

Bruno PWS  
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Final Report  
Site Investigation

Bruno Coop Association, Bruno, Nebraska  
TDD #F-07-8809-030 PAN #FNE0136SA

Prepared by: E & E/FIT for Region VII EPA  
Task Leader: Anne Melia  
Superfund Contact: Cecilia Tapia  
May 8, 1989

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## SECTION 1: INTRODUCTION

The U.S. Environmental Protection Agency (EPA) tasked the Ecology and Environment, Inc., Field Investigation Team (E & E/FIT) under Technical Directive Document (TDD) #F-07-8809-030 (Appendix A) to perform a soil-gas survey to evaluate the source(s) of the Bruno Public Water Supply (PWS) contamination. Carbon tetrachloride, chloroform, and 1,2-dichloroethane have been detected in the PWS wells.

The soil-gas survey was to define the approximate geographic extent of the subsurface plume associated with the carbon tetrachloride identified in the two village wells at various times.

Previously, the exact source of the volatile organic contamination was unknown. Several potential sources had been identified and were investigated. It was the objective of this investigation then to determine the source(s) and approximate extent of the contamination in the Bruno PWS. Presently, the suspected potential source is owned by the Bruno COOP Association. Appendix B contains completed EPA site inspection form (2070-13).

## SECTION 2: SITE LOCATION AND DESCRIPTION

### 2.1 SITE LOCATION

The village of Bruno is located in the northeast section of Butler County, Nebraska, approximately 60 miles west of Omaha. The approximate legal location of the village is the SW 1/4, S 1/2. Sec. 10, T. 15 N., R. 4 E., Bruno, Nebraska Quadrangle (USGS 1968).

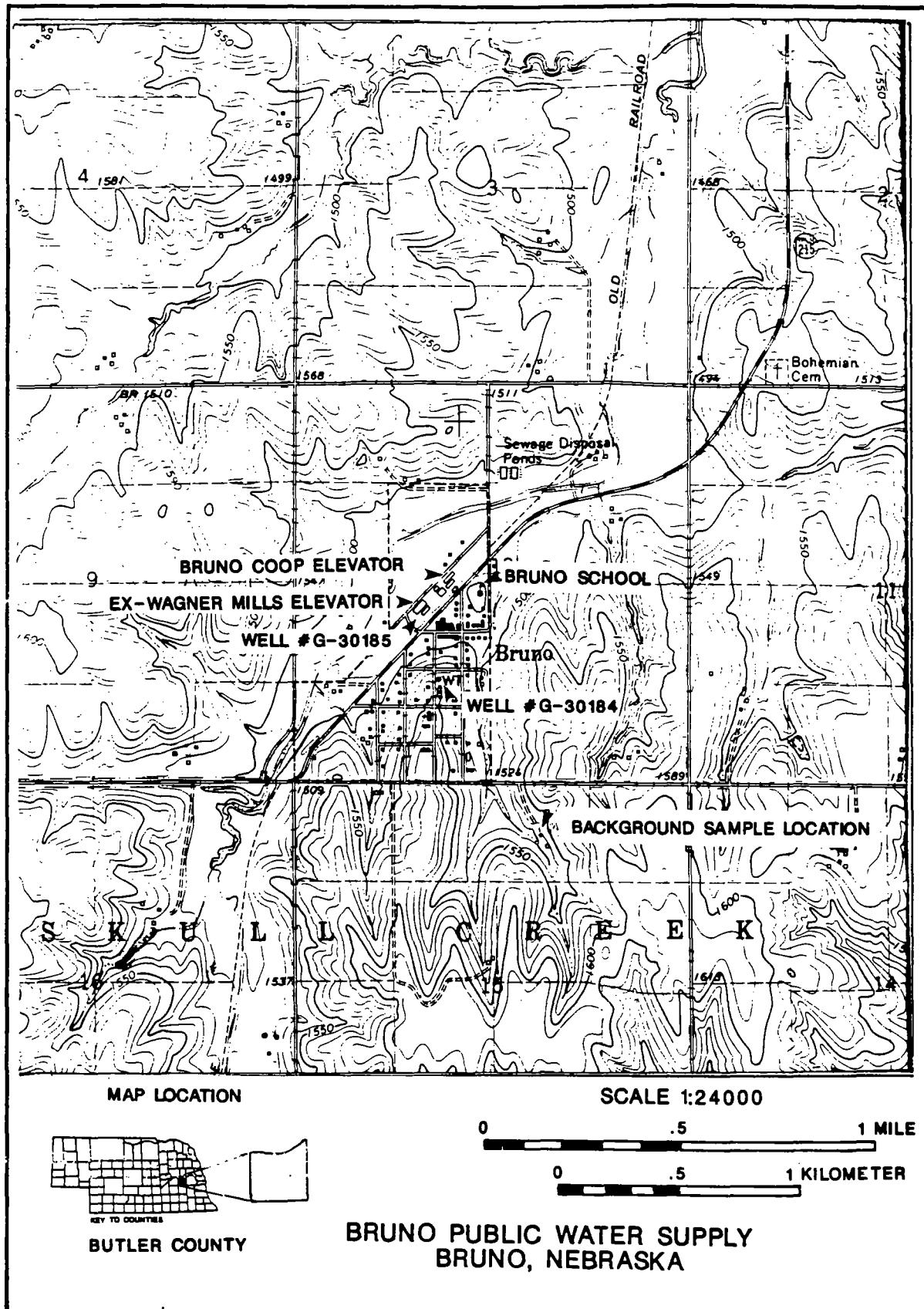
### 2.2 SITE DESCRIPTION

Bruno is a small farming community governed by a village council. The population of Bruno is 154. The public water supply system consists of two wells: one drilled in July 1965 (registration #G-30184) and the other completed in the mid-1930s (registration #G-30185). Both of Bruno's wells draw water from very fine sands deposited during the Pleistocene Era (E & E/FIT, April 1987).

The older well, #G-30185, is located adjacent to a grain storage shed presently owned by the Bruno COOP Association. Bruno's second well, #G-30184, is located approximately 50 feet north of the water tower. Both wells are currently used and are the sole producers of domestic water for the village of Bruno (E & E/FIT, April 1987). Figure 2-1 shows the locations of the wells and grain elevators with respect to the village and surrounding area.

### 2.3 SITE CONTACTS

Bob Langhorst is the contact for the Bruno COOP. He can be reached at (402) 543-2226. Mr. Wilford Kozisek is the contact for the village of Bruno. He can be reached at (402) 543-2325.



WASTE SITE TRACKING NO.: NE0090  
PREPARED BY A. MELIA

ECOLOGY & ENVIRONMENT FIT AUG. 1988  
SOURCE: USGS 7.5' BRUNO, NE. QUAD., 1968

FIGURE 2-1: SITE LOCATION MAP

## SECTION 3: SITE BACKGROUND

### 3.1 SITE HISTORY AND POTENTIALLY RESPONSIBLE PARTIES

In November 1984, the village of Bruno's water supply was initially identified by the Nebraska Department of Health (NDOH) as being contaminated with volatile organic chemicals (E & E/FIT, April 1987).

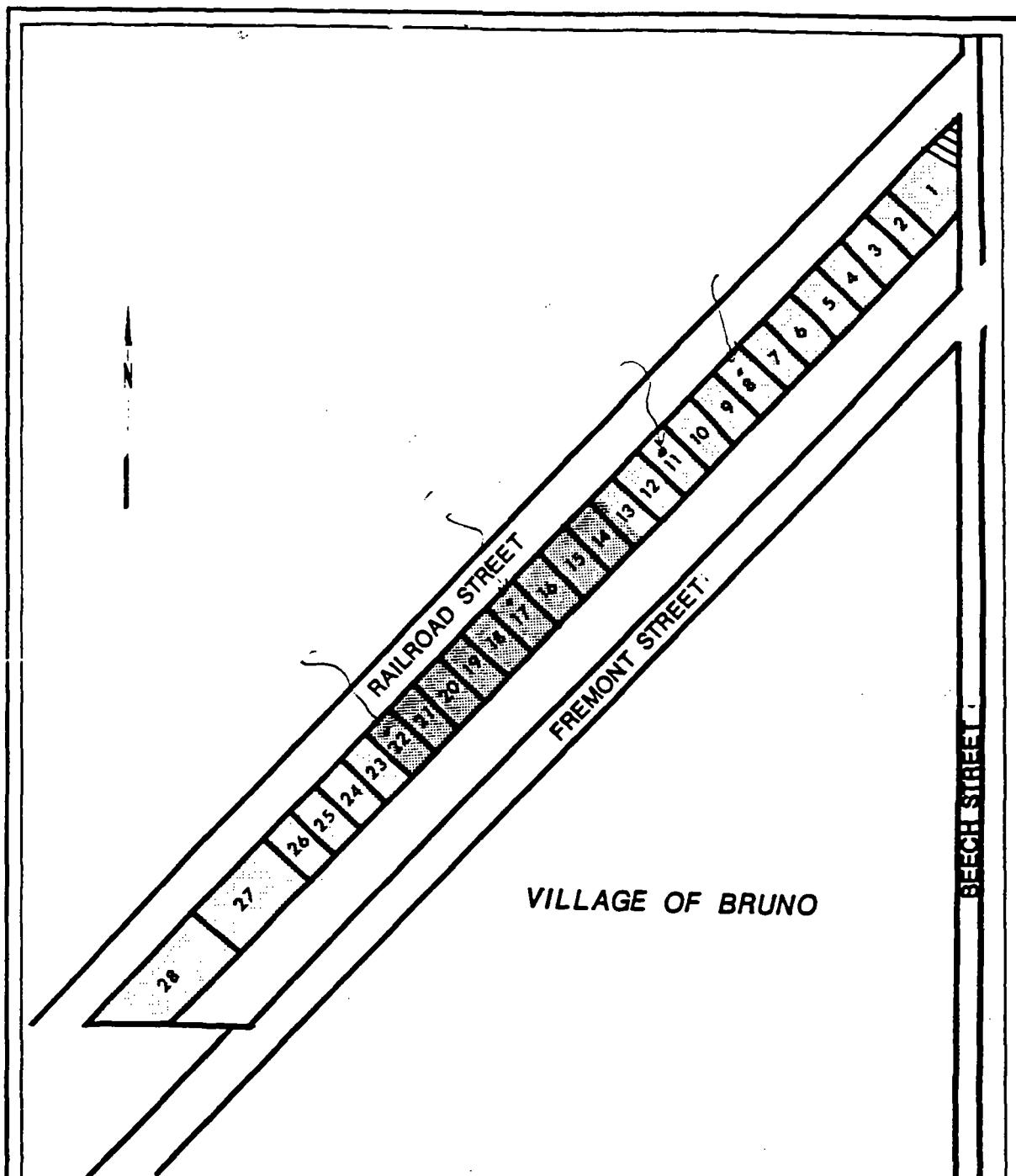
The village of Bruno was formerly the site of government grain storage bins from the late 1940s to the mid 1960s. All the bins but one were sold to local farmers and moved off site. The remaining corn crib bin was purchased by the Bruno COOP Association. Bruno currently has two functional grain bins. One is owned by the Bruno COOP Association and the other was recently purchased in June 1988 by the Bruno COOP from Wagner Mills in Schuyler, Nebraska (E & E/FIT April 1987, E & E/TAT May 1988).

The source or sources of Bruno's ground water contamination have not been identified, but the property now completely owned by the Bruno COOP Association has been the site of businesses which may have contributed to the public water supply contamination. The Norton Law Office of David City, Nebraska, conducted a title search over the last 50 years for property. The legal description of the property is warehouse lots 1 through 28 located in W 1/2 of Section 10, T. 15 N., R. 4 W. of the 6th prime meridian, in the village of Bruno, Butler County, Nebraska (Figure 3-1) (E & E/TAT May 1988).

#### 3.1.1 Chain of Ownership

The following is the chain of ownership for warehouse lots 1 through 28 located in Bruno. On July 17, 1964, the Chicago and Northwestern Railway Company (C & NW Railway Co.) sold lots 1 through 5, part of 6, lots 7 through 13, and lots 23 through 28 to the Bruno COOP Association (E & E/TAT May 1988).

**DRAFT**



BRUNO COOP ASSN.

BRUNO PUBLIC WATER SUPPLY  
BRUNO, NEBRASKA



WAGNER MILLS, INC. (PREVIOUS TO JUNE 1988)



VILLAGE OF BRUNO

SCALE: 1" - 300'

WASTE SITE TRACKING NO.: NE0090

ECOLOGY & ENVIRONMENT FIT AUG. 1988

PREPARED BY A. MELIA

FIGURE 3-1: PLAT MAP OF WAREHOUSE LOTS 1-28

- o On August 5, 1965, the C & NW Railway Company sold lots 14 through 22 to the R & W Grain Company (E & E/TAT May 1988).
- o On June 20, 1968, the Bruno COOP Association sold part of Lot 1 to the village of Bruno (E & E/TAT May 1988).
- o On December 31, 1968, R & W Grain Company sold lots 14 through 22 to Wagner Mills, Inc. (E & E/TAT May 1988).
- o On August 26, 1983, the Bruno COOP Association sold part of lot 13 to Wagner Mills, Inc. (E & E/TAT May 1988).
- o In June 1988 the Bruno COOP Association negotiated to purchase the Wagner Mills, Inc. property (Langhorst, 1988).
- o The Bruno COOP association now owns part of warehouse lot 1, all of warehouse lots 2 through 5, part of lot 6, and all of lots 7 through 28 in the village of Bruno (E & E/TAT May 1988, Langhorst August 26, 1988).

### 3.1.2 Leases

All or part of the property originally owned by the C & NW Railway Company was leased by the Agriculture Administration Act (AAA), a division of the United States Department of Agriculture (USDA), from 1947 to the mid 1960s for use as a grain storage facility. No record of the lease could be located, but a copy of the assignment of the lease to the Bruno COOP Association upon their purchase of the C&NW property in 1964 was obtained (E & E/TAT May 1988).

On February 6, 1969, Wagner Mills, Inc. leased lots 14 through 22 to the Agrico Chemical Company for a period of five years extending from February 1, 1969 to January 31, 1974 (E & E/TAT May 1988).

On March 24, 1980, the Bruno COOP Association leased part of warehouse lot 13 to Wagner Mills, Inc. for a period of five years extending from August 17, 1977 to August 16, 1982 (E & E/TAT May 1988).

## 3.2 DESCRIPTION OF POTENTIALLY RESPONSIBLE PARTIES

1. Bruno COOP Association - The Bruno COOP Association has been identified as a potential source as the owner of a facility that used fumigants that may have contained the contaminants

carbon tetrachloride, chloroform, and 1,2-DCA now occurring in the local ground water. The Bruno COOP Association was originally named Bruno Farmers' Grain and Livestock Company; on July 29, 1949, the company was renamed the Bruno Cooperative Association (E & E/TAT May 1988).

2. Wagner Mills, Inc. - Wagner Mills has been identified as a potential source as owner of a facility that used fumigants that may have contained carbon tetrachloride, chloroform, and 1,2-DCA. Wagner Mills, Inc. started business in Schuyler, Nebraska in 1913. The company was incorporated in Nebraska on June 13, 1973. In 1982, Wagner Mills became a wholly owned subsidiary of K.W. Corporation, a newly formed holding company (E & E/TAT May 1988).
3. R & W Grain Company - R & W Grain Company was a previous owner of the property owned by Wagner Mills, Inc. and recently purchased by the Bruno COOP. R & W Grain Company operated a grain storage facility which used grain fumigants that may have contained carbon tetrachloride, chloroform, and 1,2-DCA. Both owners of the company are now deceased and the company has been dissolved (E & E/TAT May 1988).
4. Agrico Chemical Company - The Agrico Chemical Company has been identified as a potential source as a generator of the contaminants now detected in the Bruno Public Water Supply. Agrico leased property owned by Wagner Mills from February 1, 1969 to January 31, 1974. Agrico manufactures phosphatic and nitrogenous fertilizers. The company leased the property from Wagner Mills to run a facility for the storage, blending, sale, and distribution of anhydrous ammonia and related products. Agrico was acquired by the Freeport-McMoran Resources Partners on March 12, 1987 (E & E/TAT May 1988).

5. United States Department of Agriculture (USDA) - The USDA has also been identified as a potential source as an operator of a Federal Grain Storage Facility. The Agriculture Administration Act (AAA) leased property from the C&NW Railway Company from 1947 to the mid 1960s. The AAA no longer exists and has been replaced within the USDA by the Agriculture Stabilization and Conservation Service (E & E/TAT May 1988).

According to Dave Hanis, who worked for the government facility from 1960 to the mid 1960s, 80/20 liquid grain fumigant containing carbon tetrachloride and 1,2-DCA was regularly used. The fumigant was also used to asphyxiate rodents by pouring it directly into animal burrows (E & E/TAT May 1988).

6. Chicago and Northwestern Transportation Company - This company has been identified as a potentially responsible party (PRP) as owner of the property during the period when the government operated their grain facility. The Chicago and Northwestern Transportation Company was once known as the C & NW Railway Company. Currently it is a subsidiary of C & NW Corporation, a railroad holding company (E & E/TAT May 1988).

Address, owner, and operator information for all Potentially Responsible Parties (PRPs) is given in Appendix C.

### 3.3 PREVIOUS INVESTIGATIONS

In November 1984 the NDOH identified the Bruno Public Water Supply (Bruno PWS) as being contaminated with carbon tetrachloride, chloroform, and 1,2-DCA. An unknown municipal well was sampled by the local well operator, and the sample was analyzed by the NDOH. The results showed 40.1 ppb carbon tetrachloride, 4.2 ppb chloroform, and 7.3 ppb 1,2-DCA (E & E/FIT April 1987).

Samples collected in December 1985, by the local well operator and analyzed by the NDOH, showed 4.5 ppb carbon tetrachloride in one well

and 3.9 ppb in another well. No other contaminants were detected, and the well identities are unknown (E & E/FIT April 1987).

In January 1986, the NDOH found 38.3 ppb carbon tetrachloride, 4.2 ppb chloroform, and 8.1 ppb 1,2-DCA in well #G-30185. Well #G-30184 contained 29 ppb carbon tetrachloride, 4.1 ppb chloroform, and 5.9 ppb 1,2-DCA (E & E/FIT April 1987).

E & E/FIT sampled the wells in March 1987 and again in September 1987. The March 1987 results showed 5.0 ppb carbon tetrachloride and qualitative results of 4.0 ppb of chloroform in well #G-30185 and 2.0 ppb carbon tetrachloride in well #G-30184 (E & E/FIT April 1987). The September 1987 sampling showed only a qualitative result of 3.0 ppb carbon tetrachloride in well #G-30185 and nothing in well #G-30184. A sample and a duplicate collected at the Bruno Public School showed quantitative results of 11.0 ppb and 8.0 ppb, respectively (E & E/FIT 1987).

The EPA sampled several Bruno wells in February 1988. Well #G-30184 contained 13 ppb carbon tetrachloride, 93.0 ppb chloroform, and 5.3 ppb 1,2-DCA. Distribution samples were also collected at the Yindrick Residence, the Post Office, and at the Bruno Public School. All past sampling results are summarized in Table 3-1.

TABLE 3-1  
Sampling Summary  
Bruno Public Water Supply

Date	Sampler	Wells/ Distribution	Contaminants Detected in ppb		
			Sample	CCl <sub>4</sub>	CHCl <sub>3</sub>
Nov. 1984	Well operator/ NDOH	Unknown		40.1	4.2
					7.3
Dec. 1985	Well operator/ NDOH	Unknown Unknown		4.5 3.9	----
					----
Jan. 1986	NDOH	#G-30185 #G-30184		38.3 39	4.2 4.1
					8.1 5.9
April 1987	E & E/FIT	#G-30185 #G-30184 Tap Background (Clarence Votava Residence)		5.0 2.0M ---- ----	4.0M ---- ---- ----
Sept. 1987	E & E/FIT	#G-30185 #G-30184 Bruno Public School Bruno Public School (Duplicate)		3.0M ---- 11.0 8.0	---- ---- ---- ----
Feb. 1988	EPA	#G-30185 #G-30184 Yindrick Residence Post Office Bruno Public School Bruno Public School (Duplicate)		38 13 28 28 ---- 29	4.6M 93 3.9M 4.0M ---- 3.6M
					16 5.3 11 13 ---- 13

M - Compound was qualitatively identified, however quantitation value is less than contract required detection limits.

MCL

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## SECTION 4: WASTE INFORMATION

### 4.1 WASTE TYPE

Carbon tetrachloride, chloroform, and 1,2-DCA have been detected at various concentrations during several well sampling events in Bruno and vicinity. These three chemicals have all been identified as grain fumigants and could have been purchased and used as late as June 1985. These chemicals were used as fumigants on grain stored for an extended period of time in unaerated buildings. These chemicals were also used as rodenticides. The highly volatile fumigants, poured into rodent burrows displace oxygen in the rodent nests thus asphyxiating the rodents (E & E/FIT April 1987).

There are several different ways these chemicals were mixed to be used as fumigants. Carbon tetrachloride was mixed 80/20 with either 1,2-DCA or carbon disulfide. Carbon tetrachloride was less toxic to pests than carbon disulfide and 1,2-DCA, and its use therefore required longer contact times to kill pests. Carbon tetrachloride acted to suppress the fire hazard associated with carbon disulfide. Chloroform was also mixed with carbon disulfide. This mixture consisted of 73.2 percent chloroform and 26.8 percent carbon disulfide. Chloroform acted to reduce the fire hazard associated with the carbon disulfide as well as serving as an insecticide (Meister 1988).

### 4.2 WASTE CHARACTERISTICS

#### 4.2.1 Carbon Tetrachloride

Carbon tetrachloride is a volatile halogenated hydrocarbon. At room temperature it is a clear heavy liquid with a sweet odor. It is used in refrigerants and propellants, mainly for Freon 11 and Freon 12; metal degreasing; the chlorination of organic compounds; production of semi-conductors; and as a grain fumigant. The use of carbon tetrachloride as a grain fumigant was banned in 1985 (ITII 1979; DHHS 1985).

Human exposure to carbon tetrachloride occurs through inhalation, skin adsorption, residual contamination in grain, and through drinking

contaminated water. It is estimated that 45 percent of all surface water and 25 percent of all ground water drinking water supplies are contaminated with carbon tetrachloride (DHHS 1985).

Acute exposure symptoms include irritation of eyes, nose, throat, headache, dizziness, nausea, vomiting, abdominal cramps, diarrhea, nervousness, unconsciousness, coma, and ventricular vibrulation; chronic exposure symptoms include dermatitis, anorexia, nausea, vomiting, mental confusion, apathy, headache, dizziness, fatigue, restriction of visual activity, loss of weight, jaundice, and renal damage (ITII 1979). Carbon tetrachloride has also been found to cause malignancies in mice, rats, trout, and hamsters. However, human evidence of carcinogenicity is inadequate (DHHS 1985).

The maximum contaminant level (MCL) for carbon tetrachloride in drinking water is 5  $\mu\text{g/l}$  (EPA July 1987). Its solubility is 785 mg/l and therefore carbon tetrachloride is moderately mobile in ground water. It is likely that carbon tetrachloride is adsorbed onto sediments rich in organic matter, although adsorption may not play a major role in the fate of carbon tetrachloride (EPA 1979).

The aquatic freshwater water quality criteria, chronic lowest observed effect level (LOEL), for carbon tetrachloride is 1,760  $\mu\text{g/l}$  (EPA 1986). Therefore carbon tetrachloride is not expected to be very toxic to aquatic life. The major aquatic fate for carbon tetrachloride is volatilization. The rate of volatilization depends on the concentration and mixing rate in water. Both hydrolysis and biodegradation occur slowly, if at all. Bioaccumulation is possible, but is not expected to occur to a significant degree (EPA 1979).

Because carbon tetrachloride is quite volatile it is likely to be an airborne contaminant. Carbon tetrachloride does not photodissociate in the atmosphere or troposphere. In the stratosphere it is degraded by higher energy, shorter wavelength light. It is thought that these degradation products are partially responsible for the destruction of the ozone layer. Some of the carbon tetrachloride that volatilizes into the atmosphere is washed out during precipitation events back into the lithosphere and hydrosphere (EPA 1979).

#### 4.2.2 Chloroform

Chloroform, also known as trichloromethane, is a volatile halogenated hydrocarbon. It has been and in some cases is still used as an intermediate in the manufacture of fluorocarbon compounds, dyes, drugs, and pesticides; as a solvent in the extraction and purification of antibiotics, vitamins and flavors; and as an industrial solvent in photography and dry cleaning; and as a heat transfer medium. Its use as an anesthetic has been largely discontinued. A mixture of chloroform and carbon disulfide was used as a grain fumigant (DHHS 1985).

Many regulations for handling spills, water quality criteria, restriction of its use as a pesticide, and for disposal of waste material generated by the production of chloroform now exist. On June 29, 1976 the Food and Drug Administration banned the use of chloroform in food, drugs, and cosmetics. Before this ban, chloroform was used in cough preparations, liniments, toothpaste, cosmetics, and toothache drops (DHHS 1985).

Inhalation of chloroform can cause excitement, nervousness, delirium, staggering, unconsciousness, shortness of breath, vomiting, anorexia, and diureses (ITII 1979). There is experimental evidence supporting the carcinogenicity of chloroform in mice and rats, but human evidence is incomplete (DHHS 1985). In 1979 EPA set an MCL of 100  $\mu\text{g/l}$  for chloroform in drinking water. Chloroform is often found in drinking water supplies because it is a by-product of the water chlorination process. Chlorine reacts with the organic matter present in natural waters to form chloroform and other trihalomethanes (EPA 1979). The chronic aquatic LOEL for chloroform is 1,240  $\mu\text{g/l}$  indicating that it is not extremely toxic for aquatic life (EPA 1986).

Hydrolysis and oxidation in the aquatic environment are not significant fate pathways for chloroform which is lost mainly through volatilization. Photolysis does not occur below the ozone layer, but ultraviolet light in the stratosphere will photodissociate chloroform. The primary removal mechanism of chloroform from the atmosphere is the reaction with hydroxyl radicals.

It is likely that chloroform is sorbed onto sediments with high organic matter content and there is a tendency for chloroform to bioaccumulate in animals under constant exposure. However, there is no

evidence that chloroform biomagnifies through the food chain. The bio-transformation and biodegradation of chloroform is possible; especially in a waste water treatment situation where the microbial populations have been slowly acclimatized (EPA 1979).

#### 4.2.3 1,2-Dichloroethane

1,2-dichloroethane (1,2-DCA and ethylene dichloride) is also a volatile halogenated hydrocarbon. It is used in pharmaceuticals, as a solvent for extraction, and also as a fumigant (ITII 1979).

Human exposure to 1,2-DCA is expected to be through similar routes as carbon tetrachloride. The symptoms of exposure to 1,2-DCA should be similar to those of carbon tetrachloride and chloroform. At room temperature 1,2-DCA is a colorless, oily liquid with an odor similar to chloroform. It has a water solubility of 8,690 mg/l which makes it likely to migrate in ground water (ITII 1979, EPA 1979).

The drinking water MCL of 1,2-DCA is 5  $\mu\text{g/l}$  (EPA July 1987). 1,2-DCA may be adsorbed onto sediments rich in organic matter, but adsorption is not likely to be significant (EPA 1979).

The freshwater chronic LOEL for 1,2-DCA is 20,000  $\mu\text{g/l}$ . Which indicates that it is rather non-toxic to aquatic life. Like carbon tetrachloride and chloroform, the major aquatic fate of 1,2-DCA is volatilization. 1,2-DCA is likely to degrade, but should not bio-accumulate. 1,2-DCA is photodissociated in the troposphere. Therefore, it should not have as great a chance of returning to the lithosphere and hydrosphere during precipitation events as 1,2-DCA (EPA 1979).

## SECTION 5: PHYSICAL AND CULTURAL SETTING

### 5.1 CLIMATOLOGY AND DEMOGRAPHY

Winters are fairly cold in Bruno due to excursions of continental air from the north, which bring frequent cold spells. The average minimum daily temperature is 15° F and the average winter temperature is 25° F. Snowfalls frequently but does not continuously cover the ground during the winter. Approximately 31 inches of snow falls per year (USDA 1982).

The summers are generally hot with occasional interruptions of cooler air from the north. The average summer temperature is 75° F with an average maximum temperature of 87° F. Roughly 70% of the 29-inch average annual rainfall occurs between the months of April to September. The average daily relative humidity is 60% to a high of 80% at dawn. The prevailing wind is from the south-southeast and reaches its highest average speed of 12 miles per hour (mph) in the spring.

Bruno is a small farming village with a population of 154. The grain elevators are located on the northwestern edge of the village.

### 5.2 TOPOGRAPHY AND DRAINAGE

Butler County is in the Interior Plains physiographic division of the United States. Both the Dissected Till Plain of the Central Lowland Province and the High Plains Section of the Great Plains Province are included in the county. Bruno is in the Hills Area geomorphic region. This area is composed of bluffs which lie along the south side of the Platte River Valley and of rolling hills, ridges, and steep valley-wall slopes in the eastern part of the county (Ginsberg 1983).

This geomorphic region can be further divided into the Loess Hills and the Drift Hills. The Loess Hills are generally north of U.S. Highway 92 and the Drift Hills are south of the highway. The maximum relief between hill tops and drainageways is 350 feet. Bruno is in the Loess

Hills area. This area is drained by small tributaries to the Platte River, some of which flow only in response to overland runoff (Ginsberg 1983).

### 5.3 SOILS

The soils in the Bruno area are a part of the Ponca-Sharpsburg association. These soils are nearly level to steep, well drained and moderately well drained soils that formed in loess and on uplands. The landscape is dissected by small intermittent drainages that join larger drainage ways. The association consists of 42% of Ponca soils, 16% Sharpsburg, and 42% minor soils (USDA 1982).

Ponca soils are found on narrow ridgetops and on long upland side slopes. The soils are well drained and moderately sloping to steep. The surface of the soil from zero to seven inches deep, is grayish-brown silty clay loam; the 7 to 22 inch subsurface soils are pale brown to light brownish gray silty clay loam; and from 22 to 60 inches, the soils consist of light gray and very pale brown silt loam (USDA 1982).

Sharpsburg soils are found on divides and side slopes of uplands. The soils are nearly level to strongly sloping and moderately well drained. The 0 to 12 inch surface layer is dark gray silty clay loam. The silty clay loam subsurface soils, from 12 to 46 inches, are dark grayish brown in the upper part to light yellowish brown in the lower part. From 46 to 60 inches, the soils are very pale brown silt to loam. Hobbs soils, which lie to the west of Bruno, are well drained soils on narrow bottom lands. Judson soils, found to the east of Bruno, are on colluvial foot slopes that border drainageways (USDA 1982).

### 5.4 STRATIGRAPHY

The oldest exposed bedrock in the region belongs to the undivided Dakota Group. The rocks in this group are of Early Cretaceous age and consists of sandstones and shale deposited in fluvial near-shore marine environments. The total thickness of these formations ranges from 500 to 600 feet (Ginsberg 1983).

Above the Dakota Group is Graneros Shale of Late Cretaceous age. This dark gray shale is about 65 feet thick and has a lower non-

calcareous and an upper calcareous zones. Immediately above the Graneros Shale is the Greenhorn Limestone also of Late Cretaceous age. This formation consists of limestones interbedded with shales. The formation is approximately 25 feet thick (Ginsberg 1983).

The youngest bedrock formation is the Late Cretaceous Carlile Shale. This formation is up to 90 feet thick and consists of two members, the Fairport and the Blue Hill. The Fairport member is calcareous and makes up the majority of the Carlile Shale (Ginsberg 1983).

During Early Tertiary time, much of the Cretaceous age material was removed by erosion to form an east-southeast sloping surface. Two major channels or paleovalleys were eroded by streams flowing across the county from the northwest. A sequence of fine sediments was deposited as Tertiary streams eroded Cretaceous material from higher land to the west (Ginsberg 1983).

During the Pleistocene Era continental glaciers advanced into eastern Nebraska from Canada and spread throughout Butler County. The geologic materials above the bedrock are composed of sand, sand and gravel, silt, and clay; deposited by water, wind, and glaciers. These deposits can be as thick as 455 feet. Till and till-related deposits are present in the eastern and central parts of the county, but not in the far western portion (Ginsberg 1983).

During the late stages of the Pleistocene Era, wind-deposited layers of silt known as loess, blanketed the older materials. The youngest material is referred to as the Peoria Loess. Erosion of the Peoria Loess led to the rolling topography of the region (Ginsberg 1983).

## 5.5 HYDROGEOLOGY

The majority of the ground water used in the Bruno area comes from the unconsolidated deposits above bedrock. The locations of the few large capacity wells in the area coincide with the eastern extension of paleovalleys. Thin sand and gravel layers can serve as small ground water resources for domestic and stock wells. The sand and gravel deposits are not very arially extensive and test drilling must often be performed to find the deposits (Ginsberg 1983).

A fairly thick layer of sand overlies paleodivides and the sediment filled paleovalleys. This thick sand layer is known as the Pleistocene Aquifer System and is used to supply most domestic wells. The Pleistocene aquifer system consists of sand and gravel and interbedded silts and clays. These interbedded silts and clays yield a small amount of water through gravity drainage to wells screened in the deeper sand and gravel and are therefore included in the Pleistocene System. The thin sand and gravel lenses which are part of the till are not included in the Pleistocene system. Both confined and unconfined water table conditions exist in the area (Ginsberg 1983).

Perched aquifers occur where clay or silty clay layers underlie more permeable sediments above the principle saturated zone. Generally these aquifers do not contain enough storage to supply domestic or stock wells. These aquifers are recharged only by precipitation and possibly excess irrigation water. In dry periods these aquifers are depleted (Ginsberg 1983).

In the Bruno area, there is little exchange between the Platte River and Pleistocene aquifers. There are also no stream interconnections within the aquifers (Ginsberg 1983). Figure 5-1 provides a list of geologic units and their water bearing properties in Butler County.

The natural chemical quality of the ground water in the Bruno area is generally good. It is low in dissolved solids, nitrate, sulfate, chloride, iron, and manganese. Table 5-1 shows inorganic chemical quality data for a well in Bruno. The legal location of the well is 15-4-10CAC, which is probably well #G-30184 (Ginsberg 1983).

Well #G-30184 is 138 feet deep and has a static water level of approximately 65 feet. Well #G-30185 is 66 feet deep and has a static water level of approximately 22 feet below ground surface. Well logs of these two wells appear in Appendix G.

Geologic units and their water-bearing properties, Butler County

System	Series	Stratigraphic unit	Thickness (feet)	Character and distribution	Water supply
Quaternary	Holocene (?)	Surficial flood-plain and terrace deposits and soil	0-10(?)	Unconsolidated stream-deposited sand, gravel, silt, and clay	May contribute water to wells
	Pleistocene	Unconsolidated deposits	25-400+	Wind-deposited silt; stream-deposited sand, gravel, silt, and clay; ice-deposited till	Stream-deposited sand and gravel constitute the major reservoir in the county and yield water to large-capacity wells
Tertiary(?)	Pliocene(?)	Mostly unconsolidated silt	0-50+	May blanket Cretaceous bedrock at base and on side slopes of paleo-valleys	Generally too fine textured to yield water to wells
Cretaceous	Upper Cretaceous	Carlile Shale (Blue Hill and Fairport Members)	0-90+	Blue Hill Member is gray argillaceous shale. Fairport Member is bluish-gray shale containing thin fossiliferous limy layers (Condra and Reed, 1959, p. 17)	Not known to supply water to wells
		Greenhorn Limestone	25+	Thin, medium soft, gray limestones interbedded with gray shales (Condra and Reed, 1959, p. 18)	Not known to supply water to wells
		Graneros Shale	65+	Dark-gray shale interbedded with thin calcareous layers; contains some sand and sandy shale, also carbonaceous material in basal part	Does not supply water to wells
	Lower Cretaceous	Dakota Group, undivided	500-600+	Principally composed of sandstones and shales	Sandstones may be aquifers but water may be moderately or highly mineralized

SOUTH  
C

NORTH  
C

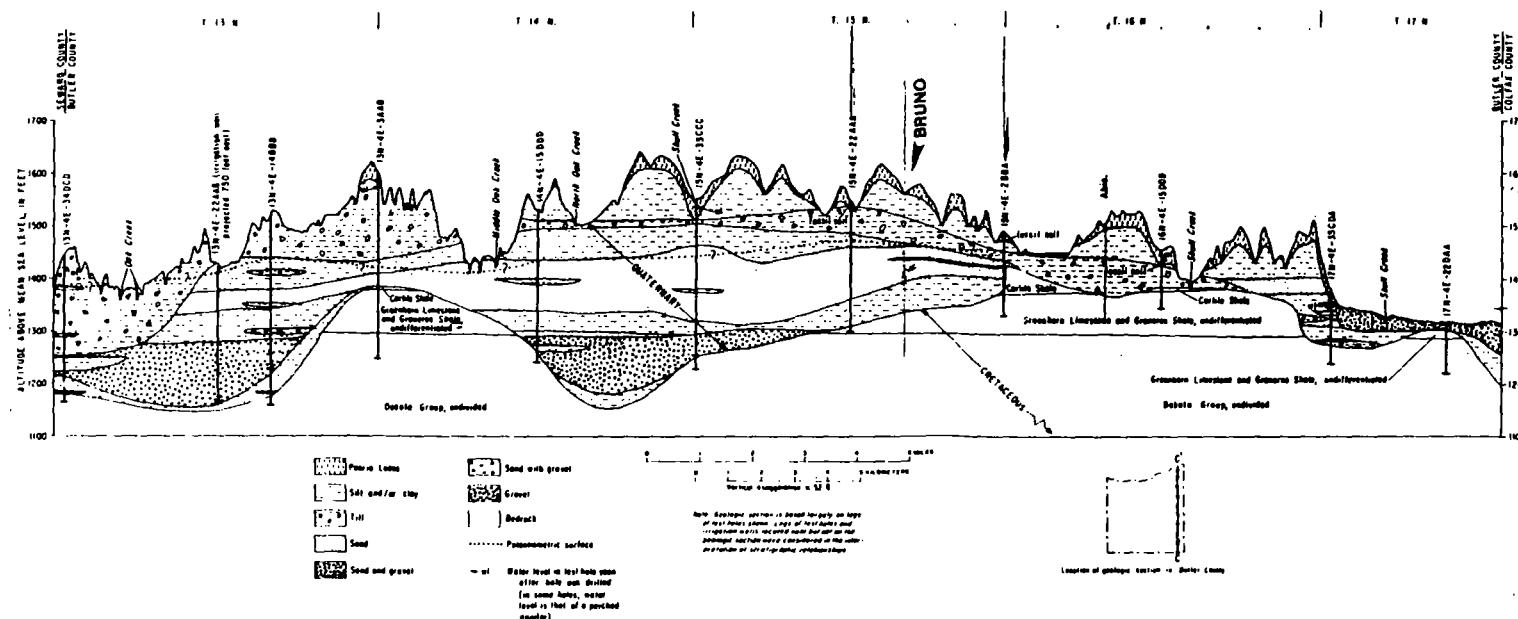


FIGURE 5-t NORTH-SOUTH GEOLOGIC SECTION THROUGH THE EASTERN PART OF BUTLER COUNTY

TABLE 5-1  
 Inorganic Chemical Analysis of  
 Bruno Well 15-4-10CAC  
 August 19, 1977

Constituent	Concentration
Iron (Fe)	250 $\mu\text{g/l}$
Manganese (Mn)	20 $\mu\text{g/l}$
Bicarbonate ( $\text{HCO}_3^-$ )	200 mg/l
Sulfate ( $\text{SO}_4^{2-}$ )	75 mg/l
Chloride ( $\text{Cl}^-$ )	17.0 mg/l
Nitrate-nitrogen ( $\text{NO}_3^- \text{N}$ )	0
Nitrite-nitrogen ( $\text{NO}_2^- \text{N}$ )	5.2 mg/l
Dissolved Solids	381 mg/l
Hardness as $\text{CaCO}_3$	250 mg/l
pH	7.2
Specific Conductance	563 umhos

Source: Ginsberg 1983

## SECTION 6: FIELD ACTIVITIES

The main emphasis of the Bruno COOP Association soil-gas investigation was to create a map of the carbon tetrachloride plume and to locate the source or sources of the volatile organic contamination detected in the Bruno PWS wells. Field work was conducted October 24 through 27, 1988. E & E/FIT members present were:

Anne Melia - Team Leader  
Wesley McCall - Gas chromatograph operator  
Jim Alldritt - Geoprobe operator  
David Zimmermann - Site safety officer

All field work was performed in level D protection. Air monitoring did not show any readings above background. Twenty-seven soil-gas samples were obtained and analyzed during the survey. Water samples were collected on October 26, 1988, from two PWS wells, the Bruno School, and a background well location. The water sample activity number was TK9A4. The wells were sampled again on December 19 and 20, 1988 to resolve apparent discrepancies in the October 26, 1988 results. The sampling activity number was DC906.

### 6.1 WATER SAMPLING

Six ground water samples were collected during the Bruno soil-gas investigation. Sample 001 was collected from Bruno PWS well #G-30185, and sample 002 and duplicate sample 003 were collected from Bruno PWS well #G-30184. A distribution sample (004) was collected from the Bruno school drinking fountain. A background sample (005) was collected from the Clarence Votava residence. A field blank was prepared and submitted for analysis to fulfill quality control/quality assurance requirements. All samples were collected in accordance with EPA and E & E protocols.

Samples were collected directly into two, 40-ml VOA vials after purging each system for approximately five minutes. The samples were iced to 4°C and packed in coolers for transport. Samples were submitted to the Region VII laboratory in Kansas City, Kansas, on October 27, 1988, for volatile organic analysis. Sample locations are depicted on Figure 2-1 and Table 6-1 provides a sample summary.

Due to apparent discrepancies in the analytical results obtained from the October 26, 1988 sampling, the same wells were sampled on December 19 and 20, 1988. The sampling protocol was identical to that followed on October 26, 1988. These samples are also summarized in Table 6-1.

## 6.2 SOIL-GAS SURVEY

Soil-gas samples were collected by pushing a hollow probe and pipe extenders to a depth of 5 to 10 feet, approximately 3 to 5 feet above the phreatic zone. The Region VII E & E/FIT Geoprobe Unit (Geoprobe, Inc.) was used to insert and remove probes. A small amount of air (10 to 20 liters) was evacuated from the soil. A 5-ml sample of the soil-gas was collected in a glass syringe from the gas sampling bulb, and immediately analyzed in the mobile laboratory. A total of 27 soil-gas samples from 26 locations were analyzed during this survey. Table 6-2 summarizes the soil-gas sample locations.

A Tracor model 540 gas chromatograph (GC) equipped with a nickel 63 electron capture detector (ECD), a Spectra physics 4290 Integrator, and a 30-meter J & W Scientific DB-624 megabore capillary column were used to analyze the soil-gas samples for carbon tetrachloride. Instrument calibration consisted of injecting known masses of each carbon tetrachloride standard into the GC and measuring the corresponding instrument responses. A calibration curve was then determined by the integrator and subsequent sample concentrations (unknowns) were determined by the integrator based on the calibration curve. The instrument detection limit was ~8 ng/l of air of carbon tetrachloride. The sample detection limit, or confidence level, was set at five times the instrument detection limit, at 40 ng/l.

TABLE 6-1  
Water Sampling Summary  
Bruno Public Water Supply  
E & E/FIT, October 26, 1988  
Sample Series: TK9A4  
E & E/FIT, December 19 and 20, 1988  
Sample Series: DC906

Sample Number	Location
001	Bruno Well #G-30185
002	Bruno Well #G-30184
003	Bruno Well #G-30184 (Duplicate)
004	Bruno School Drinking Fountain
005	Background (Clarence Votava Residence)
006F	Field Blank

Note: All samples were submitted for volatile organic analysis (VOA).

Bruno Contacts:  
Mr. Wilford Kozisek  
Box 1  
Bruno, Nebraska 68014

Clarence Votava  
826 N.  
David City, Nebraska 68632

TABLE 6-2  
 Soil-Gas Sample Location Descriptions  
 Bruno COOP Association  
 E & E/FIT, October 24-27, 1988

Sample Number	Lot Number	Location
S-1	1	Extreme SE corner of Bruno COOP property
S-2	1	~175' north of S-1 on Bruno Village property
S-3	6	Along Railroad Road ~325' from S-2
S-4	8	~200' south of S-3
S-5	12	~300' south of S-4
S-6	9	~110' from S-3 along Railroad Road
S-7	11	~200' north of S-5
S-8	18	~50' southwest of well #G-30185
S-9	17	~7' southeast of well #G-30185
S-10	17	10 feet deep at location S-9
S-11	15	~125' southeast of S-9
S-12	10	~25' northeast of S-5
S-13	27	On northwest edge of wheat field on Bruno COOP property
S-14	22	~400' southwest of S-9 (~7' from set of 5 round storage bins)

**TABLE 6-2 (Cont.)**  
**Soil-Gas Sample Location Descriptions**  
**Bruno COOP Association**  
**E & E/FIT, October 24-27, 1988**

Sample Number	Lot Number	Location
S-15	23	~40' east of S-14
S-16	19	~350' northeast of S-15
S-17	19	~135' south of S-16
S-18	21	~10' northwest of S-14
S-19	23	~75' south of S-14
S-20	11	~125' east of S-7 (directly south of a possible old grain storage bin foundation)
S-21	8	~250' northeast of S-20
S-22	9	~150' northeast of S-20
S-23	16	Directly behind a large flat grain bin ~225' southwest of S-20
S-24	10	~20' northeast of S-20
S-25	--	~6' northwest of well #G-30184
S-26	--	Southeast corner of Pine and 2nd Street intersection
S-27	--	Along Fremont Street ~50' northeast of Oak and Fremont intersection

### 6.3 ON-SITE OBSERVATIONS AND INTERVIEWS

During the October 26, 1988, sampling of Bruno PWS well #G-30184, a small plastic chemical addition tank was noted in the well house, though it was not readily apparent what type of chemical the tank contained or if chemical addition was taking place. A manufacturer's note observed near the tank indicated that someone had been out to fix a problem with the tank. Wilford Kozisek of the Bruno Village Council stated that the city had chlorinated the water from well #G-30184 for a short time. Because problems had developed with too much chlorine being added to the water, Kozisek said he thought that chlorine addition had been discontinued. The addition of chlorine to well #G-30184 could explain the 93 ppb chloroform detected in the March 1988 EPA sampling of the well. Chloroform was also detected, at 4.1 ppb, in the January 1986 sampling of the well.

## SECTION 7: ANALYTICAL RESULTS

### 7.1 WATER SAMPLING

Analytical results for both the October 26, 1988 and the December 19 through 20, 1988 sampling events appear in Table 7-1. The positive results found during the October 26, 1988, sampling are "J" coded because the maximum sample holding times were exceeded before the samples were analyzed. Several of the positive results obtained from the December 19 through 20, 1988 sampling are "J" coded due to poor standard calibration results. A "J" code indicates that the associated numerical value is an estimated quantity. The method detection limit for chloroform, 1,2-dichloroethane, and carbon tetrachloride was 1.0 ng/l.

The apparent discrepancies in the October 26, 1988 results concern samples TK9A4001 and TK9A4005. It would seem, based on previous analytical results from these samples, that these two samples were switched during collection or analysis. TK9A4001 was expected to contain contaminant levels similar to samples TK9A4002 and 003. TK9A4005 was expected to be clean. The December 19 through 20, 1988 sampling was conducted to resolve these discrepancies. Because the apparent "switching" of TK9A4001 and TK9A4005 could not be verified, only the December 19 through 20, 1988 data will be considered valid. It should be noted, however, that aside from samples 001 and 005, the analytical results from the October and December sampling events are quite similar.

Sample 001 (Bruno well #G - 30185) contained 4.0  $\mu\text{g/l}$  of chloroform, 12 J  $\mu\text{g/l}$  of 1,2-dichloroethane, and 37 J  $\mu\text{g/l}$  of carbon tetrachloride. Sample 002 (Bruno well #G-30184) contained 2.0  $\mu\text{g/l}$  of chloroform, 3.0  $\mu\text{g/l}$  of 1,2-dichloroethane, and 15  $\mu\text{g/l}$  of carbon tetrachloride. Sample 003 (the duplicate of 002), contained identical concentrations of chloroform and 1,2-dichloroethane (1,2-DCA) and 14  $\mu\text{g/l}$  of carbon tetrachloride. Sample 004, collected from the Bruno School drinking fountain, contained 3.0  $\mu\text{g/l}$  of chloroform, 12  $\mu\text{g/l}$  of 1,2-

dichloroethane, and 29  $\mu\text{g/l}$  of carbon tetrachloride. Chloroform, 1,2-DCA and carbon tetrachloride were not detected in 005 (background) and 006 (field blank). The complete data transmittals from the October and December sampling events can be found in Appendix D.

## 7.2 SOIL-GAS SURVEY

Twenty-seven samples from 26 locations were analyzed during the soil-gas investigation. Sample results are summarized in Table 7-1. All samples were collected from a depth of 5 feet, except for sample S-10 which was collected from a depth of 10 feet at location S-9. Due to the tight silty clay soil conditions of the area and the relatively low carbon tetrachloride concentrations detected in the ground water, determination of a contaminant plume was difficult. Silty clay soils tend to retard the diffusion of volatile organic compounds and therefore may have adversely affected their detection in soil-gas. Plat 1 (Appendix B) shows the sample locations and approximate contaminant plumes. Samples S-14 and S-20 contained 144  $\text{ng/l}$  and 370  $\text{ng/l}$  of air of carbon tetrachloride, respectively. These two samples were the only samples with carbon tetrachloride levels above the 40  $\text{ng/l}$  confidence level. Samples S-9 and S-21 contained 23  $\text{ng/l}$  and 12  $\text{ng/l}$  of air of carbon tetrachloride, respectively. These values are above the instrument detection limit (IDL) of 8  $\text{ng/l}$  and are therefore quantifiable, but they are below the confidence level. Because tight silty clay soils tend to restrict volatile organic chemical diffusion, all peaks of carbon tetrachloride picked up by the GC and intergrator during this survey are significant. Samples S-10, S-12, S-18, and S-24 had small carbon tetrachloride peaks. The values were below the 8.0  $\text{ng/l}$  IDL and are therefore non-quantifiable and are reported as <8.0  $\text{ng/l}$ . The remaining samples did not show any evidence of carbon tetrachloride contamination and are reported as non-detects (ND).

TABLE 7-1  
 Summary of Analytical Results for Water Samples  
 Bruno Public Water Supply  
 E & E/FIT, October 26, 1988  
 Sample Series: TK9A4  
 and  
 E & E/FIT, December 19 through 20, 1988  
 Sample Series: DC906  
 Results in  $\mu\text{g/l}$

Sample Number	Contaminant					
	Chloroform		1,2-Dichloroethane		Carbon tetrachloride	
	Oct.	Dec.	Oct.	Dec.	Oct.	Dec.
001 (Bruno Well) G-30185	ND*	4.0	ND*	12 J	ND*	37 J
002 (Bruno Well) G-30187	4.0 J	2.0	12	3.0	27 J	15
003 002 DUL	4.0 J	2.0	4.0 J	3.0	29 J	14
004 Bruno P.S.	4.0 J	3.0	4.0 J	12	31 J	29
005 BLANK	4.0 J*	ND	12 J*	ND	32 J*	ND
006 BLANK	ND	ND	ND	ND	ND	ND

\*Analytical results in question; thus the December resampling.  
 J - The associated numerical value is an estimated quantity.

TABLE 7-2  
 Soil-Gas Concentrations Carbon Tetrachloride  
 Bruno Public Water Supply  
 E & E/FIT, October 24-27, 1988

Sample Number	Concentration (ng/l)	Sample Number	Concentration (ng/l)
S-1	ND	S-15	ND
S-2	ND	S-16	ND
S-3	ND	S-17	ND
S-4	ND	S-18	<8.0
S-5	ND	S-19	ND
S-6	ND	S-20	370
S-7	ND	S-21	12
S-8	ND	S-22	ND
S-9	23	S-23	ND
S-10	<8.0	S-24	<8.0
S-11	ND	S-25	ND
S-12	<8.0	S-26	ND
S-13	ND	S-27	ND
S-14	144		

Notes: Confidence Level: 40 ng/l

Instrument Detection Limit: 8 ng/l

<8.0 ng/l: Concentration was below the instrument detection limit and is therefore non-quantifiable.

ND: No carbon tetrachloride peaks were detected by the instrument.

## SECTION 8: DISCUSSION OF RESULTS

### 8.1 ATTRIBUTION OF CONTAMINANTS

Initial interpretation of the soil-gas results indicates that the source of the Bruno PWS volatile organic chemicals contamination is the area which is and has been the site of grain storage facilities since the late 1940s. The analytical results from the water samples collected December 19 through 20, 1988, indicate that the Bruno PWS continues to have chloroform, 1,2-dichloroethane, and carbon tetrachloride contamination.

Plat 1 shows four small separate carbon tetrachloride soil-gas plumes located on property which is now owned by the Bruno Coop Association. Sample S-20 contained the highest detected concentration of carbon tetrachloride at 370 ng/l. This sample is located on warehouse lot #11, directly south of a possible old grain storage bin foundation. A 1962 aerial photo shows a building where this foundation is currently located. Sample S-21 contained 12 ng/l of carbon tetrachloride and is located on lot #8. These properties have been owned by the Bruno Coop Association since 1964. It appears from a 1962 aerial photograph of the area, that the properties were used by the USDA for their grain storage facility operations previous to 1964. A copy of this 1962 aerial photo can be found in the E & E/FIT Bruno Coop Association site file. A suitable photo copy could not be obtained for inclusion in this report.

Sample S-14 contained 144 ng/l of carbon tetrachloride and is located on warehouse lot #22, directly east of a set of five round grain storage bins. Sample S-9 contained 23 ng/l of carbon tetrachloride and is located on lot #17. From the 1962 aerial photo of the area, it appears that these properties were also used by the USDA for the grain storage facility operations previous to 1964. The R & W Grain Company purchased these properties from the C & NW Railway Company in 1965. In 1968, these properties were purchased by Wagner Mills, Inc. who then

leased the lots to the Agrico Chemical Company from February 1, 1969, to January 31, 1974. The Bruno Coop Association purchased the lots from Wagner Mills, Inc. in June 1988.

## 8.2 ENVIRONMENTAL CONSIDERATIONS

The greatest concern associated with this site is the drinking water contamination. The maximum contaminant level (MCL) for 1,2-dichloroethane is 5  $\mu\text{g/l}$  (EPA 1987). This level was surpassed in both samples DC906001, Bruno Well #G-3018S) and DC906004, the Bruno School drinking fountain, which contained 12  $\mu\text{g/l}$ . The MCL for carbon tetrachloride is also 5  $\mu\text{g/l}$  (EPA 1987). Samples DC9006001, 002, 003, and 004 contained carbon tetrachloride levels ranging from 14  $\mu\text{g/l}$  to 37  $\mu\text{g/l}$ ; which are above the MCL.

The elevated chloroform concentration of 93  $\mu\text{g/l}$  detected in Bruno well #G-30184 during the February 1988 sampling appears to have been a result of chlorination. Chlorination of the water has since been discontinued, and all the December 1988 water samples contained less than 4.0  $\mu\text{g/l}$  of chloroform. The MCL for chloroform is 100  $\mu\text{g/l}$  (EPA 1987).

## SECTION 9: SUMMARY

The E & E/FIT performed a soil-gas survey of the Bruno Public Water Supply on October 24 through 27, 1988. Twenty-seven soil-gas samples were collected from 26 different locations and analyzed for carbon tetrachloride contamination. In addition, six water samples were collected on October 26, 1988 and submitted to the U.S. EPA for volatile organic chemical analysis on October 27, 1988. Due to discrepancies in the analytical results for the water samples, the wells were resampled on December 19 through 20, 1988.

The December analytical results showed that samples collected from the two Bruno PWS wells and the Bruno school contained chloroform, 1,2-dichloroethane, and carbon tetrachloride. The concentrations of 1,2-dichloroethane and carbon tetrachloride were above the EPA MCLs.

Carbon tetrachloride was detected in eight soil-gas samples in concentrations ranging from <8.0 ng/l to 370 ng/l. The results appear as four small separate soil-gas plumes. The source of this contamination is the area which is and has been the location of grain storage facilities since the 1940s.

A 1962 aerial photograph of the area indicates that this entire area was used by the USDA for their grain storage facility operations previous to 1964. This area is now owned by the Bruno Coop Association.

## SECTION 10: BIBLIOGRAPHY

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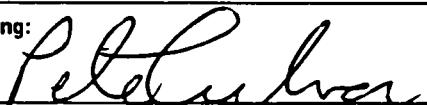
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**Appendix A**  
**Technical Directive Document**

AM

01-2 TF

1A. Cost Center: FT 1307	FIT ZONE II CONTRACT Contract Number 68-01-7347 TECHNICAL DIRECTIVE DOCUMENT (TDD)			2. TDD Number: F-07-8809-030
1B. Account Number: FNE 136SA				2A. Amendment: <input checked="" type="checkbox"/> Administrative <input type="checkbox"/> Technical
3A. Priority: <input checked="" type="checkbox"/> High <input type="checkbox"/> Medium <input type="checkbox"/> Low	3B. Key EPA Contact: Name: Cecilia Tapia			Phone: (913) 236-2856
4A. Estimate of Technical Hours: 662	4B. Subcontract: NONE	4C. Estimate of Subcontract Cost: NA	5A. SSID Number: Unassigned	5B. CERID Number: NED986367B29
5C. EPA Site Name: Bruno COOP Association		5D. City/County/State: Bruno/Butler/NE		
6. Desired Report Format: <input checked="" type="checkbox"/> Formal Report <input type="checkbox"/> Standard Report <input type="checkbox"/> Other (Specify): <input type="checkbox"/> Letter Report <input type="checkbox"/> Formal Briefing		7A. Activity Start Date: 10/3/88		7B. Estimated Completion Date: * 7/31/89
8A. Type of Activity: <input type="checkbox"/> PA <input type="checkbox"/> RCRA-PA <input type="checkbox"/> HRS Support <input type="checkbox"/> Enforcement Support <input type="checkbox"/> Training <input checked="" type="checkbox"/> SI <input type="checkbox"/> RCRA-SI <input type="checkbox"/> QA Support <input type="checkbox"/> Program Management <input type="checkbox"/> General Technical Assistance <input type="checkbox"/> ESI <input type="checkbox"/> Special Studies <input type="checkbox"/> Equipment Maintenance				
8B. FIT/SCAP Goal: Will Deliverable Meet a Unit of the Goal? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				
9. General Task Description: Conduct a site investigation of the Bruno COOP Association property/site, located in Bruno, NE.				
10. Specific Elements: 1) Implement work plan prepared under TDD F-07-8808-021 (Bruno PWS) 2) prepare trip report within 4 weeks of field work 3) Include SI form with final report			11. Interim Deadlines: 2) 11/23/88 3) 5/31/89	
<input type="checkbox"/> Additional Scope Attached				
12. Comments: Under separate TDD, Submit trip report * TDD amended to change due date				
<b>RECEIVED</b>			APR 26 1989	
13. Authorizing:  (Signature)			<input checked="" type="checkbox"/> RPO <input type="checkbox"/> DPO <input type="checkbox"/> PO	14. Date: E & E K.C.K. 4/25/89
15. Received by:  (Contractor FITOM Signature)			<input checked="" type="checkbox"/> Accepted <input type="checkbox"/> Accepted with Exceptions (Attached) <input type="checkbox"/> Rejected	16. Date: 4/26/89

**Appendix B**  
**EPA Site Investigation Form 2070-13**

EPA

## POTENTIAL HAZARDOUS WASTE SITE

## SITE INSPECTION REPORT

## PART 1 - SITE LOCATION AND INSPECTION INFORMATION

## I. IDENTIFICATION

01 STATE NE 02 SITE NUMBER D986367829

## II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site) 02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER  
 Bruno Coop Association Main Street, Box 135

03 CITY 04 STATE 05 ZIP CODE 06 COUNTY 07 COUNTY 08 CONG  
 Bruno NE 68014 Butler CODE DIST

09 COORDINATES 10 TYPE OF OWNERSHIP (Check one)  
 LATITUDE | LONGITUDE |  A. PRIVATE  B. FEDERAL  C. STATE  D. COUNTY  E. MUNICIPAL  
 41° 17' 00".N | 097° 57' 30".W |  F. OTHER  G. UNKNOWN

## III. INSPECTION INFORMATION

01 DATE OF INSPECTION 02 SITE STATUS 03 YEARS OF OPERATION  
 10/24/88  ACTIVE 1964 | UNKNOWN  
 MO/DAY/YR  INACTIVE BEGINNING YEAR ENDING YEAR

## 04 AGENCY PERFORMING INSPECTION (Check all that apply)

A. EPA  B. EPA CONTRACTOR E & E C. MUNICIPAL D. MUNICIPAL CONTRACTOR  
 (Name of firm) (Name of firm)  
 E. STATE  F. STATE CONTRACTOR G. OTHER  
 (Name of firm) (Specify)

05 CHIEF INSPECTOR 06 TITLE 07 ORGANIZATION 08 TELEPHONE NO.  
 Anne Melia Chemist E & E/FIT (913) 432-9961

19 OTHER INSPECTORS 10 TITLE 11 ORGANIZATION 12 TELEPHONE NO.  
 Dave Zimmermann Environmental Scientist E & E/FIT (913) 432-9961

Wesley McCall Geochemist E & E/FIT (913) 432-9961

Jim Alldritt Geographer E & E/FIT (913) 432-9961

3 SITE REPRESENTATIVES INTERVIEWED 14 TITLE 15 ADDRESS 16 TELEPHONE NO.  
 Bob Langhorst Manager, Bruno Coop Box 135 (402) 543-2226  
 Bruno, NE

Wilford Kozisek Bruno City Council Box 1 (402) 543-2325  
 Bruno, NE

17 ACCESS GAINED BY 18 TIME OF INSPECTION 19 WEATHER CONDITIONS  
 (Check one)  PERMISSION 10/24 - 10/26/88 Sunny, Cool 40° to 50°  
 WARRANT

IV. INFORMATION AVAILABLE FROM  
 CONTACT 02 OF (Agency/Organization) 03 TELEPHONE NO.  
 Cecilia Tapia EPA (913) 236-2856

PERSON RESPONSIBLE FOR SITE INSPECTION FORM 05 AGENCY 06 ORGANIZATION 07 TELEPHONE NO. 08 DATE  
 Anne Melia E & E FIT (913) 432-9961 04/13/89



## POTENTIAL HAZARDOUS WASTE SITE

## SITE INSPECTION REPORT

EPA

## PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

## I. IDENTIFICATION

01 STATE  
NE 02 SITE NUMBER  
D986367829

## II. HAZARDOUS CONDITIONS AND INCIDENTS

01  A. GROUNDWATER CONTAMINATION 02  OBSERVED (DATE: 11/84) 03 POTENTIAL ALLEGED

03 POPULATION POTENTIALLY AFFECTED: 154 04 NARRATIVE DESCRIPTION

The Nebraska Department of Health (NDOH) identified Bruno as having solvent contamination in their ground water in November 1984.

01  B. SURFACE WATER CONTAMINATION 02  OBSERVED (DATE: ) 03 POTENTIAL ALLEGED

03 POPULATION POTENTIALLY AFFECTED: 04 NARRATIVE DESCRIPTION

No surface water in the vicinity.

01  C. CONTAMINATION OF AIR 02  OBSERVED (DATE: ) 03 POTENTIAL ALLEGED

03 POPULATION POTENTIALLY AFFECTED: 04 NARRATIVE DESCRIPTION

None known

01  D. FIRE/EXPLOSIVE CONDITIONS 02  OBSERVED (DATE: ) 03 POTENTIAL ALLEGED

03 POPULATION POTENTIALLY AFFECTED: 04 NARRATIVE DESCRIPTION

None known

01  E. DIRECT CONTACT 02  OBSERVED (DATE: ) 03 POTENTIAL ALLEGED

03 POPULATION POTENTIALLY AFFECTED: 04 NARRATIVE DESCRIPTION

None known

01  F. CONTAMINATION OF SOIL 02  OBSERVED (DATE: ) 03 POTENTIAL ALLEGED

03 AREA POTENTIALLY AFFECTED: 04 NARRATIVE DESCRIPTION

None known

(Acres)

01  G. DRINKING WATER CONTAMINATION 02  OBSERVED (DATE: 11/84) 03 POTENTIAL ALLEGED

03 POPULATION POTENTIALLY AFFECTED: 04 NARRATIVE DESCRIPTION

The NDOH initially identified the Bruno PWS as containing volatile organic (solvent) contamination in November 1984.

01  H. WORKER EXPOSURE/INJURY 02  OBSERVED (DATE: ) 03 POTENTIAL ALLEGED

03 WORKERS POTENTIALLY AFFECTED: 04 NARRATIVE DESCRIPTION

None known - except for drinking the water.

01  I. POPULATION EXPOSURE/INJURY 02  OBSERVED (DATE: ) 03 POTENTIAL ALLEGED

03 POPULATION POTENTIALLY AFFECTED: 04 NARRATIVE DESCRIPTION

None known - except for drinking water.

## POTENTIAL HAZARDOUS WASTE SITE

EPA

## SITE INSPECTION REPORT

## PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

## I. IDENTIFICATION

01 STATE

NE

02 SITE NUMBER

D986367829

## II. HAZARDOUS CONDITIONS AND INCIDENTS (CONTINUED)

01 J. DAMAGE TO FLORA 02 OBSERVED (DATE: \_\_\_\_\_) POTENTIAL ALLEGED

04 NARRATIVE DESCRIPTION

None known

01 K. DAMAGE TO FAUNA 02 OBSERVED (DATE: \_\_\_\_\_) POTENTIAL ALLEGED

04 NARRATIVE DESCRIPTION (Include name(s) of species)

None known

01 L. CONTAMINATION OF FOOD CHAIN 02 OBSERVED (DATE: \_\_\_\_\_) POTENTIAL ALLEGED

04 NARRATIVE DESCRIPTION

None known

01 M. UNSTABLE CONTAINMENT OF WASTES 02 OBSERVED (DATE: \_\_\_\_\_) POTENTIAL ALLEGED

(Spills/runoff/standing liquids/leaking drums)

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

04 NARRATIVE DESCRIPTION

None (presently) known

01 N. DAMAGE TO OFFSITE PROPERTY 02 OBSERVED (DATE: \_\_\_\_\_) POTENTIAL ALLEGED

04 NARRATIVE DESCRIPTION

None known

01 O. CONTAMINATION OF SEWERS,  
STORM DRAINS, WWTPs 02 OBSERVED (DATE: \_\_\_\_\_) POTENTIAL ALLEGED

04 NARRATIVE DESCRIPTION

None known

01 P. ILLEGAL/UNAUTHORIZED DUMPING 02 OBSERVED (DATE: \_\_\_\_\_) POTENTIAL ALLEGED

04 NARRATIVE DESCRIPTION

Use of the fumigants in question was legal until 1985. They are no longer used.

## 5 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

## IV. COMMENTS

The site has been the location of grain storage facilities since the late 1940s and includes both government and private operations.

## V. SOURCES OF INFORMATION (Cite specific references. e.g., state files, sample analysis, reports)

Ecology and Environment, Inc., Bruno PWS Site Files.

## POTENTIAL HAZARDOUS WASTE SITE

## SITE INSPECTION REPORT

## PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

## I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
NE D986367829

## II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
<input type="checkbox"/> A. NPDES				
<input type="checkbox"/> B. UIC				
<input type="checkbox"/> C. AIR				
<input type="checkbox"/> D. RCRA				
<input type="checkbox"/> E. RCRA INTERIM STATUS				
<input type="checkbox"/> F. SPCC PLAN				
<input type="checkbox"/> G. STATE (Specify)				
<input type="checkbox"/> H. LOCAL (Specify)				
<input type="checkbox"/> I. OTHER (Specify)				
<input type="checkbox"/> J. NONE				

## III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE	04 TREATMENT (Check all that apply)	05 Other
<input type="checkbox"/> A. SURFACE IMPOUNDMENT			<input type="checkbox"/> A. INCINERATION	
<input type="checkbox"/> B. FILES			<input type="checkbox"/> B. UNDERGROUND INJECTION	<input type="checkbox"/> A. BUILDINGS ON SITE
<input type="checkbox"/> C. DRUMS, ABOVE GROUND			<input type="checkbox"/> C. CHEMICAL/PHYSICAL	
<input type="checkbox"/> D. TANK, ABOVE GROUND			<input type="checkbox"/> D. BIOLOGICAL	
<input type="checkbox"/> E. TANK, BELOW GROUND			<input type="checkbox"/> E. WASTE OIL PROCESSING	
<input type="checkbox"/> F. LANDFILL			<input type="checkbox"/> F. SOLVENT RECOVERY	
<input type="checkbox"/> G. LANDFARM			<input type="checkbox"/> G. OTHER RECYCLING/RECOVERY	
<input type="checkbox"/> H. OPEN DUMP			<input checked="" type="checkbox"/> X H. OTHER None	
<input checked="" type="checkbox"/> I. OTHER sprayed on grain (Specify)	Unknown		(Specify)	

## 07 COMMENTS

The site was/is a grain storage facility. The solvents detected in the Bruno PWS wells were used as grain fumigants and rodenticides. They were sprayed on the grain and poured into rodent nests.

## IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)				
<input type="checkbox"/> A. ADEQUATE, SECURE	<input type="checkbox"/> B. MODERATE	<input type="checkbox"/> C. INADEQUATE, POOR	<input type="checkbox"/> D. INSECURE, UNSOUND, DANGEROUS	

## 02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

None

## V. ACCESSIBILITY

J1 WASTE EASILY ACCESSIBLE:  YES  NO

02 COMMENTS

Drinking water contamination

## VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

Ecology and Environment, Inc., Bruno PWS Site Files

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA						I. IDENTIFICATION	
EPA						01 STATE NE	02 SITE NUMBER D9876367829
<b>II. DRINKING WATER SUPPLY</b>							
01 TYPE OF DRINKING SUPPLY (Check as applicable)		02 STATUS			03 DISTANCE TO SITE		
SURFACE      WELL		ENDANGERED	AFFECTED	MONITORED			
COMMUNITY	A. <u>      </u>	B. <u>X</u>	A. <u>      </u>	B. <u>X</u>	C. <u>X</u>	A. <u>      </u> (mi)	
NON-COMMUNITY	C. <u>      </u>	D. <u>      </u>	D. <u>      </u>	E. <u>      </u>	F. <u>      </u>	B. <u>      </u> (mi)	
<b>III. GROUNDWATER</b>							
01 GROUNDWATER USE IN VICINITY (Check one)							
X A. ONLY SOURCE FOR DRINKING		B. DRINKING (Other sources available)		C. COMMERCIAL, INDUSTRIAL IRRIGATION (Limited other sources available)		D. NOT USED, UNUSABLE	
				COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available)			
02 POPULATION SERVED BY GROUND WATER <u>154</u>		03 DISTANCE TO NEAREST DRINKING WATER WELL <u>0</u> (mi)					
04 DEPTH TO GROUNDWATER <u>22</u> (ft)		05 DIRECTION OF GROUNDWATER FLOW <u>NW</u>		06 DEPTH TO AQUIFER OF CONCERN <u>22</u> (ft)	07 POTENTIAL YIELD OF AQUIFER <u>57,600</u> (gpd)	08 SOLE SOURCE AQUIFER	
						X YES	NO
09 DESCRIPTION OF WELLS (Including usage, depth, and location relative to population and buildings)							
G-30185, back-up PWS well, well depth 66 ft, depth to 27 ft on Coop property. G-30184, main PWS well, depth 138 ft, depth to water 65 ft, located next to town water tower.							
10 RECHARGE AREA Unknown but expected		11 DISCHARGE AREA Unknown but expected					
X YES	COMMENTS	X YES	COMMENTS				
NO	Well G-36184 is in recharge	NO	Well G-30185 is in discharge area				
<b>IV. SURFACE WATER</b>							
01 SURFACE WATER USE (Check one)							
A. RESERVOIR, RECREATION DRINKING WATER SOURCE		B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES		C. COMMERCIAL, INDUSTRIAL		D. NOT CURRENTLY USED	
02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER							
NAME:				AFFECTED	DISTANCE TO SITE		
					(mi)		
					(mi)		
					(mi)		
<b>V. DEMOGRAPHIC AND PROPERTY INFORMATION</b>							
01 TOTAL POPULATION WITHIN				02 DISTANCE TO NEAREST POPULATION			
ONE (1) MILE OF SITE		TWO (2) MILES OF SITE		THREE (3) MILES OF SITE		0 <u>      </u> (mi)	
A. <u>196</u>		B. <u>302</u>		C. <u>465</u>			
NO. OF PERSONS	NO. OF PERSONS	NO. OF PERSONS					
03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE				04 DISTANCE TO NEAREST OFF-SITE BUILDING			
				100 feet (mi)			
05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)							
Bruno is a rural village with a population of 154. The main population lives to the southeast of the Bruno Coop.							

## POTENTIAL HAZARDOUS WASTE SITE

## SITE INSPECTION REPORT

## PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION	
01 STATE NE	02 SITE NUMBER D9876367829

## II. ENVIRONMENTAL INFORMATION

## 01 PERMEABILITY OF UNSATURATED ZONE (Check one)

A.  $10^{-6} - 10^{-8}$  cm/sec  B.  $10^{-4} - 10^{-6}$  cm/sec  C.  $10^{-4} - 10^{-3}$  cm/sec  D. GREATER THAN  $10^{-3}$  cm/sec

## 02 PERMEABILITY OF BEDROCK (Check one)

A. IMPERMEABLE (Less than  $10^{-6}$  cm/sec)  B. RELATIVELY IMPERMEABLE ( $10^{-4} - 10^{-6}$  cm/sec)  C. RELATIVELY PERMEABLE ( $10^{-2} - 10^{-4}$  cm/sec)  D. VERY PERMEABLE (Greater than  $10^{-2}$  cm/sec)

03 DEPTH TO BEDROCK 300 (ft)	04 DEPTH OF CONTAMINATED SOIL ZONE Unknown (ft)	05 SOIL pH Unknown	
---------------------------------	--	-----------------------	--

06 NET PRECIPITATION -18 (in)	07 ONE YEAR 24 HOUR RAINFALL 2 (in)	08 SLOPE SITE SLOPE <1 %	DIRECTION OF SITE SLOPE NW	TERRAIN AVERAGE SLOPE 3 to 8 %
----------------------------------	--	-----------------------------	-------------------------------	-----------------------------------

09 FLOOD POTENTIAL SITE IS IN _____ YEAR FLOOD PLAN	10 SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY
--	---

11 DISTANCE TO WETLANDS (5 acre minimum) ESTUARINE A. _____ (mi)	OTHER B. _____ (mi)	12 DISTANCE TO CRITICAL HABITAT (of endangered species) ENDANGERED SPECIES: _____ (mi)
--	------------------------	---

13 LAND USE IN VICINITY DISTANCE TO: COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS, NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS PRIME AG LAND AG LAND
A. < 1/4 (mi)	B. < 1/4 (mi)	C. _____ (mi) D. < 1/4 (mi)

## 4 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

The Bruno Coop site is located in a topographic low. The back-up well, #G-30185 is located on property owned by the Coop. Well #G-30184, the main Bruno PWS well, is located in a topographic high, south-southeast of the Bruno Coop. The entire Coop site is topographically flat, with a slope of <1%.

## VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Ecology and Environment, Inc., Bruno PWS Site Files

Bruno Coop Association Site Investigation, October 24 through 26, 1988.

## POTENTIAL HAZARDOUS WASTE SITE

## SITE INSPECTION REPORT

## PART 6 - SAMPLE AND FIELD INFORMATION

EPA

## I. IDENTIFICATION

01 STATE NE 02 SITE NUMBER D9876367829

## II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER	6	U.S. EPA	Available
SURFACE WATER			
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL			
VEGETATION			
OTHER	28	Soil-gas	Available

## III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS

## IV. PHOTOGRAPHS AND MAPS

01 TYPE <input checked="" type="checkbox"/> GROUND <input checked="" type="checkbox"/> AERIAL	02 IN CUSTODY OF Ecology and Environment, Inc. (Name of organization or individual)
03 MAPS <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	04 LOCATION OF MAPS Ecology and Environment, Inc.

## V. OTHER FIELD DATA COLLECTED (Provide narrative description)

A soil-gas survey was performed to detect carbon tetrachloride during the October 24 through 26, 1988.  
SI performed by E & E/FIT.

## VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

E & E/FIT October 24 through 26, 1988 Site Investigation

POTENTIAL HAZARDOUS WASTE SITE						I. IDENTIFICATION	
SITE INSPECTION REPORT						01 STATE NE	02 SITE NUMBER D9876367829
PART 7 - OWNER INFORMATION							
II. CURRENT OWNER(S)			PARENT COMPANY (If applicable)				
01 NAME Bruno Coop Association		02 D+B NUMBER	08 NAME			09 D+B NUMBER	
03 STREET ADDRESS (P.O. BOX, RFD #, ETC.) Box 135			04 SIC CODE	10 STREET ADDRESS (P.O. BOX, RFD #, ETC.)			11 SIC CODE
05 CITY Bruno	06 STATE NE	07 ZIP CODE 68014	12 CITY		13 STATE	14 ZIP CODE	
01 NAME		02 D+B NUMBER	08 NAME			09 D+B NUMBER	
03 STREET ADDRESS (P.O. BOX, RFD #, ETC.)			04 SIC CODE	10 STREET ADDRESS (P.O. BOX, RFD #, ETC.)			11 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	12 CITY		13 STATE	14 ZIP CODE	
01 NAME			02 D+B NUMBER	08 NAME			09 D+B NUMBER
03 STREET ADDRESS (P.O. BOX, RFD #, ETC.)			04 SIC CODE	10 STREET ADDRESS (P.O. BOX, RFD #, ETC.)			11 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	12 CITY		13 STATE	14 ZIP CODE	
III. PREVIOUS OWNER(S) (List most recent first)			IV. REALTY OWNER(S) (If applicable; list most recent first)				
01 NAME Wagner Mills		02 D+B NUMBER	01 NAME			02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.) 1303 Colfax St.			04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE
05 CITY Schuyler	06 STATE NE	07 ZIP CODE 68661	05 CITY		06 STATE	07 ZIP CODE	
01 NAME Chicago Northwestern Transportation Co.		02 D+B NUMBER	01 NAME			02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.) 165 North Canal St.			04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE
05 CITY Chicago	06 STATE IL	07 ZIP CODE 60606	05 CITY		06 STATE	07 ZIP CODE	
01 NAME		02 D+B NUMBER	01 NAME			02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY		06 STATE	07 ZIP CODE	
J. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)							
Ecology and Environment, Inc., Bruno PWS Site Files.							

## POTENTIAL HAZARDOUS WASTE SITE

## SITE INSPECTION REPORT

## PART 8 - OPERATOR INFORMATION

## I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
NE D9876367829

## II. CURRENT OPERATOR (Provide if different from owner)

01 NAME Bruno Coop Association 02 D+B NUMBER 10 NAME 11 D+B NUMBER

03 STREET ADDRESS (P.O. BOX, RFD #, ETC.) 04 SIC CODE 12 STREET ADDRESS (P.O. BOX, RFD #, ETC.) 13 SIC CODE  
Box 135

05 CITY Bruno 06 STATE NE 07 ZIP CODE 68014 14 CITY 15 STATE 16 ZIP CODE

08 YEARS OF OPERATION 09 NAME OF OWNER  
1964 - Present Bruno Coop 10 NAME 11 D+B NUMBER

## III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

## PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

01 NAME Agrico Chemical Co. 02 D+B NUMBER 10 NAME 11 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.) 04 SIC CODE 12 STREET ADDRESS (P.O. Box, RFD #, etc.) 13 SIC CODE  
Box 61119

05 CITY New Orleans 06 STATE LA 07 ZIP CODE 70161 14 CITY 15 STATE 16 ZIP CODE

08 YEARS OF OPERATION 09 NAME OF OWNER DURING THIS PERIOD  
1969-1974 Wagner Mills 10 NAME 11 D+B NUMBER

01 NAME U.S. Department of Agriculture 02 D+B NUMBER 10 NAME 11 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.) 04 SIC CODE 12 STREET ADDRESS (P.O. Box, RFD #, etc.) 13 SIC CODE  
Unknown

05 CITY 06 STATE 07 ZIP CODE 14 CITY 15 STATE 16 ZIP CODE

08 YEARS OF OPERATION 09 NAME OF OWNER DURING THIS PERIOD  
1947-1964 Chicago & NW Railway Co. 10 NAME 11 D+B NUMBER

01 NAME 02 D+B NUMBER 10 NAME 11 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.) 04 SIC CODE 12 STREET ADDRESS (P.O. Box, RFD #, etc.) 13 SIC CODE

05 CITY 06 STATE 07 ZIP CODE 14 CITY 15 STATE 16 ZIP CODE

08 YEARS OF OPERATION 09 NAME OF OWNER DURING THIS PERIOD

## IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Ecology and Environment, Inc., Bruno PWS Site Files.

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 9 - GENERATOR/TRANSPORTER INFORMATION				I. IDENTIFICATION	
EPA				01 STATE NE	02 SITE NUMBER D9876367829
<b>II. ON-SITE GENERATOR</b>					
01 NAME None		02 D+B NUMBER			
03 STREET ADDRESS (P.O. BOX, RFD #, ETC.)		04 SIC CODE			
05 CITY		06 STATE	07 ZIP CODE		
<b>III. OFF-SITE GENERATOR(S)</b>					
01 NAME None		02 D+B NUMBER		01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY		06 STATE	07 ZIP CODE	05 CITY	06 STATE
01 NAME		02 D+B NUMBER		01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY		06 STATE	07 ZIP CODE	05 CITY	06 STATE
<b>IV. TRANSPORTER(S)</b>					
01 NAME None		02 D+B NUMBER		01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY		06 STATE	07 ZIP CODE	05 CITY	06 STATE
01 NAME		02 D+B NUMBER		01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY		06 STATE	07 ZIP CODE	05 CITY	06 STATE
<b>V. SOURCES OF INFORMATION</b> (Cite specific references, e.g., state files, sample analysis, reports)					
Ecology and Environment, Inc., Bruno PWS Site Files.					

## POTENTIAL HAZARDOUS WASTE SITE

EPA

## SITE INSPECTION REPORT

## PART 10 - PAST RESPONSE ACTIVITIES

## I. IDENTIFICATION

01 STATE  
NE02 SITE NUMBER  
D9876367829

## II. PAST RESPONSE ACTIVITIES

None

01  A. WATER SUPPLY CLOSED

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

01  B. TEMPORARY WATER SUPPLY PROVIDED

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

01  C. PERMANENT WATER SUPPLY PROVIDED

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

01  D. SPILLED MATERIAL REMOVED

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

01  E. CONTAMINATED SOIL REMOVED

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

01  F. WASTE REPACKAGED

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

01  G. WASTE DISPOSED ELSEWHERE

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

01  H. ON SITE BURIAL

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

01  I. IN SITU CHEMICAL TREATMENT

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

01  J. IN SITU BIOLOGICAL TREATMENT

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

01  K. IN SITU PHYSICAL TREATMENT

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

01  L. ENCAPSULATION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

01  M. EMERGENCY WASTE TREATMENT

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

01  N. CUTOFF WALLS

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

DESCRIPTION

01  O. EMERGENCY DIKING/SURFACE WATER DIVERSION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

DESCRIPTION

01  P. CUTOFF TRENCHES/SUMP

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

DESCRIPTION

01  Q. SUBSURFACE CUTOFF WALL

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

DESCRIPTION

## POTENTIAL HAZARDOUS WASTE SITE

EPA

## SITE INSPECTION REPORT

## PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE NE	02 SITE NUMBER D9876367829

## II. PAST RESPONSE ACTIVITIES (Continued) None

01 <input type="checkbox"/> R. BARRIER WALLS CONSTRUCTED	02 DATE	03 AGENCY
04 DESCRIPTION		
01 <input type="checkbox"/> S. CAPPING/COVERING	02 DATE	03 AGENCY
04 DESCRIPTION		
01 <input type="checkbox"/> T. BULK TANKAGE REPAIRED	02 DATE	03 AGENCY
04 DESCRIPTION		
01 <input type="checkbox"/> U. GROUT CURTAIN CONSTRUCTED	02 DATE	03 AGENCY
04 DESCRIPTION		
01 <input type="checkbox"/> V. BOTTOM SEALED	02 DATE	03 AGENCY
04 DESCRIPTION		
01 <input type="checkbox"/> W. GAS CONTROL	02 DATE	03 AGENCY
04 DESCRIPTION		
01 <input type="checkbox"/> X. FIRE CONTROL	02 DATE	03 AGENCY
04 DESCRIPTION		
01 <input type="checkbox"/> Y. LEACHATE TREATMENT	02 DATE	03 AGENCY
04 DESCRIPTION		
01 <input type="checkbox"/> Z. AREA EVACUATED	02 DATE	03 AGENCY
04 DESCRIPTION		
01 <input type="checkbox"/> 1. ACCESS TO SITE RESTRICTED	02 DATE	03 AGENCY
04 DESCRIPTION		
01 <input type="checkbox"/> 2. POPULATION RELOCATED	02 DATE	03 AGENCY
04 DESCRIPTION		
01 <input type="checkbox"/> 3. OTHER REMEDIAL ACTIVITIES	02 DATE	03 AGENCY
04 DESCRIPTION		

## 7. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Ecology and Environment, Inc., Bruno PWS Site Files.

POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 11 - ENFORCEMENT INFORMATION

EPA

I. IDENTIFICATION	
01 STATE NE	02 SITE NUMBER D9876367829

## II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION  YES  NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

## III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

**Appendix C**

**Address, Owner, and Operator Information  
Potentially Responsible Parties**

DIRECTORS, OFFICERS, AND CORPORATE ADDRESSES

Bruno COOP Association

Director: The Officers

Officers: Robert Langhorst, Manager  
David Stara, President  
David Kastl, V.P.  
James Polivka, Sec-Treas.

Facility Address/Telephone Number

Main Street  
Box 135  
Bruno, NE 68014  
(402) 543-2226

Accountants: Gardiner & Co., CPA

Wagner Mills, Inc.

Directors: The Officers

Officers: LeRoy Trofholz, President  
Lenor F. Benesch, V.P.  
Marjorie Gaeth, Sec-Treas.

Facility Address:

Main Street  
Burno, NE 68014  
(No telephone number in Bruno)

Corporate Headquarters:

1303 Colfax St.  
Schuyler, NE 68661  
(402) 352-2471

Auditors: Peat, Marwick, Mitchell (Lincoln, NE)

Business Insurance Broker: Alexander & Alexander (Lincoln, NE)

Bank: Norwest Bank (Omaha, NE)

Agrico Chemical Company

Directors: Unknown

Officers: R. B. Gwyn, President  
Henry C. Hirsh, V.P.-Admin.  
Bobby L. Latham, V.P.-Mfg.  
Darrell D. Martin, V.P.-Intl. Mkg.  
Harvey E. O'Neill, V.P.-Dom. Mkg.  
Steven A. Savage, V.P.-Dom. Mkg.

**Corporate Headquarters:**

Box 61119  
New Orleans, LA 70161  
(504) 582-4000

1615 Poydras St.  
New Orleans, LA 7011

**United States Department of Agriculture**

No information was obtained for the USDA.

**Chicago North Western Transportation Company**

**Directors:** J.R. Wolfe, CEO  
John M. Bulter, CFO

**Officers:** J.R. Wolfe, President  
G.R. Carr, V.P.-Contr.  
J.E. Voldseth, Treas.  
G.R. Charles, Treas.  
R. Schmiege, Sr. V.P.-Admin.  
R.L. Wilson, V.P.-Pers.  
J.P. Dale, Sr. V.P.-Law & Real  
Estate  
John M. Butler, Sr. V.P.-Fin.  
Robert D. Smith, Sr. V.P.-Comm.  
W.D. Anderson, A.V.P.-Fin.  
R.L. Wilson, V.P.-Pers.  
J. Eberhardt, Mgr.  
R.W. Mickey, V.P.-Real Estate  
L.G. Harrison, Mgr-Real Estate

**Corporate Headquarters:**

165 North Canal Street  
Chicago, IL 60606  
(312) 559-6000

**Auditors:** Arthur Anderson (Chicago, IL)

**Business Insurance Broker:** Marsh & McLennan (Chicago, IL)  
Rollins Burdick Hunter (Chicago, IL)

**Investment Bankers:** Goldman, Sachs (New York, NY)  
Salomon Bros. (New York, NY)

**Legal Counsel:** Sonnenschein, Carlin, Nath, & Rosenthal (Chicago, IL)

**Major Banking Relationship:** Continental Illinois (Chicago, IL)  
First Chicago (Chicago, IL)

C & NW Coroporation

Directors: J.R. Wolfe  
Robert E. Brooker  
J.M. Butler  
W.H. Clark  
F.C. Langenberg  
R.D. Leach  
J.A. Zito  
Louis T. Duerinck  
R.W. Russell  
J.V. Springrose  
E.P. Berg  
C.J. Gauthier

Officers: J.R. Wolfe, President  
John M. Butler-Sr. V.P.  
Jerome W. Conlon-Sr. V.P.  
James P. Daley-Sr. V.P.  
Robert W. Schmiege-Sr. V.P.  
Robert D. Smith-Sr. V.P.

**Corporate Headquarters:**

One North Western Center  
Chicago, IL 60606  
(312) 559-7000

**Appendix D**  
**Data Transmittal**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7  
25 FUNSTON ROAD  
KANSAS CITY, KANSAS 66115

DATE: 11/23/88

MEMORANDUM

SUBJECT: Data Transmittal for Activity #: TK9A4  
Site Description: Bruno PWS

FROM: Harold G. Brown, Ph.D. W. Bunn  
Acting Chief, Laboratory Branch, ENSV

TO: Robert L. Morby  
Chief, Superfund Branch, WSTM

Attached is the data transmittal for the above referenced site. This should be considered a        Partial or  X   Complete data transmittal (completes transmittal of                   ). If you have any questions or comments, please contact Dee Simmons at 236-3881.

Attachments

cc: Data Files

EPA Region VII

Data Qualification Codes

- U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.
- M - Compound was qualitatively identified; however, quantitative value is less than contract required quantitation limits (CLP data); or value is less than limit of quantitation (EPA data) and is, therefore, an estimated value.
- J - The associated numerical value is an estimated quantity.
- I - The data are invalid (compound may or may not be present). Resampling and/or reanalysis is necessary for verification.
- O - Sample lost or not analyzed.
- L - Value known to be higher than value reported.
- N - Presumptive evidence of presence of material.
- NA - Sample was not analyzed for this compound.
- NJ - Presumptive evidence of the presence of the material at an estimated quantity.
- UJ - The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

Codes for Flash Point Data

- L - The sample did not ignite or "flash." This is the highest temperature at which the sample was tested. It is possible that the material may be ignitable at higher temperatures.
- K - The sample did ignite or "flash" at the lowest temperature tested. This is usually the ambient temperature at the time of the test. It is possible that the material may be ignitable at even lower temperatures.

## ANALYSIS TYPE: VOLATILES

TITLE: WATER FOR VOLATILES

LAB: REGION VII EPA

SAMPLE PREP:   ANALYST/ENTRY: DME REVIEWER:   

MATRIX: WATER

METHOD: 6241W00

UNITS: ug/l

CASE:   

DATE: 11/22/86

DATA FILE : DE1

SAMPLES	TK9A4001	TK9A4002	TK9A4003	TK9A4004
CHLOROMETHANE	2.4 U	2.4 U	2.4 U	2.4 U
BROMOMETHANE	4.4 U	4.4 U	4.4 U	4.4 U
VINYL CHLORIDE	2.8 U	2.8 U	2.8 U	2.8 U
CHLOROETHANE	2.8 U	2.8 U	2.8 U	2.8 U
METHYLENE CHLORIDE	2.0 U	2.0 U	2.0 U	2.0 U
ACETONE	2.0 U	2.0 U	2.0 U	2.0 U
CARBON DISULFIDE	1.0 U	1.0 U	1.0 U	1.0 U
1,1-DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U
1,1 DICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U
1,2,-DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U
CHLOROFORM	1.0 U	4.0 J	4.0 J	4.0 J
1,2-DICHLOROETHANE	1.0 U	12 J	4.0 J	4.0 J
2-BUTANONE	2.0 U	2.0 U	3.0 U	3.0 U
1,1,1-TRICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U
CARBON TETRACHLORIDE	1.0 U	27 J	29 J	31 J
VINYL ACETATE	2.0 U	2.0 U	2.0 U	2.0 U
BROMODICHLOROMETHANE	1.0 U	1.0 U	1.0 U	1.0 U
1,2-DICHLOROPROPANE	1.0 U	1.0 U	1.0 U	1.0 U
CIS-1,3-DICHLOROPROPENE	1.0 U	1.0 U	1.0 U	1.0 U
TRICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U
BENZENE	1.0 U	1.0 U	1.0 U	1.0 U
DIBROMOCHLOROMETHANE	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-TRICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U
TRANS-1,3-DICHLOROPROPENE	1.0 U	1.0 U	1.0 U	1.0 U
BROMOFORM	1.0 U	1.0 U	1.0 U	1.0 U
4-METHYL-2-FENTANONE	2.0 U	2.0 U	2.0 U	2.0 U
2-HEXANONE	2.0 U	2.0 U	2.0 U	2.0 U
1,1,2,2-TETRACHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U
TETRACHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U
TOLUENE	1.0 U	1.0 U	1.0 U	1.0 U
CHLOROBENZENE	1.0 U	1.0 U	1.0 U	1.0 U
ETHYL BENZENE	1.0 U	1.0 U	1.0 U	1.0 U
STYRENE	1.0 U	1.0 U	1.0 U	1.0 U
TOTAL XYLEMES	1.0 U	1.0 U	1.0 U	1.0 U

## ANALYSIS TYPE: VOLATILES

TITLE: WATER FOR VOLATILES

LAB: REGION VII EPA

SAMPLE PREP: JMS

MATRIX: WATER

METHOD: 6241W00

UNITS: ug/l

CASE:

DATE: 11/22/83

ANALYST/ENTRY: DME REVIEWER: AB

DATA FILE : DE1

SAMPLES	TK9A4005	TK9A4006F
CHLOROMETHANE	2.4 U	2.4 U
BROMOMETHANE	4.4 U	4.4 U
VINYL CHLORIDE	2.8 U	2.8 U
CHLOROETHANE	2.8 U	2.8 U
METHYLENE CHLORIDE	2.0 U	2.0 U
ACETONE	2.0 U	2.0 U
CARBON DISULFIDE	1.0 U	1.0 U
1,1-DICHLOROETHENE	1.0 U	1.0 U
1,1 DICHLOROETHANE	1.0 U	1.0 U
1,2,-DICHLOROETHENE	1.0 U	1.0 U
CHLOROFORM	4.0 J	1.0 U
1,2,DICHLOROETHANE	12 J	1.0 U
2-BUTANONE	4.0 U	2.0 U
1,1,1-TRICHLOROETHANE	1.0 U	1.0 U
CARBON TETRACHLORIDE	32 J	1.0 U
VINYL ACETATE	2.0 U	2.0 U
BROMODICHLOROMETHANE	1.0 U	1.0 U
1,2-DICHLOROPROPANE	1.0 U	1.0 U
CIS-1,3-DICHLOROPROPENE	1.0 U	1.0 U
TRICHLOROETHENE	1.0 U	1.0 U
BENZENE	1.0 U	1.0 U
DIBROMOCHLOROMETHANE	1.0 U	1.0 U
1,1,2-TRICHLOROETHANE	1.0 U	1.0 U
TRANS-1,3-DICHLOROPROPENE	1.0 U	1.0 U
BROMOFORM	1.0 U	1.0 U
4-METHYL-2-PENTANONE	2.0 U	2.0 U
2-HEXANONE	2.0 U	2.0 U
1,1,2,2-TETRACHLOROETHANE	1.0 U	1.0 U
TETRACHLOROETHENE	1.0 U	1.0 U
TOLUENE	1.0 U	1.0 U
CHLOROBENZENE	1.0 U	1.0 U
ETHYL BENZENE	1.0 U	1.0 U
STYRENE	1.0 U	1.0 U
TOTAL XYLENES	1.0 U	1.0 U



# UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7  
25 FUNSTON ROAD  
KANSAS CITY, KANSAS 66115

DATE: 1/25/89

## MEMORANDUM

SUBJECT: Data Transmittal for Activity #: DC 946,  
Site Description: Bruno Plus

FROM: Andrea Jirka   
Chief, Laboratory Branch, ENSV

TO: Robert L. Morby  
Chief, Superfund Branch, WSTM

Attached is the data transmittal for the above referenced site. This should be considered a        Partial or  Complete data transmittal (completes transmittal of                   ). If you have any questions or comments, please contact Dee Simmons at 236-3881.

## Attachments

cc: Data Files  
Ann Melia, E&E/FIT

EPA Region VII

Data Qualification Codes

- U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.
- M - Compound was qualitatively identified; however, quantitative value is less than contract required quantitation limits (CLP data); or value is less than limit of quantitation (EPA data) and is, therefore, an estimated value.
- J - The associated numerical value is an estimated quantity.
- I - The data are invalid (compound may or may not be present). Resampling and/or reanalysis is necessary for verification.
- O - Sample lost or not analyzed.
- L - Value known to be higher than value reported.
- N - Presumptive evidence of presence of material.
- NA - Sample was not analyzed for this compound.
- NJ - Presumptive evidence of the presence of the material at an estimated quantity.
- UJ - The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

Codes for Flash Point Data

- L - The sample did not ignite or "flash." This is the highest temperature at which the sample was tested. It is possible that the material may be ignitable at higher temperatures.
- K - The sample did ignite or "flash" at the lowest temperature tested. This is usually the ambient temperature at the time of the test. It is possible that the material may be ignitable at even lower temperatures.

## ANALYSIS TYPE: VOLATILES

TITLE: BRUNO PWS  
 LAB: VERSAR  
 SAMPLE PREP: \_\_\_\_\_  
 ANALYST/ENTRY: NUL REVIEWER: TM  
 MATRIX: WATER  
 METHOD: 9302M01  
 DATA FILE : NZ4  
 UNITS: ug/l  
 CASE: 4369G  
 DATE: 01/19/89

SAMPLES	DC906001	DC906002	DC906003	DC906004
CHLOROMETHANE	2.0 W	2.0 W	2.0 W	2.0 W
BROMOMETHANE	2.0 U	2.0 U	2.0 U	2.0 U
VINYL CHLORIDE	2.0 U	2.0 U	2.0 U	2.0 U
CHLOROETHANE	2.0 U	2.0 W	2.0 W	2.0 W
METHYLENE CHLORIDE	1.0 U	1.0 U	1.0 U	1.0 U
ACETONE	2.0 W	2.0 W	2.0 W	2.0 W
CARBON DISULFIDE	1.0 W	1.0 U	1.0 U	1.0 U
1,1 DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U
1,1 DICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U
1,2,-DICHLOROETHENE (TOTAL)	1.0 U	1.0 U	1.0 U	1.0 U
CHLOROFORM	4.0	2.0	2.0	3.0
1,2,DICHLOROETHANE	12 J	3.0	3.0	12
2-BUTANONE	I	I	I	I
1,1,1 TRICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U
CARBON TETRACHLORIDE	37 J	15	14	29
VINYL ACETATE	2.0 U	2.0 U	2.0 U	2.0 U
BROMODICHLOROMETHANE	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2,-TETRACHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U
1,2-DICHLOROPROPANE	1.0 U	1.0 U	1.0 U	1.0 U
TRANS-1,3-DICHLOROPROPENE	1.0 U	1.0 U	1.0 U	1.0 U
TRICHLOROETHENE	1.0 W	1.0 U	1.0 U	1.0 U
DIBROMOCHLOROMETHANE	1.0 W	1.0 U	1.0 U	1.0 U
1,1,2-TRICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U
BENZENE	1.0 U	1.0 U	1.0 U	1.0 U
CIS-1,3-DICHLOROPROPENE	1.0 U	1.0 U	1.0 U	1.0 U
BROMOFORM	1.0 W	1.0 U	1.0 U	1.0 U
2-HEXANONE	2.0 W	2.0 W	2.0 W	2.0 W
4-METHYL-2-PENTANONE	2.0 U	2.0 U	2.0 U	2.0 U
TETRACHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U
TOLUENE	1.0 U	1.0 U	1.0 U	1.0 U
CHLOROBENZENE	1.0 U	1.0 U	1.0 U	1.0 U
EIHYL BENZENE	1.0 U	1.0 U	1.0 U	1.0 U
STYRENE	1.0 U	1.0 U	1.0 U	1.0 U
TOTAL XYLENES	1.0 W	1.0 U	1.0 U	1.0 U

## ANALYSIS TYPE: VOLATILES

TITLE: BRUNO PWS

MATRIX: WATER

UNITS: UG/L

LAB: VERSAR

METHOD: 9302M01

CASE: 4369G

SAMPLE PREP: \_\_\_\_\_

ANALYST/ENTRY: NJL REVIEWER: TOY

DATE: 01/19/89

DATA FILE : N24

SAMPLES	DC906005	DC906006F
CHLOROMETHANE	2.0 W	2.0 W
BROMOMETHANE	2.0 U	2.0 U
VINYL CHLORIDE	2.0 U	2.0 U
CHLOROETHANE	2.0 U	2.0 U
METHYLENE CHLORIDE	1.0 U	2.0
ACETONE	2.0 W	2.0 J
CARBON DISULFIDE	1.0 W	1.0 W
1,1 DICHLOROETHENE	1.0 U	1.0 U
1,1 DICHLOROETHANE	1.0 U	1.0 U
1,2,-DICHLOROETHENE (TOTAL)	1.0 U	1.0 U
CHLOROFORM	1.0 U	1.0 U
1,2,DICHLOROETHANE	1.0 W	1.0 W
2-BUTANONE	I	I
1,1,1 TRICHLOROETHANE	1.0 U	1.0 U
CARBON TETRACHLORIDE	1.0 W	1.0 W
VINYL ACETATE	2.0 U	2.0 U
BROMODICHLOROMETHANE	1.0 U	1.0 U
1,1,2,2,-TETRACHLOROETHANE	1.0 U	1.0 U
1,2-DICHLOROPROPANE	1.0 U	1.0 U
TRANS-1,3-DICHLOROPROPENE	1.0 U	1.0 U
TRICHLOROETHENE	1.0 W	1.0 W
DIBROMOCHLOROMETHANE	1.0 W	1.0 W
1,1,2-TRICHLOROETHANE	1.0 U	1.0 U
BENZENE	1.0 U	1.0 U
CIS-1,3-DICHLOROPROPENE	1.0 U	1.0 U
BROMOFORM	1.0 W	1.0 W
2-HEXANONE	2.0 W	2.0 W
4-METHYL-2-PENTANONE	2.0 U	2.0 U
TETRACHLOROETHENE	1.0 U	1.0 U
TOLUENE	1.0 U	1.0 U
CHLOROBENZENE	1.0 U	1.0 U
ETHYL BENZENE	1.0 U	1.0 U
STYRENE	1.0 U	1.0 U
TOTAL XYLEMES	1.0 W	1.0 W

**TENTATIVELY IDENTIFIED COMPOUNDS**

TITLE: BRUNO PWS                    MATRIX: WATER                    UNITS: UG/L  
 LAB: VERSAR                        METHOD: 9302M01                CASE: 4369G  
 ANALYST/ENTRY: NUL            REVIEWER: RGL                DATE: 01-19-89

<u>SAMPLE ID</u>	<u>COMPOUND NAME</u>	<u>FRACTION</u>	<u>EST. CONC.</u>
DC906001	NONE	VOA	
DC906002	NONE	VOA	
DC906003	NONE	VOA	
DC906004	NONE	VOA	
DC906005	NONE	VOA	
DC906006 F <sup>do</sup>	1 UNKNOWN	VOA	2 JN

NSI Technology Services Corporation  
Gateway Center Tower II, Suite #311  
Fourth & State Avenue  
Kansas City, KS 66101  
(913) 281-0307

TO: Debra Morey  
Data Review Task Monitor  
THRU: Andrea Jirka  
ESAT Deputy Project Officer, EPA  
  
FROM: Nancy J. Lappin *NGL*  
ESAT Data Reviewer *1/1*  
THRU: Tenkasi S. Viswanathan, Ph.D.  
ESAT Manager  
  
DATE: January 19, 1989  
SUBJECT: Review of organic data for Bruno PWS.

TID# 07-8901-114  
ASSIGNMENT# 85  
ICF ACCT# 302-26-114-02  
NSI S.O.# 4632-1142

These data were reviewed according to the "Laboratory Data Validation Functional Guidelines for Evaluating Organic Analyses," February 1988 revision and the Region VII Organic Data Review Training Manual.

The following comments and attached data sheets are a result of the ESAT review of the above mentioned data.

CASE NO.: 4369G

SITE: BRUNO PWS

REVIEWER: NANCY J. LAPPIN

LABORATORY: VERSAR

METHOD NO.: 9302M01

EPA ACTIVITY NO.: DC906

MATRIX: WATER

<u>SMO Sample No.</u>	<u>EPA Sample No.</u>
GF827	DC906001
GF828	DC906002
GF829	DC906003
GF830	DC906004
GF831	DC906005
GF832	DC906006F

## GENERAL

This data review assignment covers SIX WATER samples from case 4369G analyzed for VOLATILE ORGANICS. One field blank was included in this assignment.

## VOLATILES

### 1. Technical Holding Times

A. Holding time criteria were met for all sample analyses.

### 2. GC/MS Tuning

A. All BFB tuning criteria were met.

### 3. Initial and Continuing Calibration

A. One initial calibration and two continuing calibrations were performed. The average relative response factor for 2-Butanone was less than 0.05 in the initial calibration and the RRF50 was less than .05 in both continuing calibrations. Also, for this compound, the %RSD was greater than 30% in the initial calibration and the %Ds were greater than 25% in both continuing calibrations. All sample results for 2-Butanone were coded "I."

B. The %RSDs for Chloromethane, Acetone, and 2-Hexanone were greater than 30% in the initial calibration performed on 12-29-88. Acetone was detected in the field blank. That result was coded "J." All other sample results for these compounds were non-detect and were coded "U."

C. The first continuing calibration, performed on 12-29-88, corresponded to the analysis of samples DC906002, -003, and -004. The %Ds for Chloroethane, Acetone, and 2-Hexanone were greater than 25%. Sample results for Acetone and 2-Hexanone were previously coded. Results for Chloroethane in these samples were non-detect and were coded "U."

C. The second continuing calibration, performed on 12-30-88, corresponded to the analysis of samples DC906001, -005, and -006F. The %Ds were greater than 25% for Chloromethane, Carbon Disulfide, 1,2-Dichloroethane, Carbon Tetrachloride, Trichloroethene, Dibromochloromethane, Bromoform, and Xylene (total). Sample results for Chloromethane were previously coded. Results for 1,2-Dichloroethane and Carbon Tetrachloride were positive in sample DC906001 and were coded "J." Other sample results, corresponding to this calibration and the outliers mentioned above, were non-detect and were coded "U."

### 4. Internal Standard Response

A. Internal standard responses were within control limits.

### 5. Method Blanks

A. Two method blanks, VBLK4 and VBLK5, and one field blank, DC906006F, were analyzed. Acetone was detected in VBLK4. Acetone and 2-Butanone were

detected in VBLK5. Acetone and Methylene Chloride were detected in the field blank. All of these compounds are common contaminants. Sample results for 2-Butanone were previously invalidated. Samples DC906001 and DC906002 were reported to contain Acetone and were qualified according to the blank rule.

6. Surrogates

A. Surrogate recoveries were within control limits.

7. Matrix Spike/Matrix Spike Duplicate

A. All RPDs and Percent Spike Recoveries were within control limits for the MS/MSD analyses of sample DC906005.

8. Compound Identification and Quantitation

A. Target compound identifications were generally supported by good agreement between sample and standard spectra.

B. A larger sample volume was used for these analyses, 25 ml as opposed to the 5 ml volume recommended in the SOW, to achieve a lower detection limit.

C. CLP contract requirements were met for all samples with respect to proper calculations for RRFs, %RSDs, %Ds, and sample concentrations.

9. Summary for volatiles

A. Sample results for 2-Butanone were invalidated due to calibration outliers.

B. Approximately 20% of the data is estimated due to failure to meet one or more QC criteria.

C. This data package generally meets the requirements for precision, accuracy and completeness described in SOP 9521M00.

**Appendix E**  
**Field Sheets and**  
**Chain-of-Custody Sheets**

**CHAIN OF CUSTODY RECORD**  
**ENVIRONMENTAL PROTECTION AGENCY REGION VII**

FIELD SHEET  
U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII  
ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115

Site Name: BRUNO PUBLIC WATER SUPPLY Site Number: :  
Location: BRUNO NE Site Code: :

Collected: YR: 88 MO: 10 Day: 26 Time: 15:30 Leader: A.MELIA

Sample Number: TK9A4001 SMO #: :

Sample Media (circle one):  
SOIL, DUST, RINSATE, SEDIMENT, WATER, OTHER: :

Sample Split (circle one): YES NO

Sample Container : Tag Color : Preservative : Analysis Requested

40 ML.VIAL : LIME : ICE - 4C : LDL VOA

Depth: \_\_\_\_\_ Pan #: \_\_\_\_\_ Aliquots: \_\_\_\_\_

Samplers: Anne Melia  
Dave Zimmerman

COMMENTS OF FIELD PERSONNEL

Site Description: Old well # G-30185  
Well depth 66 feet

Temp 13°C

pH = 7

Sp Con. 500 umhos

## FIELD SHEET

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII  
ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115

: Site Name: BRUNO PUBLIC WATER SUPPLY Site Number:  
: Location: BRUNO NE Site Code:

Collected: YR: 88 MO: 10 Day: 26 Time: 15:45 Leader: A.MELIA  
Sample Number: TK9A4002 SMO #: 16:10 ASM

: Sample Media (circle one): SOIL, DUST, RINSATE, SEDIMENT, **WATER**, OTHER: \_\_\_\_\_  
: Sample Split (circle one): YES **NO**

: Sample Container : Tag Color : Preservative : Analysis Requested

40 ML.VIAL : LIME : ICE - 4C : LDL VOA

Depth: \_\_\_\_\_ Fan #: \_\_\_\_\_ Aliquots: \_\_\_\_\_

Samplers: Anne Melia

Dale Zimmerman

COMMENTS OF FIELD PERSONNEL

: Site Description: New Well # G-30184

Well Depth 138 feet

Temp: 15°C

600 Spcl. umhos

$$p_A = 6.85$$

FIELD SHEET  
U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII  
ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115

: Site Name: BRUNO PUBLIC WATER SUPPLY Site Number: :  
: Location: BRUNO NE Site Code: :

Collected: YR: 88 MO: 10 Day: 26 Time: 15:45 Leader: A.MELIA  
Sample Number: TK9A4004 SMO #:  
Sample Media (circle one):  
SOIL, DUST, RINSATE, SEDIMENT, WATER, OTHER: \_\_\_\_\_  
Sample Split (circle one): YES NO

Depth: \_\_\_\_\_ Pan #: \_\_\_\_\_ Aliquots: \_\_\_\_\_  
Samplers: Anne Melia  
Dave Zimmerman

**COMMENTS OF FIELD PERSONNEL**

Site Description: Bruno School  
(Distribution Sample)

**CHAIN OF CUSTODY RECORD**  
**ENVIRONMENTAL PROTECTION AGENCY REGION VII**

ACTIVITY LEADER(Print) Anne Melia		NAME OF SURVEY OR ACTIVITY Bruno Public Water Supply				DATE OF COLLECTION 19 12 88		SHEET 1 01 1		
CONTENTS OF SHIPMENT										
SAMPLE NUMBER	TYPE OF CONTAINERS				SAMPLED MEDIA		RECEIVING LABORATORY REMARKS/OTHER INFORMATION (condition of samples upon receipt, other sample numbers, etc.)			
	CUBITAINER	BOTTLE	BOTTLE	BOTTLE	VOA SET (2 VIALS EA)	Water			Soil	Sediment
NUMBERS OF CONTAINERS PER SAMPLE NUMBER										
DC906001				2	✓					FNE0136514, 24
002				2	✓					
003				2	✓					
004				2	✓					
005				2	✓					
006				2	✓					
DESCRIPTION OF SHIPMENT				MODE OF SHIPMENT						
PIECE(S) CONSISTING OF _____ BOX(ES)				COMMERCIAL CARRIER: _____						
<input checked="" type="checkbox"/> ICE CHEST(S); OTHER _____				<input type="checkbox"/> COURIER <input checked="" type="checkbox"/> SAMPLER CONVEYED						
									(SHIPPING DOCUMENT NUMBER)	
PERSONNEL CUSTODY RECORD										
RELINQUISHED BY (SAMPLER)		DATE	TIME	RECEIVED BY		REASON FOR CHANGE OF CUSTODY				
<input checked="" type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED		12/20	14:00	<input checked="" type="checkbox"/> SEALED	<input type="checkbox"/> UNSEALED	analysis				
RELINQUISHED BY		DATE	TIME	RECEIVED BY		REASON FOR CHANGE OF CUSTODY				
<input type="checkbox"/> SEALED <input checked="" type="checkbox"/> UNSEALED				<input type="checkbox"/> SEALED	<input checked="" type="checkbox"/> UNSEALED					
RELINQUISHED BY		DATE	TIME	RECEIVED BY		REASON FOR CHANGE OF CUSTODY				
<input type="checkbox"/> SEALED <input checked="" type="checkbox"/> UNSEALED				<input type="checkbox"/> SEALED	<input checked="" type="checkbox"/> UNSEALED					

## FIELD SHEET

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII  
ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115

: Site Name: BRUNO FWS Site Number: :  
: Location: BRUNO NE Site Code: :

: Collected: YR: 88 MO: 19 Day: 19 Time: 13:50 Leader: A MELIA :

Sample Number: DC906001 SMO #: 1

: Sample Media (circle one): :  
: SOIL, DUST, RINSEATE, SEDIMENT, WATER, OTHER: \_\_\_\_\_ :

: Sample Split (circle one): YES ( NO )

: Sample Container : Tag Color : Preservative : Analysis Requested :

40-ML VIAL      : LIME      : ICE      : LDL VOA

Depth: \_\_\_\_\_ Pan #: \_\_\_\_\_ Aliquots: \_\_\_\_\_

Samplers: Anne Metta

Mary Knowles

### COMMENTS OF FIELD PERSONNEL

: Site Description:

• Bruno Well # 6 - 3085 Depth 66 ft

Sp. Cond - 400

: pH - 6.8

: Temp - 12°C

FIELD SHEET  
U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII  
ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115

: Site Name: BRUNO FWS Site Number: :  
: Location: BRUNO NE Site Code: :

Collected: YR: 88 MO: 12 Day: 19 Time: 13:30 Leader: A MELIA  
Sample Number: DC906002 SMO #:  
Sample Media (circle one):  
SOIL, DUST, RINSATE, SEDIMENT, WATER, OTHER: \_\_\_\_\_  
Sample Split (circle one): YES NO

: Sample Container : Tag Color : Preservative : Analysis Requested :

40-ML VIAL      : LIME      : ICE      : LDL VOA

Depth: \_\_\_\_\_ Pan #: \_\_\_\_\_ Aliquots: \_\_\_\_\_  
Samplers: Anne Melia  
Mary Kinnishes

**COMMENTS OF FIELD PERSONNEL**

Site Description: Bruno Well #G-30184 Depth 138 ft  
Sp Cond - 450 pH - 6.70 Temp - 80°C

FIELD SHEET  
U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII  
ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115

: Site Name: BRUNO FWS Site Number: :  
: Location: BRUNO NE Site Code: :

Collected: YR: 88 MO: 12 Day: 19 Time: 13:30 Leader: A MELIA  
Sample Number: DC906003 SMO #:  
Sample Media (circle one):  
SOIL, DUST, RINSATE, SEDIMENT, WATER, OTHER: \_\_\_\_\_  
Sample Split (circle one): YES NO

: Sample Container : Tag Color : Preservative : Analysis Requested :

40-ML VIAL : LIME : ICE : LDL VOA

Depth: \_\_\_\_\_ Pan #: \_\_\_\_\_ Aliquots: \_\_\_\_\_  
Samplers: Anne Melia  
Mary Knielen

**COMMENTS OF FIELD PERSONNEL**

Site Description:  
Duplicate of CO2  
Well # (→ 30184 Depth 138 ft  
Temp 80°C  
pH = 6.7  
So Cond = 450

## FIELD SHEET

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII  
ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115

: Site Name: BRUNO PWS Site Number: :  
: Location: BRUNO NE Site Code: :

Collected: YR: 88 MO: 12 Day: 19 Time: 16:10 PM Leader: A MELIA  
Sample Number: DC906004 SMO #: 14:00  
Sample Media (circle one): SOIL, DUST, RINSATE, SEDIMENT, WATER, OTHER: \_\_\_\_\_  
Sample Split (circle one): YES NO

: Sample Container : Tag Color : Preservative : Analysis Requested :

40-ML VIAL      : LIME      : ICE      : LDL VOA

Depth: \_\_\_\_\_ Fan #: \_\_\_\_\_ Aliquots: \_\_\_\_\_  
Samplers: Anne Melia  
Mary Knobles

**COMMENTS OF FIELD PERSONNEL**

Site Description: Bruno School Drinking  
Sp cond - 420 mhos Fountain  
pH - 6.8  
Temp - 12.0°C

## FIELD SHEET

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII  
 ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115

Site Name: BRUNO PWS Site Number:   
 Location: BRUNO NE Site Code:   
 Collected: YR: 88 MO: 12 Day: 20 Time: 09:00 Leader: A MELIA   
 Sample Number: DC906005 SMO #:   
 Sample Media (circle one): SOIL, DUST, RINSATE, SEDIMENT, WATER, OTHER:   
 Sample Split (circle one): YES NO   
 Sample Container : Tag Color : Preservative : Analysis Requested :   
 40-ML VIAL : LIME : ICE : LDL VOA   
 Depth: \_\_\_\_\_ Pan #: \_\_\_\_\_ Aliquots: \_\_\_\_\_   
 Samplers: Anne Melia   
Mark Knobles

## COMMENTS OF FIELD PERSONNEL

Site Description: Background Well   
 SP CORD - 510 Well depth 130ft   
 pit - 6ft   
 Temp - 10°C Owner: Clarence Votava   
 826 N.   
 - Drive City, NE 68632

FIELD SHEET  
U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII  
ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115

: Site Name: BRUNO FWS Site Number: :  
: Location: BRUNO NE Site Code: :

: Collected: YR: 88 MO: 17 Day: 19 Time: 14:10 Leader: A MELIA

Sample Number: DC906004F . SMO #:

: Sample Media (circle one):  
: SOIL, DUST, RINSE, SEDIMENT, WATER, OTHER: \_\_\_\_\_

: Sample Split (circle one): YES  NO

: Sample Container : Tag Color : Preservative : Analysis Requested :

40-ML VIAL : LIME : ICE : LDL VOA

Depth: \_\_\_\_\_ Pan #: \_\_\_\_\_ Aliquots: \_\_\_\_\_

Samplers: Anne Maria

Mary Kneller

#### COMMENTS OF FIELD PERSONNEL

• Site Description: Field Blank

**Appendix F**  
**Plat 1 - Soil-Gas Survey Results**

**Appendix G**

**Well Logs**

Registration No. G-30185 County of Butler Date Filed Aug. 20, 1968

STATE OF NEBRASKA  
CERTIFICATE OF WELL DRILLER

I, UNKNOWN..... of.....  
(Name of Driller) (Postoffice Address)

County of..... State of....., do hereby certify that:

1. I am the driller of a well located on the \_\_\_\_\_ Quarter, Section No. \_\_\_\_\_

Township..... North, Range....., owned by..... Village of Bruno.....

whose postoffice address is..... Brune..... State of..... Nebraska

2. That the drilling was begun on the.....day of....., 19....., and completed on  
the.....day of.....UNKNOWN....., 19.....

3. That the well is cased and screened in the following manner:..... 18' liner screen;.....

(Give kind of casing, lengths and position of plain and screen casing, weight of metallic casing, etc.)

.....4" I.D....x...5" O.D....stainless steel Keystone wire-wrapped.....1965.....inside.....old 8" nominal.....brass strainer that had failed. Eight

.....Installed by Layne-Western Co. in

4. That the diameter of drilled hole is.....~~30~~<sup>30</sup> inches.

strainer that had failed. Eight inch standard steel pipe extended to surface.

5. That **UNKNOWN** type of drilling machinery was used to surface.

6. That the drilled hole is/is not sealed, as follows:..... **UNKNOWN**

7. That the following is an accurate log of the depth, thickness and character of the different strata penetrated, and the location of water-bearing strata:

**DEPTH IN FEET  
FROM            TO**

#### **MATERIAL DRILLED**

Date Signed July 23, 1968

*John M. Darrow*

Registration No. G-30184 County of Butler Date Filed Aug. 20, 1968

T-19

STATE OF NEBRASKA  
MUNICIPAL OR INDUSTRIAL WELL REGISTRATION

I, RUDOLPH R. KIZISEK of Bruno  
(Name of person signing registration) (Postoffice Address)

County of BUTLER State of Nebraska, do hereby certify:

1st. That the name of the owner of the municipal (or) industrial well registered herein is.....

Village of Bruno whose postoffice address is Bruno, Nebraska

2nd. That the well is located on the NE Quarter of the SW Quarter of Section 10,

Township 15, Range 4 E of the Sixth P. M., BUTLER County, and it is 570

feet from the WEST line and 120 feet from the SOUTH line of said tract, as accurately shown on the plat on page 2 hereof.

3rd. That the well was installed for the following purpose or purposes:

Municipal Water Supply

4th. That the capacity of said well under normal operating conditions is 50 KVA gallons per minute.

5th. That the depth of the well is 138 feet, measured from the surface of the ground.

6th. That the inside diameter of the casing is 10 inches.

7th. That the static water level in the well is 65 feet below ground surface.

8th. That the depth to water under normal pumping condition is XXXX 80 feet below ground surface.

9th. That the diameter of the pump column is 4 inches. That the diameter of the 7 (Give Number of bowls) bowl or bowls is 8 inches.

10th. That the type and size of impeller is as follows:

3" UHC

11th. That the well was completed on or about the 7th day of July, 1965.

Registration No. G-30184 County of Butler Date Filed Aug. 20, 1968

STATE OF NEBRASKA  
CERTIFICATE OF WELL DRILLER

I, LAYNE-WESTERN COMPANY..... of 4430 Commercial Ave., Omaha.....  
(Name of Driller) (Postoffice Address)

County of Douglas..... State of Nebraska....., do hereby certify that:

1. I am the driller of a well located on the..... Quarter, Section No.....  
Township..... North, Range....., owned by..... Village of Bruno.....

whose postoffice address is..... Bruno..... State of Nebraska.....

2. That the drilling was begun on the..... day of....., 19....., and completed on  
the..... 7th..... day of..... July....., 19.....

3. That the well is cased and screened in the following manner:..... 2 1/2' of 10" stainless steel.....  
screen; 115' of 10" standard black casing.....  
(Give kind of casing, lengths and position of plain and  
screened casing, weight of metallic casing, etc.)

4. That the diameter of drilled hole is..... 36..... inches.

5. That..... reverse-rotary-hydraulic..... type of drilling machinery was used.

6. That the drilled hole is..... not sealed, as follows:..... 1/4" stainless steel plate.....

7. That the following is an accurate log of the depth, thickness and character of the different strata  
penetrated, and the location of water-bearing strata:

DEPTH IN FEET

FROM TO

MATERIAL DRILLED

0	29	Brown clay	29	41
29	69	Brown clay, hard and boulders	69	81
69	90	Fine sand	90	102
90	96	Gray clay	96	102
96	111	Silty sand	111	122
111	122	Fine sand and clay	122	138
122	138	Medium sand, clean		

I, Signed..... July 23, 1968.....

  
R. L. Heckman

8-0-111  
7-54  
1  
Registration No. G-30185 County of Butler Date Filed Aug. 20, 1968

VILLAGE OF BRUNO

STATE OF NEBRASKA  
MUNICIPAL OR INDUSTRIAL WELL REGISTRATION

I, RUDOLPH R KOZISEK of Bruno  
(Name of person signing registration) (Postoffice Address)

County of BUTLER State of Nebraska, being first duly sworn upon my oath say:

1st. That the name of the owner of the municipal (or) industrial well registered herein is.....

.....Village of Bruno whose postoffice address is Bruno, Nebraska.....

2nd. That the well is located on the NE Quarter of the SW Quarter of Section 10,  
Township 15, Range 4 E of the Sixth P. M., BUTLER County, and it is 300 ~~300~~ 300  
feet from the WES.T line and 360 feet from the NORTH line of said tract, as accurately  
shown on the plat on page 2 hereof.

3rd. That the well was installed for the following purpose or purposes:

.....Municipal Water Supply.....

4th. That the capacity of said well under normal operating conditions is 40 gallons per minute.

5th. That the depth of the well is 66 feet, measured from the surface of the ground.

6th. That the inside diameter of the casing is 8 XX inches.

7th. That the static water level in the well is 22 feet below ground surface.

8th. That the depth to water under normal pumping condition is 40 feet below ground  
surface. (Pumping Level)

9th. That the diameter of the pump column is 4 1/2 inches. That the diameter of the 4  
bowl or bowls is 6 inches. (Give Number of bowls)

10th. That the type and size of impeller is as follows:

.....4 stage, 6"XLC.....

11th. That the well was completed on or about the ..... day of UNKNOWN, 19.....

BUTLER 15N 4E SEC. 10