FILE ON EDOC'S ✓ YES _____ NO

SITE NAME _____

SITE # _____

COUNTY _____ TOWN _____

FOILABLE ✓ YES _____ NO

SC/PSA _____ RI/FS _____

RD _____ RA _____

SM _____ OTHER _____

NAME DESCRIPTION:

REPORT, hw130004. 1993-02-05. ONY - FS_WorkPlan

LBG Engineering Services, Inc.

Professional Environmental & Civil Engineers

OCCIDENTAL CHEMICAL CORPORATION
HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

WORK PLAN FOR FEASIBILITY STUDY

OCCIDENTAL CHEMICAL CORPORATION
HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

WORK PLAN FOR FEASIBILITY STUDY

February 1993

LBG ENGINEERING SERVICES, INC.
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HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

WORK PLAN FOR FEASIBILITY STUDY

INTRODUCTION

This work plan describes the tasks which Occidental Chemical Corporation (OCC) will complete during the Feasibility Study (FS) for the Hooker/Ruco site. It is OCC's objective to utilize technologies which will be applicable to this site so that the optimal remedial approach is implemented. The Environmental Protection Agency (EPA) Risk Assessment (RA) entitled "Hooker Chemical/Ruco Polymer Site Risk Assessment and Fate and Transport Report" identified the current and future use of groundwater at the sites as the only risk to human health or the environment, based on the following compounds of concern (COCs): tetrachloroethylene, vinyl chloride, arsenic and beryllium. Development of alternatives which will reduce risks to human health associated with site-related compounds in groundwater will be the primary objective of the FS. Other objectives include consideration of soil guidance values for protection of groundwater and consideration of ARARs including the to-be-considered (TBCs).

REMEDIAL OBJECTIVES

Alternatives will be developed based on consideration of the COCs specified in the RA, soil guidance values and on ARARs. The following sources of ARARs have been developed for site groundwater, and the actual ARARs for consideration in the FS are shown on table 1.

Federal

40 CFR	Part 141	National Primary Drinking Water Regulations
	Subpart B	Maximum Contaminant Levels
	Section 141.11	Maximum Contaminant Levels for Inorganic Chemicals
	Section 141.12	Maximum Contaminant Levels for Organic Chemicals
	Subpart F	Maximum Contaminant Level Goals
	Section 141.50	Maximum Contaminant Level Goals for Inorganic Chemicals
	Section 141.51	Maximum Contaminant Level Goals for Inorganic Chemicals
	Subpart G	National Revised Drinking Water Regulations: Maximum Contaminant Levels
	Section 141.61	Maximum Contaminant Levels for Organic Contaminants
40 CFR	Part 143	National Secondary Drinking Water Regulations
	Section 143.3	Secondary Maximum Contaminant Levels

State

6 NYCRR	Part 701	Classifications-Surface Waters and Ground Waters
	Section 701.15	Class GA Fresh Ground Waters
	Part 702	Derivation and Use of Standards and Guidance Values
	Section 702.1	Basis for Derivation of Water Quality Standards and Guidance Values
	Section 702.2	Standards and Guidance Values for Protection of Human Health and Sources of Potable Water Supplies
	Part 703	Surface Water and Ground Water Quality Standards and Ground Water Effluent Standards
	Section 703.5	Water Quality Standards for Taste, Color and Odor-Producing, Toxic and Other Deleterious Substances
10 NYCRR	Part 5	Drinking Water Supplies
	Subpart 5-1	Public Water Systems
	Section 5-1.51	Maximum Contaminant Levels
	Section 5-1.52	Tables; Table 1 - Inorganic Chemicals and Physical Characteristics Maximum Contaminant Level Determination, Table 3 - Organic Chemicals Maximum Contaminant Level Determination

A review of regulations showed that there are no ARARs which are applicable for soil, and no soil COCs were identified in the RA. The NYSDEC soil guidance values for protection of groundwater, the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) values for soil cleanup and site background levels are shown on table 2 and will be used as TBCs.

Review of sample data show that the deep soils located in the Sump 1 area should be assessed during the development of alternatives.

GROUNDWATER REMEDIAL TECHNOLOGIES

There are five remediation strategies in common use to address groundwater:

- no action;
- institutional actions;
- containment;
- in-situ groundwater treatment; and
- groundwater extraction, treatment and discharge.

Based on preliminary screening of available options for addressing the onsite groundwater, the following are potentially applicable remediation strategies:

- no action;
- institutional actions; and
- groundwater extraction, treatment and discharge.

The no action remediation strategy involves taking no physical or administrative actions. EPA is requiring that this strategy must be considered throughout the FS process as a baseline to judge other strategies (EPA, 1988). Institutional actions will aid in reducing the exposure risks, but do not actively reduce chemical concentrations in the

groundwater except by dilution. Extraction, treatment and discharge involves recovering groundwater, treating it to discharge levels and discharging it to a receiving body.

Each of the remediation strategies will be evaluated in the FS based on effectiveness, implementability and cost. In addition to the low levels of COCs, the groundwater also contains other organic chemicals which were tentatively identified during the RI (TICs). The concentrations of these chemicals range from 130 to 5,100 ug/l, based on TOC data. The TICs include ketone, glycol and diol compounds. Therefore, the treatment options considered for the extraction, treatment and discharge option should be compatible with the TICs in addition to the COCs. The following are treatment options which will be evaluated for use:

- filtration;
- sedimentation/clarification;
- flocculation;
- dissolved air flotation;
- chemical precipitation;
- chemical oxidation;
- GAC adsorption;
- resin adsorption;
- ion exchange;
- fixed film reactor; and
- hydroxyl radical treatment.

The evaluation will consist of a literature review followed by a selection of a few promising candidates for treatability studies. It may be necessary to use a combination of technologies to treat the VOCs and TICs.

The chemistry of groundwater to be treated is complex, therefore, treatability studies will be needed. In the absence of treatability studies, the groundwater treatment technology section can only list possibly applicable treatment scenarios. As discussed at our January 6, 1993 meeting, if groundwater treatment is selected in the ROD, the

selection could only specify generic groundwater treatment without reference to treatment standards. The treatability studies, actual treatment selection and applicable standards would be left to the remedial design.

DEEP SOIL REMEDIAL TECHNOLOGIES

There are six remediation strategies in common use for addressing soil:

- no action;
- institutional actions;
- capping;
- in-situ soil treatment;
- excavation, onsite treatment and onsite disposal; and
- excavation and offsite disposal.

Based on preliminary screening of available options for addressing the onsite deep soils, the following are potentially applicable remediation strategies for the deep soils:

- no action;
- institutional actions; and
- capping.

Because of the depth of the deep soils (19 to 47 feet below grade), options that involve excavation of the soils (onsite soil treatment/disposal and offsite soil treatment/disposal) are not practicable. Furthermore, because of the soil chemistry, it is doubtful that in-situ soil treatment technologies can be used for the deep soils.

The no action remediation strategy, as described above, is required by the EPA to be considered throughout the FS process, as a baseline to judge other strategies. Institutional actions aid in reducing exposure risks (which have not been identified for

the onsite soils) but do not actively reduce chemical concentrations. Capping, like institutional actions, reduce exposure risks, but also reduce a chemical's ability to leach into the groundwater. Each of the remediation strategies will be evaluated in the FS based on effectiveness, implementability and cost.

SCHEDULE

The completion schedule for the FS calls for a draft FS submittal to the EPA in April 1993.

cmp
February 4, 1993
occiwrk5.pln/93esi-4

REFERENCES

EPA, 1988, "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA-Interim Final", United States Environmental Protection Agency, EPA/540/G-89/004.

TABLES

TABLE 1

OCCIDENTAL CHEMICAL CORPORATION
HOOKER/RUCO SITE
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Chemical-Specific ARARs for
Groundwater Cleanup Criteria

Compound	Federal Standards			State Standards		Minimum ARAR-Based Groundwater Cleanup Criteria
	MCL[a]	MCLGs[b]	SMCLs[c]	Groundwater Quality Standards[d]	Drinking Water Standards[d]	
Carbon disulfide	NR	NR	NR	NR	50[U]	50
Chlorobenzene	NR	NR	NR	5	5[P]	5
Chloroform	100	NR	NR	7	100	7
Chloromethane	NR	NR	NR	NR	5[P]	5
Dieldrin	NR	NR	NR	ND	50[U]	ND 2.5
1,2-Dichloroethylene total[g]	70	70	NR	5	5[P]	5
Di-n-butyl-phthalate	NR	NR	NR	NR	50[U]	50
Di-n-octyl-phthalate	NR	NR	NR	NR	50[U]	50
Ethylbenzene	700	700	NR	5	5[P]	5
Heptachlor epoxide	NR	0*	NR	ND	50[U]	ND 2.1
4-Methyl-2-pentanone	NR	NR	NR	NR	50[U]	50
Naphthalene	NR	NR	NR	NR	50[U]	50
Tetrachloroethylene	5	0*	NR	5	5[P]	5
Trichloroethylene	5	0*	NR	5	5[P]	5
Vinyl chloride	2	0*	NR	2	2	2
Xylenes	10,000	10,000	NR	5	5[P]	5‡
Aluminum	NR	NR	50	NR	NR	NR
Antimony	6	3	NR	NR	NR	6
Arsenic	50	NR	NR	25	50	25
Barium	1,000	2,000	NR	1,000	1,000	1,000
Beryllium	1	0*	NR	NR	NR	1
Cadmium	10.	5	NR	10	10	5
Calcium	NR	NR	NR	NR	NR	NR
Chromium	50	100	NR	50	50	50
Cobalt	NR	NR	NR	NR	NR	NR

TABLE 1
(continued)

OCCIDENTAL CHEMICAL CORPORATION
HOOKER/RUCO SITE
HICKSVILLE, NEW YORK

Chemical-Specific ARARs for
Ground Water Cleanup Criteria

Compound	Federal Standards			State Standards		Minimum ARAR-Based Groundwater Cleanup Criteria
	MCL[2/]	MCLGs[3/]	SMCLs[4/]	Groundwater Quality Standards[5/]	Drinking Water Standards[6/]	
Copper	NR	1,300	1,000	200	1,000	200
Iron	NR	NR	300	300†	300†	300
Lead	50	0*	NR	25	50	25
Magnesium	NR	NR	NR	NR	NR	NR
Manganese	NR	NR	50	300†	300	300
Nickel	NR	NR	NR	NR	NR	NR
Potassium	NR	NR	NR	NR	NR	NR
Silver	50	NR	NR	50	50	50
Sodium	NR	NR	NR	20,000	NR	20,000
Vanadium	NR	NR	NR	NR	NR	NR
Zinc	NR	NR	5,000	300	5,000	300

1/ Micrograms per liter.
2/ 40 CFR 141.11, 141.12, 141.61.
3/ 40 CFR 141.51.
4/ 40 CFR 143.3.
5/ 6 NYCRR 703.5
6/ 10 NYCRR 5-1.52.
NR Not regulated.
ND, Not detected at or above X.
* The EPA believes that an MCLG of zero is not an appropriate setting for cleanup levels, and the corresponding MCL will be the potentially relevant and appropriate requirement (EPA, 1990).

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TABLE 2

OCCIDENTAL CHEMICAL CORPORATION
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TBC Soil Cleanup Criteria

Compound	Soil Cleanup Objectives to Protect Ground Water Quality[1] (mg/kg)	Recommended Soil Cleanup Goal[1] (mg/kg)	Background[2/3/4] (mg/kg)	TBC Soil Cleanup Criteria (mg/kg)
Benzoic acid	2.7	2.7	NA	2.7
Chrysene	0.4	0.4	NA	0.4
1,2-Dichloroethene (trans)	0.3	0.3	NA	0.3
Di-n-butylphthalate	8.1	8.1	NA	8.1
Heptachlor epoxide	0.02	0.02	NA	0.02
4-methyl-2-pentanone	1.0	1.0	NA	1.0
Phenol	0.03	0.03[5]	NA	0.03[5]
Tetrachloroethene	1.4	1.4	NA	1.4
Toluene	1.5	1.5	NA	1.5
Trichloroethene	0.70	0.7	NA	0.7
Aluminum	NA	30 or SB	246 - 25,000	25,000
Antimony	NA	30 or SB	<3 - 18	30
Beryllium	NA	0.14 or SB	0 - 7	7
Cadmium	NA	1 or SB	0.01 - 2	2
Chromium	NA	10 SB	1.6 - 40	40
Copper	NA	25 SB	1.7 - 31	31
Magnesium	NA	SB	<17.5 - 9,700	9,700
Nickel	NA	13 SB	0.5 - 34	34
Arsenic	NA	7.5 SB	0.95 - 21	21
Mercury	NA	0.1 SB	<0.07 - 0.1	0.1
Lead	NA	30 SB	0.8 - 240	240

1/ NYSDEC TAGM 4046, "Determination of Soil Cleanup Objectives and Cleanup Levels," 1992.
2/ McGovern, E., "Background Concentrations of 20 Elements in Soil with Special Regard for New York State".
3/ Geraghty & Miller, Inc. "Data Report, Phase I Remedial Investigation, Grumman Aerospace Corporation, Bethpage, New York (1992)"; Inorganic Soil Concentrations from GMS-1S, GMS-1I, GMS-2I and GMS-3I.
4/ Inorganic soil concentrations from baseline borings Pilot Hole G, Pilot Hole S and Well Q-1 installed during the 1989 RI.
5/ Objective is set at contract-required quantitation limit.
SB - Site background.
NA - Not applicable.

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