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for

**Woodward Industries, Inc.**  
**Nacogdoches, Texas**

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**August 2006**

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# **HAZARD RANKING SYSTEM DOCUMENTATION RECORD**

**for**

**Woodward Industries, Inc.  
Nacogdoches, Nacogdoches County, Texas  
TXD026868323**

**Prepared by:**

**Texas Commission on Environmental Quality  
State Lead Section, Remediation Division  
Austin, Texas**

**August 2006**

Hazard Ranking System  
Documentation Record

Woodward Industries, Inc.  
Nacogdoches, Nacogdoches County, Texas  
TXD026868323

Prepared by

Texas Commission on Environmental Quality  
State Lead Section, Remediation Division  
Austin, Texas

August 2006

**HRS DOCUMENTATION RECORD**

**WOODWARD INDUSTRIES, INC.**

**NACOGDOCHES, NACOGDOCHES COUNTY, TEXAS**

**TXD026868323**

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## HRS DOCUMENTATION RECORD - REVIEW COVER SHEET

**SITE NAME:** Woodward Industries, Inc.

**CONTACT PERSON:**

Documentation Record: Gary L. Hazelwood, TCEQ Project Manager (903) 535-5108

**PATHWAYS OF CONCERN:**

### **Soil Exposure Pathway**

The soil exposure pathway is of major concern for this site. Residential property located approximately 100 feet from the Shoemaker's house and a private recreational area, baseball field, has documented level I observed releases of dioxin congeners, lead, mercury, and other hazardous substances.

### **Air Migration Pathway**

Direct observation of hazardous substances via the air migration pathway is of concern for this site. Contaminated soil particles from non-vegetated areas of the site were observed entering the atmosphere and being wind driven onto the bordering residential property, during the sampling event, on August 8, 2005.

**PATHWAYS, COMPONENTS, OR THREATS NOT EVALUATED:**

### **Groundwater Pathway**

At the site, the Queen City Sand is thirty to one hundred feet below surface, the Reklaw Formation is 200 feet thick, the Carrizo Sand is 90 feet thick and the Wilcox Group is 2,500 feet thick (Ref. 9, pp. 09020 - 09022, and 09037). The Carrizo Sand and the Wilcox sands are hydraulically connected (Ref. 9, p. 09032). The closest well to the site is a livestock well, located within 0.25 miles of the site and has a water level of 40 feet below surface (Ref. 10, pp. 10011 and 10020). The nearest well supplying livestock was sampled by the EPA in 1986 and no hazardous substances were documented (Ref. 10, p. 10014). The nearest domestic well, owned by Bill Rhodes, is located nearly two miles from the site and is 514 feet deep (Ref. 11, p. 11001; and Figure 3). The closest public water supply wells are operated by Caro Water Supply Company and are located in excess of two miles from the site and are approximately 450 feet deep and supply 2,500 people (Ref. 12, pp. 12001 and 12003; and Figure 3). Since no drinking water wells are located within one mile of the site and no hazardous substances were documented in the nearby livestock well, the groundwater migration pathway was evaluated based on potential impact and the resulting score did not contribute to the site score.

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### **Surface Water Migration Pathway**

The Surface Water Migration Pathway is not being evaluated since perennial water and HRS eligible wetlands are not located within the two mile overland drainage pathway (See Figure 4). The Surface Water pathway does not contribute to the site score.

*(Although evaluation of these pathways is not documented in this report, the TCEQ is concerned for all pathways surrounding the site. However, evaluation of these pathways would not have significantly increased the overall site score.)*

### **NOTE TO READER**

The following rule was used when citing references in the HRS Documentation Record:

The State predecessor agencies: Texas Water Quality Board (TWQB), Texas Department of Water Resources (TDWR), Texas Water Commission (TWC), Texas Air Control Board (TACB), and Texas Natural Resource Conservation Commission (TNRCC) referred to throughout this report are now known as the Texas Commission on Environmental Quality (TCEQ). The new agency, TCEQ, became effective September 1, 2002, as mandated under State House Bill 2912 of the 77th Regular Legislative Session.

## HRS DOCUMENTATION RECORD

**Name of Site:** Woodward Industries, Inc.  
**Date Prepared:** 07/2006  
**CERCLIS Site ID Number:** TXD026868323  
**TCEQ ID#:** N/A

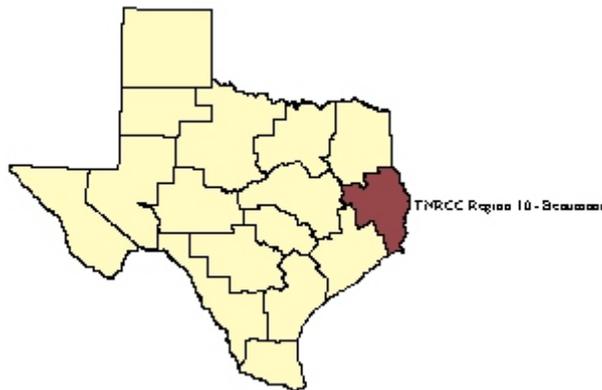
### SITE LOCATION:

**Street Address of Site:** 403 CR 816 (see Figure 1, Site Location Map).  
**City, County, State:** Nacogdoches, Nacogdoches County, Texas  
**Topographic Map:** US Geological Survey 7.5 Minute Topographic Map, Nacogdoches North, Tex. (Figure 1).

**Latitude:** 31° 43' 26" North

**Longitude:** 94° 40' 56" West

**TCEQ Region:** 10



### SITE SCORING SUMMARY:

#### Pathway Scores:

Groundwater Migration Pathway -	NE
Surface Water Migration Pathway -	NE
Soil Exposure Pathway -	9.6
Air Migration Pathway -	5.8
NE - Not Evaluated	

**HRS SITE SCORE: 5.61**

## SITE SUMMARY

### General Description of the Site:

The site's size is approximately seven acres, and is located approximately six miles north of Nacogdoches, on CR 816, just south of Mahl, Texas (Ref. 11, p. 10011; and Figure 1). The site is located in a rural area. County Road 816 is located on the site's north border. Mr. Don Shoemaker's residence is located on the east side of the site. Mr. Delwin Hightower's property is located west of the site. Railroad tracks used to be located along the western property line, but they have been removed.

### Site History:

Wood treating operations began at the site in 1947 (Ref. 11, p. 110011; and 13, p. 13004). Pentachlorophenol was used to treat posts at the site from 1947 until 1982 (Ref. 13, p. 13004). CCA was not documented to be used at this site (Ref. 10, p. 10011). East Texas Wood Treating purchased the site on March 31, 1971 (Ref. 14). Both East Texas Wood Treating and Woodward Industries, Inc. dipped posts in tanks of pentachlorophenol and let them drip into the vats (Ref. 10, pp. 10011 and 10012). Bill Woodward discontinued wood treatment operations during 1982 (Ref. 10, p. 10013). A water sample collected from the pit in February 1986, contained 18,000 µg/L of pentachlorophenol (Ref. 10, pp. 10014 and 10036). A backfilled 20' x 20' x 14' pit is the most likely location of any residual pentachlorophenol contamination (Ref. 10, p. 10012). On June 12, 1992, Woodward Industries, formerly known as East Texas Wood Treating Company, Inc. sold the property to Texwood, Inc. (Ref. 15). Texwood, Inc. was a pallet rebuilding company and was not involved in the wood treating business. Texwood, Inc. sold the property to B.F. Woodward on September 30, 1996 (Ref. 16). B.F. Woodward and Sue H. Woodward sold the property to Wesley and Jesse Myrow on January 1, 1997 (Ref. 17). Jesse L. Myrow and Wesley R. Myrow sold the property to Don L. And Marsha L. Shoemaker on April 30, 2004 (Ref. 18). The current owners, Don and Marsha Shoemaker purchased the property to control the use of the land, next to their residential property (Ref. 19, p. 19003, A-6 H Bailey P-56). Access to the site is unrestricted and a private baseball field is located on the southern portion of the site and is used for a baseball team's practice, usually approximately twelve children attend the practices. Private recreational use appears to be the only current usage of the site.

## Soil Exposure Pathway

A soil sampling event was conducted on August 8 - 9, 2005, by the TCEQ. Soil samples were collected from eight locations, using dedicated stainless steel spoons and bowls (Ref. 3 , pp. 03001 - 03007; 4, pp. 04002 - 04005, photographs 4 - 10; and 5). One sample location SO-01 was designated as the background sample location, see Figure 2. Soil sample locations SO-02, SO-03, and SO-04 were collected from the former wood treating site. Soil sample location SO-05 and duplicate SO-07 were collected east of the former wood treating site, from the Shoemaker's residential property, approximately 100 feet from their residence. Soil sample location SO-06 and duplicate SO-08 were collected from a private baseball field, near first base, on Mr. Shoemaker's property. The soil samples were collected from various depth intervals (A, B, C, and/or D) from each sample location, A = approximately 0 - 6", B = 6 - 12", C = 3 - 4', and D = 4 - 7'. Copper, lead, mercury, acenaphthene, anthracene, benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, dibenz(ah)anthracene, fluoranthene, fluorene, indeno(123cd)pyrene, naphthalene, pentachlorophenol, phenanthrene, pyrene, and total dioxins were detected in soil samples at levels that met source or observed release criteria (See Tables 1 through 6). Dioxins/Furans analysis was conducted on each of the onsite soil samples collected from the 0 - 6 inch and 6 - 12 inch interval depths, since they had elevated levels of pentachlorophenol. Total dioxin concentrations exceed the Texas Risk Reduction Program (TRRP) protective concentration levels (PCLs) at all non-background sample locations, see Table 5. TCEQ Staff of the Toxicology and Risk Assessment Section have reviewed the detection levels of the soil samples. Short term exposure to the measured levels of Pentachlorophenol (PCP) and Dioxins/Furans (D/F) are not expected to be an immediate health concern (Ref. 7). PCP and D/F were detected on-site above acceptable levels for commercial property, however, the site is currently not being used. PCP and D/F were detected on the baseball field above acceptable levels for residential property, however, the risk is likely overstated since it is evaluated as residential property which very conservative. There is the potential of adverse health effects from long-term exposure, based on the residential sample, but additional sampling may be warranted to determine whether the levels of PCP and D/F are found consistently on the residential property.

The targets are the resident individual and resident population of the Shoemaker household of two adults and one child, living within 100 feet of Level I concentrations of hazardous substances (Ref. 3, p. 03004; and 4, pp. 04003 - 04004, photographs 6 and 7). Total dioxin concentrations exceeded Texas Risk Reduction Program (TRRP) protective concentration levels (PCLs) in soil samples SO-05 and SO-07, collected from the Shoemaker's residential property (Ref. 2; 6, p. 06181 and 06183; and Table 5). The nearby population threat was evaluated and found not to contribute to the pathway score (Ref. 1, Section 5.2).

## Air Migration Pathway

The Air Migration Pathway was evaluated based on a direct observation of hazardous substance contaminated soil particles from non-vegetated areas of the site entering the atmosphere and some particles being wind driven onto the bordering residential property. While collecting soil samples SO-05 and SO-07, on August 8, 2005, from the Shoemaker's residential property, a storm was approaching from the west. While winds blew contaminated surface soil from the site, to the east, a heavy rain began and sampling was discontinued for the day.

A waste characteristics factor category value of 10 was assigned (Ref. 1, Table 2-7). A mobility factor value of 0.02 was assigned, based on an observed release of a particulate hazardous substance (Ref. 1, Section 6.2.1.2). A toxicity value of 10,000 was used, based on observed releases of dioxin congeners, lead, and mercury (Ref. 2). A hazardous waste quantity default value of 100 was assigned for a migration pathway subject to Level I concentrations (Ref. 1, Section 2.4.2.2).

The Shoemaker residential property is subject to Level I concentrations of dioxin. The population subject to potential contamination is 32 people within the 0 - 0.25 mile interval, zero people within the 0.25 - 0.5 mile interval, 9 people within the 0.5 - 1 mile interval, 771 people within the 1 - 2 mile interval, 640 people within the 2 - 3 mile interval, and 1,622 people within the 3 - 4 mile interval (Ref. 8, p. 08001). A resource within one-half mile of the site is Mr. Delwin Hightower's commercial livestock operation (Ref. 10, pp. 10011, 10014, and 10020).

**WOODWARD INDUSTRIES**

**TABLE 1**

**BACKGROUND, SOURCE, AND RELEASE SOIL SAMPLE ANALYSIS RESULTS FOR THE UPPER SAMPLE INTERVAL DEPTH**

Constituents	SO-01A 0-6" Depth Background		SO-01B 6-12" Depth Background		Highest Bkg	SO-02A 0-6" Depth <sup>1</sup> On-site		SO-03A 2-6" Depth <sup>1</sup> On-site		SO-04A 2-6" Depth <sup>1</sup> On-site		3X Highest Bkg	SO-05 3-8" Depth <sup>2</sup> Residential Area		SO-06 3-9" Depth <sup>2</sup> Recreational Area		SO-07 Duplicate of SO-05 3-8" Depth <sup>2</sup>		SO-08 Duplicate of SO-06 3-9" Depth <sup>2</sup>	
	RESULT	SQL	RESULT	SQL		RESULT	SQL	RESULT	SQL	RESULT	SQL		RESULT	SQL	RESULT	SQL	RESULT	SQL	RESULT	SQL
SEMIVOLATILE µg/Kg	RESULT	SQL	RESULT	SQL		RESULT	SQL	RESULT	SQL	RESULT	SQL		RESULT	SQL	RESULT	SQL	RESULT	SQL	RESULT	SQL
Acenaphthylene	ND	2.5	ND	3.0	NA	ND	2.1	<b>110 JL-SUR</b>	2.2	<b>52.0</b>	2.2	NA	<b>8.4</b>	2.3	ND	2.2	<b>4.5 JL-SUR</b>	2.3	ND	2.8
Anthracene	ND	3.1	ND	3.8	NA	ND	2.7	<b>63 JL-SUR</b>	2.7	<b>42.0</b>	2.8	NA	<b>19.0</b>	2.8	ND	2.7	<b>13 JL-SUR</b>	2.8	ND	3.5
Benz(a)anthracene	ND	3.4	ND	4.1	NA	ND	2.9	<b>180 JL-SUR</b>	2.9	<b>100.0</b>	3.0	NA	<b>180.0</b>	3.1	ND	2.9	<b>110 JL-SUR</b>	3.1	ND	3.7
Benzo(a)pyrene	ND	2.7	ND	3.3	NA	ND	2.4	<b>280 JL-SUR</b>	2.4	<b>160.0</b>	2.4	NA	<b>140.0</b>	2.5	ND	2.4	<b>85 JL-SUR</b>	2.5	ND	3.0
Benzo(b)fluoranthene	ND	3.0	ND	3.6	NA	ND	2.6	<b>400 JL-SUR</b>	<i>130.0</i>	<b>250.0</b>	2.7	NA	<b>130.0</b>	2.7	ND	2.6	<b>80 JL-SUR</b>	2.7	ND	3.3
Benzo(g,h,i)perylene	ND	2.5	9.0	3.0	9.0	ND	2.1	<b>320 JL-SUR</b>	2.2	<b>230.0</b>	2.2	27.0	<b>93.0</b>	2.3	<b>37 JL-SUR</b>	2.2	<b>58 JL-SUR</b>	2.3	<b>28 JL-SUR</b>	2.8
Benzo(k)fluoranthene	ND	2.5	ND	3.0	NA	ND	2.1	<b>320 JL-SUR</b>	2.2	<b>180.0</b>	2.2	NA	<b>140.0</b>	2.3	ND	2.2	<b>87 JL-SUR</b>	2.3	ND	2.8
Chrysene	ND	3.0	ND	3.6	NA	ND	2.6	<b>270 JL-SUR</b>	2.6	<b>160.0</b>	2.7	NA	<b>210.0</b>	2.7	<b>17 JL-SUR</b>	2.6	<b>140 JL-SUR</b>	2.7	<b>16 JL-SUR</b>	3.3
Dibenz(a,h)anthracene	ND	2.5	ND	3.0	NA	ND	2.1	<b>100 JL-SUR</b>	2.2	<b>47.0</b>	2.2	NA	<b>31.0</b>	2.3	ND	2.2	<b>19 JL-SUR</b>	2.3	ND	2.8
Fluoranthene	ND	2.5	ND	3.0	NA	ND	2.1	<b>160 JL-SUR</b>	2.2	<b>100.0</b>	2.2	NA	<b>260.0</b>	2.3	ND	2.2	<b>160 JL-SUR</b>	2.3	ND	2.8
Indeno(1,2,3-cd)pyrene	ND	2.5	10.0	3.0	10.0	ND	2.1	<b>340 JL-SUR</b>	2.2	<b>210.0</b>	2.2	30.0	<b>130.0</b>	2.3	ND	2.0	<b>78 JL-SUR</b>	2.3	ND	2.8
Naphthalene	ND	2.5	ND	3.0	NA	ND	2.1	<b>5 JL-SUR</b>	2.2	ND	2.2	NA	<b>5.1</b>	2.3	ND	2.2	ND	2.3	ND	2.8
Pentachlorophenol	ND	2.7	ND	3.3	NA	<b>1500 JL-SUR</b>	<i>47.0</i>	<b>3100.0</b>	<i>120.0</i>	<b>1900.0</b>	<i>120.0</i>	NA	<b>2800 JI-FD</b>	<i>130.0</i>	<b>3500.0</b>	<i>120.0</i>	<b>1500 JI-FD</b>	<i>50.0</i>	<b>2800.0</b>	<i>150.0</i>
Phenanthrene	ND	2.5	ND	3.0	NA	ND	2.1	<b>40 JL-SUR</b>	2.2	<b>22.0</b>	2.2	NA	<b>96 JI-FD</b>	2.3	<b>16 JL-SUR</b>	2.2	<b>50 JL-FD,SUR</b>	2.3	<b>14 JL-SUR</b>	2.8
Pyrene	ND	2.6	ND	3.2	NA	ND	2.3	<b>240 JL-SUR</b>	2.3	<b>150.0</b>	2.3	NA	<b>270.0</b>	2.4	<b>53 JL-SUR</b>	2.3	<b>170 JL-SUR</b>	2.4	<b>45 JL-SUR</b>	2.9
INORGANIC mg/Kg	RESULT	SQL	RESULT	SQL		RESULT	SQL	RESULT	SQL	RESULT	SQL	NA	RESULT	SQL	RESULT	SQL	RESULT	SQL	RESULT	SQL
Copper	2.7	0.2	2.07J	0.2	2.7	<b>4.2</b>	0.2	<b>32.6</b>	0.1	<b>14.9</b>	0.2	8.1	<b>58.9</b>	0.2	<b>12.6</b>	0.1	<b>36.4</b>	0.2	<b>8.2</b>	0.1
Lead	40.6	0.4	36.6	0.5	40.6	28.0	0.4	<b>72.9</b>	0.1	<b>58.9</b>	0.4	121.8	95.0	0.4	<b>372 JI-FD</b>	3.9	82.3	0.4	39.8 JI-FD	0.2
Zinc	135.0	0.5	134.0	0.5	135.0	81.3	0.4	<b>137.0</b>	0.2	123.0	0.4	405.0	176.0	0.5	82.4	0.2	166.0	0.4	75.6	0.2
Mercury (µg/Kg)	22.9	1.7	19.9	2.0	22.9	<b>91.1</b>	1.5	<b>36.0</b>	1.5	<b>27.8</b>	1.5	68.7	<b>224.0</b>	1.6	18.7	1.5	<b>247.0</b>	1.5	21.9	1.9

Depth<sup>1</sup> - To be compared to background sample SO-01A  
 Shaded/Bold - Met the source or observed release criteria.  
 NA - Not applicable.  
 J - Result is estimated.  
 SUR - Surrogate recovery outside acceptance range  
 FD - Field duplicate criteria not met

Depth<sup>2</sup> - To be compared to three times the higher of background sample SO-01A or SO-01B  
 SQL - Sample quantitation limit.  
 ND - Undetected at the laboratory reported detection limit (IDL).  
 L - Bias likely to be low  
 I - Bias is indeterminate

**WOODWARD INDUSTRIES**

**TABLE 2**

**BACKGROUND AND SOURCE 6-12 INCH DEPTH SOIL SAMPLE ANALYSIS RESULTS**

Constituents	SO-01B 6-12" Depth - Background		SO-02B 6-12" Depth - On-site		SO-03B 6-12" Depth - On-site		SO-04B 6-12" Depth - On-site	
	RESULT	SQL	RESULT	SQL	RESULT	SQL	RESULT	SQL
SEMIVOLATILE $\mu\text{g/Kg}$	RESULT	SQL	RESULT	SQL	RESULT	SQL	RESULT	SQL
Acenaphthylene	ND	3.0	ND	2.2	<b>8.8 JL-SUR</b>	2.3	<b>16 JL-SUR</b>	2.4
Anthracene	ND	3.8	ND	2.7	<b>31 JL-SUR</b>	2.9	<b>25 JL-SUR</b>	3
Benz(a)anthracene	ND	4.1	ND	2.9	<b>19 JL-SUR</b>	3.1	<b>19 JL-SUR</b>	3.2
Benzo(a)pyrene	ND	3.3	ND	2.4	ND	2.6	<b>36 JL-SUR</b>	2.6
Benzo(b)fluoranthene	ND	3.6	ND	2.6	<b>22 JL-SUR</b>	2.8	<b>53 JL-SUR</b>	2.8
Benzo(g,h,i)perylene	9.0 J	3.0	ND	2.2	<b>66 JL-SUR</b>	2.3	<b>54 JL-SUR</b>	2.4
Benzo(k)fluoranthene	ND	3.0	ND	2.2	<b>16 JL-SUR</b>	2.3	<b>35 JL-SUR</b>	2.4
Chrysene	ND	3.6	ND	2.6	<b>31 JL-SUR</b>	2.8	<b>49 JL-SUR</b>	2.8
Dibenz(a,h)anthracene	ND	3.0	ND	2.2	ND	2.3	<b>12 JL-SUR</b>	2.4
Fluoranthene	ND	3.0	ND	2.2	ND	2.3	<b>25 JL-SUR</b>	2.4
Indeno(1,2,3-cd)pyrene	10	3.0	ND	2.2	<b>24 JL-SUR</b>	2.3	<b>43 JL-SUR</b>	2.4
Naphthalene	ND	3.0	ND	2.2	ND	2.3	ND	2.4
Pentachlorophenol	ND	3.3	<b>130 JL-SUR</b>	2.4	<b>2400</b>	130	<b>1100 JL-SUR</b>	52
Phenanthrene	ND	3.0	ND	2.2	<b>14 JL-SUR</b>	2.3	<b>25 JL-SUR</b>	2.4
Pyrene	ND	3.2	ND	2.3	<b>31 JL-SUR</b>	2.4	<b>47</b>	2.5
INORGANIC $\text{mg/Kg}$	RESULT	SQL	RESULT	SQL	RESULT	SQL	RESULT	SQL
Copper	2.07J	0.21	3.13	0.16	<b>216</b>	0.073	<b>16.8</b>	0.079
Lead	36.6	0.48	22.0	0.36	<b>105</b>	0.16	<b>51.4</b>	0.18
Zinc	134	0.53	72.1	0.39	<b>450</b>	4.6	<b>193</b>	0.2
Mercury ( $\mu\text{g/Kg}$ )	19.9	2.0	<b>95.8</b>	1.5	<b>49.8</b>	1.6	<b>22.1</b>	1.6

Shaded/Bold - Met source criteria.  
 NA - Not applicable.  
 J - Result is estimated.  
 SUR - Surrogate recovery outside acceptance range

SQL - Sample quantitation limit.  
 ND - Undetected at the laboratory reported detection limit (IDL).  
 L - Bias likely to be low

**WOODWARD INDUSTRIES**

**TABLE 3**

**BACKGROUND AND SOURCE 3-4 FEET DEPTH SOIL SAMPLE ANALYSIS RESULTS**

Constituents	SO-01C Background		SO-02C On-site		SO-03C On-site		SO-04C On-site	
	RESULT	SQL	RESULT	SQL	RESULT	SQL	RESULT	SQL
SEMIVOLATILE $\mu\text{g/Kg}$	RESULT	SQL	RESULT	SQL	RESULT	SQL	RESULT	SQL
Acenaphthylene	ND	41	ND	39	ND	39	ND	37
Anthracene	ND	41	ND	39	ND	39	ND	37
Benz(a)anthracene	ND	41	ND	39	ND	39	ND	37
Benzo(a)pyrene	ND	41	ND	39	ND	39	ND	37
Benzo(b)fluoranthene	ND	41	ND	39	ND	39	ND	37
Benzo(g,h,i)perylene	ND	41	ND	39	ND	39	ND	37
Benzo(k)fluoranthene	ND	41	ND	39	ND	39	ND	37
Chrysene	ND	41	ND	39	ND	39	ND	37
Dibenz(a,h)anthracene	ND	41	ND	39	ND	39	ND	37
Fluoranthene	ND	41	ND	39	ND	39	ND	37
Indeno(1,2,3-cd)pyrene	ND	41	ND	39	ND	39	ND	37
Naphthalene	ND	41	ND	39	ND	39	ND	37
Pentachlorophenol	ND	68	ND	64	<b>740 JL-SUR</b>	65	ND	62
Phenanthrene	ND	41	ND	39	ND	39	ND	37
Pyrene	ND	41	ND	39	ND	39	ND	37
INORGANIC $\text{mg/Kg}$	RESULT	SQL	RESULT	SQL	RESULT	SQL	RESULT	SQL
Copper	1.54	0.09	<b>1.93J</b>	0.19	<b>3.49</b>	0.2	<b>2.56</b>	0.18
Lead	13.5	0.20	<b>26.3</b>	0.43	<b>23.8</b>	0.46	<b>20.2</b>	0.4
Zinc	49.6	0.23	<b>145</b>	0.48	<b>84</b>	0.51	<b>79.0</b>	0.45
Mercury ( $\mu\text{g/Kg}$ )	43.3	1.9	34.1	1.8	11.9 J	1.8	10.4 J	1.7

Shaded/Bold - Met source criteria.

NA - Not applicable.

J - Result is estimated.

SUR - Surrogate recovery outside acceptance range

SQL - Sample quantitation limit.

ND - Undetected at the laboratory reported detection limit (IDL).

L - Bias likely to be low

**WOODWARD INDUSTRIES**

**TABLE 4**

**BACKGROUND AND SOURCE 6-7 FEET DEPTH SOIL SAMPLE ANALYSIS RESULTS**

Constituents	SO-01D Background		SO-02D On-site		SO-03D On-site		SO-04D On-site	
	RESULT	SQL	RESULT	SQL	RESULT	SQL	RESULT	SQL
SEMIVOLATILE $\mu\text{g/Kg}$	RESULT	SQL	RESULT	SQL	RESULT	SQL	RESULT	SQL
2-Methylnaphthalene	ND	47	ND	40	<b>65 JL-SUR</b>	40	ND	40
Acenaphthylene	ND	47	ND	40	ND	40	ND	40
Anthracene	ND	47	ND	40	ND	40	ND	40
Benz(a)anthracene	ND	47	ND	40	<b>190 JL-SUR</b>	40	ND	40
Benzo(a)pyrene	ND	47	ND	40	<b>110 JL-SUR</b>	40	ND	40
Benzo(b)fluoranthene	ND	47	ND	40	ND	40	ND	40
Benzo(g,h,i)perylene	ND	47	ND	40	<b>74 JL-SUR</b>	40	ND	40
Benzo(k)fluoranthene	ND	47	ND	40	ND	40	ND	40
Chrysene	ND	47	ND	40	<b>240 JL-SUR</b>	40	ND	40
Dibenz(a,h)anthracene	ND	47	ND	40	ND	40	ND	40
Fluoranthene	ND	47	ND	40	ND	40	ND	40
Indeno(1,2,3-cd)pyrene	ND	47	ND	40	ND	40	ND	40
Naphthalene	ND	47	ND	40	ND	40	ND	40
Pentachlorophenol	ND	79	ND	67	<b>1100 JL-SUR</b>	67	ND	67
Phenanthrene	ND	47	ND	40	<b>130 JL-SUR</b>	40	ND	40
Pyrene	ND	47	ND	40	<b>490 JL-SUR</b>	40	ND	40
VOLATILE $\mu\text{g/Kg}$	RESULT	SQL	RESULT	SQL	RESULT	SQL	RESULT	SQL
Naphthalene	ND	0.85	ND	0.86	<b>32</b>	1.00	ND	0.89
INORGANIC mg/Kg	RESULT	SQL	RESULT	SQL	RESULT	SQL	RESULT	SQL
Copper	3.55	0.25	3.23	0.22	<b>5.17</b>	0.21	2.12 J	0.19
Lead	38.9	0.56	22.6	0.50	<b>60</b>	0.46	25.8	0.43
Zinc	211	0.62	<b>213</b>	0.55	187	0.51	208	0.48
Mercury ( $\mu\text{g/Kg}$ )	41.7	2.1	32.6	1.9	12.4 J	1.8	7.73J	1.8

Shaded/Bold - Met source criteria.

NA - Not applicable.

J - Result is estimated.

SUR - Surrogate recovery outside acceptance range

SQL - Sample quantitation limit.

ND - Undetected at the laboratory reported detection limit (IDL).

L - Bias likely to be low

TABLE 5 - TRRP DIOXIN CALCULATIONS FOR SOIL SAMPLES

Dioxin Congeners	TEF	(Analytical Results in pg/g) x (Toxic Equivalency Factor (TEF)) =( (TEF) Converted Values)			
		SO-02A On-site	SO-02B On-site	SO-03A On-site	SO-03B On-site
2,3,7,8-TCDD	1	30 x 1 = 30	12 x 1 = 12	66 x 1 = 66	130 x 1 = 130
1,2,3,7,8-PeCDD	1	190 x 1 = 190	69 x 1 = 69	620 x 1 = 620	1400 x 1 = 1400
1,2,3,4,7,8-HxCDD	0.1	730 x 0.1 = 73	260 x 0.1 = 26	2200 x 0.1 = 220	5100 x 0.1 = 510
1,2,3,6,7,8-HxCDD	0.1	1500 x 0.1 = 150	510 x 0.1 = 51	6600 x 0.1 = 660	18000 x 0.1 = 1800 JI-ICAL
1,2,3,7,8,9-HxCDD	0.1	1200 x 0.1 = 120	370 x 0.1 = 27	3500 x 0.1 = 350	6300 x 0.1 = 630
1,2,3,4,6,7,8-HpCDD	0.01	61000 x 0.01 = 610 JI-ICAL, IS	23000 x 0.01 = 230 JI-ICAL, IS	150000 x 0.01 = 1500 JI-ICAL, IS	220000 x 0.01 = 2200 JI-ICAL, IS
OCDD	0.0001	300000 x 0.0001 = 30 JI-ICAL, IS	170000 x 0.0001 = 17 JI-ICAL, IS	280000 x 0.0001 = 28 JI-ICAL, IS	320000 x 0.0001 = 32 JI-ICAL, IS
2,3,7,8-TCDF	0.1	1.6 x 0.1 = 0.16	ND	3.9 x 0.1 = 0.39	41 x 0.1 = 4.1
1,2,3,7,8-PeCDF	0.05	18 x 0.05 = 0.9	6.2 x 0.05 = 0.31	31 x 0.05 = 1.55	270 x 0.05 = 13.5
2,3,4,7,8-PeCDF	0.5	19 x 0.5 = 9.5	6.7 x 0.5 = 3.35	56 x 0.5 = 28	270 x 0.5 = 135
1,2,3,4,7,8-HxCDF	0.1	710 x 0.1 = 71	240 x 0.1 = 24	1400 x 0.1 = 140	6300 x 0.1 = 630
1,2,3,6,7,8-HxCDF	0.1	160 x 0.1 = 16	52 x 0.1 = 5.2	390 x 0.1 = 39	1500 x 0.1 = 150
2,3,4,6,7,8-HxCDF	0.1	78 x 0.1 = 7.8	26 x 0.1 = 2.6	280 x 0.1 = 28	1100 x 0.1 = 110
1,2,3,7,8,9-HxCDF	0.1	8.5 x 0.1 = 0.85	ND	ND	100 x 0.1 = 10 JI-ICAL
1,2,3,4,6,7,8-HpCDF	0.01	6100 x 0.01 = 61	2200 x 0.01 = 22	44000 x 0.01 = 440 JI-ICAL, IS	76000 x 0.01 = 760 JI-ICAL, IS
1,2,3,4,7,8,9-HpCDF	0.01	960 x 0.01 = 9.6	320 x 0.01 = 3.2	2300 x 0.01 = 23	5200 x 0.01 = 52
OCDF	0.0001	13000 x 0.0001 = 1.3	6800 x 0.0001 = 0.68	71000 x 0.0001 = 5.2 JI-ICAL, IS	85000 x 0.0001 = 8.5 JI-ICAL
Total Dioxin Congeners Per Sample		1381.11 JI-ICAL, IS	503.4 JI-ICAL, IS	4151.04 JI-ICAL, IS	8575.10 JI-ICAL, IS
Conversion of pg to mg (x 0.000000001)= mg/g		0.000001	0	0.000004	0.000009
mg/g to mg/kg (x 1000)		0.00138	0.0005	0.00415	0.00858
Total dioxin concentration (ppb)		1.4 JI-ICAL, IS	0.5 JI-ICAL, IS	4.2 JI-ICAL, IS	8.6 JI-ICAL, IS

TRRP Residential Soil PCLs level for dioxin is 1.0 ppb

The following qualifiers were due to the high concentration of dioxin compounds. The quantitation estimations do not impact the interpretation of the data exceeding PCLs.

J - Result is estimated.

I - Bias is indeterminate

ICAL - Initial calibration evaluation criteria not met IS - Internal standard evaluation criteria not met

TABLE 5 CONTINUED - TRRP DIOXIN CALCULATIONS FOR SOIL SAMPLES

Dioxin Congeners	TEF	(Analytical Results in pg/g) x (Toxic Equivalency Factor (TEF)) = (TEF) Converted Values			
		SO-04A On-site	SO-04B On-site	SO-05 Residential Area	SO-06 Recreational Area
2,3,7,8-TCDD	1	120 x 1 = 120	470 x 1 = 470	17 x 1 = 17	120 x 1 = 120
1,2,3,7,8-PeCDD	1	910 x 1 = 910	2500 x 1 = 2500 JI-ICAL	160 x 1 = 160	1000 x 1 = 1000
1,2,3,4,7,8-HxCDD	0.1	3400 x 0.1 = 340	7700 x 0.1 = 770	560 x 0.1 = 56	3300 x 0.1 = 330
1,2,3,6,7,8-HxCDD	0.1	10000 x 0.1 = 1000	14000 x 0.1 = 1400 JI-ICAL	1800 x 0.1 = 180	9700 x 0.1 = 970
1,2,3,7,8,9-HxCDD	0.1	4700 x 0.1 = 470	11000 x 0.1 = 1100 JI-ICAL	690 x 0.1 = 69	4300 x 0.1 = 430
1,2,3,4,6,7,8-HpCDD	0.01	200000 x 0.01 = 2000 JI-IS	240000 x 0.01 = 2400 JI-ICAL, IS	59000 x 0.01 = 590 JI-ICAL, IS	170000 x 0.01 = 1700 JI-ICAL, IS
OCDD	0.0001	340000 x 0.0001 = 34 JI-ICAL	360000 x 0.0001 = 36 JI-ICAL, IS	290000 x 0.0001 = 29 JI-ICAL, IS	250000 x 0.0001 = 25 JI-ICAL, IS
2,3,7,8-TCDF	0.1	507 x 0.1 = 0.57	18 x 0.1 = 1.8	1.7 x 0.1 = 0.17	6.7 x 0.1 = 0.67
1,2,3,7,8-PeCDF	0.05	45 x 0.05 = 2.25	130 x 0.05 = 6.5	14 x 0.05 = 2.1	73 x 0.05 = 8.5
2,3,4,7,8-PeCDF	0.5	81 x 0.5 = 40.5	130 x 0.5 = 65	42 x 0.5 = 21	170 x 0.5 = 85
1,2,3,4,7,8-HxCDF	0.1	1800 x 0.1 = 180	3100 x 0.1 = 310	680 x 0.1 = 68	5800 x 0.1 = 580
1,2,3,6,7,8-HxCDF	0.1	500 x 0.1 = 50	790 x 0.1 = 79	180 x 0.1 = 18	1100 x 0.1 = 110
2,3,4,6,7,8-HxCDF	0.1	320 x 0.1 = 32	400 x 0.1 = 40	120 x 0.1 = 12	630 x 0.1 = 63
1,2,3,7,8,9-HxCDF	0.1	ND	ND	ND	30 JI-ICAL
1,2,3,4,6,7,8-HpCDF	0.01	58000 x 0.01 = 580 JI-ICAL, IS	71000 x 0.01 = 710 JI-ICAL	11000 x 0.01 = 110	51000 x 0.01 = 510 JI-ICAL, IS
1,2,3,4,7,8,9-HpCDF	0.01	3100 x 0.01 = 31	5500 x 0.01 = 55	750 x 0.01 = 7.5	5600 x 0.01 = 56
OCDF	0.0001	66000 x 0.0001 = 6.6	44000 x 0.0001 = 4.4	44000 x 0.0001 = 4.4	52000 x 0.0001 = 5.2 JI-ICAL
Total Dioxin Congeners Per Sample		5796.92 JI-ICAL, IS	9947.70 JI-ICAL, IS	1344.17 JI-ICAL, IS	5996.37 JI-ICAL, IS
Conversion of pg to mg (x 0.00000001)= mg/g		0.000006	0.00001	0.000001	0.000006
mg/g to mg/kg (x 1000)		0.0058	0.00995	0.00134	0.006
Total dioxin concentration (ppb)		5.8 JI-ICAL, IS	9.95 JI-ICAL, IS	1.34 JI-ICAL, IS	6.00 JI-ICAL, IS

TRRP Residential Soil PCLs level for dioxin is 1.0 ppb

The following qualifiers were due to the high concentration of dioxin compounds. The quantitation estimations do not impact the interpretation of the data exceeding PCLs.

J - Result is estimated.

I - Bias is indeterminate

ICAL - Initial calibration evaluation criteria not met IS - Internal standard evaluation criteria not met

TABLE 5 CONTINUED - TRRP DIOXIN CALCULATIONS FOR SOIL SAMPLES

Dioxin Congeners	Toxic Equivalency Factor (TEF)	(Analytical Results in pg/g) x (Toxic Equivalency Factor (TEF)) = (TEF) Converted Values	
		SO-07 Duplicate of SO-05	SO-08 Duplicate of SO-06
2,3,7,8-TCDD	1	33 x 1 = 33	140 x 1 = 140
1,2,3,7,8-PeCDD	1	290 x 1 = 290	1100 x 1 = 1100 JI-IS
1,2,3,4,7,8-HxCDD	0.1	1000 x 0.1 = 100	4000 x 0.1 = 400
1,2,3,6,7,8-HxCDD	0.1	2900 x 0.1 = 290 JI-ICAL	12000 x 0.1 = 1200 JI-ICAL
1,2,3,7,8,9-HxCDD	0.1	1100 x 0.1 = 110	5300 x 0.1 = 530
1,2,3,4,6,7,8-HpCDD	0.01	99000 x 0.01 = 990 JI-ICAL, IS	210000 x 0.01 = 2100 JI-ICAL, IS
OCDD	0.0001	370000 x 0.0001 = 37 JI-ICAL, IS	280000 x 0.0001 = 28 JI-ICAL, IS
2,3,7,8-TCDF	0.1	2.4 x 0.1 = 0.24	7.2 x 0.1 = 0.72
1,2,3,7,8-PeCDF	0.05	27 x 0.05 = 4.05	78 x 0.05 = 9.5
2,3,4,7,8-PeCDF	0.5	81 x 0.5 = 40.5	190 x 0.5 = 95
1,2,3,4,7,8-HxCDF	0.1	1100 x 0.1 = 110 JI-IS	5000 x 0.1 = 500
1,2,3,6,7,8-HxCDF	0.1	280 x 0.1 = 28	1000 x 0.1 = 100
2,3,4,6,7,8-HxCDF	0.1	180 x 0.1 = 18	550 x 0.1 = 55
1,2,3,7,8,9-HxCDF	0.1	ND	32 JI-ICAL
1,2,3,4,6,7,8-HpCDF	0.01	17000 x 0.01 = 170 JI-ICAL	58000 x 0.01 = 580 JI-ICAL, IS
1,2,3,4,7,8,9-HpCDF	0.01	1300 x 0.1 = 13	6800 x 0.01 = 68
OCDF	0.0001	76000 x 0.0001 = 7.6 JI-ICAL	35000 x 0.0001 = 3.5
Total Dioxin Congeners Per Sample		2241.39 JI-ICAL, IS	6912.92 JI-ICAL, IS
Conversion of pg to mg (x 0.000000001)= mg/g		0.000002	0.000007
mg/g to mg/kg (x 1000)		0.00224	0.00691
Total dioxin concentration (ppb)		2.24 JI-ICAL, IS	6.91 JI-ICAL, IS

TRRP Residential Soil PCLs level for dioxin is 1.0 ppb

The following qualifiers were due to the high concentration of dioxin compounds. The quantitation estimations do not impact the interpretation of the data exceeding PCLs.

J - Result is estimated.

I - Bias is indeterminate

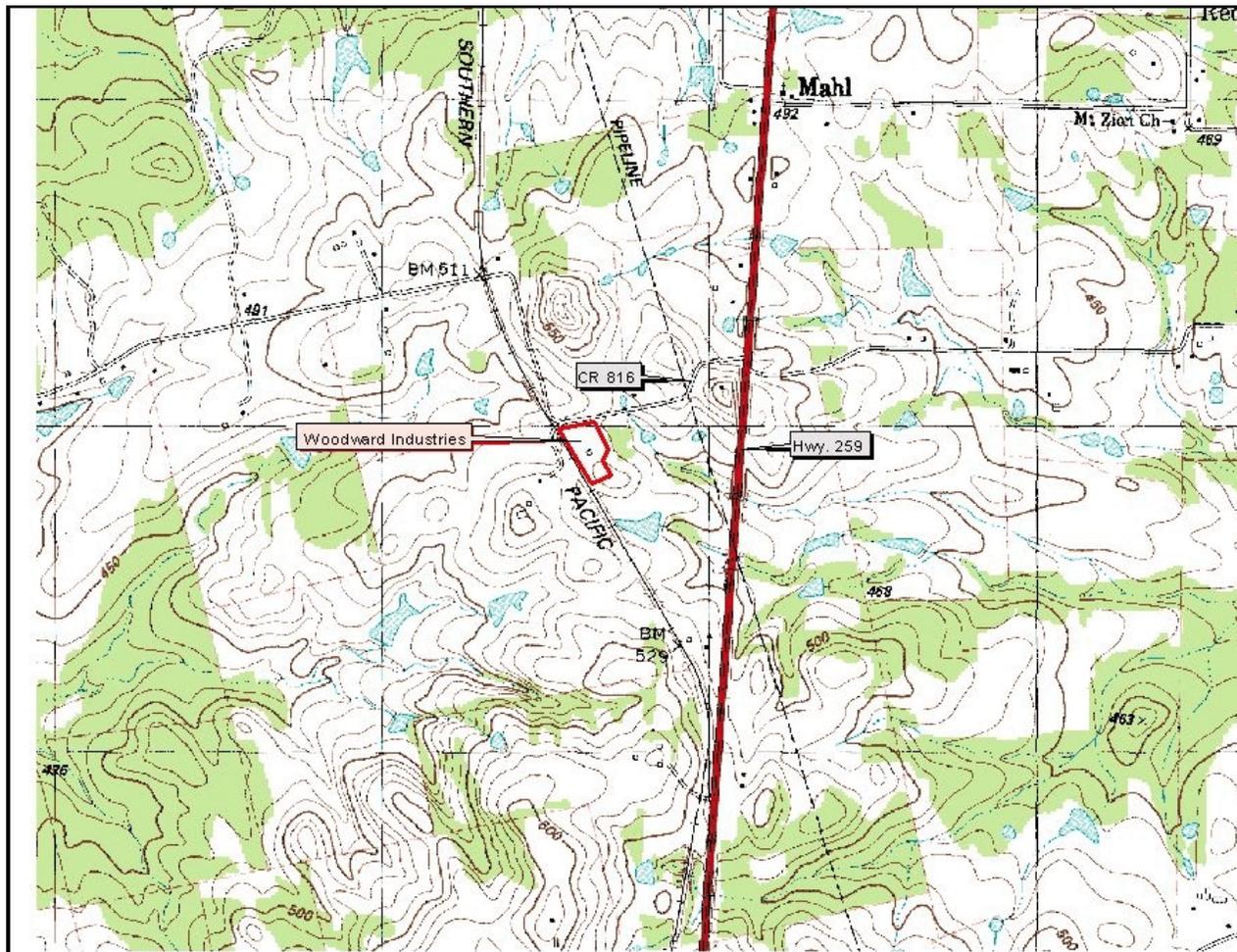
ICAL - Initial calibration evaluation criteria not met IS - Internal standard evaluation criteria not met

<b>Table 6</b>			
<b>References for Soil Sample Analytical Results</b>			
Sample ID	Inorganics Reference 6 Page	Organics Reference 6 Pages	Dioxins/Furans Reference 6 Pages
SO-01A	6038	06038-06042	06197* & 06353
SO-01B	6043	06043 - 06047	06198* & 06354
SO-01C	6048	06048 - 06052	N/A
SO-01D	6053	06053 - 06057	N/A
SO-02A	6058	06058 - 06062	06177* & 06333
SO-02B	6063	06063 - 06067	06179* & 06335
SO-02C	6068	06068 - 06072	N/A
SO-02D	6073	06073 - 06077	N/A
SO-03A	6107	06107 - 06111	06189* & 06345
SO-03B	6112	06112 - 06116	06191* & 06347
SO-03C	6117	06117 - 06121	N/A
SO-03D	6122	06122 - 06126	N/A
SO-04A	6127	06127 - 06131	06193* & 06349
SO-04B	6132	06132 - 06136	06195* & 06351
SO-04C	6137	06137 - 06141	N/A
SO-04D	6142	06142 - 06146	N/A
SO-05	6078	06078 - 06082	06181* & 06337
SO-06	6097	06097 - 06101	06185* & 06341
SO-07	6083	06083 - 06087	06183* & 06339
SO-08	6102	06102 - 06106	06187* & 06343

N/A = Not applicable, dioxin testing was limited to the upper soil sample intervals, for soil exposure.

\* = Amended Dioxins/Furans data sheets, to correct Toxic Equivalency Factor Values

Figure 1 - Site Location Map



Source

The base data set used is the Nacogdoches North, TX 1:24,000 Digital Raster Graphic (DRG), which is a scanned image of a U.S. Geological Survey topographic map. UTM NAD 83 Zone 15



Woodward Industries  
Mahl  
(Nacogdoches County)  
Texas

TXD026868323



Figure 1

Site Location Map

Figure 2 - Sample Location Map



0.2 0 0.2 Miles

Source

The base data set used is the Nacogdoches North NE, TX Digital Orthoquarter Quadrangle (DOQQ), which is a digital photograph processed by the TCEQ GIS Section, with GPS data points added. UTN NAD 83 Zone 15



Woodward Industries  
Mahl  
(Nacogdoches County)  
Texas

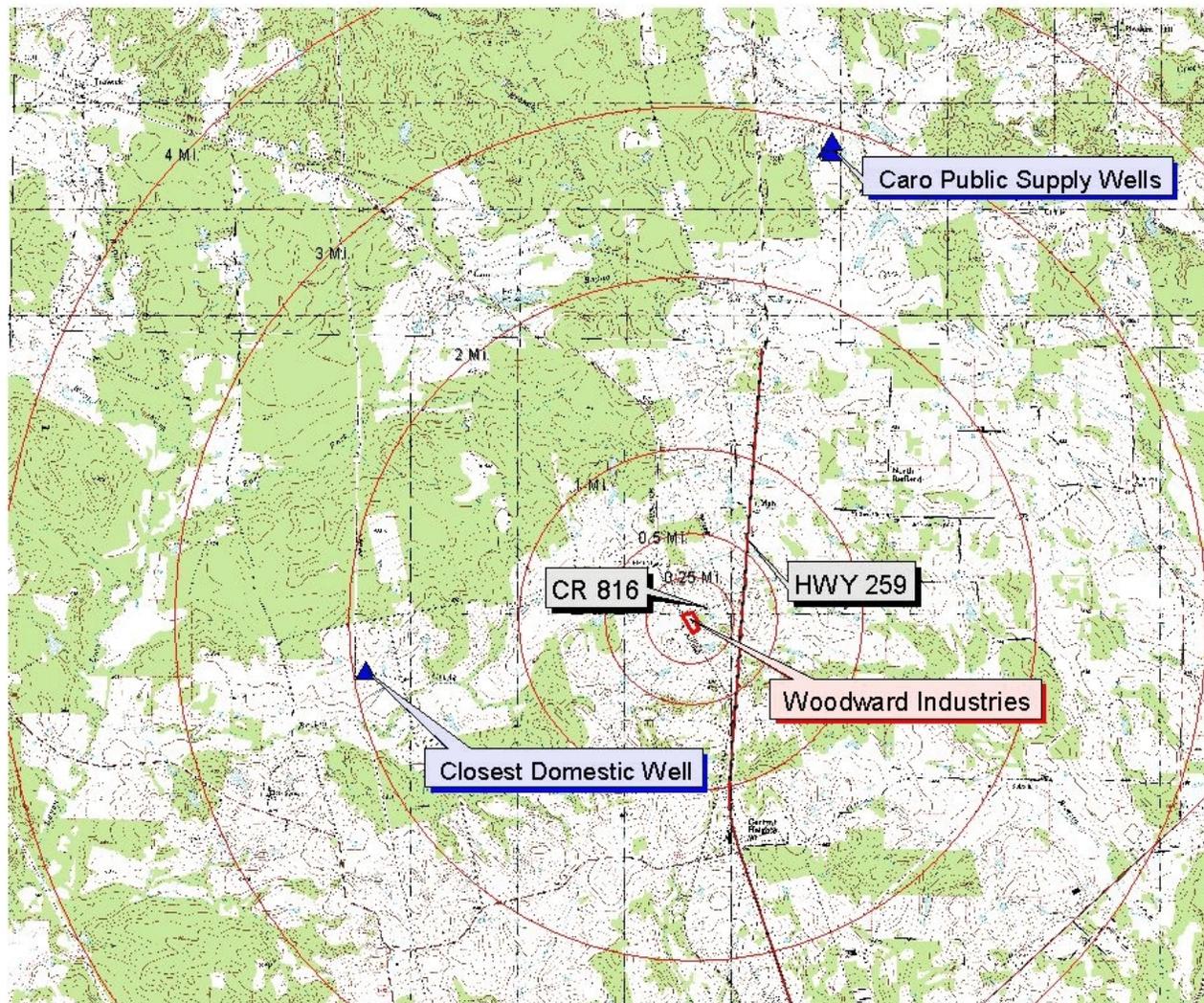
TXD026868323

31 43' 26.42" N  
94 40' 55.64" W



Figure 2  
Sample Location Map

Figure 3 - Drinking Water Well Location Map



2 0 2 Miles

Source

The base data sets used are the Nacogdoches North and Trawick, TX 1:24,000 Digital Raster Graphic (DRG), which are scanned images of U.S. Geological Survey Topographic maps. UTM NAD 83 Zone 15

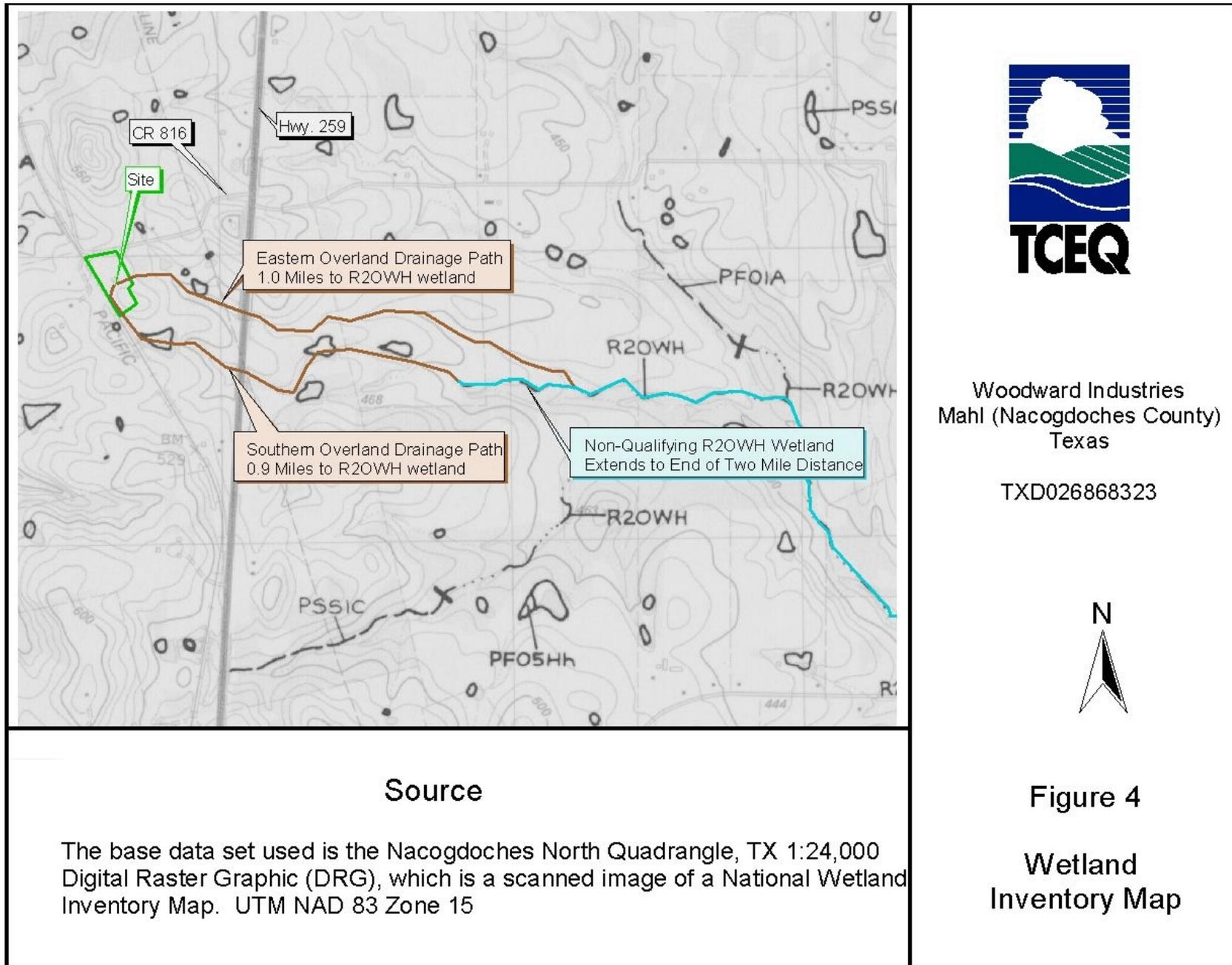


Woodward Industries, Inc.  
(Nacogdoches County)  
Texas  
TXD026868323



Figure 3  
Drinking Water Well  
Location Map

Figure 4 - Wetland Inventory Map



Woodward Industries  
Mahl (Nacogdoches County)  
Texas

TXD026868323



## REFERENCES

- | Reference Number | Description of the Reference                                                                                                                                                           |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.               | U.S. Environmental Protection Agency, 40CFR Part 300, <i>Hazard Ranking System</i> , Appendix A, 55 FR 51583, December 1990.                                                           |
| 2.               | U. S. Environmental Protection Agency, <i>Superfund Chemical Data Matrix (SCDM)</i> . January 2004.                                                                                    |
| 3.               | Hazelwood, Gary, Project Manager, Texas Commission on Environmental Quality, Sampling Event Field Notes. August 8 and 9, 2005. 7 pages.                                                |
| 4.               | Hazelwood, Gary, Superfund Site Discovery and Assessment Program, Texas Commission on Environmental Quality, Photographs, August 8 and 9, 2005. 5 pages.                               |
| 5.               | Consent for Access to the Property, Linda Hightower, and Don Shoemaker, August 8, 2005. 2 pages.                                                                                       |
| 6.               | ECS Environmental Chemistry Services. Data Usability Summary, Soil Samples, collected on August 8 and 9, 2005. 354 pages.                                                              |
| 7.               | Aplin, M.S., Michael S., Toxicology Section, Texas Commission on Environmental Quality, Interoffice Memorandum. Health Effects Review of Selected Soil Samples. May 15, 2006. 3 pages. |
| 8.               | Cook, Kelly, Texas Commission on Environmental Quality, to Gary Hazelwood, Population Ring Information for the Woodward Industries Site. February 11, 2005. 9 pages.                   |
| 9.               | Texas Water Development Board, Report 110, <i>Ground-Water Conditions in Angelina and Nacogdoches Counties</i> , Texas. March 1970. 37 pages.                                          |
| 10.              | Ponds, Annette S., Engineering-Science, Inc., Site Inspection Report. December 01, 1986. 39 pages.                                                                                     |
| 11.              | State of Texas Well Report. Tracking # 19901. April 7, 2003. 2 pages.                                                                                                                  |
| 12.              | Texas Water Development Board, Well Report. January 25, 1992. 3 pages.                                                                                                                 |
| 13.              | Davis, Jr., Robert H., Engineering-Science, Inc., Site Inspection Report. December 12, 1984. 5 pages.                                                                                  |

## REFERENCES CONTINUED

- | <u>Reference Number</u> | <u>Description of the Reference</u>                                                                                 |
|-------------------------|---------------------------------------------------------------------------------------------------------------------|
| 14.                     | Nacogdoches County Records, Warranty Deed, Volume 336, pp. 662 and 663. March 31, 1971. 2 pages.                    |
| 15.                     | Nacogdoches County Records, Warranty Deed, Volume 814, pp. 430 through 433. June 12, 1992. 4 pages.                 |
| 16.                     | Nacogdoches County Records, Warranty Deed, Volume 1034, pp. 172 through 174. September 30, 1996. 3 pages.           |
| 17.                     | Nacogdoches County Records, Warranty Deed, Volume 1070, pp. 105 through 109. January 1, 1997. 5 pages.              |
| 18.                     | Nacogdoches County Records, Warranty Deed, Volume 2078 pp. 149 through 153. April 30, 2004. 5 pages.                |
| 19.                     | Nacogdoches County Records. Donald and Marsha Shoemaker Property. Appraisal and Plat Map. January 5, 2005. 3 pages. |

WORKSHEET FOR COMPUTING HRS SITE SCORE

	<u>S</u>	<u>S<sup>2</sup></u>
1. Ground Water Migration Pathway Score ( $S_{gw}$ ) (from Table 3-1, line 13)	_____	_____
2a. Surface Water Overland/Flood Migration Component (from Table 4-1, line 30)	_____	_____
2b. Ground Water to Surface Water Migration Component (from Table 4-25, line 28)	_____	_____
2c. Surface Water Migration Pathway Score ( $S_{sw}$ ) Enter the larger of lines 2a and 2b as the pathway score.	_____	_____
3. Soil Exposure Pathway Score ( $S_s$ ) (from Table 5-1, line 22)	<u>9.6</u>	<u>92.16</u>
4. Air Migration Pathway Score ( $S_a$ ) (from Table 6-1, line 12)	<u>5.8</u>	<u>33.64</u>
5. Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$		<u>125.8</u>
6. <b>HRS Site Score</b> Divide the value on line 5 by 4 and take the square root		<u>5.61</u>

**TABLE 5-1  
SOIL EXPOSURE PATHWAY SCORESHEET**

<u>Factor Categories and Factors</u>		<u>Maximum Value</u>	<u>Value Assigned</u>
RESIDENT POPULATION THREAT			
<u>Likelihood of Release to an Aquifer</u>			
1.	Likelihood of Exposure SO-05 & SO-07, Table 1	550	<u>550</u>
<u>Waste Characteristics</u>			
2.	Toxicity <b>Dioxin congeners, lead, and mercury's toxicity = 10,000 (Ref. 2)</b>	*	<u>10000</u>
3.	Hazardous Waste Quantity (Ref. 1, Section 2.4.2.2)	*	<u>10</u>
4.	Waste Characteristics (Ref. 1, Table 2-7)	100	<u>18</u>
<u>Targets</u>			
5.	Resident Individual (Ref. 1, Section 5.1.3.1; & SO-05 & SO-07, Table 1)	50	<u>50</u>
6.	Resident Population:		
6a.	Level I Concentrations (Ref. 1, Section 5.1.3.2.1; & SO-05 & SO-07, Table 1)	**	<u>30</u>
6b.	Level II Concentrations	**	—
6c.	Resident Population (Lines 6a + 6b)	**	<u>30</u>
7.	Workers	15	—
8.	Resources	5	—
9.	Terrestrial Sensitive Environments	***	—
10.	Targets (Lines 5 + 6c + 7 + 8 + 9)	**	<u>80</u>
<u>Resident Population Threat Score</u>			
11.	Resident Population Threat (Lines 1 x 4 x 10)	**	<u>792000</u>
<u>NEARBY POPULATION THREAT</u>			
<u>Likelihood of Exposure</u>			
12.	Attractiveness/Accessibility	100	—
13.	Area of Contamination	100	—
14.	Likelihood of Exposure	500	—

\* Maximum value applies to waste characteristics category

\*\* Maximum value not applicable

\*\*\* No specific maximum value applies to factor. However, pathway score based solely on terrestrial sensitive environments is limited maximum of 60

\*\*\*\* Do not round to the nearest integer

**TABLE 5-1  
SOIL EXPOSURE PATHWAY SCORESHEET**

<u>Factor Categories and Factors</u>		<u>Maximum Value</u>	<u>Value Assigned</u>
NEARBY POPULATION THREAT (Concluded)			
<u>Waste Characteristics</u>			
15.	Toxicity	*	—
16.	Hazardous Waste Quantity	*	—
17.	Waste Characteristics	100	—
<u>Targets</u>			
18.	Nearby Individual	1	—
19.	Population Within 1-Mile	**	—
20.	Targets (Lines 18 + 19)	**	—
<u>Nearby Population Threat Score</u>			
21.	Nearby Population Threat (Lines 14 x 17 x 20)	**	—
SOIL EXPOSURE PATHWAY SCORE			
22.	Soil Exposure Pathway Score *** (S <sub>3</sub> )(Lines 11 + 21)/82,500, subject to a maximum of 100)	100	<u>9.6</u>

- \* Maximum value applies to waste characteristics category
- \*\* Maximum value not applicable
- \*\*\* No specific maximum value applies to factor. However, pathway score based solely on terrestrial sensitive environments is limited maximum of 60
- \*\*\*\* Do not round to the nearest integer

**TABLE 6-1  
AIR MIGRATION PATHWAY SCORESHEET**

<u>Factor Categories and Factors</u>		<u>Maximum Value</u>	<u>Value Assigned</u>
<b><u>Likelihood of Release</u></b>			
1.	Observed Release <b>Direct Observation, See page 2 Air Migration Pathway</b>	550	<u>550</u>
2.	Potential to Release		
2a.	Gas Potential to Release	500	---
2b.	Particulate Potential to Release	500	---
2c.	Potential to Release (Higher of Lines 2a and 2b)	500	---
3.	Likelihood of Release (Higher of Lines 1 and 2c)	550	<u>550</u>
<b><u>Waste Characteristics</u></b>			
4.	Toxicity/Mobility <b>Dioxin, Lead, &amp; Mercury 10,000 (Ref. 2) X Mobility 0.02 (Ref. 1, Section 6.2.1.2)</b>	*	<u>200</u>
5.	Hazardous Waste Quantity <b>Default Value (Ref. 1, Section 2.4.2.2)</b>	*	<u>100</u>
6.	Waste Characteristics <b>(Ref. 1, Table 2-7)</b>	100	<u>10</u>
<b><u>Targets</u></b>			
7.	Nearest Individual <b>(Ref. 1, Section 6.3.1; &amp; SO-05 &amp; SO-07, Table 1)</b>	50	<u>50</u>
8.	Population:		
8a.	Level I Concentrations <b>(Ref. 1, Section 6.3.2.2; &amp; SO-05 &amp; SO-07, Table 1)</b>	**	<u>30</u>
8b.	Level II Concentrations	**	---
8c.	Potential Contamination <b>(Ref. 1, Section 6.3.2.4; &amp; 8, p. 08001)</b>	**	<u>2</u>
8d.	Population (Lines 8a + 8b + 8c)	**	<u>32</u>
9.	Resources <b>See Page 2, Air Migration Pathway</b>	5	<u>5</u>
10.	Sensitive Environments:		
10a.	Actual Contamination	***	---
10b.	Potential Contamination	***	---
10c.	Sensitive Environments (Lines 10a + 10b)	***	---
11.	Targets (Lines 7 + 8d + 9 + 10c)	**	<u>87</u>
<b><u>Air Migration Pathway Score</u></b>			
12.	Pathway Score (S <sub>p</sub> )  (Lines 3 x 6 x 11)/82,500****	100	<u>5.8</u>