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MOTOR WHEEL SITE:

PROPOSED PLAN OF REMEDIAL ACTION

February 22, 1994

Department of Natural Resources and Environmental Control
Superfund Branch

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MOTOR WHEEL SITE
PROPOSED PLAN

1. INTRODUCTION

In July, 1992, the Department of Natural Resources reached an agreement with Motor Wheel Corporation, D & G Realty and Winner Group Management (the Potentially Responsible Parties [PRPs]) to perform a Remedial Investigation of the Motor Wheel Site under the Delaware Hazardous Substance Cleanup Act (HSCA). Based on this comprehensive environmental investigation, the Department has determined that the Motor Wheel Site in its present condition does not present an unacceptable risk to public health and safety or the environment.

2. ORGANIZATION AND CONTENTS OF THE PROPOSED PLAN

This proposed plan is issued under provisions of the Delaware Hazardous Waste Cleanup Act (HSCA) and the Regulations Governing Hazardous Substance Cleanup (the Regulations). It presents the Department's assessment of the health and environmental risks posed by the Motor Wheel Site and plans for limited further action.

The Department will provide public notice and opportunity to comment on the proposed plan in accordance with Section 12 of the Regulations. At the conclusion of the comment period, the Department, after review and consideration of the comments received, shall issue a final plan of remedial action which shall designate the selected remedial action. The proposed plan, the comments received from the public, responses to the comments and the final plan will constitute the remedial decision record.

The contents of a proposed plan of remedial action are discussed in the Regulations, Section 8. This proposed plan contains a description of the site; a summary of the procedures, analytical results and conclusions of the remedial investigation; a review of certain interim actions that have already been undertaken at the site; a discussion of objectives; a summary of the risk assessment results; and the plan for the future of the site.

3. SITE DESCRIPTION AND HISTORY

The Motor Wheel Site occupies a 15 acre tract on Ogletown Road (Route 273) approximately one mile east of Newark, Delaware. It is bounded on the south side by an Amtrak railroad line. Surrounding land use is

industrial/commercial but a residential neighborhood lies south of the railroad tracks opposite the site.

From 1957 until 1982, the Motor Wheel Corporation operated a manufacturing plant for car wheels and associated parts on the property. The facility includes a large manufacturing building, a smaller power house, offices, parking lots, and undeveloped land. During plant operations, an acid waste treatment system and a settlement lagoon occupied the rear of the property. In 1985, Motor Wheel closed the lagoon under DNREC supervision. Sludge was excavated; the lagoon was filled with clean material and a groundwater monitoring program was established. From 1982 until 1992, the property was used for storage and truck parking.

In 1990 a contractor was installing a sewer line on the site to serve a nearby property. An area of stained soil and drum fragments was unexpectedly encountered at the rear of the site near the former location of the waste lagoons. This event, and the results of a Site Investigation (SI) performed by DNREC in 1989, prompted the Department to initiate action under HSCA. The scope of the subsequent remedial investigation included the entire property. Several underground storage tanks (USTs) were discovered to be out of compliance with the Regulations Governing Underground Storage Tanks. This resulted in action by the Underground Storage Tank Branch of DNREC. "Interim Actions" are reviewed in Section #6.

In 1992, a boiler tube fabricating operation occupied a portion of the site including the buildings.

4. REMEDIAL INVESTIGATION PROCEDURES

An extensive review of past investigations and waste handling practices identified areas on the site of potential concern. DNREC accepted a real estate assessment performed in 1992 as meeting the objectives of the remedial investigation for areas inside the buildings. The assessment included sampling for polychlorinated biphenols (PCBs).

A field sampling plan was developed to quantify residual levels of contamination in areas outside the buildings. Media sampled included *surface* and *subsurface soils*, *surface* and *ground water* and *sediment*.

Five areas of potential *soil* contamination were identified:

- The area of the sewer excavation where soil stains and drum parts precipitated the enforcement action.

- The suspected oil sheen which appeared in the sewer excavation trench and was thought to be associated with nearby USTs.

- The area of the former lagoon which was excavated and closed by Solid Waste Branch in 1985.

- The paint drum storage area which was identified in the background investigation.

- The area of soil around MW-1, the background well where chlorinated solvents had been detected.

Ground water was known to be contaminated in the area around the former lagoon. Four monitoring wells had already been installed with closure of the lagoon in 1985. These wells were being sampled quarterly under the authority of the Solid Waste Branch, but not for the chlorinated solvents which were detected in Superfund Branch's 1989 Site Investigation. One of the main purposes of this RI was to find the source of solvent contamination in MW-1 since it was originally located as a background well to the lagoon area. The RI added a true background well and an additional down gradient well.

Previous studies had indicated contamination (low pH and sulfates) of *surface water* and *sediments* in the drainage ditch along the rail tracks at the rear of the property. The rail cut is about ten feet deep. The drainage ditch receives discharge from ground water moving off the site. Water and sediment samples were taken from the ditch up stream and down stream from its intersection with groundwater discharge from the site.

5. REMEDIAL INVESTIGATION RESULTS

A. Results from Inside Buildings

Surface wipe samples taken from around transformers and capacitors in the main manufacturing building indicated a past release of PCBs.

B. Results for Soils

Oil Sheen Area: A soil gas survey around the area of the suspected oil sheen was negative. Soil around the nearby tanks was also analyzed and determined not to indicate a tank leak. Considering the doubt surrounding the initial observation of the sheen, further work on this matter was suspended.

Paint Drum and MW-1 Area: A soil gas survey on a 15 point grid around the former paint drum storage area did not detect volatile compounds. The search for the source of solvents in MW-1 then focused closer to the well itself. The presence of chlorinated solvents in soil was confirmed by a soil sample taken during the removal of an UST in this area. Twenty two locations were tested for soil gas, samples being analyzed by gas chromatography in a mobil lab. Five soil samples were submitted for laboratory analysis. The maximum concentrations detected by the lab were 25 ppb for 1,2-Dichlorothene (total), 10 ppb for Tetrachloroethene (PCE), and 6 ppb for Trichloroethene (TCE).

The extent of this low level soil contamination was determined by the soil gas survey to be an irregular area of about 70 by 80 feet. The low concentration and low volume of contaminated soil suggests an incidental surface spill as its source, probably associated with use of a solvent or degreaser around the area of the gas pump.

Sewer Excavation Area: A 150 foot x 125 foot area around the location of the removed drum pieces was surveyed by soil gas on a 25 foot grid. Five soil samples were also sent for lab analysis. There was considerable instrument response to soil gas in this area. A soil gas sample was collected in a Tedlar bag for lab analysis and proved to be methane. Soil sample analysis results did not indicate volatile organic compounds (VOCs). The data now suggests that soil contamination is low concentration and limited in extent.

Former Lagoon Area: Sampling in the lagoon area was designed to check on the excavation which was performed at site closure in 1984-85. Thirty points on a fifty foot grid were screened in the field for pH and VOCs. Seven of these points were selected for confirmatory lab samples. Results indicated depressed pH (3.4-5) in several samples and elevated levels of sulfate compounds. These are doubtlessly from the acid neutralization process in the unlined lagoon. Several metals were also elevated--iron, magnesium, nickel, zinc, potassium and chromium. These are all present in the background sample but would have also been present in the industrial waste which was placed in the lagoon. The low pH would tend to keep metals in solution and leach them from soil. The area of lowest pH was next to the fence. This area would have been the most difficult area to excavate because of the railroad cut.

Similar conditions of depressed pH and elevated sulfates and metals are found in ground water monitoring wells and in the water and sediment of the nearby drainage ditch.

C. Results for Ground Water

The results of analysis of groundwater samples from the six monitoring wells are reproduced in a table on the following page. The last column in the table indicates the Maximum Contaminant Level (MCL) for the compound. MCLs are considered by the US Environmental Protection Agency (EPA) to be acceptable in drinking water. They are included here for comparison.

PCE and TCE contamination have been noted in MW-1 and MW-2 since 1984. This is the primary reason that an SI was performed on the site in 1989. Their presence in MW-1 was always problematical since MW-1 was installed as a background well for monitoring the former lagoon area. As discussed above, it now appears that the solvents reached the groundwater not from the lagoon but from an incidental surface spill. This is corroborated by the fact that PCE levels have dropped from 1200 ug/l in 1984 to 15 ug/l in 1993. Wells MW-3 to 6, about 500 feet down gradient of MW-1 were all non-detect for chlorinated compounds. Low pH groundwater conditions in the area immediately down gradient of MW-1 would tend to make the solvents less mobile.

In 1984, a groundwater sample from MW-2 had barely detectable traces of PCE and TCE. These had dropped to below detection levels by 1993.

Four organic compounds including pentachlorophenol (PCP) exceed MCLs in MW-1. Other wells do not show exceedences of MCLs for chlorinated compounds. However, it should be noted that the numerical detection limit for the laboratory analysis of PCP exceeds the MCL. It is possible therefore that other samples contain PCP. This is unlikely because PCP has not been detected in soils and there is no indication that it was used in the plant processes. Its presence at MW-1 is probably associated with an isolated release from treated wood.

The three monitoring wells down gradient of the former lagoon area have all been impacted by the acid waste which was deposited in the lagoon. They have pH of between 3.3 and 6.0 (background is 6.34) and elevated sulfates (maximum 4690 mg/l) and metals compared to the background well.

MCLs are exceeded for beryllium in MW-2, for cadmium in MW-3 and 4, and for nickel in MW-4. There is no MCL for sulfates but sulfate levels in MW-3 and 4 exceed secondary MCLs established for taste and odor of drinking water.

D. Results for Surface Water and Sediments

The most likely pathway for contamination to migrate away from the site is the drainage ditch which runs along the railroad. Because the surface of the ditch

TABLE 4-1. 1992 AND 1993 GROUNDWATER DATA
FORMER MOTOR WHEEL SITE, NEWARK, DELAWARE

	MW-MW1	MW-MW2	MW-MW3	DUP OF MW-MW3	MW-MW4	UPGRADIENT MW-MW5	MW-MW6	USEPA MCL
VOLATILE ORGANICS (ug/l)*								
Carbon Disulfide	U <10	U <10	4 BJ	U <10	2 J	U <10	U <10	—
Chloroform	U <10	1 J	U <10	U <10	U <10	U <10	U <10	—
Methylene Chloride	4 BJ	5 BJ	4 BJ	3 BJ	3 BJ	3 BJ	3 BJ	—
1,1-Dichloroethane	U <10	8 J	U <10	U <10	U <10	U <10	U <10	—
1,1-Dichloroethene	U <10	5 J	U <10	U <10	U <10	U <10	U <10	7
1,2-Dichloroethene (total)	82	11 Y	U <10	U <10	U <10	U <10	U <10	70
Trichloroethene	10	3 J	U <10	U <10	U <10	U <10	U <10	5
Tetrachloroethene	15	2 J	U <10	U <10	U <10	U <10	U <10	5
1,1,1-Trichloroethane	U <10	7 J	U <10	U <10	U <10	U <10	U <10	200
SEMI-VOLATILE ORGANICS (ug/l)*								
Bis(2-ethylhexyl)phthalate	2 J	U <10	U <10	U <10	U <10	U <10	U <10	—
Pentachlorophenol	27	U <24	U <24	U <24	U <24	U <24	U <24	1
Phenol	U <10	U <10	4 J	U <10	U <10	U <10	U <10	—
FILTERED METALS (ug/l)**								
Aluminum	U<153	6510	U<153	U<153	265	U<153	NA	—
Barium	34.4 B	16 B	13.3 B	14 B	24.9 B	43.2 B	NA	2000
Beryllium	U<0.80	7.7	U<0.80	U<0.80	U<0.80	U<0.80	NA	—
Cadmium	U<4.6	U<4.6	7.6	7.8	23.2	U<4.6	NA	5
Calcium	21900	12300	395000	407000	322000	27100	NA	—
Chromium	U<9.1	U<9.1	U<9.1	U<9.1	U<9.1	U<9.1	NA	100
Cobalt	U<22.8	79.3	399	468	792	U<22.8	NA	—
Copper	U<17.2	U<17.2	U<17.2	U<17.2	U<17.2	U<17.2	NA	1300
Iron	173	63.5 B	179000	186000	580000	87 B	NA	—
Lead	U<2.0	U<2.0	U<2.0	U<2.0	U<2.0	U<2.0	NA	5
Magnesium	15800	8180	70500	74100	622000	13900	NA	—
Manganese	240	3740	52500	54300	57100	35	NA	—
Nickel	U<25.5	34.7 B	92.2	98.4	239	U<25.5	NA	100
Potassium	2160 B	2440 B	5850	6270	5990	1400 B	NA	—
Silver	U<0.80	U<0.80	1.2 B	1.5 B	1.4 B	U<0.80	NA	—
Sodium	14700	13300	61200	63800	55700	16700	NA	—
Vanadium	U<21.3	U<21.3	U<21.3	U<21.3	U<21.3	U<21.3	NA	—
Zinc	U<6.5	79.3	101	92.0	348	6.88	NA	—
WET CHEMISTRY (mg/l)**								
Sulfate	53.7	142	4610	4690	4460	59.6	NA	—
Specific Conductance	358	400	6400	6500	6100	402	NA	—
pH (unitless)	6.29	3.9	5.87	6.01	4.64	6.34	NA	—
Total Organic Carbon	3.07	6.08	10.1	16	4.45	5.66	NA	—
Total Petroleum Hydrocarbons	U<1.03	U<1.02	1.48	1.58	U<1.01	3.3	NA	—
Total Dissolved Solids	370	458	4420	2760	7210	290	NA	—

* Source: NET 1993
** Source: GP 1992

KEY:
MW-MW1 = Motor Wheel Monitoring Well No. 1
J = Estimated concentration for organics
B = Found in blanks for organics and estimated data for inorganics
U < 10 = Undetected above numerical detection limit (e.g., 10)
NA = Not analyzed
Y = Manually calculated from chromatogram
ug/l = micrograms per liter
mg/l = milligrams per liter
MCL = Maximum Contaminant Level

is about ten feet below the grade of the plant site, it receives some discharge directly from ground water. There is always some moisture in the ditch but it does not flow continuously. Both surface water and sediment samples were taken to reveal a more complete picture of the distribution of contamination.

Railway drainage ditches are frequently contaminated by petroleum and creosote compounds, so two up stream sediment locations were sampled to determine background levels. As suspected, all six sample locations revealed some semi-volatile organic compounds in sediments. The down stream levels, however, did not exceed the two up stream ones, indicating that the Motor Wheel Site is not the source of semi-volatiles in the ditch. The down stream locations did have low pH and elevated sulfates in sediments. Therefore, sediments at three additional locations were sampled to determine the downstream extent of this migration. The result of these additional samples indicate that sulfates and pH in sediment reach background levels before the ditch empties into a natural stream.

Analysis of surface water samples confirms the rapid attenuation of sulfates and low pH in the ditch. Results of the analysis of surface water samples were also compared to the Delaware Surface Water Quality Standards. There were no exceedences of the Standards except for pH. The pH of the ditch water is affected by the site for a stretch of about 200 hundred feet. The minimum pH detected was 4.94 at a point just opposite the former lagoon. At a sample location in the ditch near its confluence with Cool Run, a tributary of White Clay Creek, pH was 6.65.

Five surface water samples were also analyzed for volatile organic compounds including PCE and TCE. There were no unqualified hits above detection levels. This result confirms that the solvent release was probably small and confined to the area near the area around MW-1.

E. Conclusions of the Remedial Investigation

The results of sampling when taken in conjunction with previous field studies and the background investigation allow some general conclusions about the volume and distribution of contamination at the site.

The acid waste, also known as pickle liquor, disposed in the lagoon is the source of low pH, sulfates and elevated metals still found in soil and ground water immediately adjacent to the lagoon area. Some of this contamination has moved off site in the drainage ditch at low levels. Overall, the 1985 closure was effective in significantly reducing the volume and concentration of these contaminants. The chlorinated compounds detected in ground water are not the result of disposal in the lagoon but are probably related to an isolated incident.

6. INTERIM ACTIONS

The Remedial Investigation Consent Decree with the responsible parties provided that, if during the course of the investigation means became apparent to reduce contamination or prevent its spread, appropriate action would be taken immediately. Since 1990, the following remedial actions have occurred:

- Approximately 480 tons of stained soil which was excavated for the sewer line was removed for off-site disposal. The soil was disposed of as a non-hazardous waste.

- Two 25,000 gallon underground storage tanks identified as out-of-compliance were filled with inert material under the authority of the Underground Storage Tank Branch. A soil investigation revealed no leakage.

- A 2,000 gallon gasoline tank was removed.

- A PCB-containing electrical transformer located inside the manufacturing building was decommissioned and removed from the site. A small spill area associated with the transformer was identified and cleaned to regulatory levels.

7. FACILITY REMEDIAL ACTION OBJECTIVES

The Regulations provide that the Department set objectives for land use, resource use, and cleanup levels that are protective of human health and the environment. The following two objectives are determined to be appropriate for the Motor Wheel facility:

- To continue the use of the site as a industrial/commercial facility with supplied public water for all purposes;

- That routine construction, excavation and maintenance activities can occur without any special chemical hazard precautions.

These objectives are consistent with the value of the building structure as a manufacturing facility, the surrounding land use, New Castle County zoning policies, state regulations governing water supply, and worker health and safety.

8. RISK ASSESSMENT SUMMARY

A health risk assessment was performed to evaluate the possible effects on human health from use of the site consistent with the objectives discussed above. The risk assessment assumes a variety of "worst-case" scenarios and attempts to quantify the probable health effects to individuals so exposed. It combines site-specific environmental data with more generalized information concerning chemical toxicity and exposure is from standard references. The risk assessment was performed using EPA methodology.

In the first step of the risk assessment, chemicals were identified as contaminants of concern in each media based on relative toxicity, frequency of detection, comparison to background levels and to established standards. At the completion of the screening process, the following chemicals remained for consideration in the risk assessment:

- in *groundwater*--1,2-dichloroethene (total), 1,1-dichloroethane, tetrachloroethene, trichoroethene, pentachlorophenol, aluminum, beryllium, cadmium, cobalt, manganese and sulfate;

- in *soil*--1,2-dichloroethene (total), tetrachloroethene, 1,1,2,2-tetrachloroethane, trichloroethene, bis(2-ethylhexyl)phthalate, chromium and sulfate;

- in *sediment*--1,2-dichloroethene (total), tetrachloroethene, trichloroethene, benzoic acid, copper and sulfate.

The risk assessment then identified potentially exposed individuals for current and future commercial/industrial land use. The following were identified:

- welding shop employees, long term exposure under existing land use

- maintenance workers, long term exposure under future land use

- construction workers, short term exposure in the future industrial development of the site.

The risk assessment also evaluated the potential for exposure of downwind and downgradient neighborhood residents, and for customers of Wilmington Suburban Water Corporation. No complete exposure pathways for these individuals exist for current or potential land and resource uses. The exposure of workers via dermal adsorption and incidental ingestion of soil, sediment and surface water represent the worst case.

Potential exposures to chemicals of concern were quantified based upon exposure point concentration and the frequency, duration, and magnitude of contact using standard EPA guidance. Due to the limited number of site data points, the maximum detected on-Site concentrations were used for exposure point concentrations. This practice provided a more conservative estimate of site risk.

The numerical conclusions of the risk assessment are presented in the risk summary table on the following page. The total risk associated with each exposure scenario is reached by summing risks from exposure to each medium (soil, sediment, surface water). The individual at greatest risk would be a maintenance worker exposed regularly to site soils and to surface water and sediment in the railroad ditch over a long period of time (indicated as "Future Land Use" on the table). That individual's increased risk of cancer from working on the site would be three in a million compared to the HSCA statutory "acceptable" risk of one in one hundred thousand. Exposure to non-carcinogens is indexed at .009 compared to the HSCA "acceptable" index number of one (1). The risks to construction workers and welding shop employees is considerably less than to the maintenance workers. The final conclusion then is that no unacceptable human health risks are associated with use of the property consistent with the remedial objectives discussed above. This would include excavation for utilities or new construction on the property.

9. PROPOSED REMEDIAL ACTION PLAN

In view of the absence of unacceptable risks associated with the site, the proposed plan is limited to ensuring that the existing industrial land use is continued and restricting groundwater withdrawal. The Regulations provide that when such an institutional control is established, it will be described in a restrictive covenant executed by the property owner and recorded with the registrar of deeds for the county in which the facility is located. The restrictive covenant shall run with the land and be binding on the owner's successors and assignees.

The Department is also recommending that the existing monitoring wells be abandoned under the appropriate regulations and that the groundwater monitoring program begun in 1982 cease.

TABLE 6-46. RISK SUMMARY TABLE

EXPOSURE PATHWAY	NONCARCINOGENIC HAZARD INDEX	INCREASED LIFETIME CANCER RISK
CURRENT LAND USE - SOIL		
Ingestion	5E-06	7E-11
Dermal Absorption	5E-06	1E-09
Total Risk	1E-05	1E-09
CURRENT LAND USE - SEDIMENT		
Ingestion	7E-06	1E-10
Dermal Absorption	1E-05	3E-09
Total Risk	1E-05	3E-09
CURRENT LAND USE - SURFACE WATER		
Dermal Absorption	2E-05	0
FUTURE LAND USE - SOIL		
Ingestion	3E-05	2E-09
Dermal Absorption	2E-05	7E-09
Total Risk	1E-05	9E-09
FUTURE LAND USE - SEDIMENT		
Ingestion	4E-05	5E-10
Dermal Absorption	6E-05	1E-08
Total Risk	9E-05	1E-08
FUTURE LAND USE - SURFACE WATER		
Dermal Absorption*	9E-03	3E-06
FUTURE SUBCHRONIC USE - SOIL		
Ingestion	5E-05	1E-11
Dermal Absorption	1E-05	1E-10
Total Risk	6E-05	2E-10
FUTURE SUBCHRONIC USE - SEDIMENT		
Ingestion	3E-04	9E-11
Dermal Absorption	7E-06	3E-10
Total Risk	3E-04	4E-10
FUTURE SUBCHRONIC USE - SURFACE WATER		
Dermal Absorption	1E-02	6E-07

Notes: *Based on Current (April 1993) Groundwater Concentrations of PCE in MW-W2.

- A hazard index of less than one indicates that adverse noncarcinogenic health effects are not expected to be associated with the maximum chemical concentrations detected at the Site.
- The DNREC acceptable target risk level is 1×10^{-5} for increased lifetime cancer risk.
- Total Risk is summed for carcinogenic and noncarcinogenic risk over all exposure pathways (i.e., ingestion and dermal absorption) for each exposed population.

10. PUBLIC PARTICIPATION

The Department actively solicits public comments or suggestions on the proposed plan and welcomes opportunities to answer questions. Please direct written comments to:

Superfund Branch
ATTN: Stephen F. Johnson
715 Grantham Lane
New Castle, DE 19720

or call (302) 323-4540. The public comment period closes on March 18, 1994. A public meeting will also be held on the Proposed Plan. The meeting will be held on Thursday, March 17, 1994 at 7:00 at the Saturn Dealership of Newark, 1801 Ogletown Road, Newark.