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FINAL REPORT

Task 1
Review of Options for Remediation of Maralco Site
Kent, Washington

May 3, 1995 ***E1/941008***

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1.0 INTRODUCTION

Enviros was contracted by the State of Washington Department of Ecology (Ecology) to perform a review of options directed at remediation and redevelopment at the Maralco Aluminum Company (Maralco).

From 1980 to 1986, Maralco operated an aluminum recycling/ refinery facility on a parcel of about 13.5 acres located at 7730 South 202nd Street in Kent, Washington. A 45,000 square foot building, of tilt-slab construction, was built on the site in about 1980. Two or three of the panels on the west wall of the building are damaged and must be replaced before the building can again be occupied. The facility produced aluminum alloy ingots from aluminum cans and aluminum metal scrap. Waste products from the operation included black dross, furnace slag, and baghouse dust. During the first year of operation, the wastes were transported off-site to the Cedar Hills landfill in Issaquah, Washington. After 1981, the wastes were stored on-site.

Maralco filed for bankruptcy in May 1983 and ceased operations in November 1986. The property is currently managed by a bankruptcy examiner. The site remediation activities are funded by the Ecology Toxics Cleanup Program. Ecology has entered into a court agreement with the secured creditors to perform site remediation.

Remedial investigations and feasibility studies, including an on-site pilot study of black dross recycling, and interim remedial actions have been performed by various environmental service providers under contract to Ecology. The results of much of this earlier work is outlined in the following documents:

- Phase I Remedial Investigation Report, MK-Environmental Services, February, 1991;
- Phase I Feasibility Study Report, MK-Environmental Services, March, 1991; and
- Work Plan for Ongoing RI/FS Activities, MK-Environmental Services, March 29, 1991.

Table 1 summarizes waste concerns at the Maralco site.

Table 1. Summary Of Maralco Waste Concerns

Waste/Equipment	Designation/Contaminants	Quantity
Aboveground Wastes		
Black Dross	Book designated a moderate Dangerous Waste	25,000 tons
Aluminum Oxides		1, 400 tons
KBI Dross	Extremely Hazardous Waste due to fish bioassay	10 tons
Baghouse dust	Extremely Hazardous Waste due to fish bioassay	500 lbs
Sediment Pond & Storm Drain Wastes		246 Drums
Soil Boring Cuttings		20 Drums
Groundwater Well Purge Water		20 Drums
Subsurface Conditions		
Soil	Limited sampling in 1987 showed concentrations of priority pollutant metals up to three orders of magnitude above cleanup guidelines	Quantity unknown
Groundwater	Limited contamination in 1990 assessment	Quantity unknown
Equipment		
Furnaces and piping	Likely to contain furnace slag and dusts associated with process	2 furnaces and some piping (fire brick lined)
Salt Saver	Unsampled. Likely to contain salts associated with process	Approximately 18 inches of waste
Bag Houses	Extremely hazardous waste	Estimated 500 lbs
Shipping Containers	Unsampled. No piles of waste material	Should be pressure-washed before removal
Concrete Ecology Blocks	Blocks should be washed before removal from site.	Quantity unknown.
Five steel tanks associated with on-site pilot study	Unsampled. Likely to contain salts associated with process.	Approximately 2,000 gallons each

The central issues to be addressed in performance of this task were defined as:

- Review of existing documents to identify possible data deficiencies necessary to facilitate subsequent tasks;
- Contact local real estate agents to obtain a preliminary estimate of the property value and identify possible options for enhancing the marketability of the Maralco property;
- Review options for disposal of black dross wastes;
- Perform a cost/benefit analysis of options for black dross disposal;
- Perform a limited search for possible sources of funding for site cleanup;
- Evaluate options for removal of an underground fuel storage tank;
- Review need for further characterization of contents of drums stored on the site;
- Review options for disposal of drums and contents;
- Review options for removal and disposal of bag house wastes;

- Define options for removal and disposal of contents of remaining furnaces;
- Perform a market survey to determine value of equipment remaining on-site;
- Investigate the possibility of using the railroad spur for loading of waste for off-site disposal; and
- Suggest an approach for closure of the chlorine piping and storage system.

Due to the limited budget, no attention was directed at subsurface contamination, namely soil and groundwater concerns.

Enviros and the Department of Ecology conducted a meeting of representatives of agencies and companies that retain some responsibility or jurisdiction over the Maralco site. In addition to discussion of those items outlined above, the primary objectives of the meeting were a review of estimated costs of cleanup, schedule and options for enhancing property value, and potential sources of funding. A list of meeting attendees and a meeting outline is provided in Appendix A.

2.0 REAL ESTATE ISSUES

Enviros toured the Maralco site with representatives of CB Commercial (Milt Reimers and Gary Volchak). CB Commercial has sold numerous properties in the area, including 2 sites directly adjacent to the north of Maralco). Mr. Volchak was very familiar with the Maralco site and the history of the contamination, wetlands issues, and the environmental conditions on surrounding properties.

CB Commercial believes that the site is very marketable. The size of the site (13.5 acres) is an asset as there are few available sites in the Kent Valley of that size.

2.1 Property & Wetlands Concerns

Representatives of CB Commercial estimated that the value of the property is about $4 to $5 per square foot. Copies of Wetland and Floodways Inventories, obtained from the City of Kent, are provided in Appendix B. Although the property occupies 13.5 acres, the apparent wetlands component (approximately 30% of the site) will likely have no value, reducing the marketable portion of the property to 9.0 acres or less.

The City of Kent has a "No-Net-Loss" policy regarding wetlands. According to this policy, any formally designated wetlands that are developed must be compensated by creation of a site of equal area. It is possible that other site owners in the area may be interested in negotiating an exchange of wetlands area for other compensation.

Enviros recommends that a formal wetlands delineation be conducted. A wetlands delineation may reduce the actual area of designated wetlands on the Maralco site by 30 percent or more and will indicate the class of wetland that is present.

Proper wetlands protection, primarily a silt fence, will be needed when the dross pile is removed and any earthwork performed. A plan for wetlands protection should be included in any workplan for future site remediation activities.

2.2 Structural

CB Commercial agents were very positive about the value of the building. Although the building is not commercially usable because the back wall is not intact, they thought the overall structure was solid and that the wall could be repaired or replaced. Nace Halpin

and Phil Stansfeld of International Aluminum Incorporated (IAI) recalled that they received a high estimate of about $200,000 for structural repairs.

Positive features about the building are that the columns are widely spaced, the ceiling is high enough not to require a sprinkler system, and it is built dock-high already. Negatives were the back wall issue and the floor will require resurfacing prior to use, and whether the building meets current structural and fire codes.

CB Commercial strongly suggested having a structural engineer do an inspection and identify the cost and scope of getting the structure up to code. This would be required before listing the property for sale as any prospective buyer would need to understand the recommendations prior to purchase. Whether the structure is worth the estimated $10 or $30 per square foot is dependent on the results of the structural report. A structural report is expected to cost $5,000 to $10,000.

2.3 Equipment

Mr. Volchak and Mr. Reimers had constructive suggestions for the materials inside the building. Firstly, it will be important to have most of the debris and equipment removed before starting to show the property. It was recommended that the furnaces and baghouse be removed and recycled for scrap. Contractors are available to dismantle the metal for the price of the scrap. There is a small container inside the building and two containers outside the building that could be sold. The concrete ecology blocks inside the building are reusable; however, it is likely that no net profit will be realized with their removal.

Enviros also toured the site with Tim Murphy of James G. Murphy, Inc., an industrial equipment salvage/ liquidation company. Mr. Murphy informed that any process equipment remaining on the site, including the furnaces, salt saver, and bag house, only have value as scrap metal. In fact, there is likely to be some cost associated with removing the fire brick remaining in the furnaces and associated piping. Thus, there will likely be no net profit with the removal of process equipment from the site.

2.4 Rail Spur

The rail spur is a key selling point for the property as it costs approximately $125,000 to bring in a new spur. In fact, Mr. Volchak is involved with a property north of the site that is assessing the feasibility of installing a new spur. However, the privilege for gaining an easement for attaching to the Maralco rail spur may yield up to $50,000. Burlington Northern may have closed the rail line connected to the spur. Gary Schulze, Vice President of Rabanco has heard that the Maralco rail spur cannot be accessed without a new switch. Rabanco will truck the waste to their transfer station in Renton for $3.50 per ton with additional transport and tipping fees of $30 per ton. Dale Zuck of Imsamet has informed us that he would transport the waste to Wendover, Utah for recycling via Union Pacific Railroad.

2.5 Real Estate Appraisal

CB Commercial recommended against a formal appraisal at this time because: 1) it would cost several thousand dollars; 2) a real estate broker who is familiar with the area could give an estimate which is probably as accurate for no cost; and 3) a formal appraisal is not necessary until the actual time of financing is near (and another appraisal would be required at that future time to reflect any changes in market conditions).

2.6 Tax Liabilities

Considerable outstanding property and utility taxes remain. Property taxes have been delinquent since 1983. Reportedly, an appeal for reassessment has been filed by Quentin Steinberg, Bankruptcy Examiner. However, as of December 1994, outstanding property taxes, including penalties and interest, were $352,308.51.

Service of water and other utilities to the Maralco site have been discontinued. As of December 1994, City of Kent Drainage Fees were $5,305.16. It is likely that additional outstanding charges remain for utilities.

3.0 POTENTIAL SOURCES OF ADDITIONAL FUNDING

Enviros conducted a search for potential sources of funds for remediation or redevelopment of the Maralco property. City of Kent (Mr. Don Wickstrom) and Ecology (David South) are not aware of potential sources of redevelopment funds. Likewise, EPA contacts are not aware of available funding. EPA has funds available for solid waste primarily directed at recycling. Typically, such grants are awarded to those proposals directed at developing or implementing recycling technologies with broad applicability. EPA referred us to the Federal Department of Housing and Urban Development (HUD) for possible Community Development Block Grant Assistance.

HUD contacts were not aware of any Federal funds for redevelopment of a contaminated site such as Maralco. The HUD Office of Block Grant Assistance (DC) said would have to participate in HUD process on the local level to influence dispensation of entitlements. The Seattle Federal HUD office suggested the City or County funds for solid waste assistance such as the King County Community Development Department. King County Community Development was not aware of any redevelopment funds and referred us to King County Economic Development Council (EDC).

The EDC, a non-profit association comprised of local businesses, did not have resources for funding redevelopment of contaminated sites. EDC suggested that we contact Seafirst Bank, which is investigating options for financing contaminated property cleanup. Alex Johnston at Seafirst Bank stated that, at this point, Seafirst can only serve as a lender for such redevelopment. In the case of Maralco, an interested party such as Ecology or City of Kent may secure a loan through Seafirst Bank and return principal and interest upon the sale of the property.

The State of Washington Clean Washington Center provides grants on competitive bid basis for market development for recyclable materials. It is unlikely that any funds could be obtained from CWC unless a grant proposal is directed at an on-site recycling program using a technology that is readily transferable for use elsewhere in Washington.

4.0 UNDERGROUND STORAGE TANK DECOMMISSIONING

Enviros prepared a workplan for removal options of a diesel underground storage tank (UST) located at the Maralco site. An UST reported to have a 35,000-gallon capacity is located in the northwest corner of the property. The UST was apparently installed at the time of construction of the Maralco facility and was used for storage of diesel fuel. Enviros evaluated the following options: the pre-assessment for the presence of diesel-contaminated soil, the removal of the UST, and over-excavation of contaminated soils.

4.1 Evaluation of Options

4.1.1 Pre-assessment for Diesel-Contaminated Soil

Pre-assessment for diesel-contaminated soil would be performed in the vicinity of the 35,000-gallon diesel UST. This assessment would provide a preliminary indication of the presence and degree of contaminated soils associated with the UST. The assessment would be performed via the advancement of three to four, 20-foot deep soil borings around the UST. Soil samples would be collected at 5-foot intervals and analyzed for petroleum hydrocarbons as diesel by Ecology Method WTPH-D. It should be emphasized that the preliminary assessment proposed would be directed only to identification of gross contamination in the soil immediately surrounding the tank and would not constitute an assessment of the full extent of hydrocarbon contamination. It would typically be most effective to address contamination during tank removal and excavation. If contamination appears to be significant, a remediation plan could more precisely predict the increased short and long-term costs and contingencies involved with the tank decommissioning.

4.1.2 Tank Removal

A health and safety trained, licensed UST site assessor must be on-site during UST decommissioning activities to collect soil samples, record sampling locations, review analytical results, guide decisions on the horizontal and vertical extent of the excavations, and write a site assessment report. A licensed UST services contractor will be needed to remove the UST.

The tank would first be pumped and rinsed. The tank would then be inerted by placing carbon dioxide (dry ice) in the tank and reducing the oxygen level to below the explosive limit. After removal, the UST would be cleaned above ground and then cut into pieces for scrap metal. Following removal of the tank, the excavation would be filled, compacted, and paved to match existing grade.

Final closure of an UST pit requires analyses of samples collected from all four sidewalls or two composite samples from adjacent sidewalls and from under each tank in the excavation.

Soil that is removed from the excavation will be temporarily stockpiled on-site. Samples shall be collected from the stockpile to determine whether the soil is above the Model Toxics Control Act (MTCA) Method A criteria for petroleum-affected soils. Characterization of the stockpiled soil is important, because it will determine whether the soil should be placed in an area for on-site storage and treatment. A minimum of three samples or one sample per 100 cubic yards of excavated soil shall be collected from stockpiles and analyzed.

4.1.3 Remediation of Contaminated Soils

During excavation, soil will be observed for discoloration and hydrocarbon odors. Enviros also recommends the use of an on-site screening device such as an organic vapor monitor (OVM) or an infrared spectrometer (IR). An on-site screening method would be employed for semi-quantitative assessment of soil contamination. The objective of making field assessments on-site would be to guide the selective expansion of the excavation pit, in order to minimize the volume of non-contaminated material removed. Soil that appears to be contaminated by on-site analysis will be stockpiled separately on-site, and covered with visqueen until transport to a treatment facility. Because most screening approaches provide only a preliminary, semi-quantitative indication of hydrocarbon contamination, more accurate quantification of the contaminant concentration is obtained by laboratory analysis of samples collected in the field.

Typically, excavation of a pit continues to the point where the on-site contaminant screening method indicates that petroleum hydrocarbon levels are below cleanup standards. Samples are then collected for laboratory analysis. Because the laboratory analysis is much more sensitive and verifiable than the on-site analysis, the actual petroleum hydrocarbon concentration, as determined by laboratory analysis, may differ from the readings observed by the on-site screening method.

Soils that are contaminated can be transported off-site for disposal, can be treated on-site by thermal desorption or soil washing, or can be treated on-site using biological soil treatment technologies. As a rule-of-thumb based on the economies of scale and Enviros experience, if soil contamination exceeds 100 cubic yards on-site treatment technologies become cost-effective enough to consider. Below 100 cubic yards, the current most cost effective option is generally off-site disposal at Roosevelt Regional Landfill. While this brief analysis does not replace a formal feasibility study, the rough guideline may assist in understanding the decision-making approach.

4.1.4 UST Removal Cost Benefit Analysis

Enviros surveyed options for removal of the UST and options for dealing with contaminated soil in the event of an historical release of fuel from the tank. The following table summarizes estimated costs (1994 dollars) for a phased approach to remove the UST and potential diesel-affected soils.

Table 2. Costs for Various UST Removal and Contaminated Soil Remediation Options

Option	Unit Cost	Units	Unit Total
1. Pre-assessment			
Engineer	$2,030	32 hours	$2,030
Driller	$495	4 borings	$1,980
Analytical	$85	30 samples	$2,550
20% Contingency			$1,142
Subtotal			**$7,702**
2. UST Removal			
Enviros	$2,110	33 hours	$2,110
Contractor	$15,370	lump sum	$15,370
Analytical	$85	10 samples	$850
20% Contingency			$3,581
Subtotal			**$21,911**
3. Over-Excavation Options			
Option A: Off-site Disposal (landfill)	$99	200 cy	$19,875
Option B: Thermal Desorption	$116	200 cy	$23,280
	$88	1,000 cy	$88,320
Option C: On-site Thin Spread	$89	200 cy	$17,760
	$50	1,000 cy	$49,920

Hauling soil to a landfill is the most expeditious method. However, this option does not recycle or re-use the hazardous materials. Thermal desorption and on-site thin spread treatment are methods more preferred by Ecology, because these methods treat the contaminated soil. After treatment the soil can be used for backfill in the tank excavation. On-site thin spread technology is the most cost-effective method, but not the most expedient. A thermal desorption unit would be on-site for approximately one month to treat 1,000 cubic yards of soil, compared to approximately 6 months to implement thin-spread treatment technology.

5.0 Drums Containing Sediment Pond Waste, Purge Water, And Drill Cuttings

Enviros reviewed documents related to the Maralco site to determine the adequacy of drum characterization for 246 drums containing sediments from a stormwater retention pond located on the west side of the property. After reviewing all available information, Enviros evaluated options for disposal of the sediment pond waste.

5.1 Adequacy Of Drum Contents Characterization

5.1.1 Drum History

According to earlier RI/FS documents, representatives of MK-Environmental and Wilder Construction visited the Maralco site in March 14, 1991 to excavate sediments from a stormwater retention pond located on the west border of the property. Based upon soil samples previously collected from the pond by MK during the Phase I Remedial Investigation (RI) and upon comparison with soils from uncontaminated areas of the site, contaminated material was visually defined by MK to be very fine-grained to clayey material ranging in color from very light to dark grey in relatively well-defined layers.

According to the MK report, the excavated material was placed in lined 55-gallon drums and staged on pallets in the parking lot. Two-hundred-forty-six drums were filled with sediments from the stormwater retention pond. Reportedly, the drums were dated and labeled "C.P." for collection pond. It was also noted whether the contents were sediments only or sediments and water.

After the excavation of sediments from the stormwater retention pond, the parking lot area on the north end of the property was swept clean and four catch basins were cleaned by hand shovel. The drain lines running from the catch basins were clogged and had to be pressure-cleaned using a fire hose. A 55-gallon drum was placed under the culvert pipe which discharges to the pond to collect any material from the parking lot. The parking lot was then completely washed down.

All water and sediments from the parking lot and catch basins were placed in lined drums and staged inside the building along the north wall. The drums were dated and labeled "C.B." for catch basin or "P.L." for parking lot. It was also noted whether the contents were sediments only or sediment and water.

5.1.2 Analytical Results

During Phase I of the RI, two soil borings (HB-7 and MW-4) were completed in the stormwater retention pond. Laboratory analyses of these samples indicated contamination by black dross. However, although the levels do not appear high enough to be considered hazardous waste, Enviros recommends a bioassay to confirm the designation of this material. Analytical results for the sediment samples collected from the two borings are summarized in the following table.

Table 3 Analytical Results for Samples Collected in the Stormwater Retention Pond

Parameter	Sample HB-7	Sample MW-4
Date Collected	September 10, 1990	September 24, 1990
Depth Interval (feet)	0.5 - 1.3	1.5 - 3.0
Contaminant	**Concentration (ppm)**	**Concentration (ppm)**
Ammonia	347	34
Total Kjeldahl Nitrogen	1,479	266
Chloride	30	120
Cyanide	1.32	<0.27
Aluminum	99,000	17,100
Barium	115	40.7
Calcium	8,850	5,250
Chromium	111	26.6
Copper	1,220	22.6
Lead	275	2.67
Magnesium	15,800	2,870
Manganese	693	122
Potassium	4,330	3,380
Sodium	1,520	1,480
Zinc	999	29.3

5.2 Scope Of Work For Further Characterization Of Drums

On December 21, 1994, Robert Thomas of Enviros randomly surveyed several drums on-site for labels. Faint markings were observed under dust on the drum lids. Among labels noted were: "drill cuttings," "purge water," "PC soil," "CB sediments and water," and "CPS," presumably designating "collection pond sediments." The drums containing drill cuttings, and purge water from well drilling and sampling, are stored in the same area as the drums containing pond sediments.

Enviros suggests that the tops of all the drums be cleaned, re-labeled based on the cryptic identification, then segregated according to the area of origin of the drum contents and specific contaminant characteristics. Since all the observed drum abbreviations have not been documented in the RI/FS, Enviros recommends that those companies which performed the drum labeling be contacted to check their field notes to clarify the abbreviations. If all of the drum contents cannot identified on the basis of labels, then

sampling and analyses for characterization of the unlabeled drums will be necessary. In addition, if the purged water does not have the well designation on the drum, the water will require characterization. Furthermore, existing RI/FS documentation indicates that the drum contents are sufficiently characterized for acceptance of the waste by regional disposal firms. However, there remains a possibility that acceptance criteria may change, particularly if the waste remains on the site for several more years, and additional characterization of the drum contents may be necessary.

5.3 Drum Disposal

After developing an inventory of drums on-site, the contents of the drums can be disposed. All drums with soil contents can be emptied into a stockpile, and transported to a landfill for general disposal. Existing characterization data should be further reviewed to determine the waste designation of the drum contents. If necessary, a bioassay should be performed to confirm the designation status of the various types of drum contents prior to disposal. The purged well water can be pumped into a vacuum truck and taken to a local disposal facility. For water, disposal facilities typically require a contaminant profile. After emptying of drum contents, drums should be triple rinsed, and then transported to a facility for recycling.

5.4 Estimate Of Costs For Disposal Of Drum Contents

A cost estimate for disposal of drums is based on several assumptions as determined by review of the MK RI/FS document:

- 246 drums are filled with stormwater retention pond sediments;
- 20 drums are filled with soil boring cuttings; and
- 20 drums are filled with purged water from groundwater wells.

Costs for drum disposal are itemized in the following table.

Table 4. Cost Estimate for Drum Disposal

Description	Quantity	Unit	Rate	Total
Contractor Costs				
Purged water profile	1	ea.	$225	$225
Vacuum truck	4	hr.	$71	$284
Purged water disposal	1,100	gal.	$0.25	$275
Stock pile soil contained in drums at appropriate locations on site	266	ea.	$10.00	$2,660
Dispose of soil at a local landfill.	120	tons	$35.00	$4,200
Triple rinse drums and store water in one separate container	2,000	gal.	$2.00	$4,000
Dispose of rinse water	2,000	gal.	$0.25	$500
Transport containers off site for disposal or recycle facility	286	ea.	$5.00	$1,430
Subtotal				*$13,574*
Consultant Oversight				
Labor	20	hr.	$68	$1360
Report Preparation	10	hr.	$60	$600
QA	1	hr.	$110	$110
Production	1	ea.	$50	$50
Subtotal				*$2,120*
20% Contingency				$3,139
TOTAL				**$18,833**

6.0 POTENTIALLY SALABLE/SCRAPPABLE EQUIPMENT

Descriptions of equipment remaining at Maralco and Enviros' summary of condition and potential value follows:

- "Salt Saver" a rotary furnace-type system patented by Maralco/IAI for recovery of salts from dross remains on the site in badly corroded condition. The Salt Saver contains about 18 inches of waste material. Once cleaned, the metal can be scrapped (likely for no revenue).

- Bag houses. Reportedly, Pulse-Air baghouses, 144 Nomex bags per baghouse; 20 ft bags and cages. It is likely that the baghouse cages need to be replaced if structures have any value for reuse. The James G. Murphy company indicates that the baghouses have scrap value once cleaned. No net revenue is anticipated from the baghouses.

- Storage/shipping containers. One of 8 ft x 20 ft dimensions and two of 8 ft x 40 ft dimensions. The containers are in reasonably good condition but need to be

cleaned. Potential sale of the containers could yield: $600 to 1,000 for the 20 ft container and $1,000 to $1,700 for the 40 ft containers.

- Concrete ecology blocks are used to contain KBI Dross waste stockpiled inside the building. The value of the ecology blocks is probably worth the cost of removal.

- Tanks. Five steel tanks used during the pilot study remain on-site. The tanks are estimated to be roughly 2,000 gallons each. It is unlikely that any revenue beyond the metal scrap value can be gained.

Reportedly, all accessible copper piping associated with the furnaces has been removed by vandals. It appears that all industrial equipment of value on the property, including the rotary drum furnaces, readily removable fire brick in the furnaces, instrumentation and controls, and the motors on the baghouse stacks have been removed and sold when possible.

6.1 FURNACES

Only the furnaces and some associated piping remain on the site. The furnaces and associated piping need to be cleaned of residual dust and fire brick prior to scrapping. Some net loss should be expected with the cleaning and removal of the furnaces for scrap.

6.2 Chlorine Storage Facility

A small metal shed, located on the north end of the rail spur, was used for offloading and storage of chlorine gas. Chlorine was used to extract magnesium from the molten metal by formation of magnesium chloride.

Enviros was unable to enter the shed for chlorine offloading and storage. However, the gas storage tanks appear to have been removed from the shed. According to Phil Stansfeld of IAI, the pipes from the chlorine area are still filled with chlorine gas. A work plan for opening the chlorine valves and clearing the piping should be prepared with consideration of appropriate health and safety concerns.

7.0 OPTIONS FOR DISPOSAL OF BLACK DROSS

7.1 Review of Existing Black Dross Characterization Results

In the Phase I RI/FS performed by MK Environmental in 1990, 23 samples were collected from five points across the black dross pile at depths of 0.5 to 4 feet.

The following table summarizes concentrations ranges for indicator contaminants resulting from analyses of the black dross samples.

Table 5 Ranges of Analytical Results for Samples Collected from Black Dross Pile

Analytical Parameter	Concentration Range ppm
Potassium	70,700 to 115,000
Sodium	33,000 to 93,100
Aluminum	130,000 to 211,000
Barium	65.2 to 289
Calcium	2,840 to 23,000
Chromium	119 to 1,860
Copper	746 to 5,400
Lead	70 to 214
Magnesium	15,000 to 45,000
Manganese	827 to 1,960
Zinc	643 to 6,100

All metal concentrations obtained from the Toxicity Characteristic Leaching Procedure (TCLP) were reported to be below detectable levels, except for one sample which contained 0.2 mg/Kg lead. Hexavalent chromium ranged from less than detectable quantities to 0.092 mg/Kg in four composite samples. Chloride samples were high in most dross samples, with concentrations as high as 150,755 mg/Kg. Ammonia and Total Kjeldahl Nitrogen concentrations ranged from 26 mg/Kg to 686 mg/Kg and 398 mg/Kg and 4,089 mg/Kg, respectively. Cyanide concentrations were less than 2 mg/Kg in all samples.

7.2 Options for Black Dross Disposal/ Recycling

Based on the results of existing characterization data, Enviros performed an extensive survey of options for disposal or treatment of black dross. Regional aluminum reduction facilities were contacted to identify common alternatives for dross disposal or recycling. Enviros also spoke with area landfills to review adequacy of characterization data, and define tipping fees and assess costs for shipping and handling. Where possible, Enviros attempted to negotiate lower costs for these services due to the volume of black dross.

Landfill disposal appears to be the most cost effective alternative at this point. Two recycling alternatives were discovered during the course of this evaluation. One dross recycling company, Imsamet, appears to be more immediately viable alternative than the IAI, a company founded by former Maralco employees. Solar Aluminum Technology Services (SALTS), a subsidiary of Imsamet, is actively recycling dross and salt cake from the aluminum industry at their facilities in Wendover, Utah. The Imsamet process reportedly results in complete recycling of dross constituents, whereby any recovered elemental aluminum is returned to aluminum smelters, aluminum oxides are sold to the cement and construction industries, and sodium and potassium brines are concentrated by solar evaporation and returned to the aluminum industry for use as salt flux or sold to the potash industry for conversion to agricultural products. SALTS processes black dross in combination with the much higher grade white dross provided by primary aluminum smelters.

In order to properly evaluate the economics for recycling the lower grade black dross, Imsamet has proposed a trial evaluation for 500 tons of black dross at a price of $33.00 per net ton. This fee covers the actual costs to transport load and transport the waste to Wendover, Utah. Imsamet has waived the actual treatment costs for the evaluation.

After the evaluation, Imsamet would be better able to evaluate the value of the recovered products and adjust fees for the full-scale treatment accordingly. Recognizing Ecology's offer to offset the cost of site remediation with sale of the Maralco property, Imsamet has offered to entertain possible creative payment schedules for waste recycling.

The IAI process, on the other hand, is designed only to recover elemental washed aluminum sands, with the water soluble salt constituents (largely sodium and potassium chlorides) directed to the sanitary sewer. The IAI system was demonstrated in an earlier pilot study (July 19, 1990 to December 18, 1990) at the Maralco site (see Phase I Feasibility Study Report, submitted by MK-Environmental Services, March 1991). In addition to demonstrating cost effectiveness, the success of the IAI system is contingent on whether a permit for discharge of wastes to the sanitary sewer remains valid (granted by the Municipality of Metropolitan Seattle -- Permit No. 7570 issued to IAI on January 26, 1989), and on demonstration of proper performance bonding and capability to prepare health and safety, quality control, and operating procedures.

Enviros also investigated the costs and for off-site disposal. Regional landfill firms were contacted to discuss costs, waste designation and transportation issues.

The accessibility of the on-site rail spur for waste loading and access to a main rail line has also investigated by Enviros. Rabanco has indicated that the length of a unit of rail cars needed to haul the material and the proximity of the main rail line prohibits loading from the docks within the Maralco building. According to Rabanco, the unit train could not be effectively loaded from the docks since the rail cars would have to be extended onto the main set of tracks near the west boundary of the property, a process that would not be allowed by Burlington Northern Railroad (BN). Rabanco also investigated the possibility of loading the cars from the west side of the rail spur by front end loader. However, BN has reportedly refused access to the right-of-way bordering the main rail line. Rabanco has offered alternatives which include extending the rail spur to accommodate one unit train at a cost of about $50,000; or, for an additional $1.50 per ton, loading and trucking of the waste to their transfer station on Renton's Monster Road for loading into rail cars. Other off-site disposal or recycling options will require similar transporting and loading.

A brief summary of costs and process descriptions for various black dross recycling and disposal options is provided in the following table.

Table 6. Recycling and Disposal Options for Black Dross

Facility/Contact	Process Description	Estimated Cost
Roosevelt Landfill Klickitat County, WA Rabanco Gary Schulze (206) 646-2532	Rail shipment to lined, permitted landfill site. No state DW are accepted. An exemption from DW status would be required.	$33.50/ton hauling and disposal plus $1.50/ton for loading
SALTS Wendover, UT IMSAMET Dale Zuck (602) 935-6330	Rail shipment to the SALTS saltcake recycling facility, where salts, aluminum oxides, and metals are recovered and sold (recycled) to recover processing costs.	$53/ton hauling and disposal
Arlington Treatment and Disposal Center Arlington, OR Chemical Waste Mgmt. Carol Kralik (206) 820-1816	Rail shipment to RCRA permitted landfill. No exemption from DW status required.	$200/ton est. based on per trip costs -- hauling and disposal
Arlington Class D Facility Arlington, OR Waste Management, Inc. Carol Kralik (206) 820-1816	Rail shipment to lined, permitted landfill. An exemption from DW status would be required for Class D disposal.	About $200/ton est. based on per trip costs -- hauling and disposal
Envirosafe HW Landfill Grandview,ID Envirosafe Services Dan Keitges (206) 827-2732	Rail shipment to RCRA permitted landfill. No exemption from DW status required.	$130/ton -- hauling and disposal
On-site treatment IAI Phil Stansfeld Nace Halpin	The feasibility of on-site recovery of aluminum oxides has been demonstrated in a pilot study at the Maralco site. A discharge permit from Metro is required for the brines generated by this process.	$60-$100/ton -- hauling and disposal

Disposal firms indicated that costs would remain relatively unchanged even if the waste is delivered piecemeal over the course of one year; assuming that the facility would be assured shipment of the entire waste volume. As indicated in the preceding table, firms such as Envirosafe and Chemical Waste Management have proposed disproportionately high disposal costs. It is assumed that more competitive disposal pricing will be available after waste designations have been finalized and the project is closer to actual performance.

Vertical characterization of the black dross piles is limited, but the samples collected from various shallow depths indicate the makeup of the black dross is relatively uniform. Based on these data, it does not appear that additional characterization is warranted.

Enviros contacted Polly Zehm of Ecology's Central Regional Office (CRO) to discuss the Maralco site. Ms. Zehm outlined the Dangerous Waste exemption process recently employed for similar wastes at the Recycled Aluminum Metals Company (RAMCO) site in Klickitat County. The results of the RAMCO exemption are outlined in the Ecology document "Final Petition Decision - Recycled Aluminum Metals Company Salt Cake Waste Exemption of 20,000 Tons of Salt Cake Waste from the Dangerous Waste Regulations, Dept. of Ecology, Central Regional Office, October 7, 1994."

CRO recommended that a Static Acute Fish Toxicity bioassay be performed to determine if the DW designation is appropriate for the black dross. Waste designation by the Static Acute Fish Toxicity Bioassay Method is typically performed at two concentrations. Wastes subjected to the Acute Fish Toxicity Test must be sampled in accordance with the procedures referenced in WAC 173-303-110. Those wastes resulting in statistically significant fish mortality at 100 mg/L are designated EHW while those resulting in mortality at 1,000 mg/L are designated DW. The nondangerous waste designation is assigned to those samples for which there is no mortality at either concentration.

The Maralco black dross was book designated Dangerous Waste on the basis of oral rat toxicity bioassay data for sodium chloride and potassium chloride. Other primary and secondary aluminum plants report that dross typically designates due to the presence of ammonia, and sampling after three or more days generally results in a nondangerous waste designation. The January 1994 revisions to the Dangerous Waste Regulations, Chapter 173-303 WAC state that the bioassay designation takes precedence over the book designation procedure. A bioassay might show that the black dross is not DW, and eliminate the need to apply for a DW exemption, and reduce paperwork associated with DW manifesting. However, it remains possible that the waste will designate dangerous due to the presence of metals such as chromium, copper, zinc, and others.

The process for exemption of the dross for disposal as a nondangerous waste could require 4 to 5 months, according to Ms. Zehm. Mr. Vern Meinz at Ecology Headquarters was identified as the person to contact when submitting a petition for exemption of the Maralco waste.

Aluminum oxide and KBI dross has potential value for sale to the cement industry. There is likely to be no net gain in the sale of oxides and dross. However, at this point, we have not contacted regional cement manufacturers to define the costs for recycling that waste via those consumers. In the event that a buyer for these wastes cannot be identified, then disposal or recycling will be necessary.

8.0 BAGHOUSE WASTES

The baghouse dust was designated an extremely hazardous waste (EHW) due to results of the fish toxicity bioassay. Enviros recommends sampling of the baghouse waste, inspection of the baghouse interiors, and estimation of waste volumes. Simple treatability evaluations could be performed to determine the possible cause of the EHW designation. If the designation is due to the presence of ammonia, one solution to achieve sub-DW levels might simply entail wetting the dust and allowing the ammonia to vent. Alternatively, if the designation is due to acidity, then neutralization may be effective in achieving nondangerous waste designation of the baghouse wastes. A relatively inexpensive alkaline compound, such as lime, would be added for neutralization of acidity.

9.0 COSTS

A summary of projected remediation costs is provided in Table 6. Costs are itemized into both assets and liabilities ranging from the potential market value of the building and equipment to a review of costs for waste disposal and recycle options.

Table 6. Estimate of Property Assets and Limited Site Remediation Costs

Item	Asset	Liability	Comment
PROPERTY			
Building (45,000 s.f.)	$450,000 to 1,350,000		$10 to $30 per sq. ft depending on structural issues
Land (13.5 acres less 30% assumed wetlands)	$1,646,568 to 2,058,210		$4 to 5 per s.f. (wetlands will reduce value)
Railroad Spur Access	$35,000 to 50,000		Assumes neighbor wants access via Maralco spur
Shipping Containers	$3,200 to 4,400		
Structural Appraisal		$5,000	
Building Structural Repair		$200,000	Unsubstantiated estimate recalled from memory by former Maralco owner/operator.
REMEDIATION			
Kent-SEPA Checklist Fee		$150	
Kent-SWM Drainage Fee		$5,305.16	As of 12/94; Increases $189.40/yr
King Co. Property Taxes		$352,308.51	As of 12/94
Equipment Removal		--	Estimate not obtained
Underground Storage Tank			
UST Preassessment		$8,000	
UST Decommissioning		$22,000	Assumes no contamination
WASTE DISPOSAL/ RECYCLE			
Treatability Evaluation for Baghouse Dusts		$12,000	
Bioassays		$6,000	$425 per two level assay
Disposal Option			
Black Dross		$875,000	$35/ton
Aluminum Oxide		$49,000	$35/ton
KBI Dross		$1,300	$130/ton
Optional Disposal Subtotal		*($925,000)*	
Recycle Option			
Black Dross		$1,325,000	$53/ton (Imsamet)
Aluminum Oxide		$74,200	$53/ton
KBI Dross		$530	$53/ton
Optional Recycle Subtotal		*($1,399,730)*	
Disposal Only			
Bag House & Furnace Dust		$10,000	$130/ton plus removal (no recycle value)
Drum Contents		$20,000	
Remediation Subtotal		*($955,000 to 1,429,730)*	
City of Kent Haz. Waste Fee		$9,550 to $14,297	1% per year of total remediation costs
TOTAL	**$2,134,768 to $3,462,610**	**$1,575,314 to $2,054,791**	See following assumptions/ limitations

10.1 Assumptions & Limitations of Projected Remediation Cost Estimate:

The costs for decommissioning assume that no petroleum contaminated soil will be associated with the UST. Furthermore, costs for project management and engineering oversight have not been included. Cost estimates for Static Acute Fish Toxicity Bioassays assume assays for representative samples of: black dross (2 samples), aluminum oxides (1 sample), KBI Dross (1 sample), treated baghouse waste (2 samples), sediment pond and storm drain wastes (2 samples), soil boring cuttings (2 samples), groundwater well purge water (2 samples). Wetlands delineation or mitigation costs are also not included. Due to budget limitations costs for soil and groundwater assessment or remediation were not included in this estimate. Nor does the estimate include costs for contractor and Enviros oversight for removal of nonhazardous debris and general site cleanup.

10.0 SCHEDULE

Schedule charts for the proposed remediation tasks are presented in Appendix C. The task timelines have been prepared assuming a February 1995 start date. One task timeline, with a 16-month projected performance schedule, assumes that the it will be necessary to pursue the exemption process with Ecology in order to remove the dangerous waste designation on the black dross for low cost disposal at regional landfills. The other, more optimistic schedule assumes that the waste will already be designated nondangerous due to the results of fish toxicity bioassays and will only require a 12-month schedule for waste removal and site cleanup. Both scenarios are optimistic and are submitted only to demonstrate the relatively rapid schedule with which the Maralco remediation could be performed with the availability of adequate funds.

11.0 TASKS REMAINING

Based on the previous discussion, the following items can be completed as funding allows:

- Estimate of building structural repair costs;
- Wetlands delineation;
- Outline steps required for SEPA review;
- Bioassays to determine if DW designations are appropriate;
- Characterization of contents of furnaces and salt saver;
- Inventory drums and determine if further characterization is necessary;
- Investigate options for removal of bag house wastes;
- Inspection and emptying of chlorine lines;
- Evaluate condition of groundwater monitoring wells and replace as necessary;
- Current groundwater sampling and analysis;
- Evaluation to assess options for reducing designation of baghouse wastes;
- Define costs for equipment cleaning and removal;
- Determine if preassessment will be performed prior to UST decommissioning;
- Preparation of bid specifications for UST removal;
- Determine if exemptions from outstanding tax, utility, and hazardous waste fees can be obtained;
- Process City of Kent Environmental checklist; and
- Public comment process;

Please call us if you have any questions about the preceding report. We appreciate this opportunity to be of service to the Washington Department of Ecology.

Respectfully submitted,

Enviros, Incorporated

Trenton G. Smith
Environmental Engineer

Kathleen S. Goodman, R.G.
Principal Geoscientist

APPENDIX A

List of Attendees at January 4, 1995 Planning Meeting for Maralco

Agenda for January 4, 1995 Planning Meeting

Maralea Meeting

David L. South	Ecology - TCP	649-7200
Kathleen Goodman	Enviros	827-5525
Quentin Steinberg	Bankruptcy Trustee	622-5510
~~Bob~~ Stone	Ecology HAZ WASTE	649-7219
DAVID L HILL	ULLICO	746-6446
Chuck Hinds	Ecology	407-7210
MILT REIMERS	CB COMMERCIAL	292-6135
CLARK L. VOLCHOK	CB COMMERCIAL	292-6130
RICHARD CHASE	CITY of Kent Eng.	859-3950
ERIK STOCKDALE	ECOLOGY - SHORELANDS	~~649~~-7061
BOB THOMAS	ENVIROS	828-2508

enviros

Planning Meeting for Remediation

of

MARALCO Aluminum Site
7730 South 202nd Street
Kent, Washington

Department of Ecology
Enviros, Inc.

January 4, 1995

Enviros Incorporated
210 Marina Park Building
25 Central Way
Kirkland, Washington
98033-6156
Tel 206 / 827-5525
Fax 206 / 827-3299

OBJECTIVES OF MEETING

- Remediation Options
  - Stockpiled wastes
  - Equipment
- Underground Storage Tank Decommissioning
- Enhancing Property Value for Sale
- Costs for Remediation
- Schedule
- Funding Alternatives

PROPERTY DESCRIPTION

- 13.5 acres
- Designated Wetlands
- Building 45,000 square feet (tilt slab construction)
- Back wall of building has been damaged
- Some equipment remains on-site (salt saver, furnaces, bag houses)

HISTORY OF MARALCO

- Maralco operated from 1980 to 1986
- Produced aluminum ingots from aluminum cans and aluminum metal scrap
- Waste products: black dross, furnace slag, and baghouse dust
- Wastes were transported off-site for first year of operation then stored on-site

SUMMARY OF WASTE CONCERNS

- Black Dross — 25,000 tons
  (book designated a moderate Dangerous Waste)
- Aluminum Oxides — 1, 400 tons
- KBI Dross — 10 tons
  (Extremely Hazardous Waste due to fish bioassay)
- Baghouse dust — 500 lbs
  (Extremely Hazardous Waste due to fish bioassay)
- Sediment Pond & Storm Drain Wastes — 246 Drums
- Drill Cuttings & Well Purge Water
  - Soil Boring Cuttings — 20 Drums
  - Groundwater Well Purge Water — 20 Drums
- Subsurface Conditions (soil and groundwater)
  - Limited contamination in 1990 assessment
- Equipment
  - Furnaces and piping
  - Salt Saver
  - Bag Houses
  - Shipping Containers
  - Concrete Ecology Blocks

OPTIONS FOR BLACK DROSS REMEDIATION

- Off-site disposal (will require trucking to transfer station for rail transport to disposal site)
- Off-site recycling (will require trucking to transfer station for rail transport to disposal site)
- On-site recycling (if contractor demonstrates permitting and performance capabilities)

OPTIONS FOR REMEDIATION OF OTHER WASTES

- Baghouse dust -- neutralize/ stabilize to reduce designation for disposal
- KBI Dross -- recycle (Imsamet or cement plant)
- Aluminum Oxides -- recycle (Imsamet or cement plant)
- Sediment Ponds & Storm Drain Wastes
- Drill Cuttings & Purge Water (landfill disposal)
- Soil -- scrape 1 to 3 feet during removal of dross and oxide piles for disposal (will need confirmatory sampling)
- Assess & Monitor Groundwater?

UNDERGROUND STORAGE TANK

- 35,000 gallon diesel tank
- Decommissioning
- Preassessment
  - Advantage -- anticipation of remediation costs
  - Disadvantage -- increases overall decommissioning costs

OTHER ISSUES

- Permitting Requirements (City of Kent Environmental Checklist)
  - Hauling Permit (for transfer of wastes to transfer station)
  - Environmental Impact Statement
  - Time to process permits & review?
- Public Participation
- Real Estate Appraisal (ca. $5K, after removal of waste piles)
- Send entire project out to bid with performance specifications?
  - Disposal of all wastes
  - Equipment removal
  - Building repair
  - Site cleanup (trash removal, etc.)
- Possible reassessment of property may result in reduced tax

POTENTIAL VARIABLES

- UST-associated petroleum contaminated soil
- Contamination of subsurface soils and groundwater

ENHANCING PROPERTY VALUE

- Waste Disposal
- Equipment Removal
- Sale of access to rail spur?
- Reroute wetland?
- Channel 100 year flood to culvert?
- Structural upgrade prior to sale?
- Zoning Restrictions (i.e. can property be subdivided?)

Item	Asset	Liability	Comment
PROPERTY			
Building (45,000 s.f.)	$450,000 to 1,350,000		$10 to $30 per sq. ft depending on structural
Land (13.5 acres)	$2,265,120 to 2,831,400		$4 to 5 per s.f. (wetlands may reduce value)
Railroad Spur Access	$35,000 to 50,000		Assumes neighbor wants access via Maralco spur
Shipping Containers	$3,200 to 4,400		
Structural Appraisal		$5,000	
Structural Repair		$200,000	Unsubstantiated estimate
REMEDIATION			
Kent-SEPA Checklist Fee		$150	
Kent-SWM Drainage Fee		$5,305.16	As of 12/94; Increases $189.40/yr
King Co. Property Taxes		$352,308.51	As of 12/94
Building Structural Repair		$200,000	
Equipment Removal		--	
Underground Storage Tank			
UST Preassessment		$8,000	
UST Decommissioning		$22,000	Assumes no contamination
WASTE DISPOSAL/ RECYCLE			
Treatability Evaluation for Baghouse Dusts		$12,000	
Bioassays		$3,000	
Disposal Option			
Black Dross		$875,000	$35/ton
Aluminum Oxide		$49,000	$35/ton
KBI Dross		$1,300	$130/ton
Optional Disposal Subtotal		*($925,000)*	
Recycle Option			
Black Dross		$1,325,000	$53/ton (Imsamet)
Aluminum Oxide		$74,200	$53/ton
KBI Dross		$530	$53/ton
Optional Recycle Subtotal		*($1,399,730)*	
Disposal Only			
Bag House & Furnace Dust		$10,000	$130/ton plus removal (no recycle value)
Drum Contents		$20,000	
Remediation Subtotal		*($955,000 to $1,429,730)*	
City of Kent Haz. Waste Fee		$9,550 to $14,297	1% per year of total remediation costs
TOTAL	**$2,753,320 to $4,235,800**	**$1,757,313 to $2,236,790**	

Assumptions & Limitations:

No UST-associated petroleum contaminated soil;
Estimate does not include project management and engineering oversight;
Does not include any potential wetlands mitigation costs;
Does not include soil and groundwater assessment or remediation;
Does not include nonhazardous debris removal and general site cleanup;

Table 3.1
Results of Stage 2 Laboratory Analyses of Black Dross/Baghouse Waste Samples
Total Metal Analysis
Target Analyte Metals and Indicator Metals
Maralco Site, Kent, Washington

SAMPLE LOCATION:	BH-1	BH-2	BD-5	BD-6	BD-8	BD-9
DEPTH INTERVAL (ft., BGS):	2.3-2.8	2.1-2.7	2.4-2.5	3.5-4.0	1.0-1.5	1.5-2.0
SAMPLE ID:	368501	368502	368507	368509	368511	368512
DESCRIPTION:	baghouse dust	baghouse dust	black dross	black dross	black dross	black dross
SAMPLE DATE:	9/6/90	9/6/90	9/6/90	9/7/90	9/7/90	9/7/90
UNITS:	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g
Aluminum*	172000 B,N	130000 B,N	211000 B,N	155000 B,N	130000 B,N	140000 B,N
Antimony	<3.15		<2.88	<2.89		<2.78
Arsenic	<0.633		0.722	2.75		1.94
Barium*	65.2 N	81.2 N	91.5 N	66.1 N	91.5 N	76.4 N
Beryllium	1.26		2.6	1.88		1.94
Cadmium	2.05		5.19	2.31		2.36
Calcium*	2840	4200	6800	4340	5120	5000
Chromium*	153 B,N	189 B,N	196 B,N	119 B,N	412 B,N	120 B,N
Cobalt	4.1		7.36	3.47		11
Copper*	1200	1420	2860	1660	1200	746
Iron	3630 B		8100 B	3040 B		6700 B
Lead*	110	108	144	115	93.1	97.2
Magnesium*	19200 N	15000 N	21600 N	20500 N	24800 N	22800 N
Manganese*	1510 B	1100 B	1960 B	1070 B	1000 B	986 B
Mercury	0.26		0.351	0.064		0.059
Nickel	31.5 B,N		67.9 B,N	39.1 B,N		36.1 B,N
Potassium*	109000 N	86600 N	17300 N	43400 N	115000 N	70700 N
Selenium	<0.633		<0.577	<0.578		<0.555
Silver	<1.57		<1.44	<1.45		<1.39
Sodium*	93100	65000	15900	27500	45000	33000
Thallium	<0.633		<0.577	<0.578		<0.555
Vanadium	84.7		137	84.8		197
Zinc*	773 B	871 B	2000 B	1060 B	952 B	843 B

APPENDIX B

Wetlands and Floodways Inventory Maps for the Vicinity of the Maralco Site

NORTH

SCALE: 1"=300'

1/4 SECTION LINE

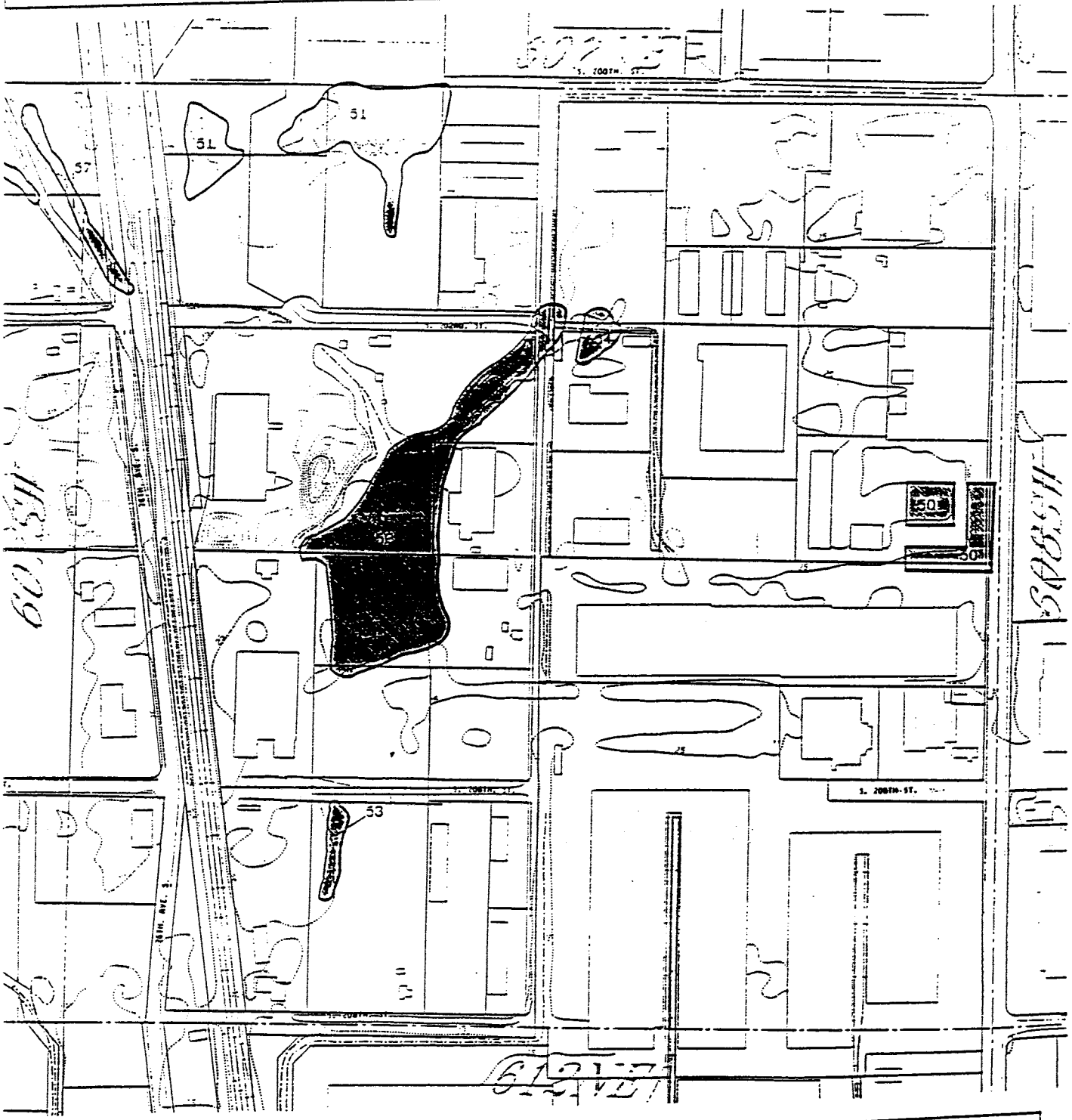
KENT CITY LIMITS

WETLAND

CONTOUR INTERVAL = 5 FT.

TOPOGRAPHIC BASE COMPILED FROM AERIAL PHOTOGRAPHY FLOWN APRIL 1988

PROPERTY LINES SHOWN ARE APPROXIMATE (ENTERED FROM ASSESSORS MAPS)

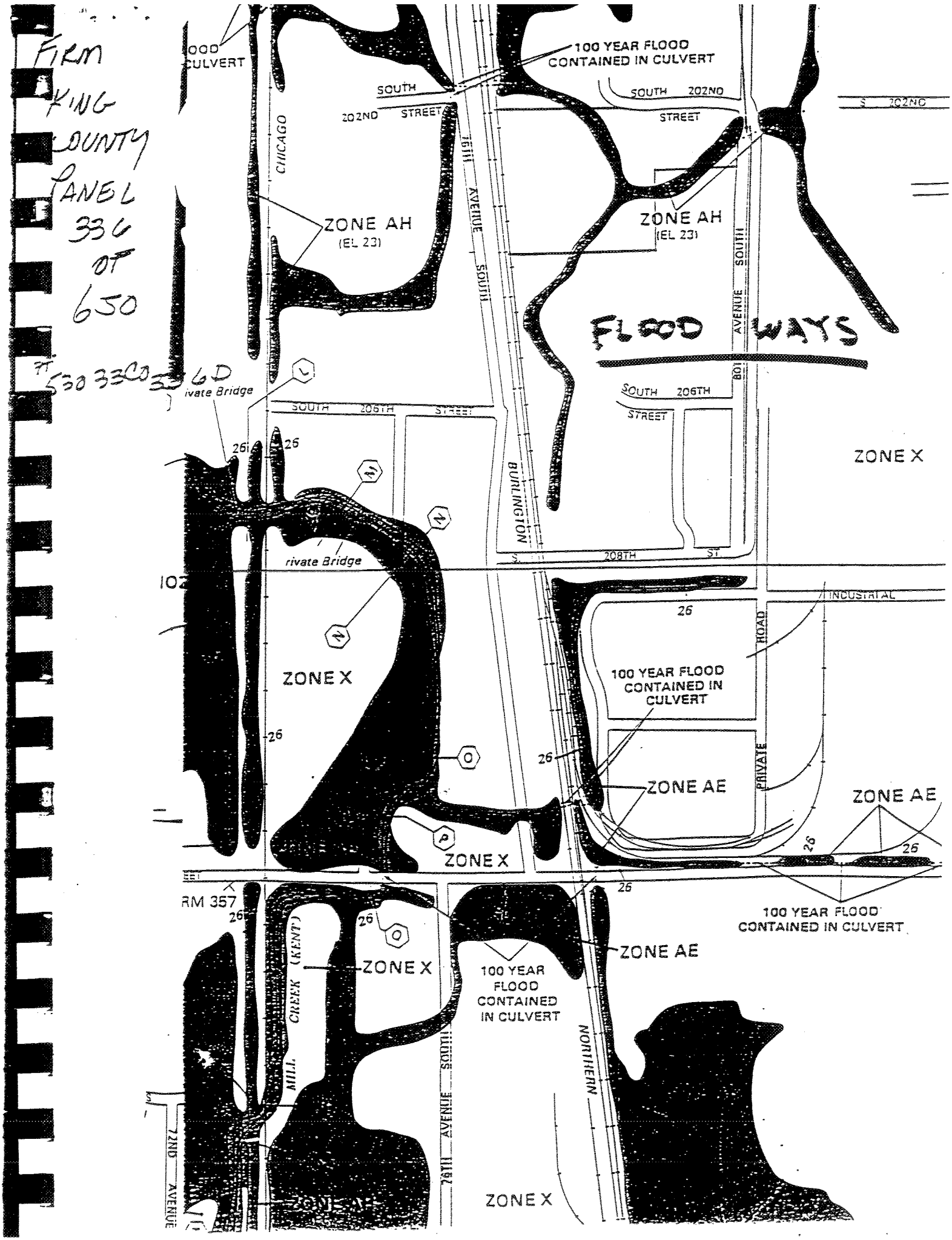


WETLAND INVENTORY

SE 01-22-04

SHEET 607SE

CITY OF KENT GEOGRAPHIC INFORMATION SYSTEM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FLOOD WAYS
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ZONE X
BURLINGTON
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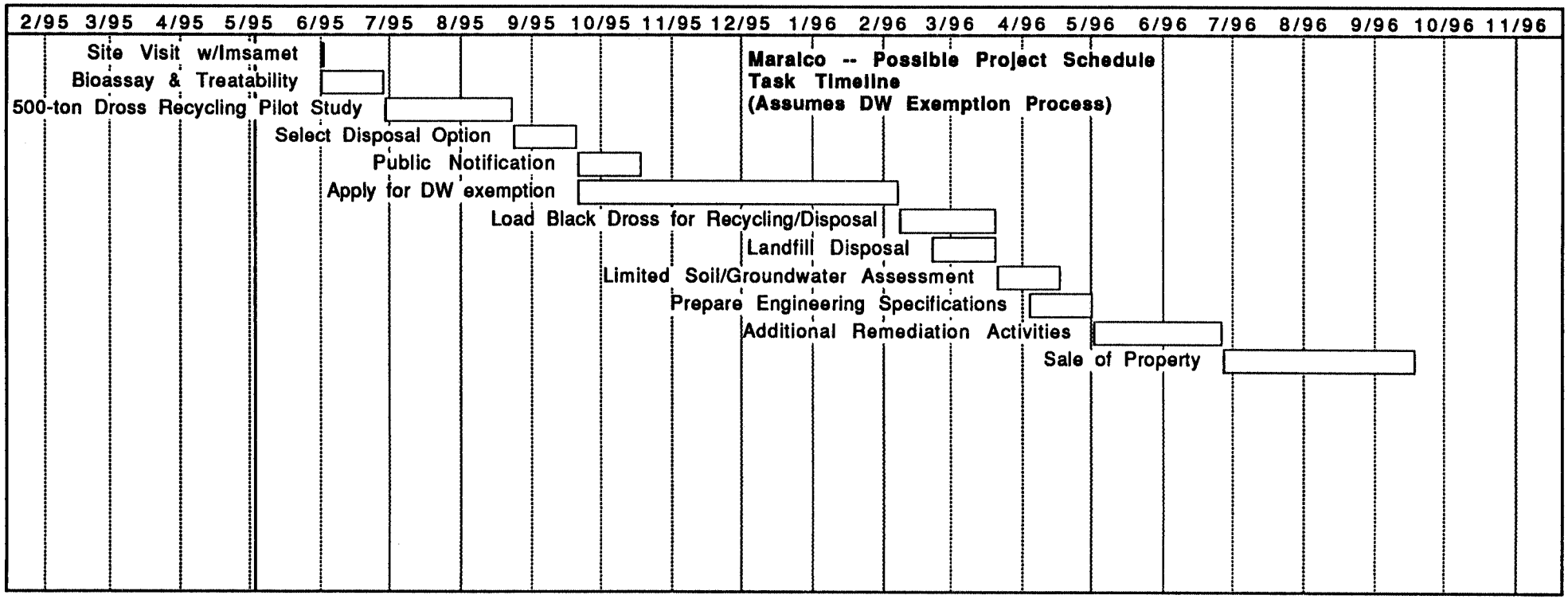
INDUSTRIAL ROAD
100 YEAR FLOOD CONTAINED IN CULVERT
ZONE AE
PRIVATE
ZONE AE
ZONE X
ZONE X
RM 357
MILL CREEK (KENT)
ZONE X
100 YEAR FLOOD CONTAINED IN CULVERT
ZONE AE
NORTHERN
72ND AVENUE
ZONE X

APPENDIX C

Task Timeline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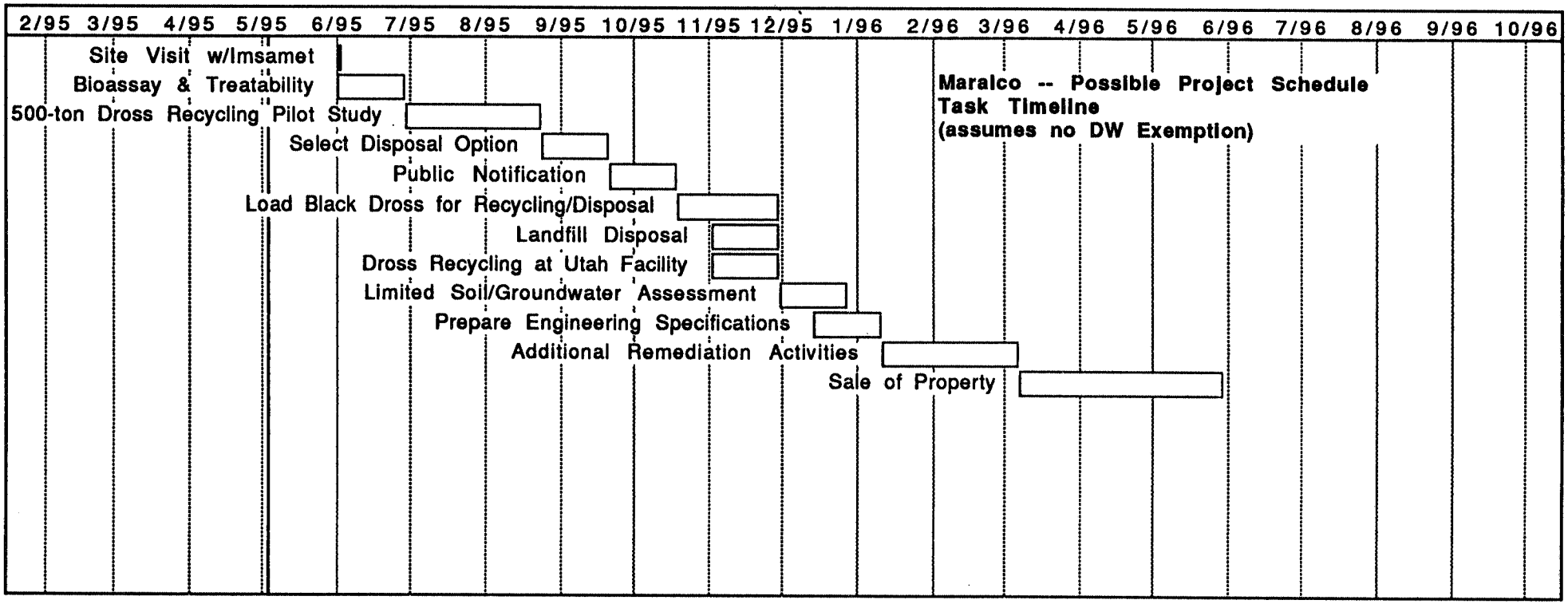
Site Visit w/Imsamet
Bioassay & Treatability
500-ton Dross Recycling Pilot Study
Select Disposal Option
Public Notification
Apply for DW exemption
Load Black Dross for Recycling/Disposal
Landfill Disposal
Limited Soil/Groundwater Assessment
Prepare Engineering Specifications
Additional Remediation Activities
Sale of Property
Maralco -- Possible Project Schedule
Task Timeline
(Assumes DW Exemption Process)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Site Visit w/Imsamet
Bioassay & Treatability
500-ton Dross Recycling Pilot Study
Select Disposal Option
Public Notification
Load Black Dross for Recycling/Disposal
Landfill Disposal
Dross Recycling at Utah Facility
Limited Soil/Groundwater Assessment
Prepare Engineering Specifications
Additional Remediation Activities
Sale of Property
Maralco -- Possible Project Schedule
Task Timeline
(assumes no DW Exemption)

APPENDIX D

List of Individuals and Agencies Contacted During Performance of Task 1

Table. List of Individuals and Agencies Contacted During Performance of Task 1

Contact/Affiliation	Project Role	Phone
Bill Bishop, Bishop & Lynch	Attorney representing ULLICO	206/622-5306
Kevin Bricks, Chemist Parametrix;	96 Hour Static Acute Fish Toxicity Bioassay Information	206/822-8880
Richard Chase, City of Kent, Engineering	City of Kent Permitting & Environmental Checklist & Hazardous Waste Concerns	206/859-3950
John Dumas, EPA Region X	Solid Waste Grants Program	206/553-6522
Housing & Urban Development (HUD)	Community Development Block Grant Assistance	206/220-5153
Nace Halpin, IAI	On-site treatment	206/878-7003
Alan Hashimoto, King County Tax Assessor;	Outstanding property taxes & reassessment issues	206/296-5144
David Hill ULLICO	ULLICO is a secured creditor for Maralco	206/746-6446
Alex Johnston, Seafirst Bank	Contacted for redevelopment funds	206/358-8938
Bruce Kendall Economic Development Council	Contacted for redevelopment funds	206/386-7823
City of Kent -- Utility Billing	Outstanding drainage fees	206/859-3373
Carol Kralik, Chemical Waste Mgmt.	Disposal at Arlington Landfill	206/820-1816
Dan Keitges, Envirosafe Services	Disposal at HW landfill, Idaho	206/827-2732
Mike Lazenby, VP Special Credits Seafirst Bank	Seafirst Bank is a Secured Creditor	206/358-7130
Ken Marcey, EPA Region X	Hazardous Waste Division	206/553-6501
Randy Miller, Intalco Aluminum	White Dross disposal practices	206/384-7061
Jerry Mishler	Non-ferrous scrap recycler	503/223-3745
Tim Murphy James G. Murphy, Inc.	Industrial Equipment Salvage	206/486-1246
Gary O'Neill, EPA Region X	Sustainable Development	206/553-1792
Hank Peterson, Kaiser Aluminum	White Dross disposal practices	206/591-0422
Milt Reimer, CB Commercial	Real Estate Issues	206/292-6315
Reynolds Aluminum	Aluminum recycling practices	206/872-6700
Warren Rosenfeld	CalBag Metals	503/226-3441
Paul Schmeil, Kaiser Aluminum	White Dross disposal practices	206/591-0476
George Scott, Intalco Aluminum	White Dross disposal practices	206/384-7537
Gary Shulze, Rabanco	Disposal at Roosevelt Landfill	206/646-5232
Phil Stansfeld, IAI	On-site treatment	206/872-7242
Quentin Steinberg, Steinberg & Steinberg	Bankruptcy Examiner	206/622-5510
Erik Stockdale, Ecology - Shorelands	Wetlands concerns	206/649-7061
Bob Stone, Ecology, Hazardous Waste Division	Hazardous Waste Concerns	206/649-7216
Gary Volchak, CB Commercial	Real Estate Issues	206/292-6315

Table (cont'd). List of Individuals and Agencies Contacted During Performance of Task 1

Don Wickstrom, City of Kent	Public Works Dept. - Engineering	206/859-3383
Bill Willinski, City of Kent	Public Works Dept. - Wetlands	206/859-3383
Geoff Yeates, Yeates Custom Backhoe	UST removal estimate.	206/641-6659
Polly Zehm, Ecology, CRO	Involved in exemption of RAMCO dross.	
Dale Zuck, Imsamet/ SALTS	Recycling in Utah	602/935-6330