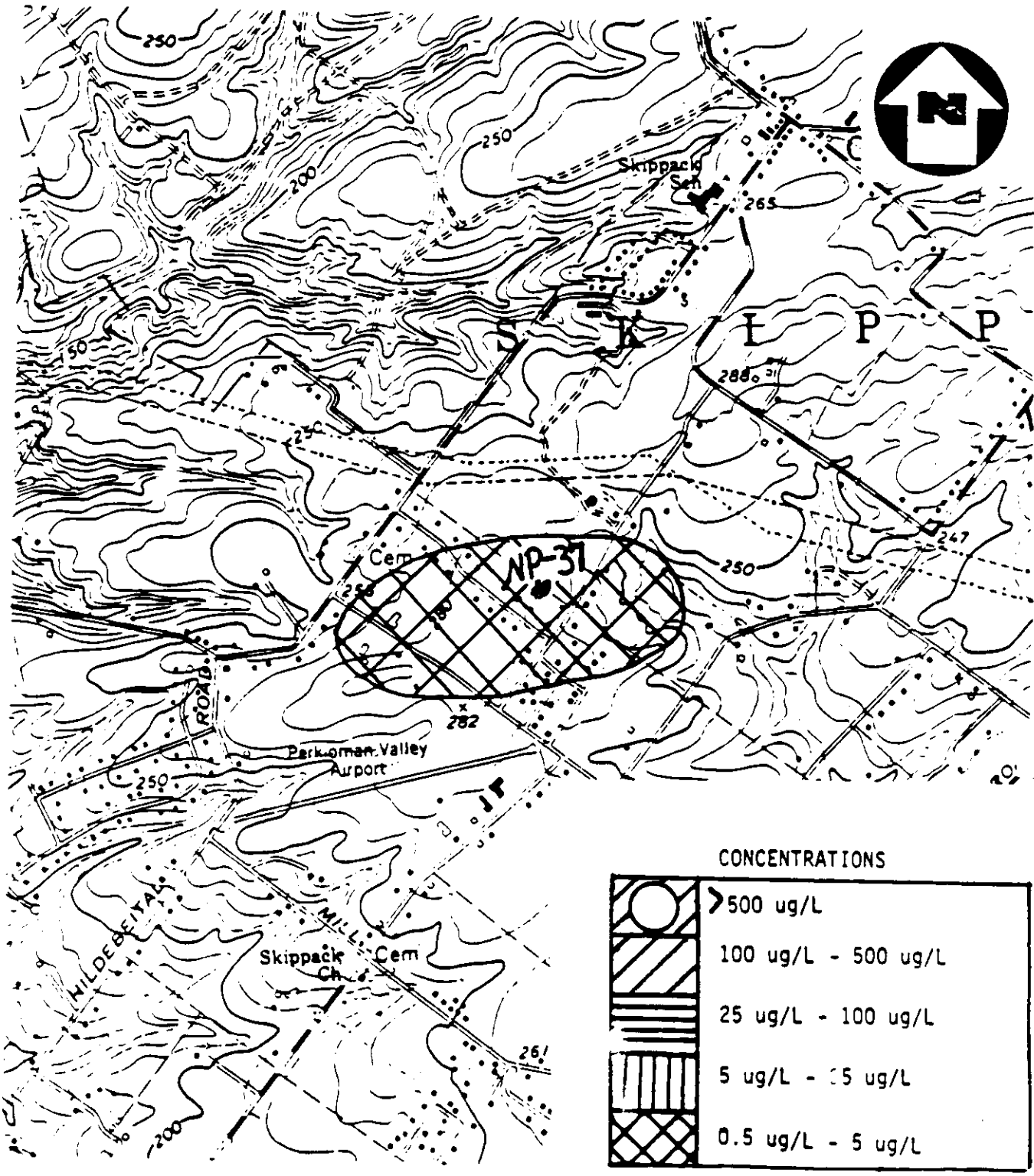
AR000450

4.10 Area 9

Area 9 is situated in Skippack Township east of Route 113. The area is located on the Collegeville quadrangle (see map, page 4-38). Contamination in this area was discovered in August 1979. NPWA well NP-37, which is located within the contamination plume, has a 1,1,1-trichloroethane concentration range of 1 to 2 ug/l (see page 4-38). NP-37 is 487 feet deep and has a permitted capacity of 144,000 gpd.[1]

Residents in the area are supplied by NPWA or rely on private wells. To this date, no private wells in the area have been tested for VOC contamination.[1]

The proposed limit for 1,1,1-trichloroethane is 200 ug/l. Concentration levels in NP-37 are far below this proposed limit. Residential wells should be checked for contamination. If high levels of VOC contamination are found, residents should consider hooking up to public water supply. At this time, there are no known potentially responsible parties contributing to the VOC contamination in area 9.[1]



AREA 9 (no scale)

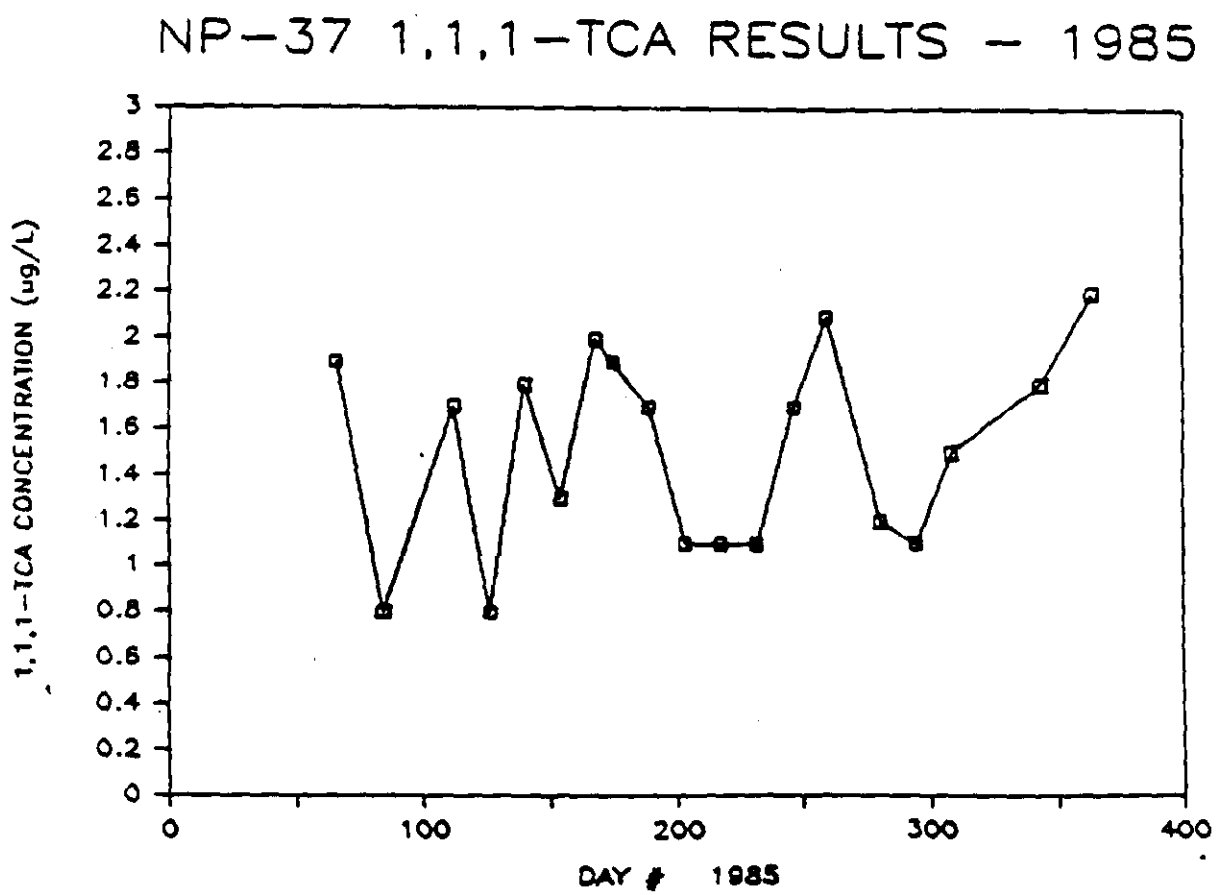
NO KNOWN POTENTIAL RESPONSIBLE PARTIES

FROM REFERENCE 7

NUS CORPORATION
A Halliburton Company

NP-37 RESULTS FOR 1985 ug/L

E	DAY #	SAMPLE #	1,1,1-TCA	TCE
Mar-85	66	495	1.9	<0.5
25-Mar-85	84	680	0.8	<0.5
22-Apr-85	112	832	1.7	<0.5
06-May-85	126	969	0.8	<0.5
20-May-85	140	1061	1.8	<0.5
03-Jun-85	154	1157	1.3	<0.5
17-Jun-85	168	1244	2.0	<0.5
24-Jun-85	175	1284	1.9	<0.5
08-Jul-85	189	1350	1.7	<0.5
22-Jul-85	203	1464	1.1	<0.5
05-Aug-85	217	1532	1.1	<0.5
19-Aug-85	231	1643	1.1	<0.5
03-Sep-85	246	1757	1.7	<0.5
16-Sep-85	259	1851	2.1	<0.5
07-Oct-85	280	1952	1.2	<0.5
21-Oct-85	294	2121	1.1	<0.5
04-Nov-85	308	2198	1.5	<0.5
09-Dec-85	343	2537	1.8	<0.5
30-Dec-85	364	2668	2.2	<0.5



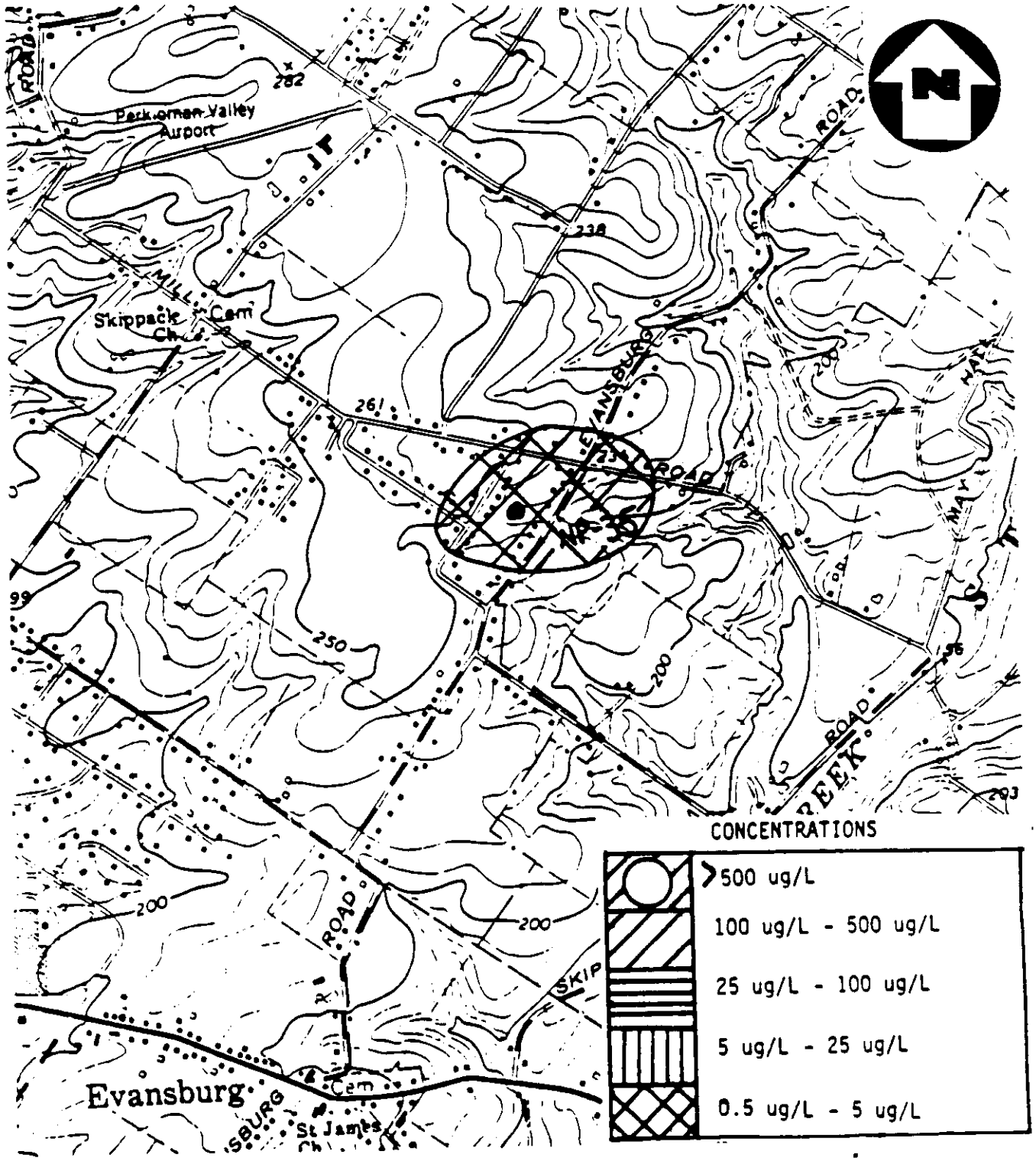
Area #9 From Reference 1 4-39

4.11 Area 10

Area 10 is situated in Skippack Township at the intersection of Evansburg Road and Mill Road. The area can be located on the Collegeville quadrangle (see map, page 4-41). Contamination in this area was discovered in August 1979. NPWA well NP-35, which is located within the plume, has 1,1,1-trichloroethane contamination ranging in concentrations of 1 to 3.5 ug/l (see page 4-42). NP-35 is 557 feet deep and has a permitted capacity of 50,400 gpd. NP-35 is the sole source for the NPWA satellite system in area 10 (see appendix B).[1]

Area residents are supplied by NPWA or rely on private wells. No private wells have been sampled in the area; therefore, the plume boundaries are estimated.[1]

The proposed limit for 1,1,1-trichloroethane is 200 ug/l. Contaminations in NP-35 are far below the proposed limit. Residential wells in the area should be checked for VOC contamination. If residential well concentrations are higher, residents should consider hooking up to the public water system. At this time, there are no known potentially responsible parties contributing to the VOC contamination at area 10.[1]

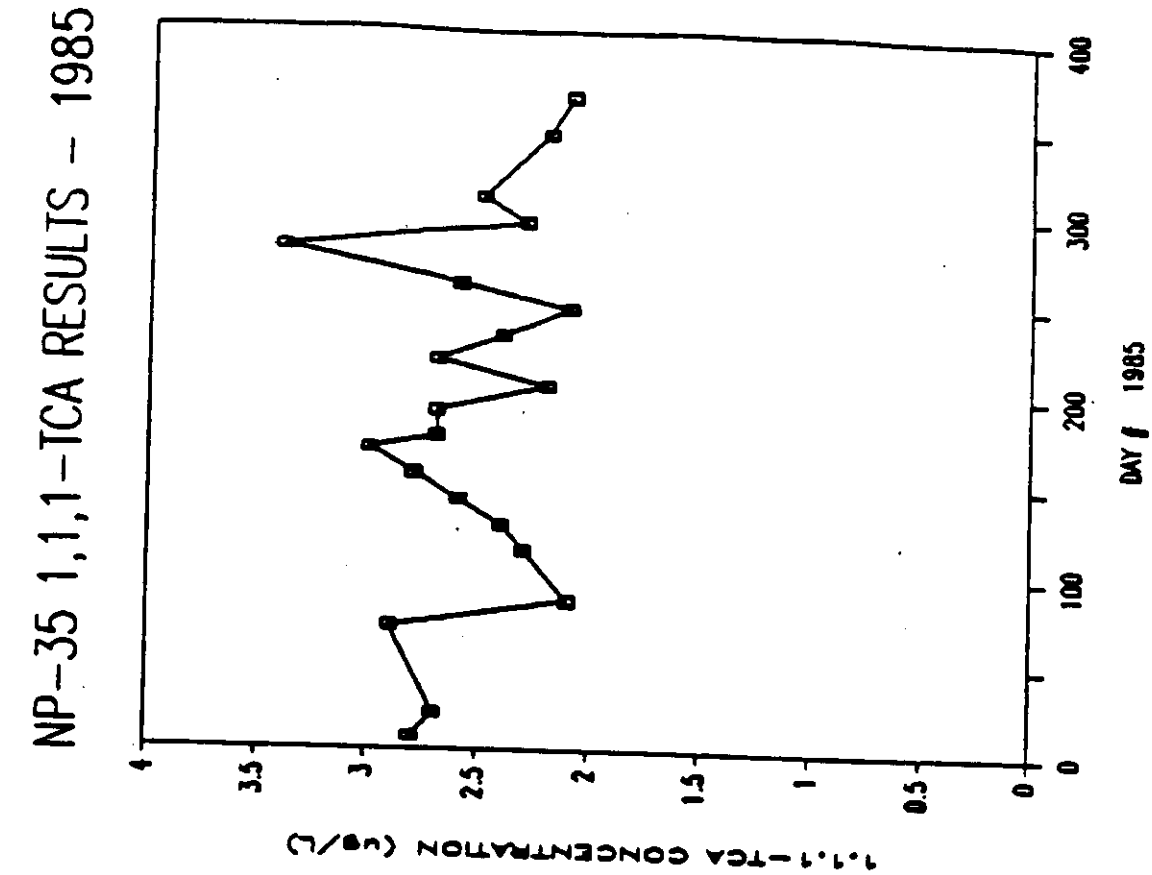


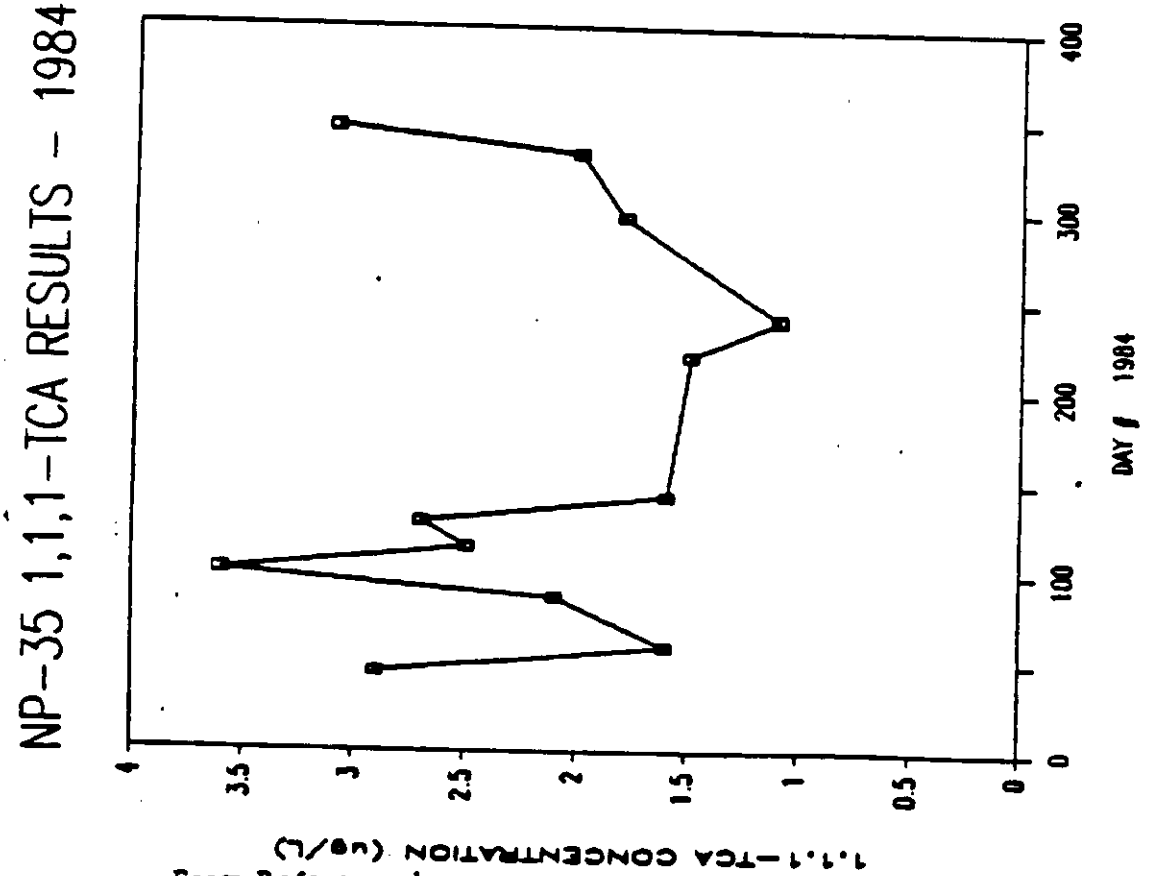
AREA 10 (no scale)

NO KNOWN POTENTIAL RESPONSIBLE PARTIES

FROM REFERENCE 7

NUS CORPORATION
A Halliburton Company





From Reference 1

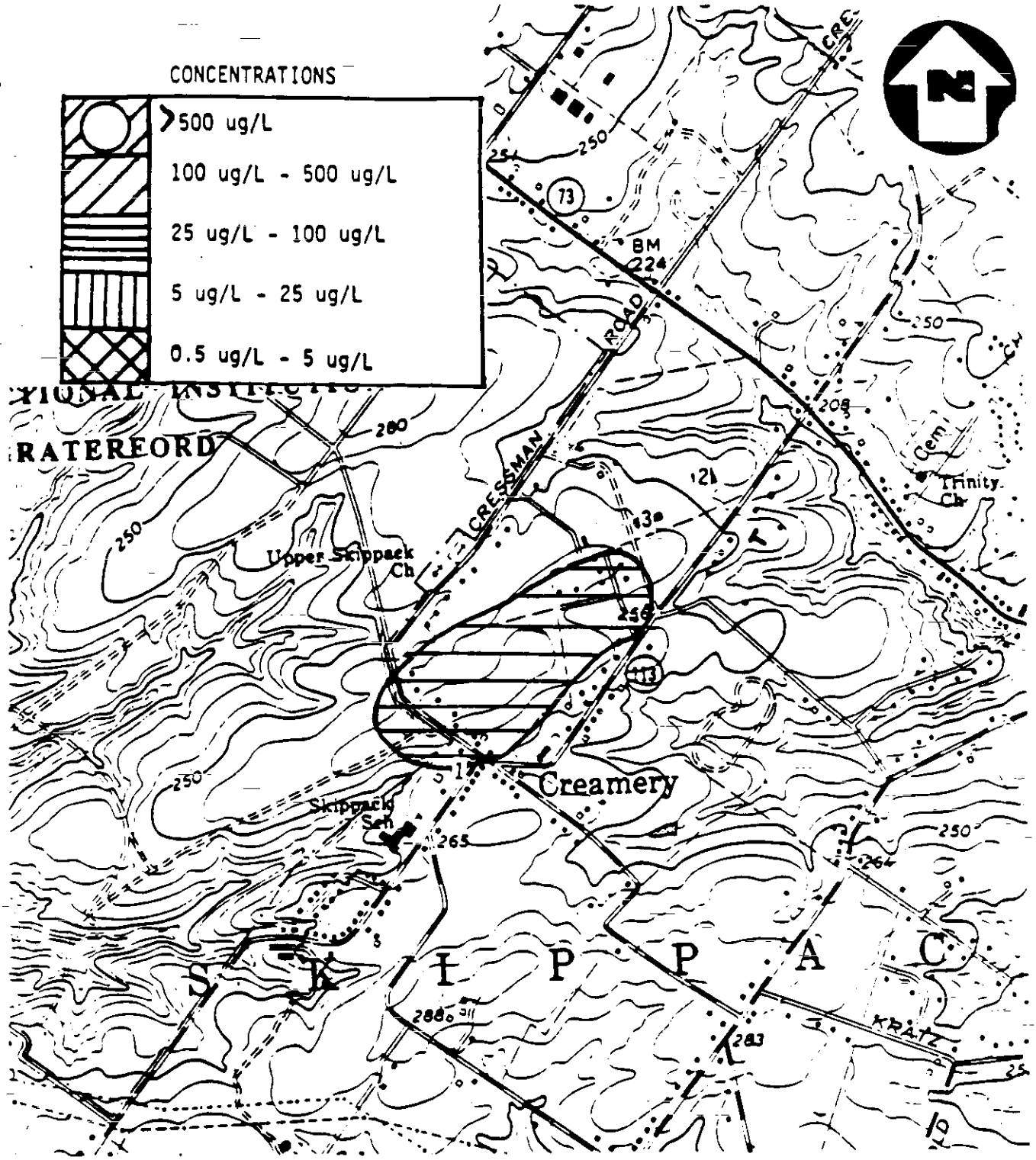
Area #10

4.12 Area 11

Area 11 is situated in Skippack Township near Creamery. The area can be located on the Collegeville quadrangle (see map, page 4-44). VOC contamination was discovered in this area in 1980 by PA DER. The entire area relies on private wells and no NPWA wells are located in the area.[1]

PA DER performed a well survey in this area in 1981. TCE contamination in residential wells was up to 89 ug/l. PA DER attributed this contamination to septic tank cleaning. NUS FIT III has determined 3 other potentially responsible parties for the VOC contamination in this area, including W.M. Yocum Machine Company, EAM Corporation, and Static, Incorporated. These 3 industries are believed to be users of VOC.[1,3]

Additional study is needed in area 11. All wells should be checked for VOC contamination. Residents with TCE contamination should consider hooking up to public water. In addition, contamination concentrations in home wells may give additional indication of the potentially responsible parties.



AREA 11 (no scale)

1 W.M. YOCUM MACHINE COMPANY

2 EAM CORP.

3 STATIC, INC.

FROM REFERENCE 7

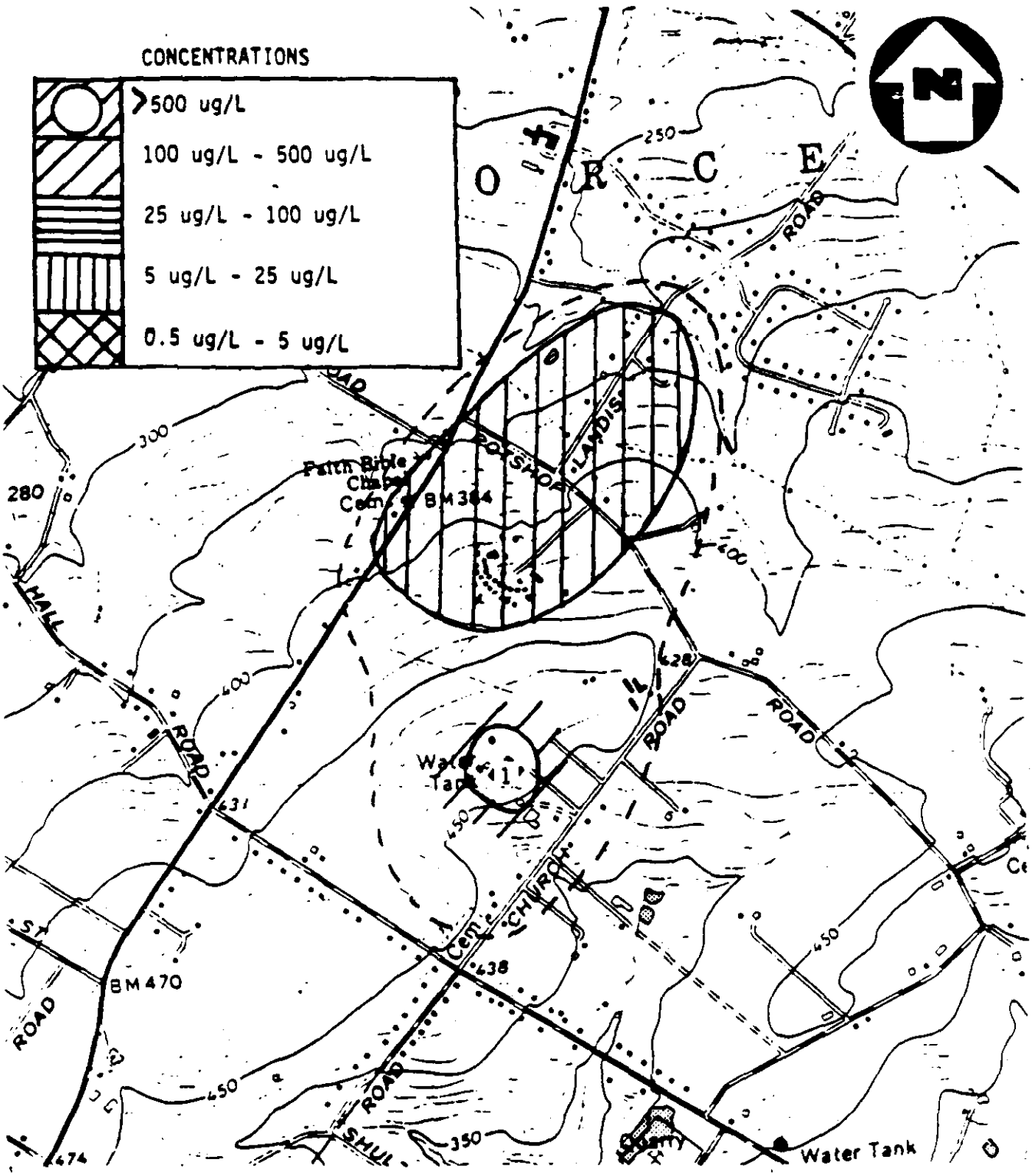
NUS CORPORATION
A Halliburton Company

4.13 Area 12

Area 12 is situated in Worchester Township. The area can be located on the Lansdale quadrangle (see map, page 4-46). VOC contamination was discovered in this area in August 1979 by NPWA when testing a residential well. The entire area relies on private wells and there are no NPWA wells in the area.[1]

NPWA detected TCE contamination in Variety Club Camp, Pennsylvania School for the Handicapped, and residential wells, all located in the northern area of the plume. This area is close to NPWA service lines and could hook up to their supply.

PA DER discovered high levels of TCE contamination at the Transicoil, Incorporated facility, located on Trooper Road. Considering PA DER's findings and the high topographic location of the Transicoil facility, they are the likely responsible party for area 12.[3]



AREA 12 (no scale)

1 TRANSICOIL INC.

FROM REFERENCE 8

NUS CORPORATION
A Halliburton Company

AR000460

SECTION 5

5.0 SUMMARY AND CONCLUSION

Groundwater contamination from the careless handling, use, and disposal of organic chemicals is a widespread problem in the North Penn area. Twelve individual areas of groundwater contamination have been documented. Private and NPWA wells located in these areas have become contaminated.

NPWA has 18 contaminated wells in 9 of the identified areas (see well summary, page 5-2). Five of the 18 wells are inactive due to contamination. With treatment, wells S-9, L-9, L-10, and L-25 could supply an additional 0.5 mgd to NPWA. Water from well L-8 is presently treated, but contaminant levels are still above the maximum contaminant level (MCL). Presently, NPWA must purchase 1.6 mgd to meet customer demands. Active wells (NP-33, NP-21, L-22, and L-23) have VOC contamination levels above the proposed limit. Water from these wells is either treated (L-22) or mixed with cleaner water (NP-33, NP-21, and L-23) to bring contamination levels below the proposed limits. Other wells have VOC contamination below the proposed limits for each particular chemical contaminant.

The 3 areas that do not use NPWA wells (areas 4, 11, and 12) rely on private wells or are served by North Wales Water Authority. Private wells in these areas should be checked for contamination. If contamination levels exceed the proposed limits, residents should hook up to the nearest water authority.

File searches at EPA, PA DER, and NPWA, and a site reconnaissance performed by NUS FIT III have produced 51 potentially responsible parties for the groundwater contamination in the North Penn area (see potentially responsible parties summary, pages 5-3 and 5-4). The first list of industries (primary) are known users or are strongly suspected to be users of chemicals. Some industries have changed ownership (indicated in summary). In such a case, both parties are considered potentially responsible parties. The secondary list includes industries that could have or may be contributing to the groundwater contamination in the North Penn area.

Site Name: North Penn Area
TDD No.: F3-8512-31

Summary NPWA Wells

Well	Area	Depth (ft)	Capacity (gpd)	Maximum Concentration of VOCs in ppb TCE	PCE	Other	Status
S-9	1	300	144,000		24.7		Inactive
S-10	1	300	115,200		2.6		Active
NP-15	2	500	144,000	no limit set			Active
				1,1-dichloroethane		19.2	
NP-5	3	630	504,000		5.1		Active
NP-33	3	560	216,000	13.2			Active
NP-21	5	500	864,000	19.8			Active
L-8**	6	291	100,800	2,000	800	45(V.C.)	Inactive
L-9	6	500	144,000	190	17.2		Inactive
L-10	6	264	100,800	25	25		Inactive
L-21	6	399	144,000	1.3			Active
L-23	6	600	86,400	30.4	4.1		Active
L-25	6	492	144,000	34	12		Inactive
L-22*	7	645	252,000	157.6	1.3		Active
L-17	7	565	144,000	1.2			Active
L-12	7	620	100,800	0.5			Active
NP-39	3	510	360,000	4.6			Active
NP-37	9	487	144,000	1,1,1-trichloroethane		2.2	Active
NP-35	10	557	50,400	1,1,1-trichloroethane		3.6	Active

* Equipped with granular-activated charcoal treatment and pumped to NPWA distribution system

** Equipped with granular-activated charcoal treatment and pumped to waste water treatment

Site Name: North Penn Area
TDD No.: F3-8512-31

Summary of Potentially Responsible Parties

Primary

Industry	Area
Gentle Cleaners, Incorporated	1
Granite Knitting Mills, Incorporated	1
Parkside Apartments	1
Ametek Corporation - Hunter Spring Division	2
Waste Conversion, Incorporated	2
SPS Technology	2
B & G Manufactures Company (now Jed Manufacturing)	2
Greene Tweed Company	3 and 7
Nice Bearing Division of SKF Industries	3
Reclamation Resources	4
American Electronic Laboratories	5
Gas Spring Company	5
Brown, Boveri Electric	5
Limberg Company	5
Baron Blackeslee Division - Allied Chemical Company	5
J.W. Rex Company	6
John Evans' Sons, Incorporated	6
Allied Paint Company	6
Keystone Hydraulics	6
Eaton Laboratories	6
Royal Cleaners	6
Lansdale Transportation (now owned by Lansdale Realty)	6
Andale Company	6
Philadelphia Toboggan (now H.G.H. Corporation)	6
K & K Laundry (now Precision Rebuilders)	6

Spra-Fin, Incorporated	7
Ford Electronics and Refrigeration Corporation	7
Deltron Incorporated	7
Teleflex, Incorporated - Aeroscope/Defense Division	7
Leeds and Northrup	7
Porter Instruments	7
Zenith Electronics Corporation (now Elan Associates)	7
Green Tweed Company	7 and 3
Transicoil	12

Secondary

Industry

A. Steiert and Sons, Incorporated	2
Met-Pro Corporation	3
Percora Chemical Company	3
Penn Fishing Tackle Company	3
William Wilson's Sons	6
Lehigh Valley Farms - Atlantic Processing, Incorporated	6
Crystal Soap and Chemical Company	6
American Olean Tile Company	6
Decision Data Computer Company	6
Skee-Ball	6
Precision Tube Company, Incorporated	7
Merck, Sharp, and Dohme	7
Brooks Instrument Division	7
Residents at 2001 Store Road	8

W.M. Yocum Machine Company	11
EAM Corporation	11
Static, Incorporated	11

APPENDIX A

1. COST CENTER:	REM/FIT ZONE CONTRACT TECHNICAL DIRECTIVE DOCUMENT (TDD)	2. NO.:
ACCOUNT NO.:		F3-8512-31

3. PRIORITY:	4. ESTIMATE OF TECHNICAL HOURS:	5. EPA SITE ID:	6. COMPLETION DATE:	7. REFERENCE INFO.:
☒ HIGH ☐ MEDIUM ☐ LOW	GG per REB ~~150~~ 200		GG per REB 3/31/86 TF	☒ YES ☐ NO ☐ ATTACHED ☐ PICK UP
	4A. ESTIMATE OF SUBCONTRACT COST:	5A. EPA SITE NAME: North Penn Area Lansdale, PA		

8. GENERAL TASK DESCRIPTION: Perform a preliminary assessment/site inspection of the subject site using available information.

9. SPECIFIC ELEMENTS:

1.) Review background information
2.) Contact state and local agencies for relevant information.
3.) Contact Water authority for water supply information (Harry Borchers 855-3617)
4.) Determine possible responsible parties in the water supply area from available records.
5.) Maintain contact with Laura Boornazian and Butch Byer
6.) Prepare and submit report, include incover letter recommendations for need of HRS
7.) All work on this project to be performed according to: WP-PA-1, Rev. 1 & WP-SI-1, Rev.1

10. INTERIM DEADLINES:

11. DESIRED REPORT FORM: FORMAL REPORT ☒ LETTER REPORT ☐ FORMAL BRIEFING ☐

OTHER (SPECIFY):

12. COMMENTS: State Code 042 County Code 091

13. AUTHORIZING RPO:	14. DATE:
Harold G Byer (SIGNATURE)	3/5/86
15. RECEIVED BY: ☐ ACCEPTED ☐ ACCEPTED WITH EXCEPTIONS ☐ REJECTED (CONTRACTOR RPM SIGNATURE)	16. DATE:

Sheet 1 White – FITL Copy
Sheet 2 Canary – DPO Copy
Sheet 3 Pink – Contracting Officer's Copy (Washington, D. C.)
Sheet 4 Goldenrod – Project Officer's Copy (Washington, D. C.)

APPENDIX B

Available in EPA files

APPENDIX C

References

1. North Penn Water Authority. File information.

2. United States Environmental Protection Agency. File information for the North Penn area.

3. Pennsylvania Department of Environmental Resources. File information for the North Penn area.

4. United States Department of the Interior Geologic Survey. Perkiomenville, Pennsylvania Quadrangle, 7.5 Minute Series. Topographic Map. 1973.

5. United States Department of the Interior Geologic Survey. Telford, Pennsylvania Quadrangle, 7.5 Minute Series. Topographic Map. 1973.

6. United States Department of the Interior Geologic Survey. Doylestown, Pennsylvania Quadrangle, 7.5 Minute Series. Topographic Map. 1983.

7. United States Department of the Interior Geologic Survey. Collegeville, Pennsylvania Quadrangle, 7.5 Minute Series. Topographic Map. 1983.

8. United States Department of the Interior Geologic Survey. Lansdale, Pennsylvania Quadrangle, 7.5 Minute Series. Topographic Map. 1983.

9. United States Department of the Interior Geologic Survey. Ambler, Pennsylvania Quadrangle, 7.5 Minute Series. Topographic Map. 1983.

10. Pennsylvania Department of Transportation. Traffic and Legislative Route Map. Montgomery County and Bucks County Map. 1982.

11. Commonwealth of Pennsylvania Department of Environmental Resources, Topographic and Geologic Survey. Geologic Map of Pennsylvania. 1979.

12. United States Department of Agriculture, Soil Conservation Service. Soil Survey of Montgomery County, Pennsylvania. 1967.

13. United States Department of Agriculture, Soil Conservation Service. Soil Survey of Bucks and Philadelphia Counties, Pennsylvania. 1975.

14. Martin, L. Source Identification of TCE and other Chlorinated Organic Groundwater Pollutants in the Upper Wissahickon Watershed - Phase II. 1981.

15. Newport, T., Commonwealth of Pennsylvania, Bureau of Topographic and Geologic Survey. Groundwater Resources of Montgomery County, Pennsylvania. Report 29, 1973.

16. Rima, D., H. Meisler, and S. Longwill, Commonwealth of Pennsylvania, Bureau of Topographic and Geologic Survey. Geology and Hydrology of the Stockton Formation in Southeastern Pennsylvania. Bulletin W-14, 1962.

17. Rima, D., Commonwealth of Pennsylvania, Bureau of Topographic and Geologic Survey. Groundwater Resources of the Lansdale Area, Pennsylvania. Report 146, 1955.

18. Longwill, S., and C. Wood, Commonwealth of Pennsylvania, Bureau of Topographic and Geologic Survey. Groundwater Resources of the Brunswick Formation in Montgomery and Berks Counties, Pennsylvania. Report W-22, 1965.

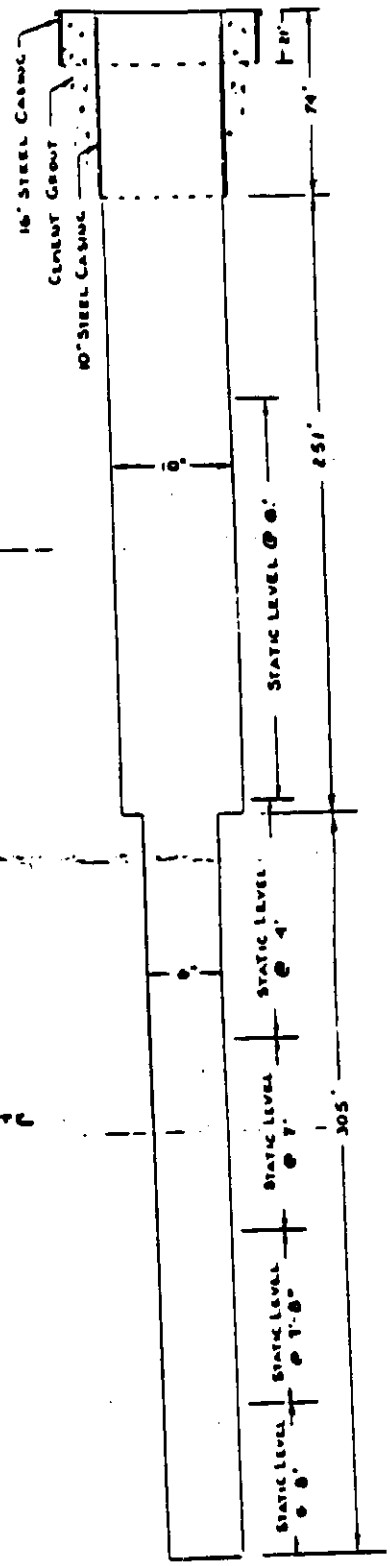
19. United States Department of the Interior, Fish and Wildlife Service, with Garth Glenn, NUS FIT III. Correspondence. January 24, 1986.

20. Montgomery County Planning Commission. Water Service Plan. 1977.

APPENDIX D

WELL [illegible]

DEPTH	SOIL TYPE
0	Red Clay
8	Coarse - Fine Red Shale
29	Medium Red Shale with Seams of Blue Shale
40	Medium Red Shale, Tr. Calcite
63	Fine Red Shale, Calcite
75	
110	
	Fine, Medium Red Shale, Tr. Calcite
	Hit Void @ 200 ft.
259	
	Med., Fine Grey Shale, Tr. Red Shale, Tr. Calcite
290	
	Medium Red Shale, Tr. Calcite
	Hit Void @ 318 ft.
330	
	Fine Red Shale
360	
	Med., Fine Red Shale, Tr. Calcite
580	
	Med., Fine Red Shale, Tr. Calcite, Tr. Sandstone (?)
630	



Discharge from Air Drilling Rig		Deep Well Turbine
During Drilling	After Drilling	
10 GPM		
37 GPM		
Hard. - 10 Grains		
	148 GPM	249'
		305
		352
		407
		498
	185 GPM	
124 GPM		
130 GPM		
185 GPM Hard. - 12 Grains		
	204 GPM	
230 GPM Hard. - 13 Grains	204 GPM	
209 GPM		
204 GPM		

NORTH PENN WATER AUTH

WELL NO. N.P.-[illegible]

GEOLOGIC LOG & CONSTRUCTION DIAGR

FRETZ RD. TOWAMENC

Drawn by: R. Main — Date: Sept

Scale: 1in

Scaled: March 18 1966

AR000475

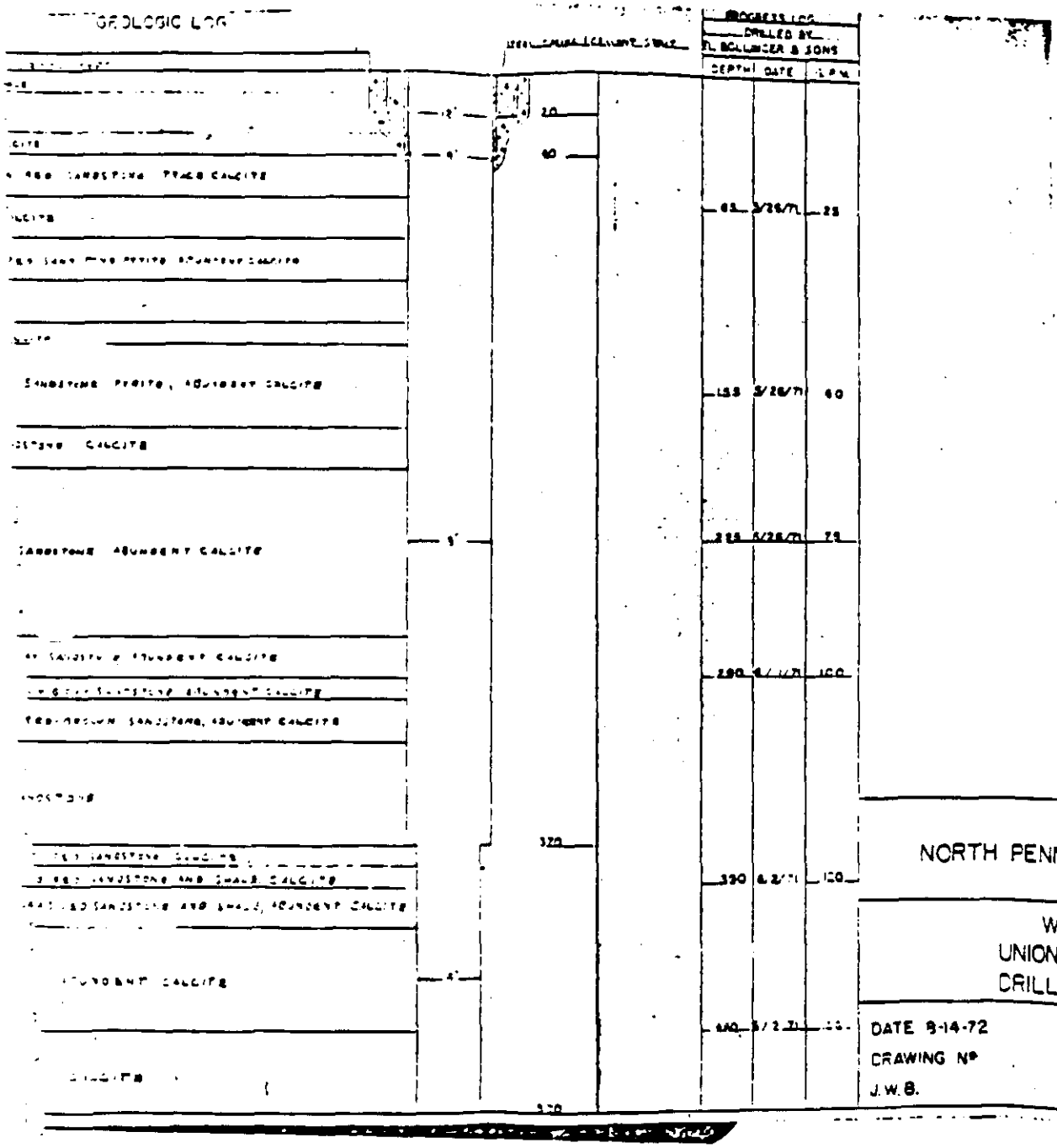


EXHIBIT H

NORTH PENN WATER AUTHORITY

WELL NP 15
UNIONVILLE PIKE
DRILLING LOG

DATE 9-14-72
DRAWING Nº
J.W.B.

SCALE:
HOR. - 1"=10'
VERT-1"=10'

1983 DEPENDABLE DAILY OUTPUT OF THE WATER SYSTEM - SOURCES (MAIN SYSTEM ONLY)

GROUNDWATER SOURCES (WELLS) WELL NAME OR NUMBER	Depth (feet)	Diam (in.)	Is Source metered YES	Is Source metered NO	Average Daily Withdrawal CPD	(Days)	Safe Yield or Minimum Prod During Dry Yrs of Record (CPD)	Facilities which limit the Total Daily Output (e.g., Raw Water Pumpg, Treatment Works, Transmission Mains, Distribution Systems, etc...) TYPE	CAPACITY (CPD)	
L-7	378	8	x		41,205	(365)	38,880	pump	57,600	
L-8	291	8			--		37,440	pump	100,800	Inactive
L-9	500	8	x		100,315	(365)	96,480	pump	144,000	Inactive
L-10	264	8	x		23,452	(79)	36,000	pump	100,800	Inactive
L-11	390	8	x		--		20,160	pump	50,400	
L-12	285	8	x		57,783	(365)	51,840	pump	57,600	
L-14	325	10	x		24,712	(102)	63,360	pump	144,000	
L-16	399	10	x		102,153	(365)	37,440	pump	144,000	
L-17	387	10	x		111,430	(365)	66,240	pump	144,000	
L-18	406	10	x		267,693	(365)	120,960	pump	288,000	
L-19	430	10	x		91,353	(365)	43,200	pump	72,000	
L-21	399	10	x		98,622	(365)	105,120	pump	144,000	
L-22	645	8	x		149,962	(365)	51,840	pump	165,600	
L-23	600	10	x		44,603	(208)	64,800	pump	86,400	
L-25	492	8	x		--		53,280	pump	144,000	
L-26	400	10	x		65,411	(365)	51,840	pump	72,000	
L/pool			x		10,893	(62)	17,280	pump	--	
S-2	216	6	x		92,958	(365)	84,960	pump	108,000	
S-4	300	8	x		29,273	(365)	23,040	pump	36,000	
S-8	300	8	x		41,578	(320)	44,640	pump	86,400	
S-9	300	8	x		--		64,800	pump	144,000	Inactive
S-10	300	8	x		59,747	(365)	46,080	pump	72,000	
S/pool			x		21,547	(110)	34,560	pump	--	
NP-2	664	8	x		53,345	(320)	50,400	pump	72,000	
NP-4	668	10	x		117,422	(365)	92,160	pump	144,000	
NP-5	630	10	x		261,175	(365)	263,160	pump	360,000	
NP-8	645	8	x		--		43,200	well	57,600	
NP-11	500	8	x		71,178	(365)	64,800	pump	72,000	
NP-12	620	8	x		16,962	(253)	149,760	pump	172,800	
NP-14	585	10	x		152,474	(365)	239,040*	well	432,000	
NP-15	500	8	x		72,613	(365)	74,880	pump	144,000	
NP-16	500	8	x		--		144,000¶	pump	288,000	
NP-17	565	11	x		355,605	(365)	239,040*	well	576,000	
NP-20	300	8	x		134,405	(365)	93,600*	well	288,000	
NP-21	500	12	x		291,432	(365)	244,800*	well	432,000	
NP-26	475	8	x		49,312	(365)	205,920	pump	216,000	
NP-29	410	8	x		65,073	(365)	72,000*	well	216,000	
NP-30	400	8	x		98,416	(365)	72,000*	well	216,000	
NP-31	500	10	x		91,323	(365)	89,280*	well	216,000	
NP-33	560	12	x		132,403	(275)	178,560	pump	216,000	
NP-34	335	10	x		97,159	(365)	100,000#	permit & pump	100,000	
NP-46	500	8	x		6,211	(69)	72,000*	well	144,000	
NP-48	492	10	x		144,419	(190)	220,000#	permit & pump	220,000	
					3,645,617		3,962,840		6,944,000	

* if pump operated 24 hours

\# limited by permit

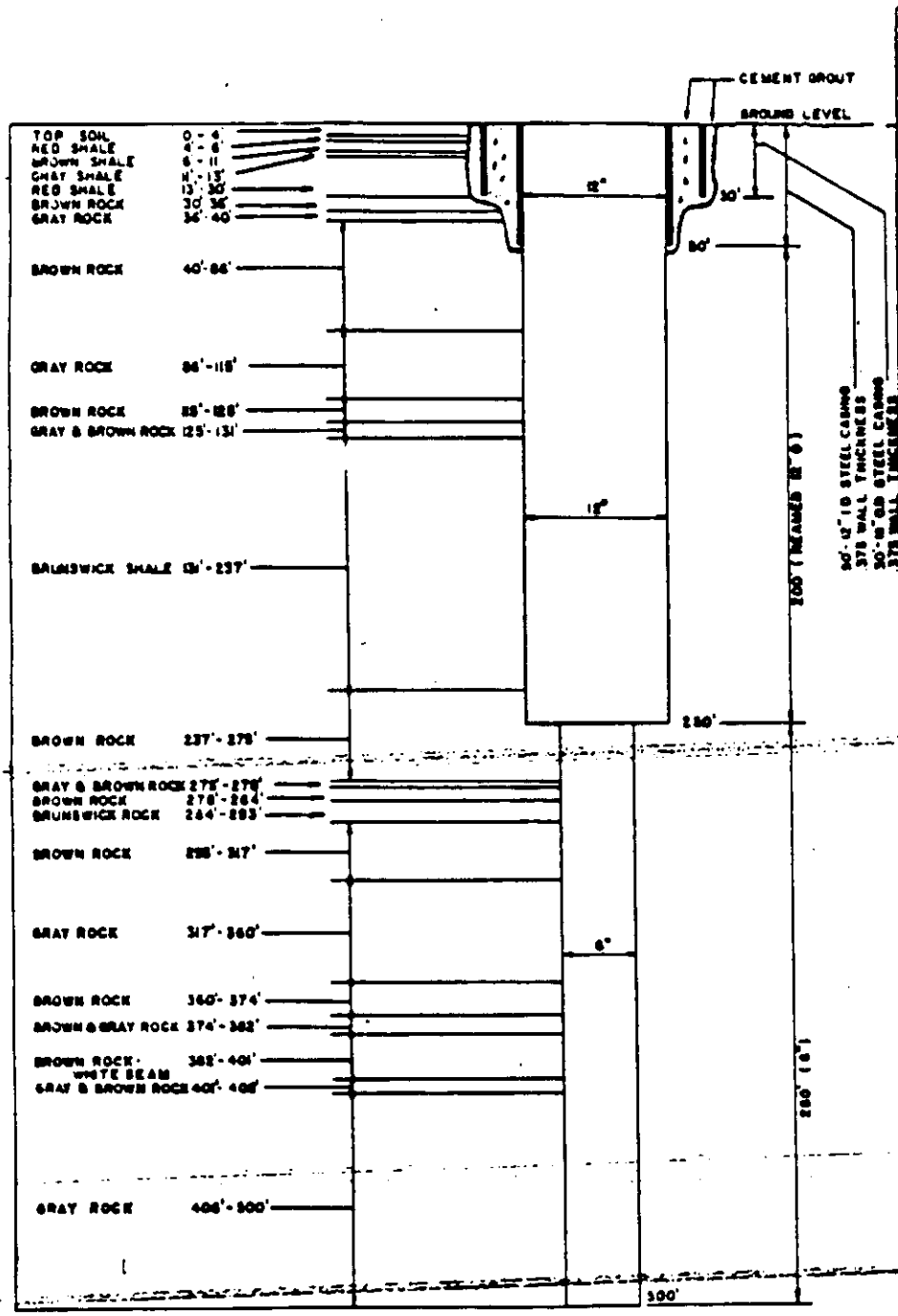
¶ emergency (diesel power only)

1983 DEPENDABLE DAILY OUTPUT OF THE WATER SYSTEM - SOURCES (SATELLITE SYSTEM ONLY)

GROUNDWATER SOURCES(WELLS) WELL NAME OR NUMBER	Depth (feet)	Diam (in.)	Is Source metered YES	Is Source metered NO	Average Daily Withdrawal GPD	Average Daily Withdrawal (Days)	Safe Yield or Minimum Prod During Dry Yrs of Record (GPD)	Facilities which limit the Total Daily Output (e.g.,Raw Water Pumpg,Treatment Works,Transmission Mains,Distribution Systems, etc...) TYPE	CAPACITY (GPD)
NP 28	300	8	x		3,189	(365)	89,280*	pump	144,000
NP 35	557	6	x		4,046	(365)	28,800*	pump	80,400
NP 36	341	6	x		7,180	(365)	67,680*	pump	115,200
NP 37	487	6	x		27,994	(365)	24,480*	pump	93,600
NP 38	350	6	x		1,024	(365)	21,600*	pump	36,000
NP 39	510	8	x		41,904	(365)	161,280*	pump	360,000
Total Satellite Systems					85,337		393,120		799,200
plus Total Main System					3,645,617		3,962,840		6,944,000
					3,730,954		4,355,960		7,743,200

* if pump operated 24 hours

WELL Nº N.P.-21



PROGRESS LOG — DRILLED BY F.L. BOLLINGERS & SONS			
DEPTH	DATE	G.P.M.	STATIC
0'	4/22/69	0	- - - -
30'		6	
75'		25	
130'		100	
205'	4/23/69	120	7'
324'	4/25/68	200	7'
336'	4/26/68	240	7'
500'	5/7/68	300	7'

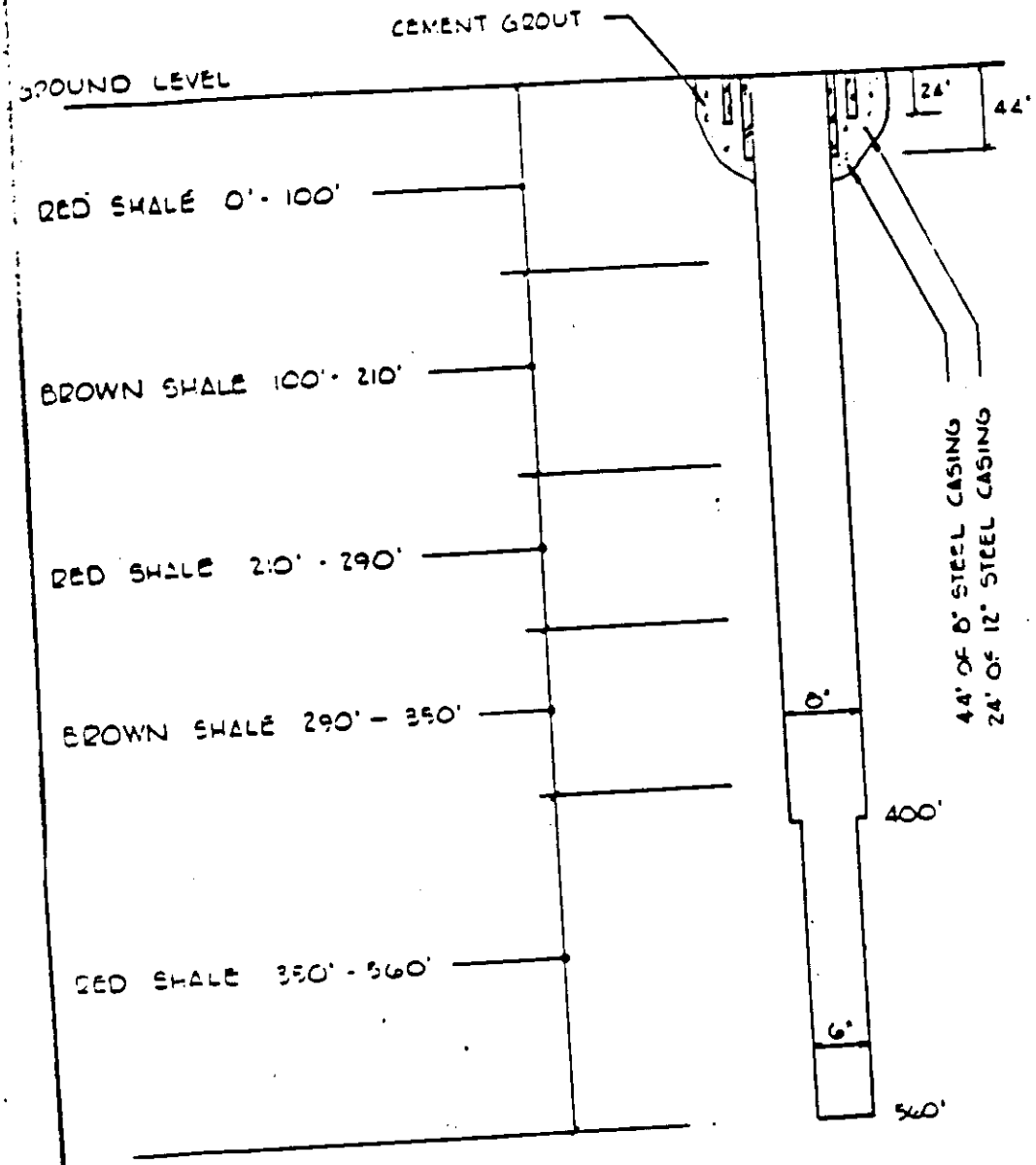
EXHIBIT "H"

NORTH PENN WATER AUTHORITY

WELL Nº N.P.-21
HATFIELD TOWNSHIP
DRILLING LOG

DATE 1-5-70
DWN. BY T. GABLE
SCALE HORZ: 1" = 10'

WELL N.P. · 33



PROGRESS LOG

DRILLED BY:
F.L. BOLLINGER / SONS

DEPTH	G.P.M.	STAT C
110'	8	
270'	12	
290'	100	
320'	150	
350'	200	
390'	300	
560'		

NORTH PENN WATER AUTHORITY

WELL N.P. - 33
TOWAMENCIN TOWNSHIP
DRILLING LOG

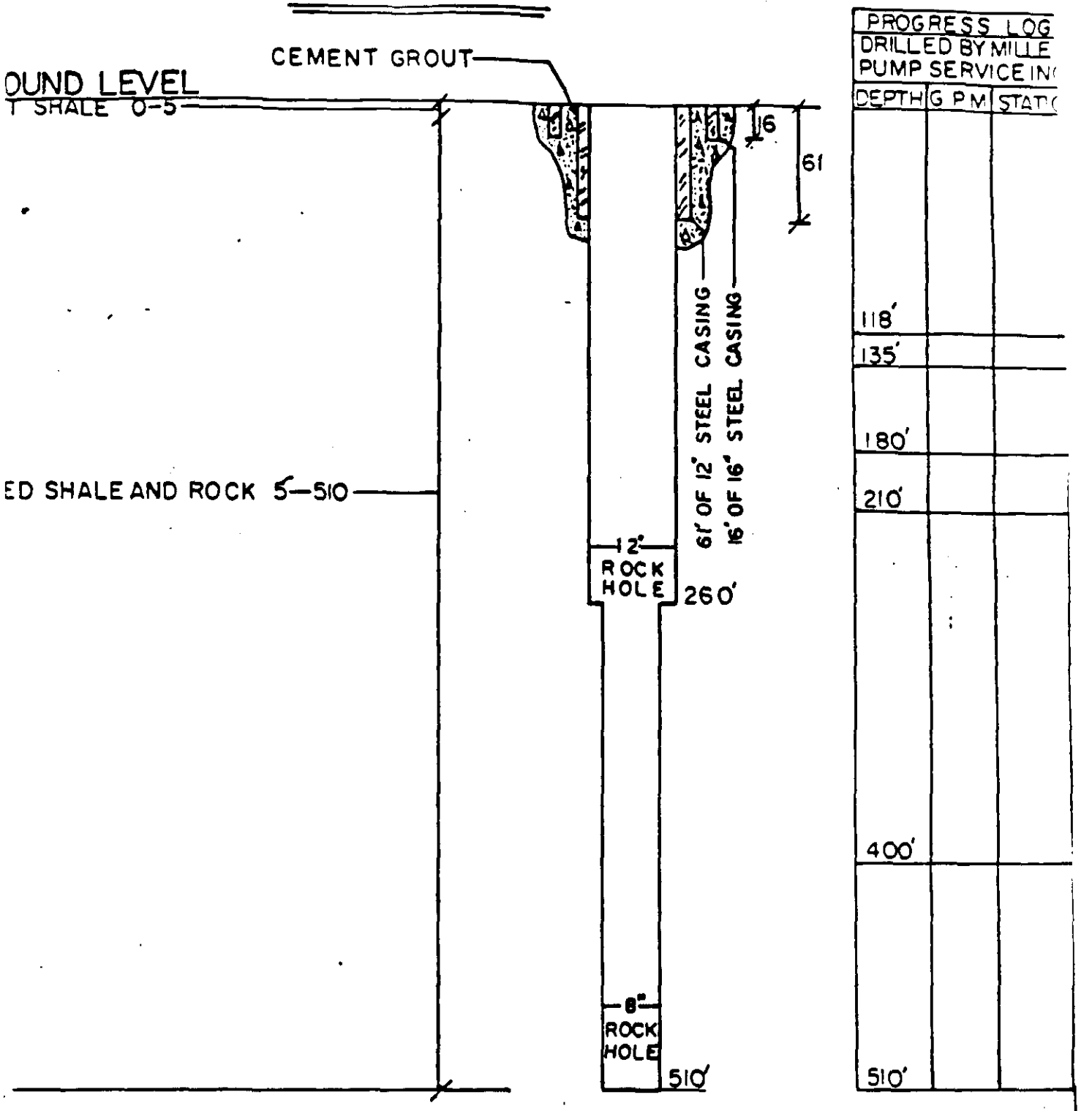
DATE : 3-15-77

SCALE : NONE

EXHIBIT H

AR000480

WELL NP 39



NORTH PENN WATER AUTHORITY	
WELL NP 39 SKIPPACK TOWNSHIP DRILLING LOG	
DATE: 9-1-77 DWG. BY: R.T.W	SCALE: NONE DWG. NO: A123-0386
EXHIBIT H	


F

ZENITH LAGOON CLOSURE REPORT

Prepared for

ELAN ASSOCIATES

NOVEMBER, 1983

ARC PROJECT NO. [illegible]

ZENITH LAGOON CLOSURE REPORT

ARC Project No. 22286

LIST OF APPENDICES

1. Zenith Lagoon Study, AGES Corporation, June, 1983.

2. Zenith Site Assessment, BCM Eastern, Inc., November, 1986.

3. Liquids disposal agreements with the Upper Gwynedd Township Authority, February, 1984 through June, 1986.

4. ARC Closure Plan and related correspondence, August, 1986, through December, 1986.

5. Lagoons #1, #2, #3, #4, #5, #6, #7, #8, #9 and #10 analytical data, closure requests and DER approval letters.

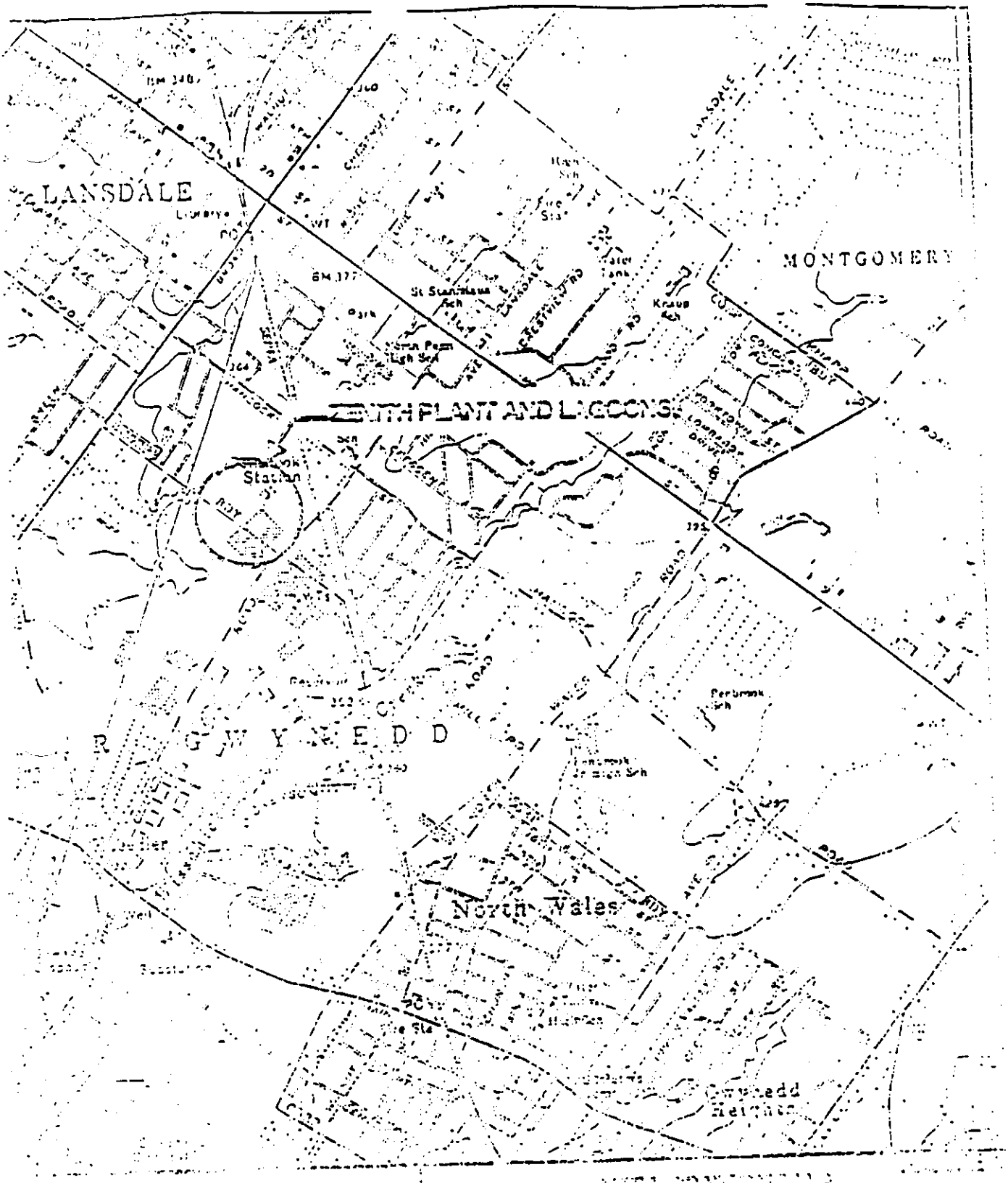
6. PTI disposal documents for non-hazardous waste generated from the closure of lagoons #1, #4, #5, #6, #7, #8, #9 and #10.

7. Disposal documents for hazardous wastes contained in lagoons #2 and #3.

8. Ground water data and supplemental information.

1.0 INTRODUCTION

This report presents the results of the clean closure of ten (10) wastewater lagoons located at 1180 Church Road, Lansdale, Montgomery County, Pennsylvania (see Figure 1). The site was formerly owned and operated by Zenith Corporation.



AR000486

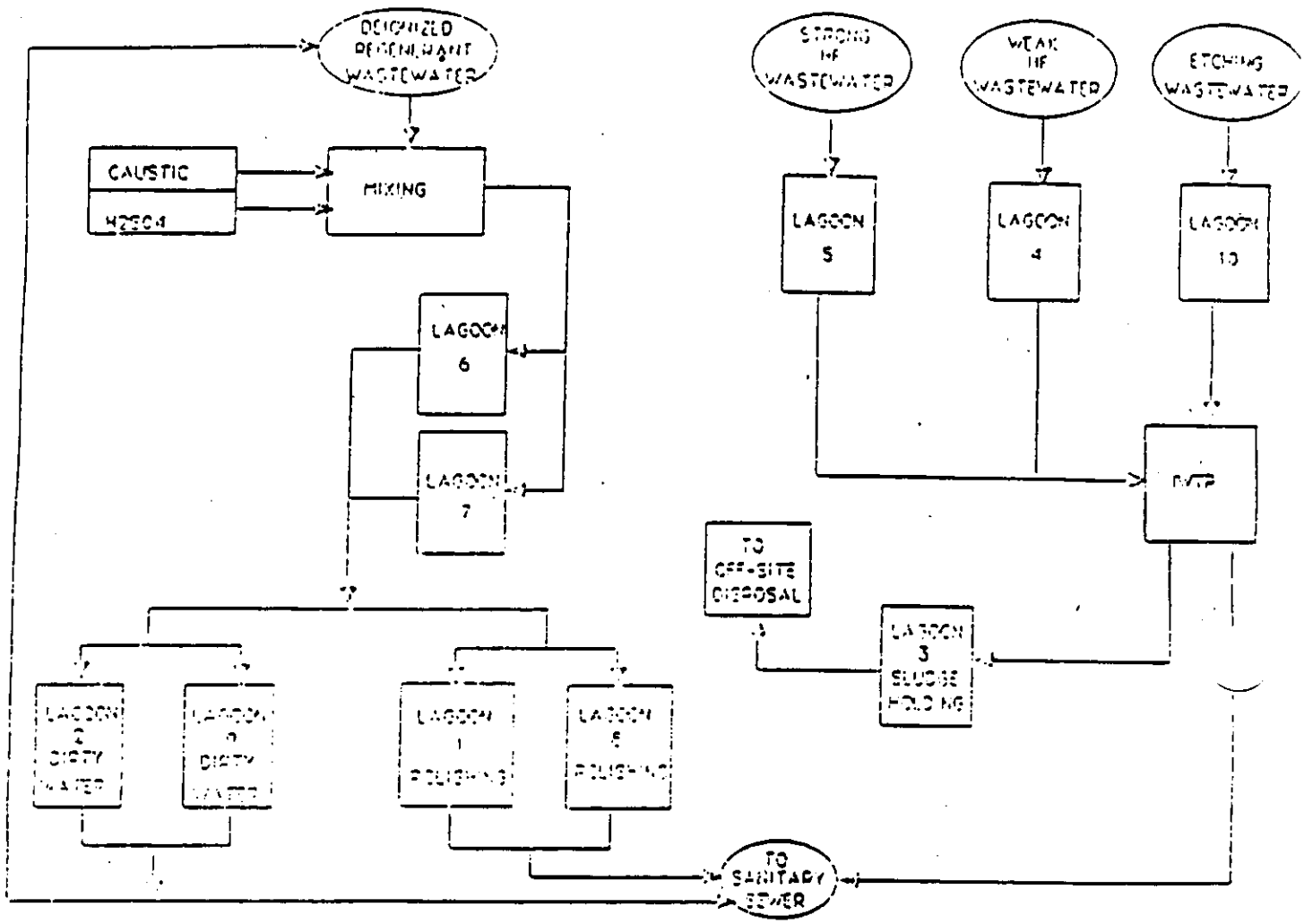
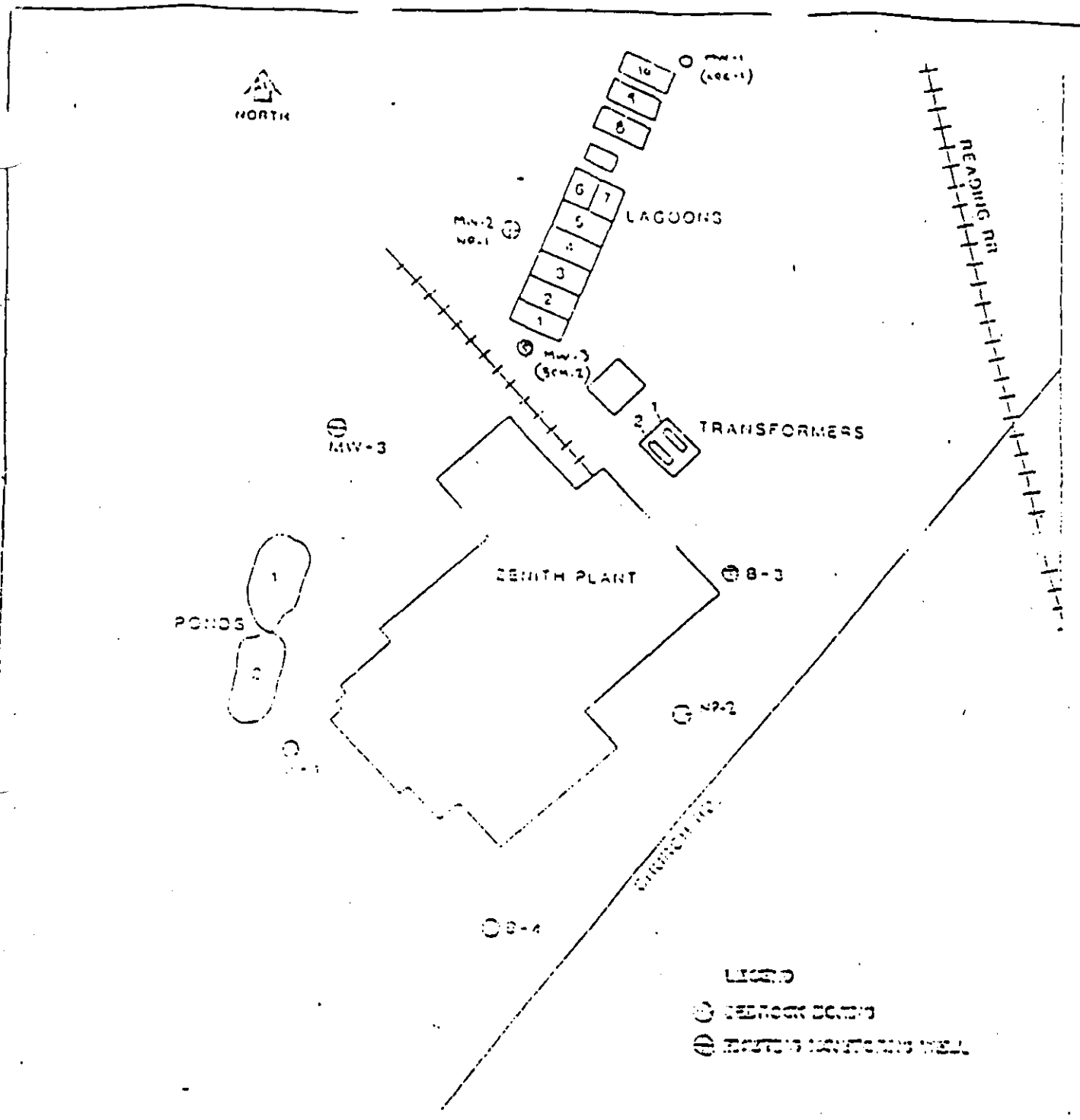

DEIONIZED REGENERANT WASTEWATER
CAUSTIC
MIXING
LAGOON 6
LAGOON 7
STRONG HF WASTEWATER
WEAK HF WASTEWATER
ETCHING WASTEWATER
LAGOON 5
LAGOON 4
LAGOON 10
TO OFF-SITE DISPOSAL
LAGOON 3 SLUDGE HOLDING
LAGOON 2 DIRTY WATER
LAGOON 1 POLISHING
LAGOON 8 POLISHING
TO SANITARY SEWER

FIGURE 12


NORTH
LAGOONS
MW-3
TRANSFORMERS
READING RR
ZENITH PLANT
B-3
PONDS
B-4
LEGEND

AR000488

3.0 LAGOON CLOSURE PROGRAM

3.1 Liquids Removal

In preparation for the closure of the Zenith lagoons, rainwater which had filled the lagoons over the years had to be removed and properly disposed of. In February, 1984 the owners of the property entered into an agreement with the Upper Gwynedd Township Authority (UGTA) (see Appendix 3). The agreement set the conditions for discharge of the liquids into the UGTA sewer system.

During the period from March, 1986 through June, 1986, ARC obtained permission to discharge the liquids into the sewer system. Appendix 3 contains the ARC / UGTA correspondence which led to an acceptable procedure to sample, analyze, and document the discharge of the lagoon liquids.

During the entire two (2) and one-half (1/2) year closure program, all liquids contained in the lagoons were tested and discharged into the UGTA sewer system in accordance with the above referenced agreements.

3.2 Solids Removal

Upon UGTA authorization to begin the liquids removal process, ARC held a series of discussions with PA DER to conceptualize a closure methodology acceptable to the Department. By letter dated August 29, 1986 ARC presented the Zenith Lagoons Closure Plan to DER for approval. After review of the closure plan, DER, by letter dated October 20, 1986, sent a comment letter to ARC. The DER comment letter was addressed by ARC on November 10, 1986, and DER approved the closure methodology by letter dated December 29, 1986 (see Appendix 4).

3.2.1 Non-Hazardous Solids Removal

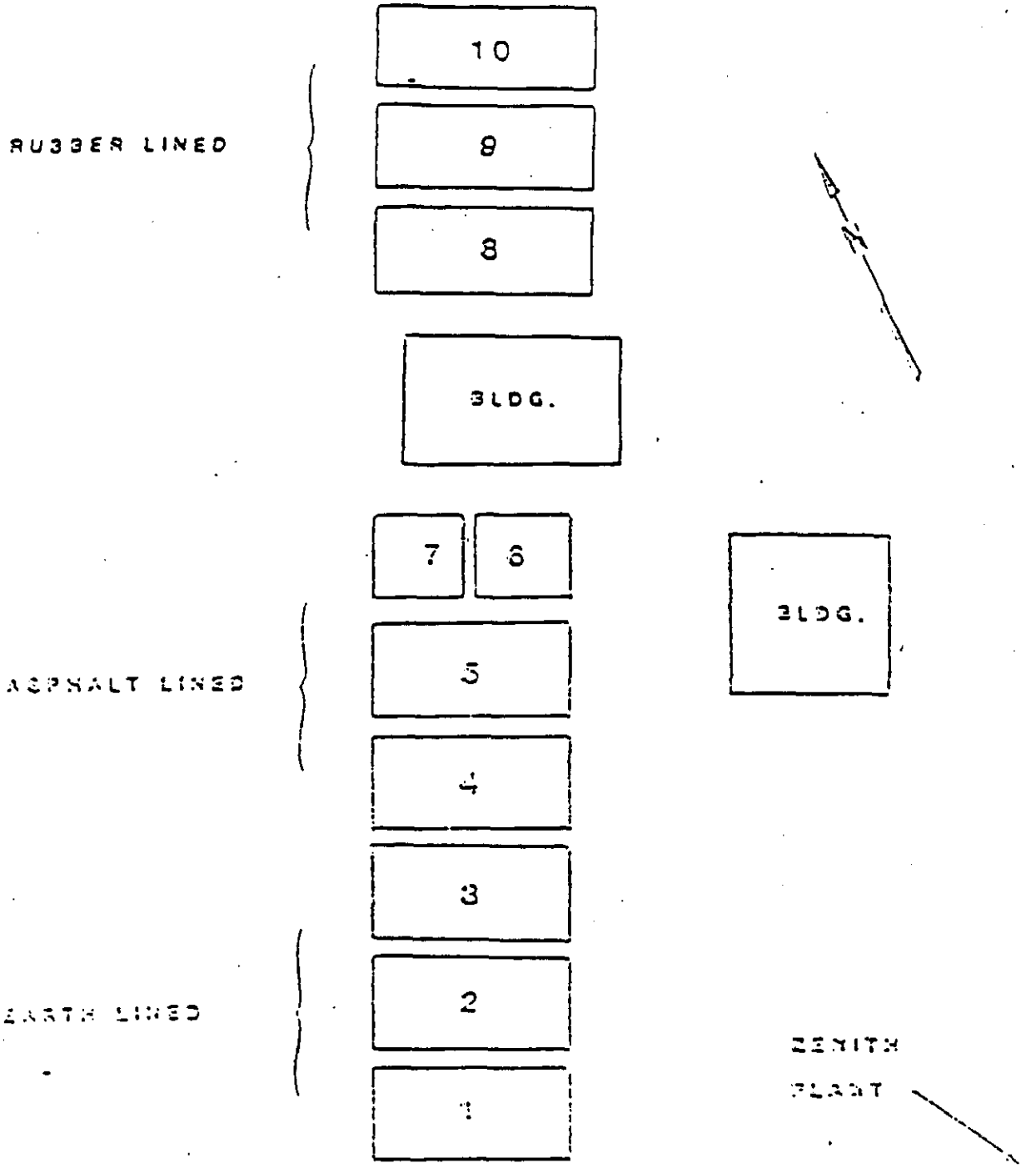
Upon approval of the closure plan by DER, the closure program commenced in the spring of 1987. The closure program began with the removal of the PVC liner in lagoon #10. A grid system was established and soil samples were collected at discrete points and saved. Each sampling point was also blended to created a composite sample for analysis.

Upon receipt of the analytical data, the data was transmitted to PA DER with a request to backfill lagoon #10.

This procedure was followed with lagoons #9, #5, #6, #7, #3, #1, and #4, in that order (see Figure 4). In each case DER approved the backfilling of the lagoons. Appendix 5 contains the ARC backfill approval letters and analytical data, as well as the DER approval letters.

Analysis of the excavated soil / liner / sludge waste showed this material to be non-hazardous. Several disposal facilities were contacted relative to the acceptance of this material and ultimately Browning-Ferris Industries (BFI) was chosen to receive the non-hazardous waste.

Appendix 6 contains the BFI approval documents as well as all transportation and disposal manifests for disposal of the waste at BFI's CLD / Salem Landfill, located in Green Township, Salem, Ohio.


10
9
8
RUBBER LINED
BLDG.
7
6
BLDG.
5
ASPHALT LINED
4
3
2
EARTH LINED
1
ZENITH
PLANT

3.2.2 Hazardous Solids Removal

During the summer of 1987, as the closure of the non-hazardous lagoons proceeded, ARC was directed to develop a sampling protocol which could deal with the extreme variability of the sludge contained in lagoons #2 and #3. Over time as grab samples were obtained from these lagoons, some samples resulted in data which showed the sludge to be non-hazardous and some resulted in hazardous levels of lead. Upon excavation of the sludge it was determined that the sludge mass was made up of discrete layers from one-eighth of an inch to an inch or more in depth.

To deal with this situation ARC developed a sampling protocol which called for the compositing of over 100 core samples in each lagoon. The result of this sampling activity was a "super composite" sample for lagoon #2 and lagoon #3. The results of the analysis of the super composite samples would be used to make removal and disposal decisions.

The results of the analysis of the super composite samples showed the sludge in lagoon #2 to be hazardous (1.91 mg/l of cadmium and 19.2 mg/l of lead) and the sludge in lagoon #3 was also hazardous (181.2 mg/l of lead).

Based upon this data, several contractors, with hazardous waste transportation and disposal experience were evaluated. Waste Conversion, Inc. (PAD065600592) evaluated the feasibility of removing the sludge in slurry form. Twelve (12) loads of sludge were transported to the Waste Conversion facility in Hatfield. It was ultimately determined that this method of disposal was not feasible.

Upon approval by the PA DER Pittsburgh Regional Office, one (1) load of sludge was transported to Mill Services, Inc. for stabilization. It was also determined that this disposal method was not feasible.

Finally, the waste was approved for disposal at the Four County Landfill in Rochester, Indiana (IND000780544). The waste was transported to the landfill by Horvith Trucks, Inc. (PAD064035819). Between May, 1988 and August, 1988 a total of 197 loads of sludge and soil was transported to the Four County Landfill.

In all, approximately 4200 cu.yds. of hazardous waste was transported to Waste Conversion, Mill Services, and Four County Landfill.

After completion of the sludge and soil removal program, bottom samples were obtained and analyzed. The results of the analysis of the bottom samples were forwarded to DER with the request to backfill lagoons #2, and #3, by letter dated September 12, 1988.

Appendix 5 contains the September 12, 1988 request to DER to backfill lagoons #2 and #3 and the November 15, 1988 letter from DER approving the backfilling of lagoons #2 and #3.

Appendix 7 contains the super composite samples' results as well as all disposal manifests.

3.3 Ground Water Monitoring

In accordance with the ARC Closure Plan and the PA DER criteria for approval of the plan (see Appendix 4), two (2) existing monitoring wells, and one (1) new monitoring well have been used to evaluate ground water quality in the area of the lagoons. Figure 5 shows the location of each monitoring well used by ARC to evaluate ground water quality, Tables 1, 2, 3, and 4 reflect the results of the analysis of ground water samples, and Appendix B contains copies of all analytical data and associated ground water information. Additionally, a November 13, 1986 BCM Report (see Appendix 2) has also been reviewed relative to on-site ground water conditions.

Table 1 shows the results of ARC's 1/6/87 pre-closure monitoring of MW-1 (ARC-1). At that time only two (2) drinking water parameters exceeded established standards, chromium (0.055 vs. 0.05) and selenium (0.013 vs. 0.01). It is our opinion, however, that these slight elevations are due to natural conditions, and not lagoon impact. MW-1 could not be sampled during post-closure monitoring since the well was destroyed during regrading of lagoon #10.

Table 2 shows the results of 1986 BCM and 1987 and 1988 ARC monitoring of MW-2 (NP-1). This well exhibited slight elevations of cadmium (0.014 vs. 0.01) and selenium (0.013 vs. 0.01) during the 1/6/87 pre-closure monitoring; however, both parameters were within drinking water standards during post-closure monitoring. The data also shows a slight increase in total dissolved solids (TDS), fluoride, and specific conductance during closure activities; however, this change was anticipated due to the massive earth moving activities during closure.

Table 3 shows the results of 1986 BCM and 1987 and 1988 ARC monitoring of MW-3 (BCM-2). This well exhibited elevated levels of chromium, lead, and selenium in the 1986 BCM data, however, BCM related this situation to grab sampling undeveloped wells. The ARC pre-closure data showed a slight elevation of selenium, which was not confirmed during post-closure monitoring. ARC post-closure monitoring did reveal slight elevations in TDS (422 vs. 510), fluoride (0.16 vs. 0.2), and specific conductance (685. vs. 793); however, this change was also anticipated due to earth moving activities.

Table 4 shows the results of BCM and ARC monitoring of the North Penn well (NP-2) which has consistently shown the impact of off-site VOC contamination. This well exhibited a significant increase in the concentration of total VOC's (101.4 vs. 1221.0 ug/l) between 1/6/87 and 9/8/88. This VOC contamination has nothing to do with either past operation, or closure of the lagoons.

In summary, the required ground water monitoring has shown minimal impact from the closure of the lagoons. Monitoring wells #2 and #3 exhibited slight increases in TDS, specific conductance and fluorides which can be attributed to closure of the lagoons. It is ARC's opinion, however, that these levels will approach background (MW-1 and NP-2) after final grading and stabilization of the area.

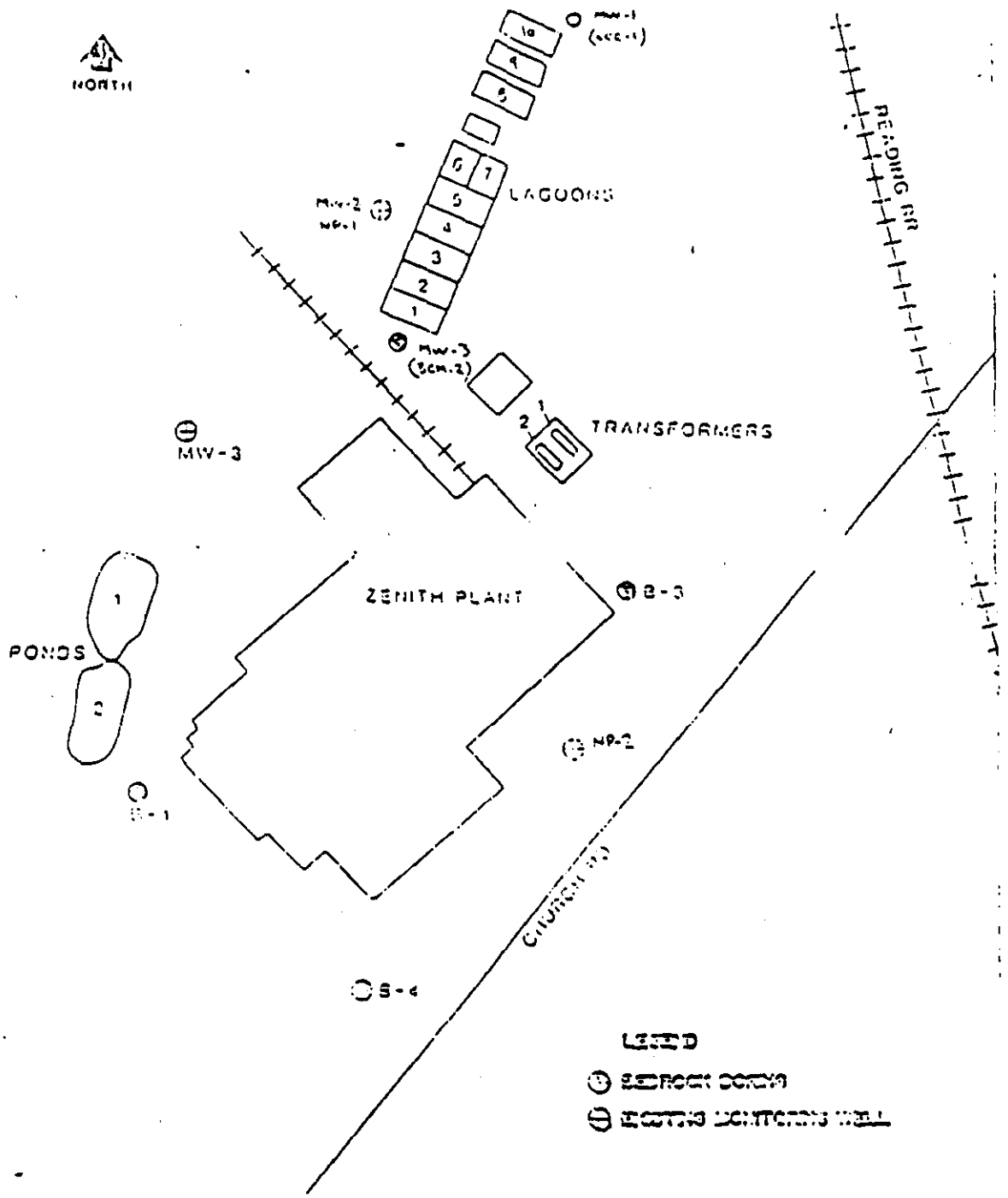


FIGURE 3

GROUNDWATER WELL LOCATION MAP

FORMER ZENITH FACILITY

MONITORING WELL #1 (ARC - 1)

TABLE 1

Parameter	(02617) ARC 1/6/87	ARC 9/8/88
Arsenic	0.003	This well was destroyed during the closure of Lagoon #10 and as a result could not be sampled.
Barium	<0.5	
Cadmium	<0.001	
Chromium	0.055	
Lead	0.001	
Mercury	<0.0002	
Selenium	0.013	
Silver	<0.001	
Cyanide	<0.005	
Fluoride	0.13	
COD	11.3	
TDS	274.	
pH	7.91	
Spec. Cond.	393.	
Total VOC's (ug/l)	ND	

MONITORING WELL #2 (NP - 1)

TABLE 2

Parameter	(MW-1) BCM 11/26/86	(02619) ARC 1/6/87	(03834) ARC 9/8/86	Drinking Water Standards
Arsenic	-	0.005	<0.05	0.05
Barium	-	<0.5	0.062	1.0
Cadmium	<0.005	0.014	<0.01	0.01
Chromium	0.013	0.003	<0.05	0.05
Lead	0.002	<0.001	<0.05	0.05
Mercury	-	<0.0002	<0.001	0.002
Selenium	<0.004	0.013	<0.01	0.01
Silver	-	<0.001	<0.05	0.05
Cyanide	-	<0.005	<0.05	0.2
Fluoride	-	0.13	0.2	1.4 to 2.4
COD	<1.	<10.	2.	-
TDS	-	351.	480.	500.
pH	7.4	7.94	7.70	6.5 to 8.5
Spec. Cond	626.	595.	731.	-
Total VOC's (ug/l)	2.1	423.1	ND	*

* Maximum contaminant levels (MCL's) are available for selected compounds.

MONITORING WELL #3 (BCM #2)

TABLE 3

Parameter	(B-2) BCM 11/26/86	(02618) ARC 1/6/87	(03835) ARC 9/8/88	Drinking Water Standards
Arsenic	-	0.005	<0.05	0.05
Barium	-	<0.5	0.064	1.0
Cadmium	<0.01	<0.001	<0.01	0.01
Chromium	0.182	0.004	<0.05	0.05
Lead	0.079	<0.001	<0.05	0.05
Mercury	-	<0.002	<0.001	0.002
Selenium	0.080	0.014	<0.01	0.01
Silver	-	<0.001	<0.05	0.05
Cyanide	-	<0.005	<0.05	0.2
Fluoride	-	0.16	0.2	1.4 to 2.4
COD	650.	10.4	2.	-
TDS	-	422.0	510.0	500.
pH	-	7.85	7.35	6.5 to 8.5
Spec. Cond	549.	635.0	793.	-
Total VOC's (ug/l)	5.8	120.1	914.9	*

* Maximum contaminant levels (MCL's) are available for selected compounds.

NP - 2

TABLE 4

Parameter	(MW-2) BCM 11/26/86	(02620) ARC 1/6/87	(03336) ARC 9/S/S8
Arsenic	-	-	-
Barium	-	-	-
Cadmium	<0.01	-	-
Chromium	<0.02	-	-
Lead	<0.002	-	-
Mercury	-	-	-
Selenium	<0.040	-	-
Silver	-	-	-
Cyanide	-	-	-
Fluoride	-	-	-
COD	<1.	-	-
pH	-	-	-
Spec. Cond	472.	-	-
Total VOC's (ug/l)	353.2	101.4	1221.0

4.0 CONCLUSIONS

Based upon the preceding closure report, the following conclusions can be drawn:

1) The Zenith Lagoon Closure program has been completed in accordance with the PA DER approved closure plan (see Appendix 4);

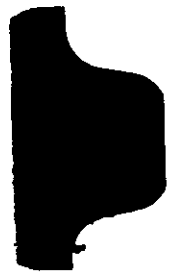
2) All liquid waste contained in the lagoons was discharged into the UGTA sewer system in accordance with the agreement (see Appendix 3);

3) All solid and semi-solid process waste, lagoon liner material, and contaminated soil associated with the lagoons has been removed and transported to permitted disposal facilities (see Appendix 6 and Appendix 7);

4) Based upon sampling and analysis of lagoon bottom samples, PA DER has approved the backfilling and final closure of lagoons #1, #2, #3, #4, #5, #6, #7, #8, #9 and #10 (see Appendix 5);

5) Based upon pre-and post-closure ground water monitoring, no long term impact from the lagoons or the lagoon closure program is anticipated (see Appendix 8);

6) Continued, lagoon specific, ground water monitoring is not necessary.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
1875 New Hope Street
Norristown, PA 19401
215 270-1975

January 26, 1989

Mr. Edward H. Prout, Jr.
American Resource Consultants, Inc.
450 East Street
Doylestown, PA 18901

Re: Zenith Lagoons-Closure Report
Upper Gwynedd Township
Montgomery County

Dear Mr. Prout:

This is in reply to your letter of November 16, 1988 in which you request our review of the final Closure Plan, dated November, 1988 for the subject site.

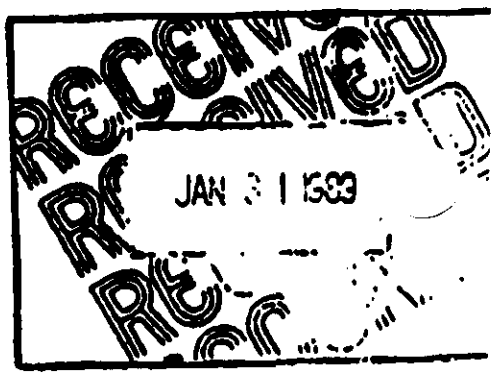
Based on our review of the data provided, we concur with the conclusions presented in the Closure Plan. We recommend that all existing monitoring wells and borings be abandoned in accordance with approved industry procedures, such as those contained in AWWA Standard A 100-84. Notify this office when this has been accomplished.

If you have any questions, please call me or Robert Day-Lewis, Hydrogeologist, at (215)270-1975.

Very truly yours,

JOSEPH A. FEOLA
Regional Water Quality Manager

cc: Upper Gwynedd Township
Mr. Jolly
Re 30 (DAC)24.12



FINAL REPORT ON LANSDALE PROPERTY

30 May 1990

SECTION 1

INTRODUCTION

During November 1989, Roy F. Weston, Inc. (WESTON) conducted a field investigation of the property at 1180 Church Road in Lansdale, Pennsylvania. The purpose of the field investigation was to determine: (1) if there was soil and/or groundwater contamination at the site, and (2) if there was contamination present, whether it was from previous operations conducted at the site or from surrounding sites.

The site had previously been owned and operated by Philco-Ford, and then Zenith as a production plant for television picture tubes. When Zenith owned and operated the facility (1973 & 1974), it used eight settling ponds (lagoons) for effluent containing wastes which included heavy metals and other chemicals (see Figure 1). The lagoons have since been closed under a Pennsylvania Department of Environmental Resources (PADER) approved closure plan. The present field investigation by WESTON was also designed to confirm that all contamination from the lagoons was removed.

Currently the area of the site where the lagoons were located is covered with backfill excavated from the adjoining property. WESTON concentrated its efforts on the lagoon area in measuring degradation of the soil and groundwater. The foundation of one of the pump houses associated with the lagoons is still visible but the pump house has been demolished. Another pump house and holding tank are intact but badly deteriorated.

To determine if any soil contamination was present, five soil borings were drilled and sampled. Four of the borings were located in the vicinity of the former lagoons. The fifth soil boring was located in an undisturbed area to determine background conditions.

CLIENT: ROUSE, INC.
FINAL REPORT ON LANSDALE FACILITY

WESTON attempted four monitor wells. One monitor well (MW-3) was drilled to 80 feet below ground surface and encountered no groundwater. The other three wells (MW-1, MW-2, and MW-4) yielded water at varying levels (explanations of the well drilling process and the explanations for the variability in groundwater depths can be found in Sections 3 and 4). The wells that were eventually used for the measurements contained in this report were wells MW-1, MW-2, MW-4, and an existing well in the parking lot of this site, adjacent to Church Road. The soil boring and monitor well locations can be seen in Figure 1.

The soil samples obtained at the site were analyzed for volatile organic compounds (VOCs), fluoride, and EP Tox leachate metals. The groundwater samples were analyzed for VOCs, fluoride, and soluble metals. The parameters chosen were based on the historic use of the site and previous studies. The site is located within Zone 7 of the Lansdale TCE Contamination Area, which is on the National Priorities Lis' (NPL) for environmental cleanup under Superfund. Therefore there was sufficient written history on the area and on the site to allow a determination of what compounds to look for in the samples. All samples were analyzed using current EPA-approved methods. All QA/QC and standard chain-of-custody protocols were observed.

Section 2 of this report details the methodologies used for drilling, well installation and development, surveying, and sampling. Section 3 discusses the results of the investigation including soil and bedrock descriptions and analytical results. Section 4 contains the summary and conclusions.

SECTION 2

METHODOLOGIES

2.1 SOIL BORINGS

Five soil borings were completed using hollow stem augers and split spoon sampling. Samples for laboratory analysis were collected using clean dedicated stainless steel trowel directly from the split spoon and into clean labeled laborator

containers. The samples were immediately put in a cooler on ice after collection. The borings were located so as to sample soils from lagoons 2 (SB-1), 3 (SB-2),4 (SB-3),and both 6 and 7 (SB-4). One background sample (SB-5) was collected as shown in Figure 1.

2.2 WELL INSTALLATION

Four monitor wells were drilled and three were completed using air hammer drilling at locations shown in Figure 1. The holes were advanced until groundwater was encountered. The diameters of the open holes were 6 inches and the wells were completed using ten feet of 2 inch schedule 40 PVC slotted screen (with a minimum of 6 feet submerged into the groundwater) and schedule 40 PVC riser pipe. The sand pack (#1 sand) was installed by downhole methods followed by a 2-foot bentonite pellet seal and cement/bentonite grout to surface. The wells were completed with a protective casing with a lockable lid. The wells were developed with a teflon bailer until the water was clear (as practical). For details of well construction and development see Table 6.

2.3 GROUNDWATER SAMPLING

Because of the very low yields, the onsite wells were purged with clean teflon bailers one day before sampling. The wells were then sampled with laboratory cleaned dedicated teflon bailers within 24 hours after purging. VOC samples were collected first, followed by fluoride and soluble metals. The metals samples were filtered immediately after collection using dedicated (disposable Nalgen) filterware with a 0.45 micron pore size and then preserved at a pH of 2 with nitric acid. The samples were put in a cooler with ice immediately after collection and filtering.

2.4 DECONTAMINATION

To ensure that cross-contamination between samples did not occur, all sampling instruments were thoroughly cleaned before use. All drill rig equipment including rods, augers, drill stems, split spoons, and tools were thoroughly steam cleaned between sampling and/or drill site locations. Details of

decontamination of sampling instruments can be found in Table 1.

2.5 MONITOR WELL ELEVATION SURVEY

The three newly completed monitor wells on-site (MW-1, MW-2, and MW-4) and the existing monitor well in the parking lot adjacent to Church Road were surveyed to obtain relative elevations of the top of the well casing. This was completed by assigning a relative elevation of 100.00 feet to the foundation of the former on-site pump building. The top of the well casings were measured using level and stadia rod relative to the assigned benchmark. Two transit locations were used to check the accuracy of the measurements. The accuracy was +/- 0.03 foot. During the survey, a round of water level measurments was obtained.

SECTION 3

RESULTS

3.1 SOIL SAMPLING

Five soil borings were completed during the field investigation which included four borings (SB-1 through SB-4) in the former lagoon area and one boring (SB-5) completed in an undisturbed area just east of the lagoons (See Figure 1). The soil borings (and nearby excavations) revealed that bedrock is within ten feet of the surface outside of the lagoon area and 15 to 20 feet below ground surface in the lagoon area. The soil profile in the soil borings SB-1 through SB-4 consisted of a red silty clay (weathered shale). In SB-5 the soil profile also consisted of a red silty clay and appeared undisturbed. In the soil borings in the lagoon area the soil profile was the same red silty clay material, but was disturbed (fill). Table 2 is a summary of the soil borings completed at the site. The soil profile across the site was consistently found to be a red silty clay material.

The analytical results of the soil sampling are summarized in Tables 3, 4, and 5 and indicate the following:

- o No significant volatile organic contamination was found.
- o The only metals (using EP Tox leachate analysis) found were selenium in SB-2 and SB-3 and cadmium in SB-3.
- o Fluoride was found in all the soil samples in the lagoon area ranging in concentration from 11.4 to 49.7 ppm. No fluoride was detected in SB-5.

We compared the levels found at the site with contaminant levels acceptable for soil. Pennsylvania does not specify acceptable/unacceptable contaminant levels for soils. We therefore used the New Jersey Department of Environmental Protection (DEP) ECRA Action Levels for comparison. They are 4,000 ppb for selenium and 3,000 ppb for cadmium.

Based on the analytical results it appears that the soils in the former lagoon area are not a source for significant contamination. We base this statement on the fact that the levels found at the site (selenium - 134 ppb and 340 ppb; cadmium - 150 ppb) are well below what are considered "acceptable" levels.

3.2 GROUNDWATER SAMPLING

Wells MW-1, MW-2, and MW-4 were drilled using air hammer methods until the first water bearing zone was reached. The wells were completed using 10-feet of 2-inch Schedule 40 PVC 20 slot screen penetrating the ground water for a minimum of six feet and 2" schedule 40 PVC riser to the surface. The sandpack was installed in each well by downhole methods to a depth of 40 feet below ground surface followed by a 2-foot bentonite pellet seal and cement/bentonite grout to surface. The well was completed with a 6-inch diameter steel protective casing and locking lid. For details of well completion see Table 6. The wells were developed by bailing until the water was clear (as practical). During development and subsequent purging for

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FINAL REPORT ON LANSDALE FACILITY

On 17 November 1989, MW-1, MW-2, MW-4 and the monitor well in the parking lot adjacent to Church Road were sampled. The results of the analysis indicate that:

- Trichloroethylene (TCE) was the only volatile organic compound found in the groundwater below the site. It was found at trace levels on the site further away from Church Road, and was found at higher levels in the parking lot well adjacent to Church Road.

- Chromium was found in the groundwater samples from two of the on-site wells away from Church Road. No chromium was detected in the third well away from Church Road and in the parking lot well. No other metals were detected in any of the wells.

- Fluoride was found just above the detection limit in all the wells (including the parking lot well). The levels detected were all below the limit range of 1.4 to 2.4 ppm specified in the drinking water standards.

Monitor well MW-2 was sampled two times in order to evaluate whether priority pollutant metals were present in the groundwater. Preliminary analysis results indicated that the groundwater contained chromium at a concentration of 975 ug/l. No other groundwater or soil samples collected at the site were indicators of chromium contamination at unacceptable levels.

The initial groundwater sample from MW-2 was collected immediately after the well installation and development, and may not have been representative of aquifer conditions. The results of the subsequent sampling round (performed 28 February 1990) indicated no detectable quantities of chromium in the well. This result was confirmed by reanalysis of the sample.

The second sample was collected after aquifer conditions near the borehole had stabilized. Consequently, the later results are more representative of the concentrations in the vicinity of well MW-2 and are consistent with other results obtained at the site.

3.3 Groundwater Levels

Groundwater level measurements were obtained during the relative elevation well survey to confirm groundwater flow direction and gradient.

Well	Depth to Water (12-29-98)	Relative Elevation of Well Casing	Relative Groundwater Elevation
MW-1	65.89	94.58	28.69
MW-2	70.92	100.37	29.45
MW-4	58.41	106.18	47.77
Pkng Lot	51.00	93.06	42.06

Based on these results, it appears that the change in bedrock noted during drilling may be significantly affecting static groundwater levels on-site. A groundwater investigation by SMC Martin in November 1981 determined the direction of flow of the groundwater. Using surveyed well elevations and depth measurements, SMC Martin established that groundwater at the site flows in a "westwardly" direction. This means that the flow of groundwater is "generally" from Church Road onto the site. BCM Eastern, Inc. confirmed the direction of flow and stated the following in their report of November 1986:

> "... the groundwater flow direction information indicates that the TCE and other organic compounds probably have a source south and east of Church Road, rather than the Zenith plant property."

SECTION 4

CONCLUSIONS AND RECOMMENDATIONS

The results of the investigation indicate the following:

o Small amounts of fluoride are present in all soil and groundwater samples taken at this site. This was not

unexpected since past reports noted the presence of fluoride at the site. The levels which were found are not a problem.

o Selenium was detected in two soil borings (SB-2 and SB-3) at 0.134 and 0.340 ppm respectively. This element had been detected in previous site investigations also and still exists, but are well below maximum contaminant levels (MCLs) acceptable for soils.

o Soluble chromium was detected in groundwater samples from MW-1, and MW-4 at concentrations of 0.022 and 0.026 ppm, respectively. These again confirmed the results of previous site investigations, and also are below the reference MCL (New Jersey) that we used.

o Cadmium was detected at 0.15 ppm in soil boring SB-3. Again, this sample was well below the reference MCL (New Jersey) that we used.

o Barium was detected at 0.216 ppm in the parking lot well. This is well below the drinking water standard of 5 ppm.

o The samples were analyzed for volatile organic compounds. Methylene chloride was detected in most samples including the blank. Methylene chloride is a common laboratory contaminant and the analytical results do not indicate that samples taken from the site contain this contaminant. Minor amounts of acetone were also detected in some samples. This is probably attributable to laboratory contamination as it was not detected in confirmatory reanalysis of the samples.

o Trichloroethylene (TCE) was detected in the parking lot well at 80 ppb and in MW-1 and MW-4 at 27 ppb and 23 ppb respectively. The higher concentration of TCE in the parking lot well would confirm the fact that the TCE is moving onto the site from a source south and east of Church Road rather than coming from the site. Other studies of the site all indicate that the TCE contamination was historically confined only to the area of the property adjacent to Church Road. This assessment indicates that the TCE has migrated further onto the property thus affecting MW-1 and MW-4.

o There appear to be two aquifers underlying the site. Based on information collected in the field and from background literature (Longwill and Wood, 1965), it appears that the

differences found in the groundwater levels may be controlled by the nature of the bedrock encountered. In the parking lot well and MW-4 the relative static water levels measured are up to 19 feet different than the measurements from MW-1 and MW-2. From the drilling logs and the literature it is apparent that there are two different rock formations (New Brunswick Shale and Lockatong Shale) and the contact between the two formations probably runs through the site. At this time it cannot be determined where the exact contact may be. Based on the drilling logs the New Brunswick overlies the Lockatong in MW-1, MW-2 and MW-3 (dry well). The drilling in MW-4 did not encounter the Lockatong Formation. It appears that the static water level in the Lockatong Formation may be below that of the New Brunswick Formation. At this time, the exact nature of the connection between the two aquifers at the site cannot be determined. More drilling and an aquifer test would need to be done to determine how the change in bedrock affects groundwater levels and the interconnections between the two aquifers.

However, based on past groundwater analyses and sample results, it can be determined that flow direction is from Church Road onto the site.

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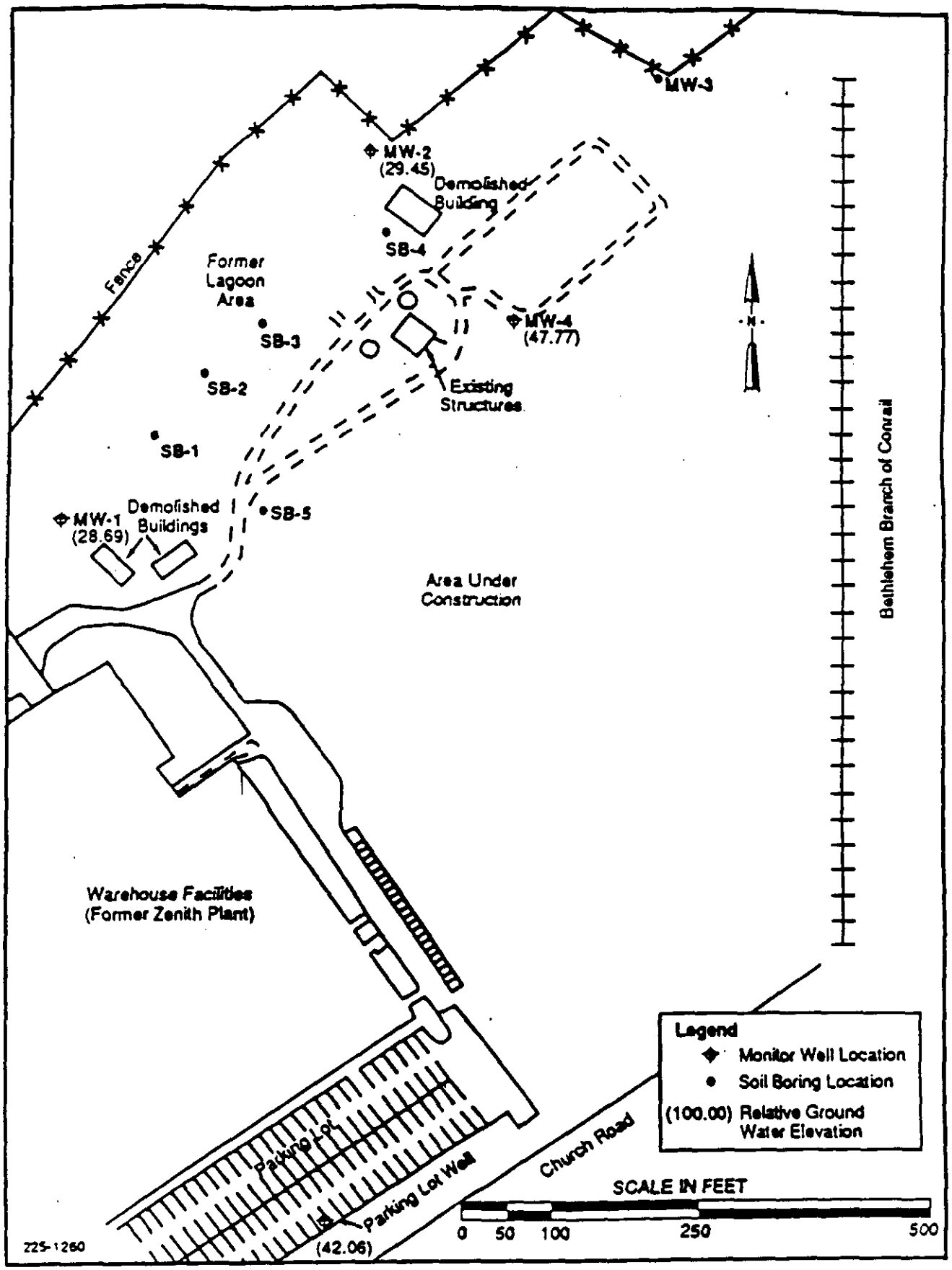


FIGURE 1 SITE LOCATION MAP

WESTON

TABLE 1

Decontamination Procedures
Rouse and Associates
Landsdale, PA Facility

Item	Procedure
Drill rig, augers, tools, split spoons, drill stems	1. Steam clean
Bailers and stainless steel trowels	1. Alconox and potable water scrub
	2. Potable water rinse
	3. Deionzed water rinse
	4. 10% nitric acid rinse
	5. Deionzed water rinse
	6. Acetone (pesticide grade) rinse
	7. Total air dry
	8. Deionized water rinse

Dedicated polyethylene rope was used to sample each well.

TABLE 2

Soil Boring Summary
Rouse and Associates
Landsdale, PA Facility

Location Description	Total Borehole Depth (ft)	Depth to Water (ft)	Interval Sampled (ft)	Depth to Bedrock(ft)
SB-1	15	-	9-11	15 Red brown CLAY with some silt, (fill)
SB-2	15	4	14-15	15 Red brown CLAY with some silt, (fill)
SB-3	5	4	3-4	- Red brown CLAY with some silt, (fill)
SB-4	15.5	12	10-12	15.5 Red brown CLAY with some silt, (fill)
SB-5	5	4	2-4	5 Red brown CLAY with some silt, (weathered shale)

- Could not accurately be determined during field observations.

TABLE 3

Summary of Volatile Organic Compound Analyses*
Results (ppb)

Rouse and Associates
Landsdale, PA Facility

Compound	MW-1	MW-2	MW-4	Parking Lot Well	SB-1	SB-2	SB-3	SB-4	SB-5	Field Blank	Trip Blank
Acetone	69	ND	32	ND	ND	2JB	8J	ND	ND	ND	ND
Trichloroethylene (TCE)	27	ND	23	80	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene (PCE)	ND	ND	ND	ND	ND	3J	ND	ND	ND	ND	ND

B: Also found in method blank indicating laboratory contamination.
J: Detected at a concentration below the method quantitation limit.
ND: Not Detected
*: Concentrations reported as ppb.

TABLE 4

Summary of Inorganic Analyses*
Rouse and Associates
Lansdale, PA Facility

Location	Arsenic (As)	Lead (Pb)	Mercury (Hg)	Selenium (Se)	Silver (Ag)	Barium (Ba)	Cadmium (Cd)	Chromium (Cr)	Flouride (F)
MW-1	ND	ND	ND	ND	ND	ND	ND	22.2	0.48
MW-2	ND	ND	ND	ND	ND	ND	ND	ND	0.22
MW-4	ND	ND	ND	ND	ND	ND	ND	26.5	0.13
Parking Lot Well	ND	ND	ND	ND	ND	216	ND	ND	0.24
Field Blank	ND	ND	ND	ND	ND	ND	ND	ND	ND
SB-1	ND	ND	ND	ND	ND	ND	ND	ND	18.4
SB-2	ND	ND	ND	134	ND	ND	ND	ND	11.4
SB-3	ND	ND	ND	340	ND	ND	150	ND	49.7
SB-4	ND	ND	ND	ND	ND	ND	ND	ND	12.6
SB-5	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND - Not Detecteed
* - Concentrations reported as ppb.

TABLE 5

Well Completion Summary
Rouse and Associates
Lansdale, PA Facility

Well	Total Depth (feet)	First Water (feet)	Depth to Bedrock (feet)	Screened Interval (feet)	Sandpack Interval (feet)	Bedrock Description
MW-1	105	100	15	95-105	40-105	Red silty shale [1] ~60' grey silty shale - hard [2]
MW-2	70	58	6	60-70	40-70	Red silty shale [1] ~60' grey silty shale-hard [2]
MW-3	80	N/A	5	N/A	N/A	5-50' red silty shale [1] 50-80' grey silty shale (hard) [2]
MW-4	60	53	6	50-60	40-60	Red silty shale [1]

(1) Brunswick Formation

(2) Lockatong Formation

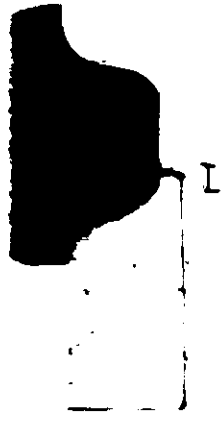
Note: All measurments are expressed as NA - Not applicable - No well constructed
Feet below ground surface

WESTON

TABLE 5

Fluoride Results (ppm)

Groundwater	Fluoride
MW-1	0.48
MW-2	0.22
MW-4	0.13
Parking Lot Well	0.24
Field Blank	ND
Soils	
SB-1	18.4
SB-2	11.4
SB-3	49.7
SB-4	12.6
SB-5	ND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ENVIRONMENTAL
LAW PRACTICE

July 13, 1995

Frances L. Costanzi
U.S. Environmental Protection Agency
Region III
841 Chestnut Building (3HW22)
Philadelphia, PA 19107

RE: North Penn Area 7 Superfund Site, Lansdale, Montgomery County, Pennsylvania

Dear Fran:

Please be advised that we represent Rouse & Associates, whose three partners, Willard Rouse, David Hammers and George Congdon, received your letter regarding the above matter, dated June 27, 1995. The letter inquired whether the three Rouse partners were willing to participate in future negotiations concerning this site.

As you know, it is my understanding that Fran Burns, rather than you, is serving as the RPM for the site. I spoke briefly with Fran last week, and told him that this was the first letter that the three Rouse partners ever received from EPA, and that in order to answer his question I needed to find out the following information:

1. Are there any other potentially responsible parties other than those listed on Attachment 1, so that I can do a conflicts check?

2. The letter indicated that "EPA has reason to believe that [Rouse & Associates] owned and/or operated a facility at the site during the time hazardous substances were disposed in a manner contributing to contamination of the groundwater beneath the site." As I told Fran, Rouse & Associates purchased this tract long after there was any disposal of hazardous substances, and therefore as a subsequent owner having purchased from someone in the chain of title who had previously contaminated the site, there

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had been no such disposal by Rouse. I therefore question whether that sentence, which is part of the Form 107 Notice, applies to Rouse.

3. I asked Fran to let me know why at this late date the 107 letter went out to the three Rouse partners.

4. I made certain that Fran was aware of the attempt by Liberty Property Trust, the REIT that acquired the site from Rouse last year, to enter into a prospective purchaser agreement, during which negotiations an amount was agreed upon as a premium that could be paid but the prospective purchaser policy was held inapplicable because of Willard Rouse's relationship to Liberty Property Trust. Fran said that he was aware of that but would get all the details on these negotiations.

5. Finally, I asked him what, if anything, EPA had in mind with respect to a de minimis cash-out for the three Rouse partners.

Unfortunately, Fran and I have been trading phone calls all week so that I am unable to have the benefit of the information requested, but did not want to let the two week deadline from the receipt of the letter pass without indicating a willingness to continue to discuss this matter if I am able to clear conflicts and ultimately represent the three Rouse partners.

I am sending copies of this letter to Fran Burns, Jim D'Alessandro and Abe Ferdas at EPA, as well as Don Becker at Pennsylvania Department of Environmental Protection, so that they will be aware of the situation which I find myself in the time of dictating this letter.

Sincerely,

Joseph M. Manko
For MANKO, GOLD & KATCHER

JMM/dms

cc: Frances Burns, Esquire (3HW22)
James D'Alessandro, Esquire (3HW11)
Abraham Ferdas, USEPA
Leslie Reid Price, Esquire

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AN
ENVIRONMENTAL
LAW PRACTICE

September 26, 1995

James D'Alessandro, Esquire
United States Environmental
Protection Agency
Region III
841 Chestnut Building
Philadelphia, PA 19107

Re: North Penn Area 7 Superfund Site, Lansdale, Montgomery County, Pennsylvania

Dear Jim:

Reference is made to my letter to Fran Costanzi, dated July 13, 1995 (copy enclosed), copies of which were also sent to you, Fran Burns and Abe Ferdas. In my letter I posed a number of questions, including as the final question, "what, if anything, EPA had in mind with respect to a de minimis cash-out for the three Rouse partners".

I would appreciate your getting back to me to discuss this.

Sincerely,

Joseph M. Manko
For MANKO, GOLD & KATCHER

JMM/kl/10106-001
Enclosure
cc: Leslie Reed Price, Esquire

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AN
ENVIRONMENTAL
LAW PRACTICE

November 30, 1995

James D'Alessandro, Esquire
United States Environmental
Protection Agency
Region III
841 Chestnut Building
Philadelphia, PA 19107

Re: 1180 Church Road, North Penn Area 7, Lansdale, PA

Dear Jim:

Last summer, I inquired as to whether my client's could discuss a de minimis settlement of any potential liability in connection with the above property. I wrote you again on September 26, and subsequently spoke with you on October 17. At that time, you told me that you had been tied up with end of the fiscal year matters, but that you would look into it within the next several weeks and get back to me.

I would appreciate your doing that since it has now been several months since I first raised this matter with you.

Sincerely,

Joseph M. Manko
For MANKO, GOLD & KATCHER

JMM/nba

bcc: Leslie Reid Price, Esquire

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AN
ENVIRONMENTAL
LAW PRACTICE

December 4, 1995

James D'Alessandro, Esquire
United States Environmental
Protection Agency
Region III
841 Chestnut Building
Philadelphia, PA 19107

Re: 1180 Church Road, North Penn Area 7, Lansdale, PA

Dear Jim:

This is a brief follow up to my letter to you of last week regarding the 1180 Church Road property owned by the 3 Rouse affiliates. I note that Carol Browner's announcement of administrative reforms for Superfund on October 2 included the intention to expand protections for de minimis and de micromous parties. Perhaps that would be helpful in allowing you to respond to my request.

Sincerely,

Joseph M. Manko
For MANKO, GOLD & KATCHER

JMM/bad
cc: Leslie Reid Price, Esquire

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AN
ENVIRONMENTAL
LAW PRACTICE

November 6, 1996

VIA TELEFAX
Neil Wise, Esquire
Chief, CERCLA Removal
and Pennsylvania Remedial Branch
U.S. Environmental Protection Agency
Region III (3RC2)
841 Chestnut Building
Philadelphia, PA 19107

Re: 1180 Church Road, North Penn Area 7, Lansdale, PA

Dear Neil:

This letter will (1) confirm my request to you last week that we revisit a prospective purchaser agreement ("PPA") or a prospective tenant agreement ("PTA") for the above site and (2) bring to your attention a new development in the law which we believe entitles Liberty Property Trust, the current owner of the site ("Liberty"), to come within the CERCLA §107(b)(3) third-party defense.

As to the PPA and the PTA, you advised me that the $277,000 and $93,000 figures that were offered to us earlier this year as appropriate premiums, respectively, would still be "on the table." I would appreciate your factoring in the §107(b)(3) defense (discussion below), which I believe should have a very significant downward impact on the numbers. In any event, by sending you this letter, I am requesting that we have an opportunity to meet with you and your staff to discuss an expedited negotiation as soon as possible.

Secondly, you will recall that your staff took the position that Liberty, as a PRP, could only settle with the agency by paying in excess of $1 million since it was, at this stage of the investigation/remedial process, to be offered no different status than the other PRPs who actually released hazardous substances. Although we were assured that this "per capita" allocation would

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change if we were to await the completion of the CERCLA process, we found this position to be unacceptable and with the prospective sale/lease of the site then falling through, this question went into a hiatus.

In light of the recent decision in *New York v. Lashins Arcade Co.*, 91 F.3d 353 (2d Cir. 1996) (a courtesy copy of which is transmitted herewith), in which the court interpreted the third-party defense of CERCLA, 42 U.S.C. § 9607(b)(3), we are asking that the agency reconsider its position and remove Liberty Property Trust and Rouse Associates from the list of potentially responsible parties ("PRPs") in the North Penn 7 Area (as well as reduce the PPA and PTA premiums previously suggested).

In *Lashins*, the court held that a current owner of property, who had no direct or indirect contractual relationship with either the party who caused the pollution or with the property owner at the time when the pollution occurred, may avoid liability under CERCLA's third-party defense. 91 F.3d at 359-361. The *Lashins* case involved a retail commercial property at which a dry cleaning business had operated from 1958 until 1971 and its operator had dumped the volatile organic compound PCE behind the store. After 1971, no other dry cleaning establishment ever operated there. *Id.* at 356. The property was sold to an individual who owned the property until her death in 1977, at which time her husband inherited it. *Id.* Lashins purchased the property from the husband.

Subsequently, the New York State Department of Environmental Conservation (the "NYSDEC") and the EPA investigated the property and confirmed that PCE was contaminating private wells near the site. The NYSDEC issued a Record of Decision setting forth a plan to abate and remedy the contamination. The state filed an action under CERCLA and state law against the current owner of the property, Lashins, and other co-defendants. Lashins and the State filed opposing motions for summary judgement on the issue of Lashins' liability under CERCLA as a current owner of the site. *Id.* at 359.

The district court granted Lashins' motion and the Second Circuit Court of Appeals upheld the decision, concluding that Lashins satisfied CERCLA's third-party defense in §9607(b)(3). In support of its decision, the court reasoned that the offending release was clearly caused by third parties, that Lashins had no direct or indirect contractual relationship with either of the third party dry cleaners who released the PCE, or with the owners of the site at the time the dry cleaners operated and when the pollution occurred, and that Lashins had done everything that could reasonably have been done to avoid or correct the problem. *Id.* at 359-360.

The *Lashins* case is persuasive authority in the instant matter. Like the site in *Lashins*, the 1180 Church Road Site (the "Site") was owned, operated and contaminated by a previous party. The Site was purchased and operated by a division of Philco in 1965, and on June 29, 1973, was sold to Zenith Electronics Corp. ("Zenith"). Zenith used the facility for a brief time before closing its operations at the Site in December 1974. After 1974, there has been no manufacturing activity at the Site.

In June 1983, Applied Geotechnical and Environmental Service Corp. ("AGES") was retained to conduct a lagoon sampling program at the Site. The extensive chemical analysis indicated that there was an absence of volatile organics in the samples. There were, however, certain other chemicals with elevated concentrations.

Several months later, the Site was transferred to Elan Associates ("Elan"). (Although Elan owned the Site as has Rouse Associates, it has not been named a PRP.) During its ownership, Elan, in conjunction with the Pennsylvania Department of Environmental Resources ("DER"), commenced investigatory and remediation work, including the installation of groundwater monitoring wells.

In late 1986, Rouse Associates performed due diligence on the Site and entered into a purchase agreement whereby Elan was specifically required to be exclusively responsible for cleaning up all contamination at the property so that there would be no impact on the environment. In addition, Rouse Associates had obtained an indemnity from Elan to protect it from any other liability arising from environmental contamination at the Site. Rouse Associates paid full value for the Site and did not receive any purchase price discount due to the environmental contamination. Elan performed a RCRA closure of the lagoons and DER approved the closure plan and the removal of the groundwater monitoring wells in 1989. EPA knew as early as 1986 which parties it considered to be PRPs for TCE contamination in the North Penn 7 Area, but failed to name Rouse Associates as a PRP for nine years. The Site was transferred by Rouse Associates to Liberty when Rouse Associates transferred its real estate holdings to Liberty in connection with Liberty's public offering several years ago.

In this matter, the offending release was clearly caused by previous owners. Rouse Associates and Liberty, like Lashins, had no direct or indirect contractual relationship with either of the previous operator/manufacturers who released contaminants, or with the owners of the site at the time the pollution occurred, and they have done everything that could reasonably have been done to avoid or correct the problem. Consequently, EPA should remove Rouse Associates and Liberty as PRPs.

As indicated to you by phone and earlier in this letter, Liberty now has a potential buyer for the Site and due to the time sensitivity of a sale, needs to resolve these two items as promptly as possible. Accordingly, I await your call.

Sincerely,

Joseph M. Manko
For MANKO, GOLD & KATCHER

JMM/phw/10103.001
Enclosure
cc: Mr. Willard G. Rouse, III (via first-class mail w/encl.)
Mr. John Gattuso (via first-class mail w/encl.)
Pamela H. Woldow, Esquire (w/o encl.)

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AN
ENVIRONMENTAL
LAW PRACTICE

January 6, 1997

Beth Termini, Esquire [3RC32]
United States Environmental
Protection Agency
Region III
841 Chestnut Building
Philadelphia, PA 19107

Re: 1180 Church Road

Dear Beth:

As I interpret your voice mail message of December 20, EPA is taking the position that (1) the dollar figures that it provided for a prospective purchaser or prospective tenant earlier this year would be applicable, subject to a possible small inflationary increase; (2) the Region is not following the Lashner decision in the 2nd Circuit finding current owners who had no relationship with the contaminator qualifying to be "innocent owners" under Section 101(35)(A) (even in this case where all remediation required by DEP was implemented by my clients); and (3) neither my client's previous significant remedial expenditures to satisfy DEP nor their innocence would be taken into account in reducing what EPA previously told us would be a per capita division of an estimated $6.6 million cleanup (i.e., a payment of $1.1 million by Liberty Property Trust) to obtain a covenant not to sue and contribution protection.

If this is so, then EPA is offering no change from its prior position, notwithstanding the fact that (1) EPA Region III has advised me it would not pursue Liberty Property Trust or the three Rouse affiliates if they became former owners under the CDMG rationale (not having caused or disturbed any contamination while in ownership) and (2) Liberty Property Trust's obligation to make a payment to effectuate settlement would be eliminated or reduced to a de minimis amount once the site is fully investigated and cleaned up (there

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being five or six "RPs" who would be looked to for all or substantially all of the reimbursement.)

Please advise me whether this is the agency's final decision in this regard; obviously if it would be helpful for me to raise this with someone at headquarters or elsewhere, I would want to do so.

If this is the agency's final position (with which I obviously strenuously disagree), then I will get back to you if, as and when Liberty Property Trust secures a prospective purchaser or tenant to negotiate a prospective purchaser or lease agreement and to confirm the continued applicability of CDMG on Liberty Property Trust after the sale or lease.

I am disappointed that all the positive Brownfield policies and statements that EPA is making to the public would appear to have had no effect on this particular matter.

Sincerely,

Joseph M. Manko
For MANKO, GOLD & KATCHER

JMM/dms

cc: Neil Wise, Esquire
John S. Gattuso, Vice President
Leslie Reid Price, Esquire

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