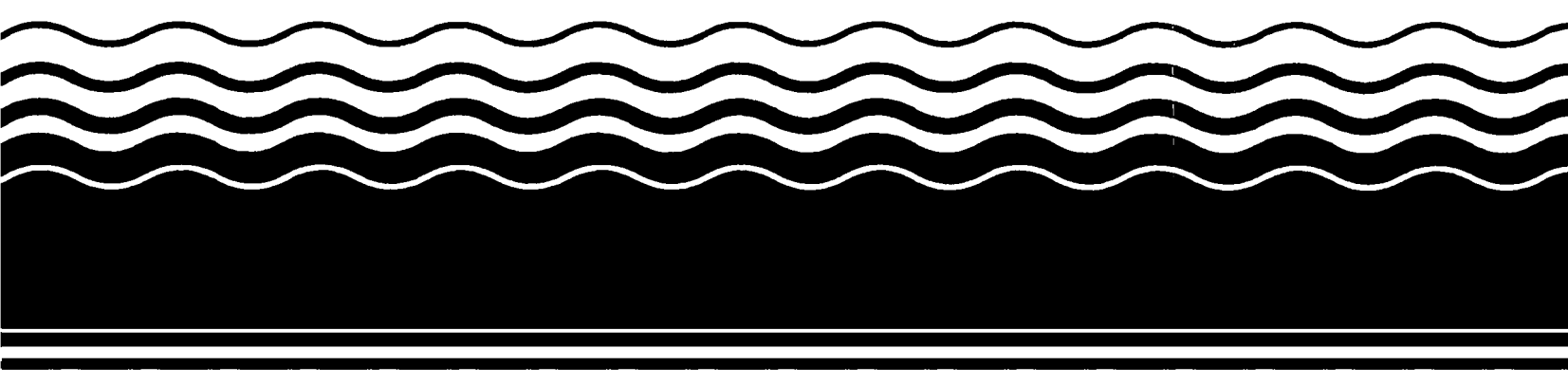


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January 1995

**EPA Superfund
Record of Decision:**

**Sussex County Landfill #5
Superfund Site, Laurel, DE
12/29/1994**



United States Environmental Protection Agency - Region III
Superfund Program

Record of Decision

Sussex County Landfill #5 Superfund Site
Laurel, Delaware

December 1994

**RECORD OF DECISION
SUSSEX COUNTY LANDFILL #5 SUPERFUND SITE**

DECLARATION

SITE NAME AND LOCATION

Sussex County Landfill #5 Superfund Site
Laurel, Delaware

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Sussex County Landfill #5 Superfund Site (Site) in Laurel, Delaware which was chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision document explains the factual and legal basis for selecting the remedy for this Site. The information supporting this remedial action decision is contained in the Administrative Record for this Site.


The Delaware Department of Natural Resources and Environmental Control (DNREC) has concurred with the selected remedy (see attached letter).

DESCRIPTION OF THE SELECTED REMEDY

The selected remedy for the Sussex County Landfill #5 Superfund Site is No Action. A review of conditions at the Site will be conducted at least every five years in accordance with Section 121(c) of CERCLA and 40 C.F.R. Section 300.430(f)(4)(ii) of the NCP, to verify that no unacceptable hazards are posed by conditions which may then exist at the Site.

DECLARATION STATEMENT

EPA has determined that no remedial action is necessary at the Site to ensure protection of human health and the environment. Therefore, the Site now qualifies for inclusion on the Construction Completion List.



Thomas C. Voltaggio, Director
Hazardous Waste Management Division
Region III

12/29/94
Date

DECISION SUMMARY

1.0 Site Name, Location and Description

The Sussex County Landfill #5 Superfund Site (Site), also known as the Laurel Landfill, is a 38-acre municipal landfill located off Route 494 and approximately 1 mile west of the Laurel Airport in Laurel, Delaware (see Figures 1 and 2). The landfill was in operation between May 1970 and August 1979 and during that time accepted municipal and industrial waste. Waste was disposed of at the landfill in trenches which were excavated into the native soil. At the start of the landfill operations, waste was disposed of in the extreme southern portion of the property with disposal progressing toward the northern property boundary. Waste placed in the trenches was covered by approximately two feet of soil obtained from soil stockpiles generated during the excavation of the trenches. After the landfill closed in 1979, a transfer station for municipal waste was operated under permit from Delaware Department of Natural Resources and Environmental Control (DNREC) on the northwest corner of the property. This transfer station closed in 1993.

The Site is bordered by property used predominantly for agricultural purposes. However, residential dwellings also exist along the roadways surrounding the landfill. There are approximately 5,000 people within a three-mile radius of the landfill and this entire population uses ground water as its drinking water supply. The principal stream draining the Site is Broad Creek, which lies approximately two miles north of the Site. A surface water drainage ditch (the Collins and Culver Ditch) lies approximately 500 feet from the northeast corner of the landfill and discharges into Broad Creek.

2.0 Site History and Enforcement Activities

During the 1980s, several investigations were conducted at the Site by Sussex County and DNREC to evaluate the potential impacts posed by contaminants of concern on ground water and surface water quality in the vicinity of the Site. As a result of these investigations, DNREC determined that ground water in the vicinity of the landfill had been impacted by contaminants coming from the landfill. Ground Water Management Zones (GMZs) were subsequently developed for the landfill and approved by DNREC. Three GMZs were established in the area surrounding the landfill; one of these restricted the installation of new ground water pumping wells and two of these restricted pumping rates of any new and existing wells. On August 8, 1988, DNREC and Sussex County signed a Memorandum of Understanding (MOU) to support the development and implementation of the GMZs.

In 1986, EPA concluded a site inspection which indicated that ground water in the area of the landfill had become contaminated with volatile organic compounds (VOCs) and metals coming from the landfill.

The Site was proposed for the National Priorities List (NPL) in June 1988 and was added to the list on October 4, 1989. On April 4, 1991, EPA and Sussex County entered into an Administrative Order on Consent which required Sussex County to conduct a Remedial Investigation (RI) and Feasibility Study (FS) for the Site.

During the RI, one offsite residential well was found to be contaminated with vinyl chloride just above the Maximum Contaminant Level (MCL). As a result, Sussex County provided this residence with bottled water. In February of 1993, Sussex County installed a water treatment system on the well which uses a carbon filter to remove VOCs as well as ultraviolet light to reduce bacteria levels.

In the Fall of 1993, Sussex County completed the RI which included the EPA-prepared Human Health and Ecological Risk Assessments. Based on the results of the RI and the Risk Assessments, EPA determined that a FS was not necessary to evaluate remedial alternatives.

3.0 Highlights of Community Participation

EPA released the RI Report and the Proposed Plan for the Site for public comment on August 1, 1994. In accordance with Section 117(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund) of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), EPA made these two documents available to the public in the Administrative Record maintained at the EPA Docket Room in Region III, and in the Laurel Public Library, Laurel, Delaware. The notice of availability of these two documents was published in the Wilmington News-Journal on August 1, 1994. A public comment period on the documents was held from August 1, 1994 to August 31, 1994. In addition, EPA held a public meeting on August 10, 1994. At this meeting representatives from EPA and DNREC answered questions about conditions at the Site and the remedial alternative under consideration. A response to the comments received during this period is included in the Responsiveness Summary, which is part of this ROD.

In addition, EPA distributed fact sheets to the community in July 1992 and July 1993 which provided background information and highlighted the progress of the RI field work. A public meeting was also held in the community in July 1992 to discuss the scope of the RI field work.

4.0 Scope and Role of the Response Action within Site Strategy

EPA has determined that no action is presently warranted at the Site under the Superfund Program based on: 1) the low levels of contamination detected in the ground water and 2) the risk levels which were calculated for the Site.

In addition, in accordance with the MOU and a State Notice of

Conciliation dated August 1994, Sussex County is required to install a water line which will serve residents downgradient of the landfill and within the GMZs with public water. The State Notice of Conciliation also provides for the following: 1) a ground water monitoring program; 2) maintenance of the landfill cover to ensure the integrity and effectiveness of the soil cover and to correct any effects of settling, subsidence and erosion; and 3) institutional controls which restrict well installation and/or operation in the GMZs. These actions should ensure that the Site continues to pose no unacceptable risks to human health in the future.

5.0 Summary of Site Characteristics

The Site is situated within the Atlantic Coastal Plain physiographic province. The Coastal Plain is underlain by a gently seaward-dipping wedge of unconsolidated and semiconsolidated sediments. The thickness of the Coastal Plain deposits ranges from 4,200 feet in the northern portion of Sussex County to approximately 7,000 feet in the southeastern part of the County.

The Site is directly underlain by unconsolidated deposits of the Beaverdam Formation. The Beaverdam Formation is the surficial geologic unit over much of south-central Sussex County and is composed predominantly of medium to coarse grained sand with occasional, localized zones of interbedded clay and sand. A near-surface interbedded clay and sand unit is present north of the landfill. In this area, the interbedded clay and sand unit is generally less than 10 feet thick. This near-surface clay and sand unit was also encountered at well locations in the landfill area. A clay layer with interbedded sands has been identified at one monitoring well location (LS-17) at a depth of 58 to 69 feet below ground surface. A similar stratum, though not nearly of the same thickness, was encountered at monitoring well LS-13. A map showing the monitoring well locations is attached (see Figure 3).

Ground water contained in the Beaverdam Formation is the uppermost ground water system at the Site. Depth to water measurements from on-site monitoring wells range from 6 to 18.5 feet below ground surface. Ground water flow within the Beaverdam Formation is generally in a northerly direction with an average lateral flow rate of approximately 255 feet/year. Monitoring well LS-5 is screened in a perched ground water zone that exists above the near-surface interbedded clay and sand unit.

Ground water levels and flow direction appear to be minimally affected by pumping of the Collins irrigation well which is located to the east of the Site. In addition, shallow ground water flow direction does not appear to be significantly altered by pumping of the Hastings irrigation well to the west of the Site. However, in the deeper hydraulic zone of the Beaverdam Formation, ground water flow direction during the use of the Hastings irrigation well was shifted from a

northerly direction to a northwesterly direction.

The ground water level data collected during the RI indicate that the Collins and Culver Ditch is not a discharge point for the ground water system monitored by the Site monitoring wells. However, perched water that may exist in the area of monitoring well LS-13 could be discharging to this ditch.

Ground water samples obtained from onsite and offsite monitoring wells, residential wells and two irrigation wells during the RI indicate that ground water is mainly contaminated with low levels (in the low parts per billion range) of VOCs (see Table 1 and Figure 3A). Volatile organic ground water contamination appears to extend downgradient of the landfill approximately 1,000 feet northward from the northwest corner of the landfill. Benzene and vinyl chloride were the only VOCs that have been detected at concentrations above the Maximum Contaminant Level (MCL). MCLs are standards which are promulgated under the Safe Drinking Water Act and are defined as the maximum permissible level of a contaminant in water which is delivered to any user of a public water system. Benzene was detected above the MCL of 5 parts per billion (ppb) at two monitoring wells, LD-01 (9 ppb) and LS-03 (24 ppb). Vinyl chloride was detected above the MCL of 2 ppb at one downgradient residential well, RW-02 (4 ppb).

Barium was detected in one onsite monitoring well (LD-01) at 4.8 parts per million (ppm) which exceeds the MCL of 2 ppm. In addition, ground water data indicated the presence of beryllium in low levels. However, because beryllium was sporadically detected in a number of upgradient wells and downgradient wells, beryllium is thought to be naturally occurring and not likely to be site-related.

The RI soil gas screening results suggest that minimal subsurface migration of landfill gases has occurred outside the boundaries of the landfill. In addition, the ambient air samples collected indicate minimal impact on ambient air quality resulting from the migration of gases through the landfill cover.

Surface water and sediment samples were collected from four individual ponded areas which existed on the landfill at the time of the RI (see Figure 4). An additional three sediment samples were collected from other areas on the landfill that appeared to be sediment depositional environments. The sediment analytical data generated from the RI showed no apparent impacts on sediment quality at the landfill. A few organic compounds were detected at low concentrations (less than 0.5 milligram/kilogram (mg/kg)). Metals analysis of the sediment samples showed concentrations comparable to background levels or within the typical range of concentrations found in natural soils. Surface water quality monitoring data collected from the infrequently ponded areas on the landfill surface did not indicate the presence of any site-related organic compounds. Inorganics were detected in the surface water. However, no comparative background data could be obtained in the Site vicinity to assess the significance of the inorganics in the

surface water.

The landfill soil cover was found to be composed predominantly of sand with minor amounts of clay and silt. The cover ranges in thickness from less than one foot to approximately three feet. A total of seven surficial soil samples were collected in alternating grids of the grid system established on the landfill (see Figure 5). Three additional background soil samples were collected from properties surrounding the landfill. The RI soils data show no apparent impact on surficial soils quality resulting from the landfill. No significant levels of organic compounds were detected in soil samples. Metals concentrations in these samples were comparable to background levels or within the typical range of concentrations found in natural soils.

According to the soil borings collected during the RI, the thickness of the solid waste ranges from 10 to 14 feet. The total volumetric estimate of solid waste at the landfill is estimated to be approximately 610,000 cubic yards. Although no significant settlement of the solid waste was calculated at the landfill based on the RI elevation data obtained from the landfill settlement points, subsequent visual inspection of the landfill by DNREC indicates that there are several areas which exhibit noticeable waste compaction and settlement, primarily concentrated in the northern sections of the landfill. Standing water was evident in some of these areas.

Seventy plant taxa were identified on or around the landfill. They are arranged in seven distinct communities: deciduous/coniferous woods, coniferous woods, canopied woods, open herbaceous uplands, panic grass wetlands, wool grass wetlands, and soft rush wetlands. Two small deciduous/coniferous woods are immediately adjacent to the east and south of the landfill. The southern corner of the landfill is occupied by a dense stand of young coniferous trees. The remainder of the landfill is occupied primarily by an open, herbaceous, upland community. A second distinct upland community with an open canopy of small trees occupies the eastern and northern edges of the landfill. Small isolated wetlands are present in the upland community. A single plant species listed on the Delaware Plants of Special Concern List, sandrock cress, also known as small flowered bitter cress (*Cardamine parviflora* var. *arenicola*), was found on the landfill.

Thirty species of birds, 10 species of mammals, 4 species of reptiles and amphibians, 5 taxa of benthic macroinvertebrates and earthworms were seen or otherwise confirmed as being on or around the landfill. Two bird species on the list of birds of special concern from the Delaware Natural Heritage Inventory were identified on or around the landfill: the common nighthawk (*Chordeiles minor*) and the Cooper's hawk (*Accipiter cooperii*). Potentially, 20 other species of birds, 3 other species of mammals and 3 other species of reptiles, all of special concern, may visit or inhabit the landfill.

Wetlands are scattered, isolated ponded areas of very small size were identified on the landfill surface from aerial photographs and site

inspection. These areas exhibit certain palustrine emergent classification characteristics.

6.0 Summary of Site Risks

6.1 Human Health Risk Assessment

As part of the RI/FS process, EPA prepared a Baseline Risk Assessment to characterize, in the absence of remedial action (i.e. the "no action" alternative), the current and potential threats to human health that may be posed by contaminants migrating into the media of concern. The risk assessment, conducted in accordance with EPA protocols, evaluated the constituents found in the various media at the Site and determined which are Site-related contaminants of concern to human health. The risk assessment also evaluated the likelihood of contact with these contaminants by humans. The concentrations of the contaminants, at the points of exposure, were then used to estimate the potential for adverse effects on human health.

The risk assessment process is composed of four steps: Identification of the Chemicals of Concern, the Exposure Assessment, the Toxicity Assessment, and Risk Characterization. Each of these steps is fully described in the Baseline Risk Assessment.

6.1.1. Chemicals of Concern

Chemical selection is based on toxicity, concentration, mobility, persistence, frequency of detection, likelihood of association with activities at the Site, laboratory contamination and background concentrations. The following constituents were selected as chemicals of concern in the media of concern (ground water) at the Site (also see Table 2):

Residential Wells

Benzene
Vinyl Chloride
1,2-Dichloropropane
1,4-Dichlorobenzene

Monitoring Wells

Benzene
Vinyl Chloride
1,2-Dichloropropane
1,4-Dichlorobenzene
Trichloroethylene

Beryllium, which was also reported at risk-based concentrations of concern, was not considered to be a site-related contaminant. Risk due to beryllium was assessed since it does contribute to the total risks of receptors at the Site. Other inorganic constituents were not determined to be of toxicological significance and were therefore not

determined to be contaminants of concern.

6.1.2. Exposure Assessment

The objective of the exposure assessment is to estimate the amount of each chemical of potential concern at the Site that is actually taken into the body (i.e. the intake level or dose). This is done by 1) evaluating potential pathways by which populations may be exposed under current or potential future land use conditions; 2) identifying concentrations of chemicals in environmental media at potential exposure points; and 3) deriving concentration estimates using available analytical data.

6.1.2.1. Ground water

Through screening and evaluation of the Site-media data, EPA determined that the only route of exposure of toxicological significance at the Site is through ground water. Contaminants from the landfill are thought to have migrated to the ground water. The residents are then potentially exposed to the contaminated ground water through the consumption of drinking water and household activities such as showering, bathing, etc. The means of this exposure are expected to occur in both current and future residential use scenarios.

Adult receptors may come into contact with contaminants of concern in the ground water through the ingestion of contaminated water and the inhalation of volatile compounds during showering. While adults may also come into dermal contact with contaminants during showering, screening indicates that the risk associated through this pathway is insignificant for adults. Children may come into contact with contaminants of concern in the ground water through the ingestion of contaminated ground water, the inhalation of volatile compounds during bathing and due to dermal contact with the contaminants during bathing.

Residential Well:

Residential well RW-2 was used as the point of residential exposure since it was the only residential well in which contaminants related to the Site were detected. EPA determined this exposure to be applicable to both current and future use scenarios for residents using ground water at Residential Well RW-2. In addition, exposure point concentrations are applicable in a future residential scenario if the contaminants detected in this well were to migrate to other residential wells in the vicinity of the Site.

The Reasonable Maximum Exposure (RME) which is defined as the 95th percent upper confidence limit value of the arithmetic mean is used as the exposure point concentration value for all appropriate risk calculations. In cases where the RME value exceeds the maximum reported concentration for a given contaminant, or in cases where the

data set is not sufficient for the calculation of an RME value, the maximum reported value is used for exposure point calculations. If a contaminant has been determined to be present in samples for a given medium, but is reported as a non-detect for a given sample, one half of the detection limit is used in RME calculations for that contaminant.

As stated above, EPA determined through risk-based screening that benzene, 1,4-dichlorobenzene, 1,2-dichloropropane, and vinyl chloride represent contaminants of concern at RW-2. The maximum concentrations of these selected contaminants of concern were used as exposure point concentrations since the 95th percent upper confidence limit values exceeded the maximum contaminant concentrations because of the limited data set. The exposure point concentration as detailed in the Baseline Risk Assessment for these contaminants are 4 ppb for benzene, 4 ppb for vinyl chloride, 2 ppb for 1,2-dichloropropane and 1 ppb for 1,4-dichlorobenzene. As previously indicated, beryllium is not considered to be Site-related, but is still evaluated in the risk assessment. The highest concentration of beryllium reported in a residential well at the Site was 2.9 ppb in RW-33. This concentration was used to represent the upper range of risk posed by beryllium to Site residents.

Monitoring Wells:

Monitoring well exposure point concentrations were used to assess the exposure of offsite receptors to ground water in a future use scenario. Monitoring wells LD-1, LS-7R and LS-16 represent the center of the organic contaminant plume that was considered to be the source of exposure to receptors if the contaminant plume were to migrate to some offsite point where this water may be used for residential purposes. It should be noted that this water is not currently being used by residents.

The exposure point concentrations for the monitoring well contaminants of concern as detailed in the Baseline Risk Assessment are 9 ppb for benzene, 1 ppb for 1,2-dichloropropane, 4 ppb for 1,4-dichlorobenzene, 2 ppb for trichloroethylene, and 2 ppb for vinyl chloride. These concentrations represent the maximum contaminant concentration since the 95th upper confidence limit values for this monitoring well group exceeded the maximum contaminant concentration values. The exposure point concentration for beryllium is 5.8 ppb which is the maximum value detected in any monitoring well (LS-09).

6.1.2.2. Soils

EPA determined through preliminary screening that soils are not a significant contributor to Site risk. The exposure of receptors to onsite soils is limited due to the vegetative cover on the landfill and the prohibition on building on the landfill in the future.

6.1.2.3. Surface Water

Because surface water consists of small areas of ponded rain water that evaporate or drain into the surface after a short period of time, surface water is not considered to be of concern for purposes of the Baseline Risk Assessment.

6.1.2.4. Sediments

Sediments are not thought to be of toxicological significance at the Site.

6.1.3. Toxicity Assessment

A toxicity evaluation of the chemicals present at the Site was conducted in order to identify relevant carcinogenic potency factors and chronic reference doses against which daily intake levels could be compared.

Slope factors (SFs) have been developed by EPA to estimate excess lifetime cancer risks associated with exposure to potentially carcinogenic contaminants of concern. SFs are multiplied by the estimated intake of a potential carcinogen to provide an upper-bound estimate of the excess lifetime cancer risk associated with exposure at that intake level. The term "upper bound" reflects the conservative estimate of the risk calculated from the SF. Use of this approach makes underestimation of the actual cancer risk highly unlikely. Slope factors are derived from the results of human epidemiological studies or chronic animal bioassays to which animal-to-human extrapolation and uncertainty factors have been applied (e.g., to account for the use of animal data to predict effects on humans). SFs for contaminants of potential concern at the Site which contribute to the carcinogenic risk are presented on Table 3.

Reference doses (RfDs) have been developed by EPA for indicating the potential for adverse health effects from exposure to contaminants of concern exhibiting noncarcinogenic effects. RfDs are estimates of lifetime daily exposure levels for humans, including sensitive individuals. Estimated intakes of contaminants of concern from environmental media (e.g. the amount of a contaminant of concern ingested from contaminated drinking water) can be compared to the RfD. RfDs are derived from human epidemiological studies or animal studies to which uncertainty factors have been applied. RfDs are also summarized for contaminants of potential concern at the Site on Table 3.

6.1.4. Risk Characterization

For carcinogens, risks are estimated as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to the carcinogen. Excess lifetime carcinogenic risk is calculated by multiplying the dose by the cancer SF. These risks are

probabilities that are generally expressed in scientific notation (i.e., 1.0×10^{-4} or 1.0 E-04). An excess lifetime carcinogenic risk of 1.0 E-06 indicates that an individual has a one in one million chance of developing cancer as a result of exposure to Site-related contaminants over a 70-year lifetime under the specific exposure conditions at the Site.

The potential for adverse noncarcinogenic health effects as a result of exposure to a single contaminant in a single medium is expressed as a hazard quotient (HQ) or the ratio of the estimated daily intake of a contaminant in a given medium to the contaminant's RfD. The hazard index (HI) is obtained by adding the HQs for all of the contaminants in a medium or by adding the HQs for all media to which a given population may reasonably be exposed. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media. HI values that are greater than 1.0 indicate that adverse health effects may be expected to occur.

Residential Well:

For adults, an increased carcinogenic risk of 9.24 E-05 was calculated for the ingestion of ground water containing the contaminants of concern. An increased carcinogenic risk of 2.60 E-05 was calculated for the inhalation of volatile chemicals during showering. The combined risks for these two residential pathways is therefore 1.18 E-04 which is marginally above the generally acceptable risk level of 1.0 E-04 . Risk estimates for children were calculated to be less than those estimates for adults.

The noncarcinogenic risk calculated for adult exposure to contaminants in the residential wells was due to the inhalation of volatile contaminants during showering. The Hazard Index value calculated was 1.23 E+00 . This Hazard Index value is marginally above EPA's generally acceptable risk level of 1.0 E+00 and indicates a potential for adverse health effects to occur under the residential use scenario. Benzene is the major contributor to the noncarcinogenic risk in this situation.

Adults consuming ground water containing the maximum concentration of naturally occurring beryllium reported in the residential wells near the Site may be exposed to an increased cancer risk of 1.46 E-04 . Noncarcinogenic risk due to beryllium is insignificant for all receptors since beryllium is not a significant contributor to the Hazard Index.

Although the calculations in the risk assessment assume that no remediation will occur, it should be noted that in 1993 the County placed a carbon filter on the one impacted residential well, RW-2 thereby eliminating any current exposure of site-related contaminants to this resident.

Monitoring Wells:

If the levels of contaminants identified in the monitoring well organic contaminant plume were to migrate to some point where receptors may come into contact with them and use ground water of this quality for residential purposes at some point in the future, the resultant increased cancer risk due to ingestion was calculated to be $4.98 \text{ E-}05$. The increased cancer risk associated with inhalation exposures for this ground water would be $1.68 \text{ E-}05$ for adults. The total combined increased cancer risk for adults would therefore be $6.66 \text{ E-}05$. The risk to children was calculated to be less because the exposure route of inhalation during bathing is less than that of the adult inhalation exposure route due to showering. If receptors were to consume ground water containing the concentration of naturally-occurring beryllium reported in Monitoring Well LS-09, an increased cancer risk of $2.93 \text{ E-}04$ for adult exposure is derived.

Noncarcinogenic impacts for adults as evaluated by the Hazard Index would be $9.13 \text{ E-}03$ for ingestion of this ground water and $2.67 \text{ E+}00$ for inhalation during showering. EPA calculated a combined Hazard Index for adult exposure of $2.68 \text{ E+}00$. Adverse noncarcinogenic effects may be expected to occur for adults using this water if exposure to this ground water were to occur in the future. Noncarcinogenic risk due to beryllium is insignificant for all receptors since beryllium is not a significant contributor to the Hazard Index.

6.2 Environmental Evaluation

EPA conducted an Ecological Risk Assessment (ERA) to evaluate any actual or potential ecological risk as a result of exposure to Site-related contaminants of concern. The ERA concluded that a negligible potential exists for impact to habitats onsite and in the surrounding area.

7.0 Description of the Selected Alternative- No Action

Under the Superfund Program, studies conducted at NPL sites characterize the nature and extent of contamination and determine the most feasible cleanup approaches. The studies at this Site have indicated that very low levels of contaminants of concern exist in the ground water which translate into correspondingly low risk levels. Based on these levels and in light of the activities being taken by the State of Delaware and Sussex County which are described below, EPA is not requiring any action be taken under the Superfund Program. Although EPA is not requiring any action at this time, there is the possibility that future releases or migration of contaminants from the Site could warrant additional actions. EPA has determined that it is appropriate to monitor this situation by conducting a review of conditions at the Site at least every five years to verify that the No Action remedy remains protective of human health and the environment

in accordance with Section 121(c) of CERCLA and 40 C.F.R. Section 300.430(f)(4)(ii) of the NCP.

As noted previously, Sussex County, under a Notice of Conciliation dated August 1994 with the State of Delaware, will be 1) installing a water line to residents downgradient of the landfill; 2) establishing a ground water monitoring program; 3) maintaining the integrity and effectiveness of the vegetated soil cover to correct any effects of settling, subsidence, and erosion and to prevent precipitation from eroding or otherwise damaging the cover which prevents direct contact with the waste material; and 4) restricting well installation and/or operation in the GMZs. The information generated as a result of the ground water monitoring program will be reviewed by DNREC and EPA to ensure that human health and the environment remain protected. This information will provide a basis for determining if additional response actions are required in the future.

8.0 Documentation of No Significant Change

EPA released the Proposed Plan for the Sussex County Landfill #5 Site for public comment on August 1, 1994. The public comment period closed on August 31, 1994. EPA reviewed all written comments submitted during the public comment period and all comments received during the public meeting which was held on August 10, 1994. A summary of the comments received during the public comment period and corresponding responses to these comments is included in the Responsiveness Summary section of this Record of Decision. Based on these comments, EPA has determined that no significant change to the proposed remedy, as originally identified in the Proposed Plan, was necessary.

TABLE 1
SUMMARY OF VOLATILE ORGANIC CONTAMINATION
DETECTED DURING THE RI IN THE GROUND WATER
SUSSEX COUNTY LANDFILL #5

CONTAMINANT	RANGE OF CONCENTRATIONS (ppb)	CONTAMINANT	RANGE OF CONCENTRATIONS (ppb)
Dichlorodifluoromethane	ND-8	1,1- Dichloroethane	ND-2
Vinyl Chloride	ND-4	Cis-1,2- dichloroethene	ND-4
Benzene	ND-24	Trichloroethylene	ND-1
1,2-Dichloropropane	ND-2*	Toluene	ND-2
Tetrachloroethene	ND-.6	Chlorobenzene	ND-5
Ethylbenzene	ND-17	1,3- and 1,4-Xylene	ND-130
1,2-Xylene	ND-71	Isopropylbenzene	ND-2
Bromobenzene	ND-1	N-propylbenzene	ND-.8
1,3,5-Trimethylbenzene	ND-3	1,2,4- Trimethylbenzene	ND-8
Sec-butylbenzene	ND-.4	1,4-Dichlorobenzene	ND-4
1,2-Dichlorobenzene	ND-1	4-Isopropyltoluene	ND-1
Naphthalene	ND-7*	Chloroethane	ND-4*
Trans-1,2- dichloroethene	ND-.07*	Trichlorofluoro- methane	ND-.2*
1,1,1-Trichloroethane	ND-.1*		

ND = Not Detected

* = Estimated value

Table 2
Contaminants of Concern
Sussex County Landfill #5

RESIDENTIAL WELL

Contaminant	Maximum Concentration ¹	MCL ²	MCLG ⁴
Benzene	4 ³	5	0
1,4-Dichlorobenzene	1	75	75
1,2-Dichloropropane	2	5	0
Vinyl Chloride	4	2	0

MONITORING WELLS

Contaminant	Maximum Concentration ¹	MCL ²	MCLG ⁴
Benzene	9 ³	5	0
1,4-Dichlorobenzene	4	75	75
1,2-Dichloropropane	1 ⁵	5	0
Vinyl Chloride	2 ⁵	2	0
Trichloroethylene	2 ⁵	5	0

- 1) Maximum concentration refers to the maximum concentration of the contaminant detected in certain wells as defined by the Baseline Risk Assessment.
- 2) Maximum Contaminant Level (MCL) stands for the maximum permissible level of a contaminant in water which is delivered to any user of a public water system as defined by the Safe Drinking Water Act.
- 3) All concentrations are reported in parts per billion (ppb).
- 4) Maximum Contaminant Level Goal (MCLG) stands for the non-enforceable concentration of a drinking water contaminant that is protective of adverse human health effects and allows an adequate margin of safety as defined by the Safe Drinking Water Act.
- 5) This value represents one-half of the detection limit at monitoring well LD-01.

TABLE 3
TOXICITY VALUES FOR CONTAMINANTS OF CONCERN
FROM THE BASELINE RISK ASSESSMENT (SEPTEMBER 1993)
SUSSEX COUNTY LANDFILL #5

Compound	Cancer Group ¹	Inhalation SF (mg/kg/d) ⁻¹	Oral SF (mg/kg/d) ⁻¹	Inhalation Rfd (mg/kg/d)	Oral Rfd (mg/kg/d)
Benzene	A	2.91E-02	2.9E-02	1.4286E-04	--
1,4-Dichlorobenzene	C	--	--	2.3E-01	0.1
1,2-Dichloropropane	B2	--	--	1.14E-03	--
Trichloroethylene	B2	6.0E-03	1.1E-2	--	6.0E-03
Vinyl Chloride	A	3.0E-01	1.9E+00	--	--

1) See Table 5 for Cancer Group definitions.

2) "--" indicates that no toxicological data exists.

TABLE 4
SUMMARY OF SITE RISKS
SUSSEX COUNTY LANDFILL #5

INCREASED LIFETIME CANCER RISK:

	Ingestion	Inhalation	Total
RESIDENTIAL WELL	9.25 E-05	2.60 E-05	1.18 E-04
MONITORING WELL	4.98 E-05	1.68 E-05	6.66 E-05

NONCARCINOGENIC HAZARD INDEX:

	Ingestion	Inhalation	Total
RESIDENTIAL WELL	3.02 E-04	1.23 E+00	1.23 E+00
MONITORING WELL	9.13 E-03	2.67 E+00	2.68 E+00

Risk values are calculated for adults coming in contact with ground water which is contaminated with the contaminants of concern (Table 2).

Table 5

EPA Categories for Potential Carcinogens

EPA Category	Group Description	Evidence
Group A	Human Carcinogen	Sufficient evidence from epidemiologic studies to support a causal association between exposure and cancer in humans
Group B1	Probable Human Carcinogen	Limited evidence in humans from epidemiologic studies
Group B2	Possible Human Carcinogen	Sufficient evidence in animals, inadequate evidence in humans
Group C	Possible Human Carcinogen	Limited evidence in animals and/or carcinogenic properties in short-term studies
Group D	Not Classified	Inadequate evidence in animals
Group E	No evidence	No evidence in at least two adequate animal tests or in both epidemiologic and animal studies

SUSSEX COUNTY LANDFILL #5 Site Location Map

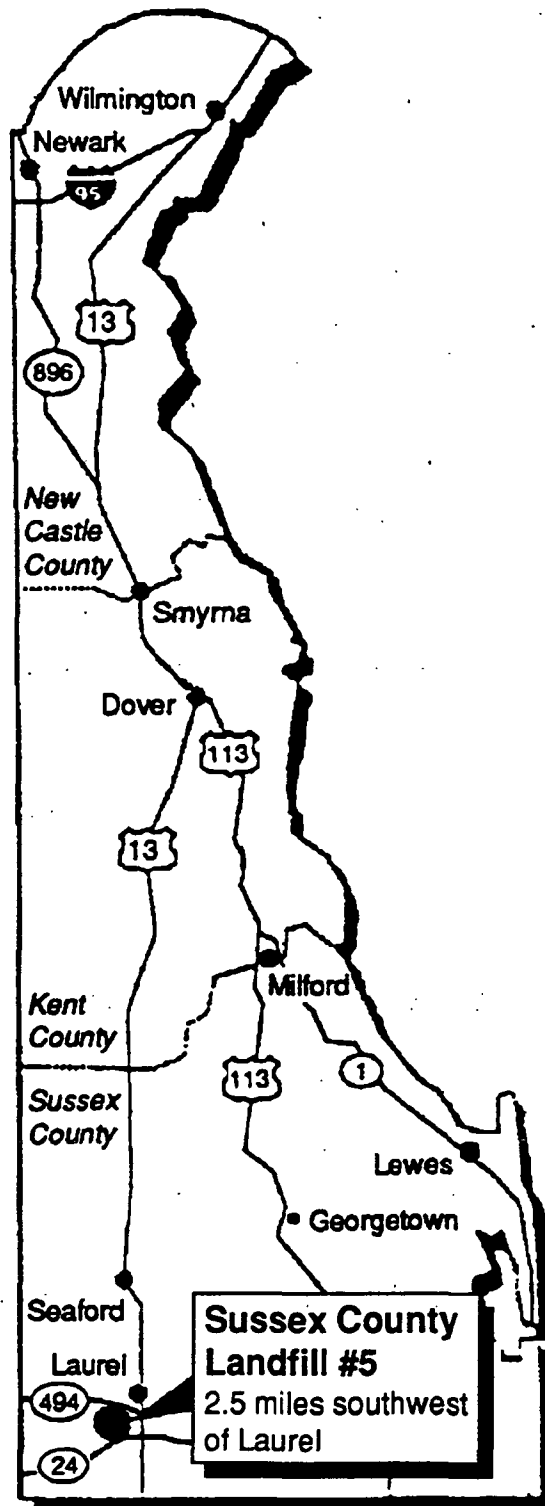


FIGURE 1

SUSSEX COUNTY LANDFILL #5

Site Layout Map

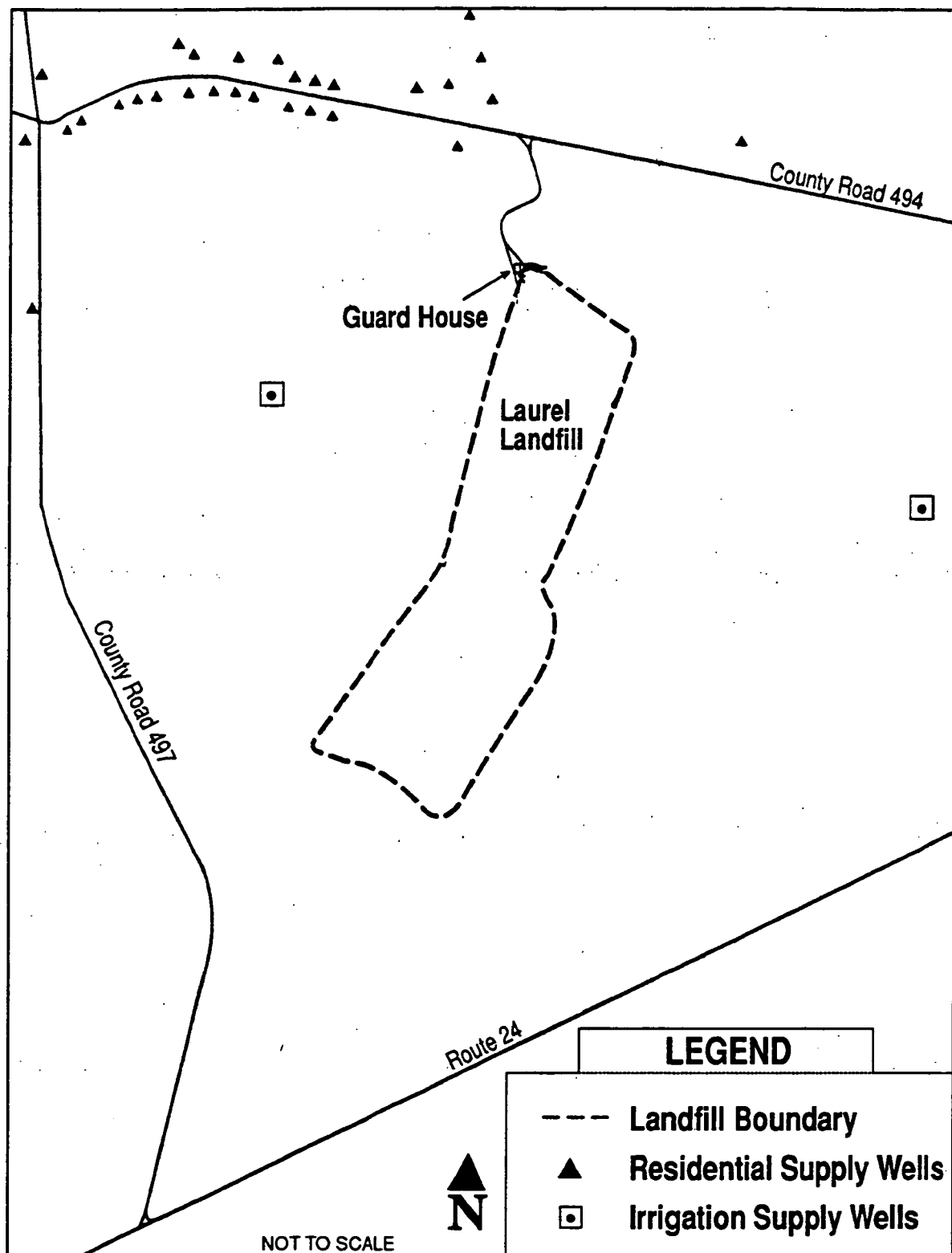


FIGURE 2

SUSSEX COUNTY LANDFILL #5

Ground Water Sampling Locations

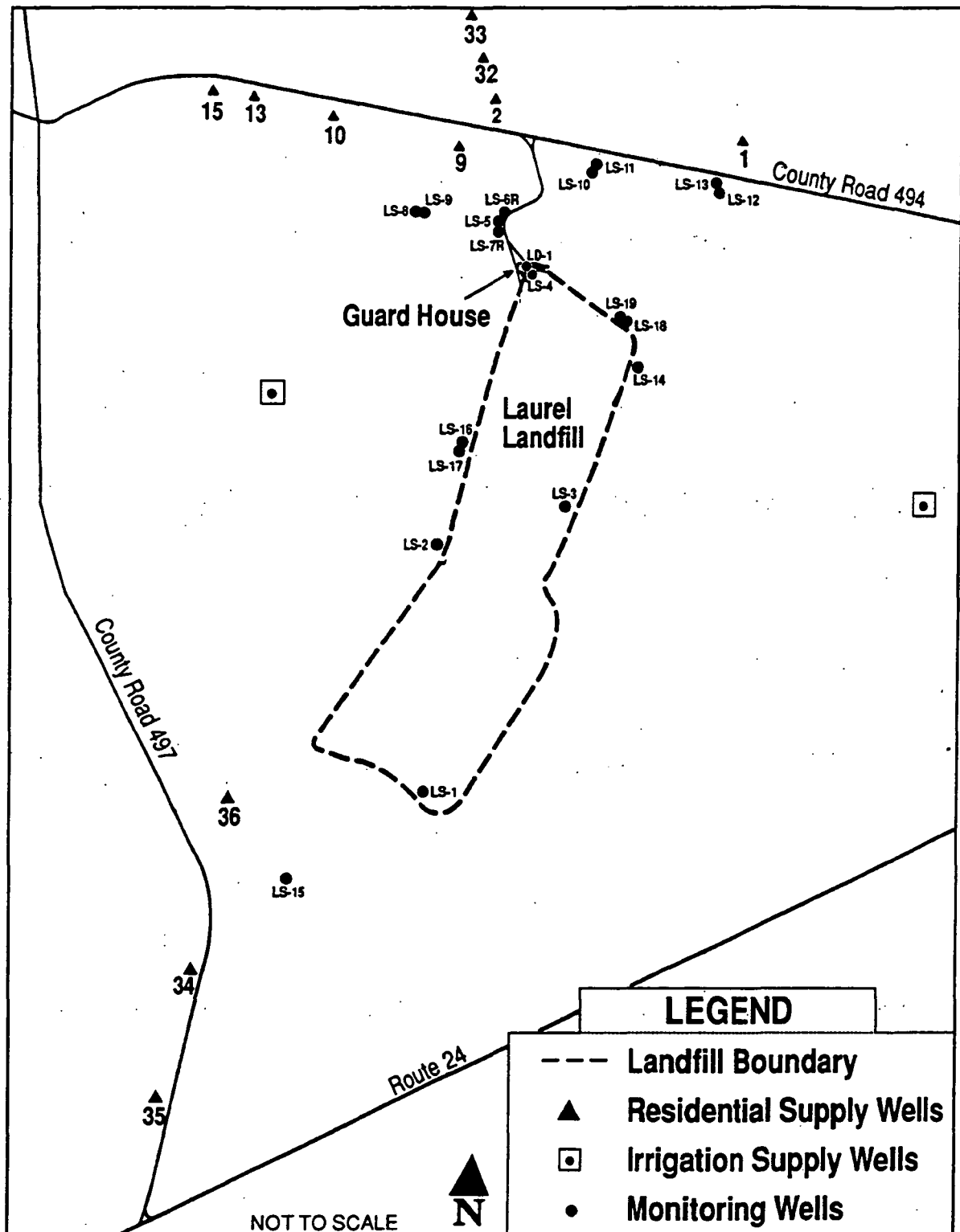
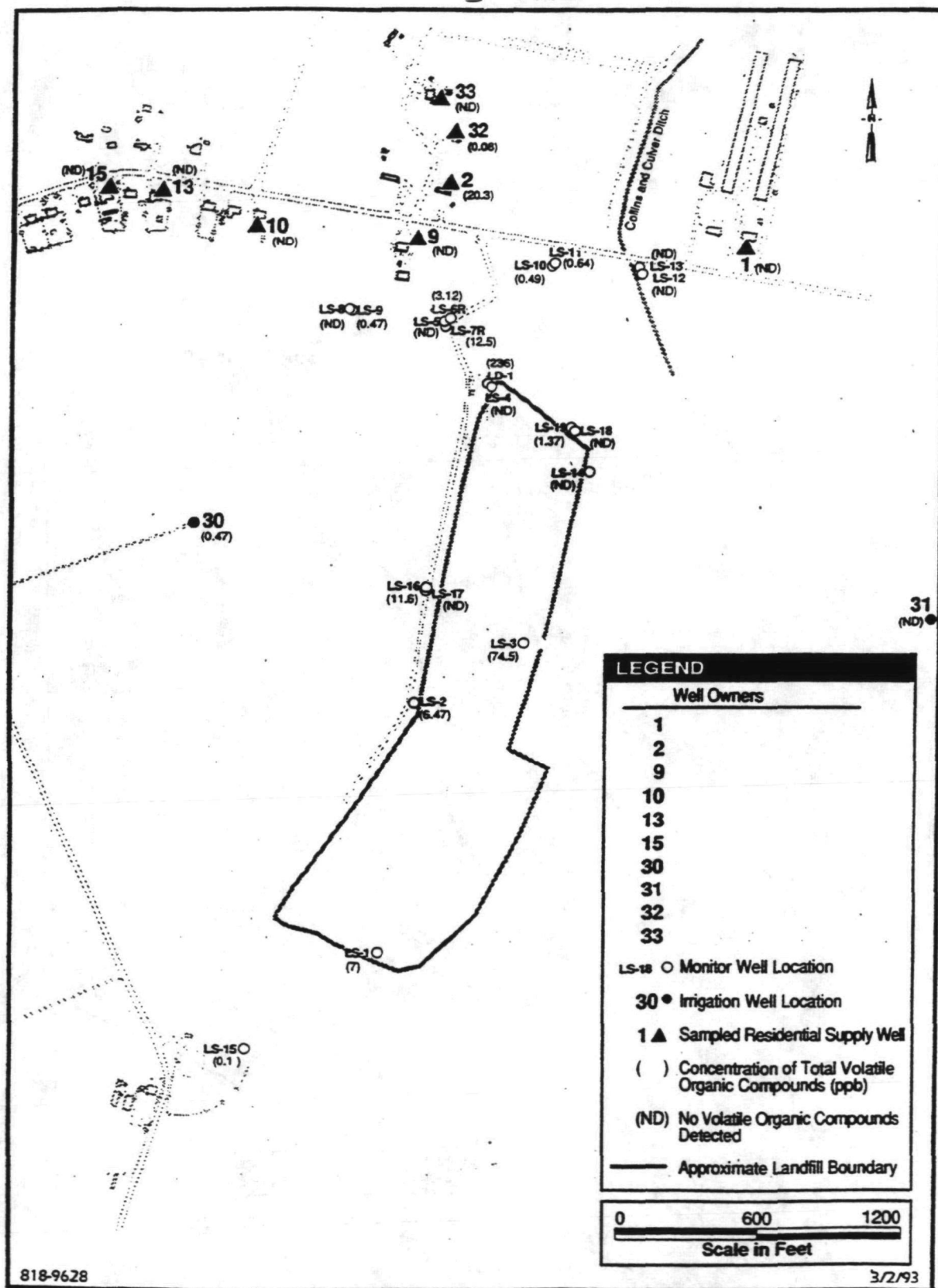
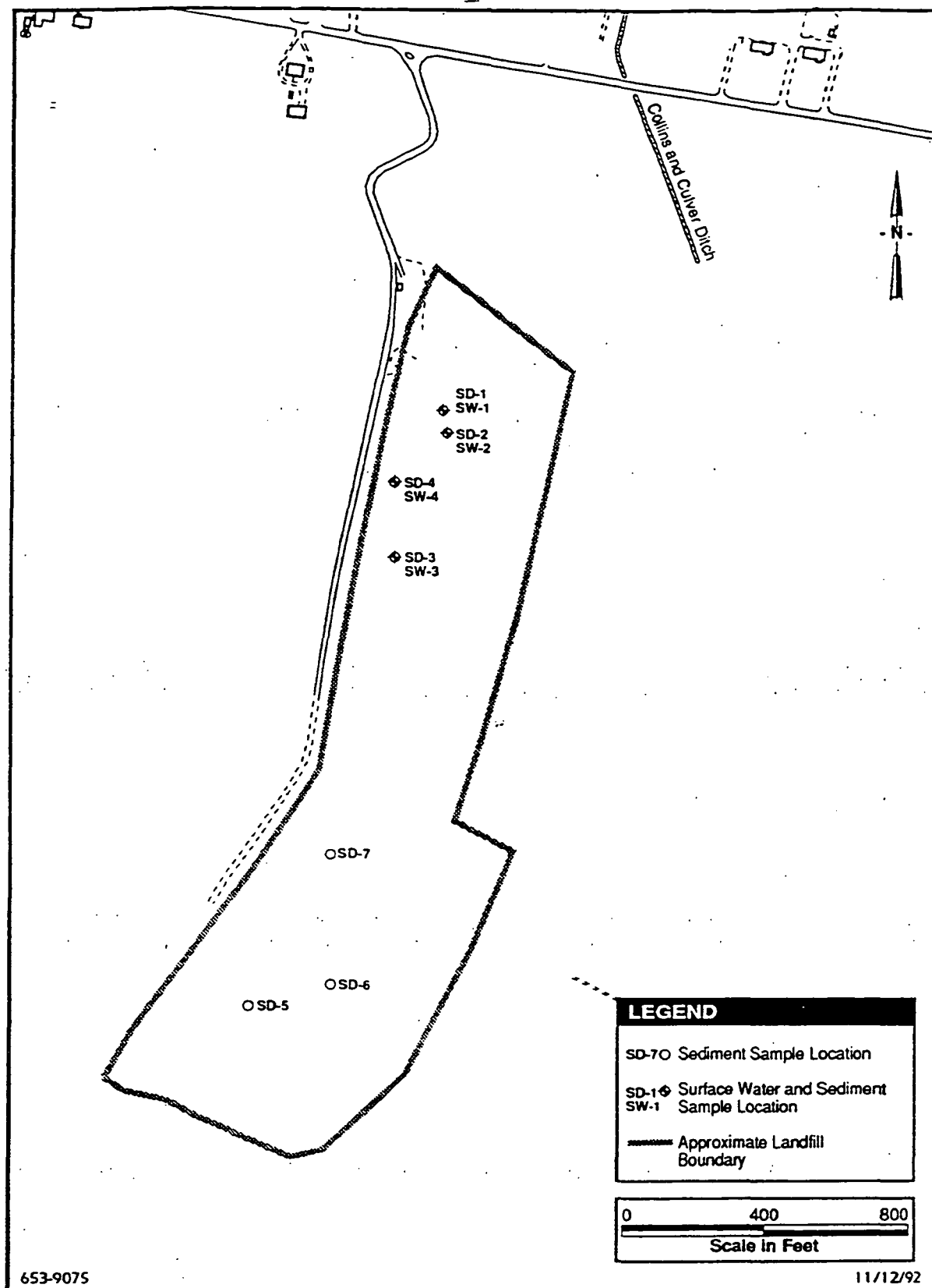


FIGURE 3



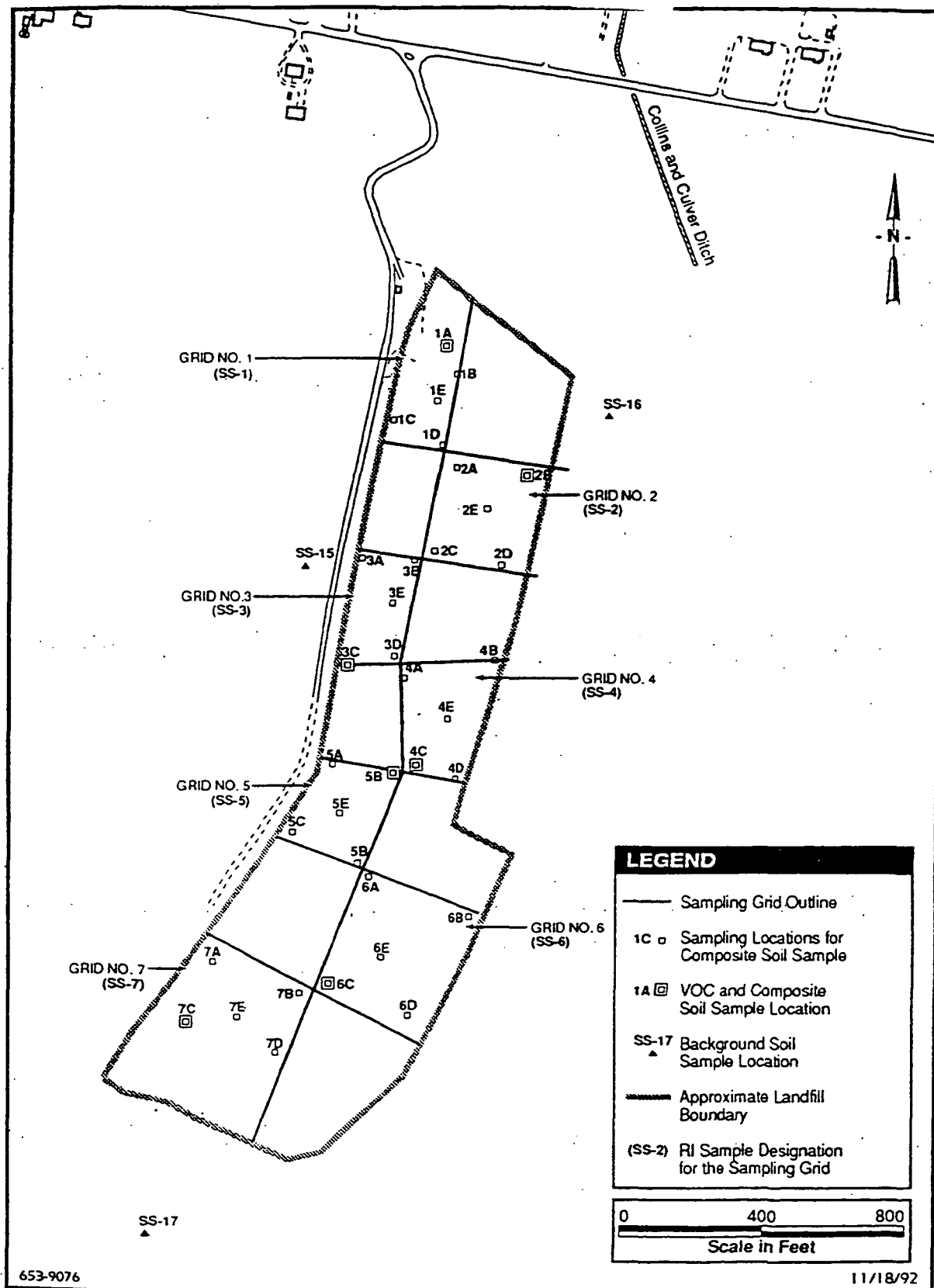
**CONCENTRATIONS OF TOTAL VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
LAUREL LANDFILL**

FIGURE 3A



**SURFACE WATER AND SEDIMENT SAMPLE LOCATIONS
LAUREL LANDFILL**

FIGURE 4



**SAMPLING GRID AND SOIL SAMPLE LOCATIONS
LAUREL LANDFILL**

FIGURE 5

RESPONSIVENESS SUMMARY

Sussex County Landfill #5 Site Laurel, Delaware

This Responsiveness Summary documents public comments received by the U.S. Environmental Protection Agency (EPA) during the public comment period on the Proposed Remedial Action Plan (Proposed Plan) for the Sussex County Landfill #5 Site (Site). It also provides EPA's responses to those comments. The Responsiveness Summary is organized as follows:

- A. Overview
- B. Summary of Citizens' Comments Received During the Public Meeting and Corresponding Responses
- C. Summary of Written Comments Received and Corresponding Responses

A. Overview

A public comment period was held from August 1, 1994 through August 31, 1994 to receive comments from the public on the Remedial Investigation (RI), the Proposed Remedial Action Plan, and the remedial alternative for the Sussex County Landfill #5 Site preferred by EPA and the Delaware Department of Natural Resources and Environmental Control (DNREC). A public meeting was held on August 10, 1994 at 7:00 pm in the Laurel Fire Company Hall in Laurel, Delaware. The public meeting was attended by EPA, DNREC, Sussex County officials, and local residents. The transcript of the public meeting is contained in the Administrative Record for the Site.

The purpose of the public meeting was to present and discuss the findings of the RI and to apprise the meeting participants of EPA's and DNREC's preferred remedial alternative. A summary of comments received during the meeting and written comments received throughout the public comment period are presented along with a response to each.

B. Summary of Citizens' Comments Received During the Public Meeting and Corresponding Responses

Comments made during the public meeting and corresponding responses are summarized below:

One citizen made the following comments #1 through #15.

Public Comment #1: A citizen commented that hazardous substances of unknown origin and quantity were deposited in the landfill (with the exception of the asbestos material reportedly disposed

of by DuPont). This citizen was concerned that EPA does not know how much hazardous waste has migrated from the Site or how long it has taken to migrate. The citizen made the analogy that the landfill is like a time bomb waiting to go off.

Response #1: EPA has reviewed the County's records regarding types and quantities of waste disposed of in the landfill. EPA agrees that it is not possible to ascertain the exact type and amount of wastes and their constituents. However, EPA has been able to determine through ground water monitoring data gathered during the RI and previous monitoring data gathered by the County over the last 10 years what contaminants are migrating from the landfill, at what levels and at approximately what rates. Low levels of volatile organic compounds (VOCs) which are typically associated with waste from municipal landfills were detected in the ground water downgradient of the Site. These contaminants were detected at concentrations in the low parts per billion (ppb) range and are likely migrating with ground water at an estimated rate of approximately 255 feet per year. Since the types and levels of contaminants have remained essentially constant over the last 10 years, EPA does not view the landfill as a time bomb waiting to go off. However, the ground water in the vicinity of the landfill will continue to be monitored. If levels and/or types of contaminants change such that there is a threat to human health or the environment, EPA will require appropriate measures to remediate the Site.

Public Comment #2: The citizen commented that the State and the County have claimed that they do not have any money to clean up the contamination and that the proposed water line does not cure the problem but instead passes the cost of cleanup to future generations.

Response #2: EPA disagrees. The No Action alternative was selected based on technical considerations including: 1) the low levels of contaminants detected at the Site and 2) the risk levels calculated for the Site and 3) in light of the provisions set forth in the State Notice of Conciliation. The preferred alternative was not selected based on cost considerations. In addition, EPA believes that the No Action remedy in light of the above stated considerations is protective of human health now and will be in the future and, therefore, does not pass the cost of cleanup to future generations.

Public Comment #3: The citizen commented that neither DNREC nor EPA has authority over existing wells which may be affected by hazardous contaminants in the future. This citizen also stated that it is the responsibility of the property owner to have wells periodically monitored for future contamination.

Response #3: EPA disagrees that it has no authority to require action be taken at residential wells which may become

contaminated in the future. As stated above, EPA does have the authority to require evaluation and implementation of future remedial actions which may be required in order to be protective of human health and the environment. With regard to the responsibility being that of the property owners to monitor their own wells for contamination, the ground water monitoring program which has been established in the State Notice of Conciliation requires the County to monitor any residential well within the public water service area not hooked up to the water line as well as certain monitoring wells for a period of no less than five years. After the five year period, EPA will determine whether future monitoring is required to ensure protectiveness of human health and the environment as part of the Five Year Review process. Therefore, EPA does not believe that it is necessary for residents to monitor their own wells for potential Site-related contamination.

Public Comment #4: The citizen asked what the rate and the direction of contaminant migration is.

Response #4: The contaminants likely migrate in a northerly direction with the ground water flow which has an estimated average lateral rate of approximately 0.7 feet per day or 255 feet per year.

Public Comment #5: The citizen asked what the actual outer limits of the contaminants are to date and whether the migration is being monitored at the outer limits and depths.

Response #5: As stated in the above response, contaminants likely migrate in a northerly direction with ground water. The northernmost well in which Site-related contamination was detected is a residential well which is approximately 1000 feet north of the landfill and is screened at a depth of approximately 70 to 75 feet. No contamination was detected in wells sampled north of this residential well and as such this well represents the outer limit of the contamination. A monitoring program will be used to track the movement of the ground water contamination through sampling of a series of monitoring and residential wells located downgradient of the landfill. These wells are drilled to different depths. In addition, some of the wells are located within the ground water contamination plume and some are located outside the plume. Therefore, the monitoring data will provide information on the ground water quality both vertically and laterally at the outer limits of the ground water contamination and will also be used to evaluate the trend of contaminant concentrations over time.

Public Comment #6: The citizen asked if the well restriction applied only to shallow wells, 50-feet-deep or less, or all wells regardless of their depth.

Response #6: According to DNREC, restrictions on well installation within the No Well Zone of the GMZs apply only to wells screened in the unconfined aquifer. Wells drilled into the deeper confined aquifer will be permitted as long as they are double-cased to ensure no contaminant migration into the deeper aquifer. Restrictions in GMZ "A" and "B" (only permitting wells pumped at less than 10 gpm and 100 gpm, respectively) also apply to wells in the unconfined aquifer only.

Public Comment #7: The citizen commented that no cost information with regard to the water line installation or any other potential clean-up action was made available for review.

Response #7: EPA agrees that no cost information was generated to compare potential clean up actions. Based on the findings of the Remedial Investigation (RI) and the Risk Assessment and in light of the State Notice of Conciliation, EPA determined that the No Action alternative was appropriate. In this situation, a Feasibility Study (FS) is not deemed necessary to compare alternatives based on technical merit or cost analysis.

Public Comment #8: The citizen asked what additional restrictions the State Notice of Conciliation imposes on the properties within the GMZs, such as restrictions on residential, agricultural or industrial development.

Response #8: The only property restrictions contained in the State Notice of Conciliation refer to the construction and use of the ground water wells. However, additional restrictions such as zoning may be considered by the County in the future should such be deemed necessary.

Public Comment #9: The citizen asked what the actual death causes/rates in the population in the vicinity of the Site are and how the death rate from cancer correlates with that for the rest of the State of Delaware.

Response #9: EPA has not performed a study of the causes/rates of death in the vicinity of the Site or tried to correlate death rates from cancer or any other cause with death rates for the rest of Delaware. The Remedial Investigation and the corresponding Risk Assessment are designed to assess what the potential adverse impacts (carcinogenic and noncarcinogenic) are to human health and the environment from Site-related contaminants.

Public Comment #10: This citizen commented that EPA proposes to remove this Site from the National Priorities List (NPL) thereby making funds unavailable for future cleanup actions.

Response #10: EPA responded that it is not proposing to remove the Site from the NPL at this time. EPA will be conducting at

least one Five Year Review prior to assessing whether or not to propose this Site for deletion from the NPL. In addition, as stated in 40 C.F.R. Section 300.425(d)(6) of the NCP, EPA has discretionary authority to take further action at a deleted Site if a review indicates that the remedy is no longer protective. 40 C.F.R. Section 300.425(e)(3) states that all releases deleted from the NPL are eligible for Fund-financed remedial actions should future conditions warrant such actions. Therefore, even if EPA deleted the Site from the NPL in the future, funds could still be made available for remedial actions should it become necessary. It should, however, be noted that EPA would first likely require Sussex County and/or any other responsible party to fund any necessary remedial action.

Public Comment #11: The citizen questioned the frequency of the ground water monitoring.

Response #11: DNREC responded that the ground water monitoring will continue quarterly for the first year and then semi-annually thereafter until the first Five Year Review at which time EPA will review the requirement for further monitoring.

Public Comment #12: The citizen expressed concern that contaminants may impact residential wells in between the periods of monitoring.

Response #12: EPA disagrees. There are several monitoring wells located downgradient and to the north of the landfill. These wells will serve as sentinel wells as they are located between the landfill and the downgradient residential wells. Since the contaminants move slowly in the ground water, it is anticipated that ground water contamination will be detected in the sentinel wells in advance of reaching any non-impacted residential well. In addition, the downgradient residential wells should not be utilized once the public water supply is available (scheduled for June 1995).

Public Comment #13: The citizen asked how long the County has been monitoring ground water in the vicinity of the landfill, and what the data have indicated regarding the levels of the contaminants in the ground water.

Response #13: The County responded that it has been monitoring the groundwater in the area since approximately 1980. The levels of contaminants have remained consistent since that time and are in the low parts per billion range.

Public Comment #14: The citizen asked why EPA is not investigating the source of the beryllium detected in the ground water. The citizen asked if the beryllium could be one of the underlying factors for the cancer rate in Delaware being the highest rate in the nation.

Response #14: The beryllium is not suspected to be a Site-related contaminant as it was sporadically detected in ground water samples from wells both upgradient and downgradient of the landfill. Beryllium is a constituent of some minerals, such as beryl, that can naturally occur in rocks and sand. When ground water comes into contact with the rocks and sand, naturally occurring beryllium can leach into the ground water.

With respect to the link between beryllium and the cancer rate in Delaware, EPA is not aware of any study investigating the role of beryllium in cancer in Delaware.

Public Comment #15: The citizen asked if the public water supply will be monitored for the chemicals which are regulated by the Safe Drinking Water Act, including the chemicals which were recently added in 1990. The citizen asked who will pay for this monitoring.

Response #15: The public water system will be expected to operate within the regulations of the Safe Drinking Water Act which includes monitoring for all regulated chemicals. The County responded that the utility company will be required to pay for the monitoring. Although monitoring may ultimately be passed down to the users of the system, the utility company is regulated by the Public Service Commission and therefore, must get approval on any increase in rates.

Public Comment #16: A citizen asked what the cost of the water line was to each resident. Several citizens expressed concern over their monthly water bill (i.e., the water usage rate) and the fact that maintenance fees may increase in the future. One citizen stated that he felt it would be a financial hardship.

Response #16: The County responded that it will pay the \$400.00 connection fee; however, the residents will be responsible for their monthly water bill which was estimated to be \$20.00. Regarding an increase in the water usage rates, the County again responded that the Public Service Commission regulates the rates which may be charged by the utility. The County also responded that there may be some cost savings to the residents who would no longer have the costs associated with 1) power usage for the pumps on the residential wells and 2) maintenance costs for the pumps. In addition, the County stated that there may be some cost savings associated with homeowner's insurance once the fire protection is installed. However, a cost analysis has not been performed to determine whether these factors would offset the \$20.00 monthly bill.

Public Comment #17: A resident thought that the local property values may increase with the installation of the water line.

Response #17: EPA has no response to this comment because it is

beyond EPA's expertise and regulatory authority.

Public Comment #18: Several citizens commented that the Site has negatively affected property values in the area.

Response #18: EPA does not disagree that the Site may have negatively impacted property values in the area.

Public Comment #19: A citizen asked about the source of benzene and whether benzene and the other VOCs were migrating from the Site.

Response #19: EPA responded that benzene and other VOCs most often come from petroleum-based wastes which can be attributable to everyday household products disposed of in municipal landfills. The concentration of contaminants found at this Site is in the low parts per billion (ppb) range. Specifically, the concentrations of contaminants of concern ranged from nondetect to a maximum concentration of 24 ppb for benzene, 4 ppb for vinyl chloride, 2 ppb for 1,2-dichloropropane, 4 ppb for 1,4-dichlorobenzene and 1 ppb for trichloroethylene.

Public Comment #20: A citizen asked at what depths contamination was detected. Another citizen asked if the monitoring wells are deeper than the landfill waste.

Response #20: The depths of monitoring wells which showed contamination range between 30 to 90 feet below ground surface. According to the County, the residential well in which contamination was detected is approximately 75 feet deep. The majority of the monitoring wells are deeper than the landfill waste as the depth of the waste is estimated to be 10 to 14 feet deep and the majority of monitoring wells range in depth from 30 to 90 feet below ground surface.

Public Comment #21: A citizen asked if levels of contaminants would decrease as they moved further away from the landfill.

Response #21: EPA responded that the levels of contaminants would be expected to decrease further away from the landfill due to dilution, volatilization and microbial degradation of the contaminants.

Public Comment #22: One citizen asked if the contaminants have migrated downward into deeper wells.

Response #22: The predominant direction of ground water flow in the aquifer beneath the Site is horizontal. However, in some of the monitoring wells, 70 feet deep or greater, contaminants were detected in low levels. Low level contamination in the deep monitoring wells may be the result of seasonal pumping of the agricultural wells. However, overall the highest concentration

of contaminants were detected in wells that are 50 feet deep or shallower.

Public Comment #23: A citizen asked what other remedial options could be considered at the Site.

Response #23: As indicated in response #7, EPA considers the No Action alternative to be protective of human health and the environment based on the conditions at the Site. Therefore, a Feasibility Study was not deemed necessary to evaluate other remedial alternatives. However, EPA did discuss during the public meeting that remedial alternatives which could be considered for a landfill site warranting such action include: a landfill cap, a slurry wall, or a pump and treat system for contaminated ground water.

Public Comment #24: One citizen asked if the risk assessment evaluated risk to healthy individuals only or to individuals of higher potential risk due to health problems.

Response #24: EPA responded that risk is calculated based on sensitive members of the population (i.e. elderly, children, persons with a sensitivity to a particular substance).

Public Comment #25: A citizen inquired when the water line is to be installed.

Response #25: The water line construction is currently scheduled to begin in December of 1994 and end in approximately June of 1995. The County responded that information regarding the construction of the water line will be mailed to potentially affected residents in the future.

Public Comment #26: Several citizens asked whether or not the existing residential wells would have to be abandoned. The citizens were concerned about having to pay for water which is used to water gardens or which is supplied to chicken houses.

Response #26: The County responded that it would require the residents to abandon their wells to eliminate potential risk. In addition, the County did not believe there were any chicken houses located in the water line service area.

Public Comment #27: One citizen disagreed and stated that there were two chicken houses on Route 494 in the area.

Response #27: It has been determined that two sets of chicken houses do exist in the area. However, both are located within GMZ "B", where wells with pumping rates of less than 100 gpm are permitted.

Public Comment #28: Several citizens asked when EPA would make a final decision and whether their comments would be considered in this decision.

Response #28: EPA responded that a final decision would not be made until after taking into consideration the comments received during the public comment period. EPA would then issue the Record of Decision (ROD) which would document the final decision which addresses public concerns in the attached Responsiveness Summary.

Public Comment #29: One citizen stated that it was unfair that the responses to the comments would be provided with the final decision. This process does not allow the citizens to rebut EPA's responses prior to the issuance of the ROD.

Response #29: Under the current Superfund remedy selection process, the Responsiveness Summary is issued as part of the ROD. The purpose of the public comment period and Responsiveness Summary is not to provide immediate responses to each concern that is raised but to take these concerns into consideration prior to making any final decision.

Public Comment #30: One citizen believed that the decision had already been made because the water line was already in progress.

Response #30: EPA responded that the proposal of the preferred No Action alternative and the installation of the water line are independent actions. The County had made an agreement with the State in 1988 to take certain steps at a number of landfills which included the installation of a water line at the Sussex County Landfill #5. The County is now moving forward to implement these steps which were made enforceable under the State Notice of Conciliation. The No Action remedy proposed by EPA was based on an evaluation of Site conditions in addition to the steps being taken under the State Notice of Conciliation. EPA's proposal to the community as described in the Proposed Plan is that no additional Federal action is necessary at the Site based on these factors.

Public Comment #31: One citizen inquired if other properties could receive public water.

Response #31: The County responded that their contract with the utility company included only service to residents within the GMZs. However, if the utility company wanted to extend the water line to other areas, it could do so.

Public Comment #32: One citizen asked if the properties in the GMZs could be subdivided once the water line was in place.

Response #32: The County responded that development would be

permitted. However, the County would comment on any development taking place adjacent to the landfill property to ensure protection of human health and the environment.

Public Comment #33: One citizen inquired about deed restrictions in the No Well Zone of the GMZs.

Response #33: The County responded that deed restrictions have already been placed on properties within all three GMZs (i.e. No Well Zone, Zones "A" and "B" which restrict pumping rates).

Public Comment #34: A citizen asked how the public water service area was determined. He asked why the GMZs were drawn as concentric circles versus a "V" extending northward from the landfill.

Response #34: The concentric circles which describe the GMZs were established in 1988 in a Memorandum of Understanding between the State and the County. If drawn today with the benefit of the RI data, the GMZs may have been drawn as a "V" extending north of the landfill versus the more conservatively drawn concentric circles which include properties to the south of the landfill. However, the public water service area logically extends to the residents downgradient or north of the landfill within the GMZs and to the two properties on either side adjacent to the landfill within the No Well Zone along property lines. EPA feels that the public water service area has been drawn appropriately and is protective of human health.

Public Comment #35: A citizen stated that he felt that there was a conflict of interest regarding a particular property which is directly adjacent to the landfill to the east. The citizen felt that this property was slated to receive public water because it was owned by a County Councilman. Another citizen agreed and felt that properties to the north of the GMZs, including his father's property, should receive public water.

Response #35: The property in question is located directly adjacent to the Site to the east. EPA and DNREC feel that it is appropriate to supply this property with a public water supply regardless of the ownership of the property because of its proximity to the landfill. In addition, this property was previously slated to receive an alternate water supply in 1988 under the State Memorandum of Understanding with the County (during which time the property owner was not a County Councilman). In response to supplying public water to properties north of the GMZs, at this time, the data do not indicate that these properties are in any danger of being impacted by Site-related contaminants. However, if the monitoring data show that Site-related contaminants are moving north outside the GMZs and are impacting human health and the environment, EPA will evaluate or require an evaluation of other remedial alternatives which may

include extending the water line to other properties.

Public Comment #36: One resident stated that he and his neighbor had obtained permits from the State to drill wells within the No Well Zone.

Response #36: Following discussions with representatives from the drilling company which reportedly installed the well in question, DNREC has determined that contrary to what was suggested during the meeting, a well application was not approved by DNREC for a new well within the No Well Zone. Apparently, a permit was never applied for by the drilling company as they were only performing a repair to an existing well. This action does not require a permit.

Public Comment #37: One citizen asked if a newly constructed home within the public water service area would need to be hooked up to the water line and who would pay for the hookup.

Response #37: The County responded that the new homeowner would be required to connect to the water line immediately and that the new homeowner would be required to pay for the hookup. The County stated that they would try, however, to work with individuals on a case-by-case basis if there was an unusual circumstance. The County cited the following example. If there was a 150-acre parcel and one resident proposed construction in the far northwest corner where Site-related contaminants were not likely to occur, the County might consider placement of an individual well there.

Public Comment #38: A citizen asked where the well for the system is to be located.

Response #38: The County responded that the location for the supply well had not yet been determined. The County has contacted several different homeowners in the area whose properties may be used for the supply well. A well test first needs to be conducted to determine the quantity and quality of water in each location.

Public Comment #39: One citizen commented that he thought that the community was lucky that the contamination was not worse. He felt that if the contamination was worse, EPA would mandate Sussex County to spend millions and millions of dollars to clean up the Site.

Response #39: EPA agrees that if the contamination were worse, remediation would have been required which could have been quite expensive.

Public Comment #40: One citizen commented that not very many people were present at the public meeting. He wondered if EPA

had received a lot of interest in the Site from the community. Another citizen stated that he thought one reason for the small turnout was due to a "a campaign put on by somebody, telling the television stations to announce that the residents of Sussex County can breathe a sigh of relief, everything is okay."

Response #40: EPA responded that 60 copies of the Proposed Remedial Action Plans were mailed to interested local citizens and community leaders. In addition, EPA placed a full-page advertisement in the Wilmington News Journal which announced the public meeting date, time and location. EPA is not aware of any publicity campaign to dissuade citizens from attending the public meeting. EPA did not participate in any television interviews.

C. Summary of Written Comments Received and Corresponding Responses

Copies of all written comments received are contained in the Administrative Record for the Site. The written comments and corresponding responses are summarized below:

A citizen of Laurel, Delaware submitted two letters dated August 2, 1994 and August 11, 1994 which were received during the public comment period. Many of the comments in these letters were raised by this citizen at the public meeting and as such they are detailed in Section B of this Responsiveness Summary. However, they are also summarized below for completeness.

Citizen Comment #1: "It is my understanding that the purpose of CERCLA and SARA is to clean up hazardous waste sites. This plan is only an immediate action plan which postpones the actual clean up. The "cancer" is still there." The citizen commented that the proposed plan did not eliminate the source of the carcinogens.

Response #1: The preferred No Action alternative was not proposed in an effort to postpone clean up at the Site. As stated in Response # 2, Section B, EPA feels that the No Action remedy in light of the Site conditions and the State Notice of Conciliation is protective of human health now and in the future. EPA agrees that the waste material and therefore the potential source of carcinogens is not being eliminated. However, EPA feels that it is not practical to remove the waste from the landfill nor is it necessary to ensure protection from Site-related contaminants.

Citizen Comment #2: Should the Site need to be cleaned up at a future date (i.e. should the contaminants migrate beyond the public water service area), will EPA Superfund monies be made available and is this documented in writing?

Response #2: See Response #10, Section B of the Responsiveness Summary.

Citizen Comment #3: What is the rate of migration of contaminants from the Site?

Response #3: See Response #4, Section B of the Responsiveness Summary.

Citizen Comment #4: What are the actual outer limits of the contaminants to date and is the migration of contaminants being monitored at the outer limits and depths?

Response #4: See Response #5, Section B of the Responsiveness Summary.

Citizen Comment #5: Does the well restriction apply to only shallow wells, 50-feet-deep or less, or to all wells regardless of how deep? Explain and correlate these restrictions to monitored data.

Response #5: See Response #6, Section B of the Responsiveness Summary for restrictions. These restrictions appropriately apply to the unconfined aquifer and are based on the ground water data obtained during the RI.

Citizen Comment #6: Several comments related to the absence of cost data which would be used to evaluate remedial alternatives including the water line. "What are the life cycle costs for this plan?" "Should the Site need to be cleaned up in 5 years, what is EPA's estimate of cost? Compare to 1994/5."

Response #6: See Response #7, Section B of the Responsiveness Summary.

Citizen Comment #7: "By what amount has the value of the affected properties been changed by the migration of contaminants?"

Response #7: EPA has not performed an analysis of property values in the area nor has EPA determined if the property values have been affected by the Site.

Citizen Comment #8: "Beyond water usage, what additional restrictions on the properties within the GMZ does this plan impose, e.g., residential, agricultural, industrial development?"

Response #8: See Response #8, Section B, of the Responsiveness Summary.

Citizen Comment #9: "The incidence of health hazards have been empirically calculated. What is the actual death cause correlation in the population of the vicinity of the Site, e.g., cancer?" "How does the death rate correlate with all of Delaware, e.g. cancer?"

Response #9: See Response #9, Section B, of the Responsiveness Summary.

Citizen Comment #10: The citizen indicated that he felt that the decision was previously made because the County was already in the process of implementing the water line.

Response #10: See Response #30, Section B, of the Responsiveness Summary.

Citizen Comment #11: "No references were made to any ecological studies down stream nor wetland exposure caused by the weeks long

flooding of hundreds of acres of land in the vicinity of the landfill in Jan '94."

Response #11: EPA did perform an Ecological Risk Assessment which indicated that little, if any, risk exists for adverse impacts to ecological habitats onsite or in the surrounding area from Site-related contaminants. EPA agrees that it did not perform an analysis of the impact of the January 1994 flooding which was referenced by the comment.

Citizen Comment #12: The citizen commented that future meetings should be videotaped, so as to more accurately capture the tone of the meeting. He suggested that a written transcript could be made from the videotape.

Response #12: EPA agrees that videotaping public meetings is one way to accurately capture the tone of the meeting. However, EPA feels that the written transcript of the public meeting and the Responsiveness Summary which are contained in the Administrative Record for the Site also capture the tone of the meeting and accurately represent the concerns of the citizens.

A letter was received on August 31, 1994 from a resident of Millsboro, Delaware. This letter was sent at the request of a resident of Laurel, Delaware. The comments contained in the letter are summarized below:

Citizen Comment 13: "...[a citizen] is very concerned about the plume of contaminated water which is leaching from the landfill heading towards him and his farm."

Response #13: It is EPA's understanding that the property in question lies outside the GMZs to the northwest. EPA does not believe that any Site-related contaminants are approaching this property. It is not anticipated that Site-related contaminants at levels of concern would reach a property which is located at that distance from the landfill. However, EPA and DNREC will continue to review the ground water monitoring data to ensure that Site-related contaminants at levels of concern are not extending beyond the limits of the GMZs.

Citizen Comment #14: This citizen commented that she has been trying for the last 19 years to get Sussex County and the State of Delaware to bring the six County dumps into compliance with the State and Federal laws.

Response #14: Regarding the Sussex County Landfill #5, DNREC will require Sussex County under the State Notice of Conciliation to take certain measures to close the landfill in accordance with the applicable 1974 Delaware Solid Waste Disposal Regulations to the extent practicable. According to DNREC, there are some circumstances which make compliance with these regulations

impracticable. For example, there exist quite diverse and mature flora and fauna communities on portions the landfill. It would not be reasonable to clear these areas to replace them with 2 feet of soil and seed in an effort to comply with the regulations. In these areas, the mature vegetation provides a more effective cover than would the 2 feet of soil and seed.

Citizen Comment #15: The letter states "...[a citizen] says that he has independently tested water samples from nearby wells which are more severely contaminated than the samples presented by the County. The County has also refused to allow him access to their most recent sampling results. This makes all of us very suspicious and uneasy."

Response #15: In response to the first issue, EPA has requested the analytical results from the samples which were reportedly taken by this citizen. He has indicated that he does not wish to release the results unless he can be reimbursed for the cost of the analytical services.

In response to the County's refusal to allow access to sampling results, all sampling results which were relied on for the selection of the proposed alternative are located in the Administrative Record for the Site which is available for inspection at the Laurel Public Library. EPA believes that the "County's most recent sampling results" which are referenced in this comment refer to monitoring which was performed by the County in August 1994. It is EPA's understanding that the analysis from this sampling event was not completed at the time of the request which was apparently made sometime prior to the date of this letter, August 31, 1994. EPA received the analytical results from this sampling event on September 29, 1994. These results were then placed in the Administrative Record for public inspection.

Citizen Comment #16: The commentor requested that EPA postpone the decision until the "questions arising from the County Administration's refusal to allow access to their test results [can] be answered."

Response #16: As indicated in the above comment, EPA has reviewed the results of the first round of quarterly monitoring which were received by the Agency on September 29, 1994. EPA's review of this monitoring data shows that the levels of contaminants have remained essentially the same as they were during the RI and during previous sampling conducted by the County. EPA, therefore, feels that the No Action alternative is still protective of human health and the environment.

A letter was received from a citizen of Laurel, Delaware dated August 31, 1994. His comments are summarized below:

Citizen Comment #17: Several comments were related to various cancer cases in residents within the GMZs.

Response #17: Without supporting studies and extensive epidemiologic data, it is difficult, if not impossible, to establish a causal relationship between exposure to an agent and an adverse health effect in a given population. However, because the cancer cases to which this comment refers occurred in several different organs in the body (brain, bladder, and kidney), it is unlikely that a single chemical or limited class of chemicals is responsible. In addition, Site-related contaminants have only been detected in one residential well, not in all the wells referenced in this comment.

Citizen Comment #18: The citizen commented that on Exhibit AR304559 of the Administrative Record, EPA had handwritten the comment "But Benzene incr." in the margin of this exhibit. This exhibit is a letter written from the project manager at Roy F. Weston, Inc. to the EPA project manager on behalf of Sussex County. The purpose of the letter was to forward to EPA monitoring results from monitoring well, LD-1.

Response #18: EPA agrees that the concentration of Benzene as indicated on Exhibit AR304559 shows an increase from ND (nondetect) in 1984 to 9.0 ppb in 1992. However, these levels are all in the low ppb range and are of the same order of magnitude. In addition, EPA used the highest level of 9 ppb in the risk calculations as documented in the Risk Assessment for the Site even though no one is currently being exposed to benzene. As stated previously, the ground water monitoring program, which is detailed in the State Notice of Conciliation, will continue to monitor Site-related contaminants in LD-1 as well as in other Site monitoring wells. If levels are found to have increased to a level which would warrant concern and/or it is determined that there are receptors being exposed to levels of concern, EPA will require an evaluation of alternate remedial actions.



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November 28, 1994

Mr. Peter H. Kostmayer (3RA00)
Regional Administrator
U.S. EPA, Region III
841 Chestnut Building
Philadelphia, PA 19107-4431

RE: Sussex County Landfill #5 (Laurel) Record of Decision, December 1994

Dear Mr. Kostmayer:

The Delaware Department of Natural Resources and Environmental Control (DNREC) has completed its review of the December, 1994 Record of Decision (ROD) document for the Sussex County Landfill #5 Superfund site. This correspondence represents DNREC's official concurrence with the ROD for the Laurel landfill. As you are aware, DNREC has been actively involved throughout the Superfund process as it pertains to this site, and has been an integral part in the development of the response actions which directly led to the selected remedy.

We believe that the actions already taken between the State and Sussex County will ensure protection of public health, welfare and the environment, and are pleased with your agreement in this matter. We therefore concur with the "No Action" remedy selection.

Sincerely,

A handwritten signature in cursive script, reading "Nicholas A. Di Pasquale".

Nicholas A. Di Pasquale
Director, Division of Air and Waste Management

NADP:KJR/mcb
KJR94164.SSX
DE-013 IIB9

cc: Christophe A.G. Tulou
N.V. Raman
Jamie H. Rutherford
Keith Robertson
Robert Kuehl
Michael Izzo

Delaware's good nature depends on you!