EPA Superfund
Record of Decision:

SAND SPRINGS PETROCHEMICAL COMPLEX
EPA ID: OKD980748446
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SAND SPRINGS, OK
09/29/1987
ALLYN M. DAVIS, DIRECTOR             CARL E. EDLUND, CHIEF
HAZARDOUS WASTE MANAGEMENT DIVISION  SUPERFUND PROGRAM BRANCH
HAZARDOUS WASTE MANAGEMENT DIVISION

STEPHEN A. GILREIN, CHIEF
ALONM REMEDIAL SECTION
SUPERFUND PROGRAM BRANCH
HAZARDOUS WASTE MANAGEMENT DIVISION

BONNIE J. DEVOS, CHIEF
STATE PROGRAMS SECTION
SUPERFUND PROGRAM BRANCH
HAZARDOUS WASTE MANAGEMENT DIVISION

BENNETT STOKES, CHIEF
SOLID WASTE AND EMERGENCY RESPONSE BRANCH
OFFICE OF REGIONAL COUNSEL.
DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

SANDS SPRINGS PETROCHEMICAL COMPLEX, TULSA COUNTY, OKLAHOMA.
SOURCE CONTROL OPERABLE UNIT.

STATEMENT OF PURPOSE


THE STATE OF OKLAHOMA CONCURS WITH THE ON-SITE SOLIDIFICATION AND/OR STABILIZATION AND OFF-SITE THERMAL DESTRUCTION OF CHLORINATED A ZINC CONTAMINANTS DESCRIBED IN THIS RECORD OF DECISION. THE STATE DOES NOT CONCUR WITH THE ON-SITE INCINERATION CONCEPT PROPOSED BY EPA AT THE START OF THE PUBLIC COMMENT PERIOD. (LETTER ATTACHED).

#DR
STATEMENT OF BASIS

THIS DECISION IS BASED UPON THE ADMINISTRATIVE RECORD FOR THE SAND SPRINGS PETROCHEMICAL COMPLEX SUPERFUND SITE (INDEX ATTACHED). THE ATTACHED INDEX IDENTIFIES THE ITEMS WHICH COMPRISE THE ADMINISTRATIVE RECORD UPON WHICH THE SELECTION OF A REMEDIAL ACTION IS BASED.

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DECLARATION

THE ABOVE DESCRIBED REMEDY IS PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT, ATTAINS FEDERAL AND STATE REQUIREMENTS THAT ARE APPLICABLE OR RELEVANT AND APPROPRIATE, AND IS COST-EFFECTIVE COMPARED TO EQUALLY ENVIRONMENTALLY PROTECTIVE ALTERNATIVES. THIS REMEDY SATISFIES THE PREFERENCE FOR TREATMENT THAT REDUCES TOXICITY, MOBILITY, OR VOLUME AS A PRINCIPAL ELEMENT. FINALLY, IT IS DETERMINED THAT THIS REMEDY UTILIZES PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE.

9/29/87
DATE 
ROBERT E. LAYTON JR., P.E.
REGIONAL ADMINISTRATOR.
EXECUTIVE SUMMARY


THE TOTAL KNOWN WASTE VOLUME IS APPROXIMATELY 130,000 CUBIC YARDS. UNLINED SLUDGE PITS ON THE SITE CONTAiN SEVERAL THOUSAND CUBIC YARDS OF SULFURIC ACID SLUDGE. IN ADDITION TO THESE WASTES, THE LAGOONS, PITS, AND SPRAY PONDS ON THE SITE CONTAIN VARIOUS HEAVY METALS AND ORGANICS.

THE REMEDIAL ALTERNATIVES EVALUATED FOCUS ON CONTROLLING OR DESTROYING THE SOURCE OF THE CONTAMINATION. THE MAIN SITE OPERABLE UNIT WILL ADDRESS THE REMAINDER OF THE SITE, PRIMARILY THE GROUNDWATER CONTAMINATION.
SUMMARY OF REMEDIAL ALTERNATIVE SELECTION
SOURCE CONTROL OPERABLE UNIT FOR
SAND SPRINGS PETROCHEMICAL COMPLEX
TULSA COUNTY, OKLAHOMA

SEPTEMBER 1987

I. SITE LOCATION AND DESCRIPTION

THE SAND SPRINGS PETROCHEMICAL COMPLEX SUPERFUND SITE IS LOCATED IN SAND SPRINGS, OKLAHOMA. AS SHOWN IN FIGURE 1 THE SITE IS LOCATED ON THE NORTHERN BANK OF THE ARKANSAS RIVER, IMMEDIATELY WEST OF TULSA, OKLAHOMA. THE SITE ENCOMPASSES APPROXIMATELY 235 ACRES AND IS THE FORMER LOCATION OF A REFINERY. AS SHOWN IN FIGURE 2, THE SITE INCLUDES UNLINED ACID SLUDGE PITS, A SURFACE IMPOUNDMENT SURFICIAL SLUDGE CONTAMINATION, SOLVENT AND WASTE OIL LAGOONS AND CONTAMINATED SEDIMENTS. FIGURE 2 ALSO SHOWS SEVERAL SUBSURFACE SLUDGE PITS AND SPRAY PONDS WHICH WERE DISCOVERED SUBSEQUENT TO THE PUBLICATION OF THE SOURCE CONTROL OPERABLE UNIT REMEDIAL INVESTIGATION AND FEASIBILITY STUDY. THESE AREAS WILL ALSO BE ADDRESSED IN THIS OPERABLE UNIT. TOTAL KNOWN WASTE VOLUME IS APPROXIMATELY 130,000 CUBIC YARDS. THE SITE IS SITUATED IN A SANDY ALLUVIAL DEPOSIT WITH A THICKNESS RANGING FROM 26 TO 52 FEET. THIS DEPOSIT IS UNDERLAIN BY APPROXIMATELY 100 FEET OF SHALE. PITS AND LAGOONS HAVE CONTAMINATED SHALLOW GROUNDWATER.

SITE HISTORY

THE SITE OPERATED AS A REFINERY FROM THE TURN OF THE CENTURY THROUGH THE 1940’S. THE PROPERTY HAS SINCE BEEN DEVELOPED AS AN INDUSTRIAL AREA AND CONSISTS OF AN ABANDONED SOLVENT AND WASTE OIL RECYCLER, AN ACTIVE TRANSFORMER SALVAGE/RECYCLER, ACTIVE CHEMICAL MANUFACTURERS AND VARIOUS OTHER INDUSTRIES.


SEVERAL THOUSAND CUBIC YARDS OF SULFURIC ACID SLUDGE, WITH A PH RANGING FROM 1.5 TO 2.5 AND CONTAINING HEAVY METALS AND ORGANICS, EXIST IN THE UNLINED SLUDGE PITS. THE SLUDGE DEPOSITS ON THE RIVER SIDE OF THE LEVEE ARE OF SIMILAR COMPOSITION AS THE ACID SLUDGE PITS NORTH OF THE LEVEE.

THE SURFACE IMPOUNDMENT, LOCATED BETWEEN THE LARGE AND SMALL ACID SLUDGE PITS, DRAINED SURFACE WATER TO THE ARKANSAS RIVER PRIOR TO CONSTRUCTION OF THE LEVEE. AN ANALYSIS OF THE SURFACE IMPOUNDMENT LIQUID BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) IN 1980 INDICATED A PH OF 2.1 AND THE PRESENCE OF CHRYSENE, ANTHRACENE, PHENANTHRENE, PYRENE, BENZENE, 1,1-DIFLUOROTETRACHLOROETHANE, TOLUENE, PHENOL, NITROBENZENE, AND FLUORONAPHTHALENE.

Wynn lagoons were collected in 1982. Samples from the south lagoon showed significant contamination by chlorinated volatiles, benzene, toluene, and numerous long-chain aliphatic hydrocarbons indicative of oils. Lead and zinc levels were also high. Samples from the north lagoon showed the same types of contaminants as the south lagoon. However, sediments from the north lagoon have shown higher levels of volatile organics and metals.

In September 1983 the site was proposed for inclusion on the National Priorities List. Promulgation of the site was in June 1986. In June 1984, the Oklahoma State Department of Health (OSDH) entered into a cooperative agreement with EPA to conduct the Remedial Investigation/Feasibility Study (RI/FS) at the site. Utilizing funds from this cooperative agreement, the OSDH contracted with John Mathes and Associates to perform the sampling, analysis, and technical assessments of the site.

In an effort to address the obvious contamination in an expeditious manner, a source control Operable Unit was established to focus on the waste in the pits, ponds, and lagoons. This record of decision deals with those sources of contamination. By placing a portion of the full feasibility study on an expedited schedule the major sources of contamination can be considered without waiting for completion of the full FS. The remainder of the site, primarily the groundwater will be addressed in the full or "main site" FS. The Remedial Investigation Report on Sludge and Surface Impoundment Sampling and the Source Control Operable Unit Feasibility Study are dated April 1987.

**GEOLOGY**

The Sand Springs Petrochemical Complex is located in the alluvial floodplain of the Arkansas River. The alluvial material consists primarily of silts and fine-medium grain sands with an estimated permeability of 82-300 gallons per day per square foot. The depth of the alluvial sands on the site ranges from 26 to 52 feet with the thinner deposits occurring near the river. The groundwater flow velocity in the alluvial materials is estimated to be in the range of 243 to 764 feet per year.

Underlying the floodplain alluvium is the Coffeyville Formation. This formation is composed of shales, thin ripply bedded sandstones, and siltstones approximately 335 feet in thickness. From a regional perspective, 70 percent of the formation is composed of shales. Included in the upper half of the formation is a thick (20 - 50 feet) layer of sandstone termed Layton sandstone. This sandstone is readily identified in the rocky bluffs on the south side of the Arkansas River opposite the site. Since the site is topographically lower than the sandstone outcrops, this indicates that the upper portion of the Coffeyville Formation, including the Layton sandstone, has been eroded away in the area of the Sand Springs Petrochemical Complex. The lower portion of the Coffeyville is reported to be shale with thin tongues of sandstone.

**Remedial Investigation Results**

Eleven distinct waste disposal locations were sampled on the Sand Springs Petrochemical Complex site. At these locations, numerous discrete interval and composite samples were collected for chemical analysis. These locations (Figure 2) are referred to as:
THE SOURCE CONTROL OPERABLE UNIT FEASIBILITY STUDY CONSIDERED THE SLUDGES AND LIQUIDS IN SEVEN IDENTIFIED SURFACE PITS, PONDS AND LAGOONS. FOUR SUBSURFACE AREAS CONSISTING OF PETROLEUM SLUDGES AND ACIDIC SLUDGES WERE DISCOVERED DURING THE PHASE II BORING AND DRILLING ACTIVITIES. SOIL AND GROUNDWATER DATA FROM BENEATH THESE IDENTIFIED AREAS INDICATE THEY ARE SOURCES OR POTENTIAL SOURCES OF GROUNDWATER CONTAMINATION. FOR THIS REASON VOLUME CALCULATIONS FOR THESE AREAS WERE INCLUDED BY ADDENDUM TO THE VOLUME ESTIMATES IN THE FEASIBILITY STUDY. ADDITIONAL ANALYTICAL DATA MAY BE DEVELOPED DURING THE DESIGN PHASE TO FURTHER DEFINE THESE WASTES. THE ADDITIONAL SUBSURFACE AREAS OF SLUDGES REPRESENT APPROXIMATELY A 23 PERCENT INCREASE IN VOLUME. A COST SENSITIVITY ANALYSIS HAD ALREADY BEEN DEVELOPED BASED ON A 25 PERCENT INCREASE IN VOLUME. BECAUSE THE ADDITIONALLY IDENTIFIED SUBSURFACE VOLUME (23 PERCENT INCREASE) SO CLOSELY APPROXIMATES THE COST SENSITIVITY ANALYSES (25 PERCENT INCREASE) NO ADDITIONAL COST ESTIMATES HAVE BEEN CALCULATED. THE COSTS SENSITIVITY ANALYSIS ESTIMATES HAVE BEEN ADOPTED FOR COMPARISON OF ALTERNATIVES.

TABLES 1 AND 2 SHOW THE COMPOUNDS WITH THE HIGHEST CONCENTRATIONS AS A RESULT OF SAMPLES COLLECTED FROM THE ELEVEN DISPOSAL LOCATIONS. LEAD HAD THE HIGHEST CONCENTRATION (3,775 MG/KG) OF ALL THE INORGANIC COMPOUNDS FOUND IN THE SOLID SAMPLES, WHILE TETRACHLOROETHENE HAD THE HIGHEST CONCENTRATION (19,000 MG/KG) OF ALL THE ORGANIC COMPOUNDS. IN THE LIQUID SAMPLES, CHROMIUM HAD THE HIGHEST CONCENTRATION (10,460 MG/L) OF THE INORGANIC COMPOUNDS FOUND AND BIS (2-ETHYLHEXYL) PHTHALATE HAD THE HIGHEST CONCENTRATION (11 MG/L) OF THE ORGANIC COMPOUNDS. THE MOST FREQUENTLY DETECTED ORGANIC PRIORITY POLLUTANT COMPOUNDS DETECTED IN SOLID SAMPLES WERE CHRYSENE AND TOTAL XYLENE. BIS (2-ETHYLHEXYL) PHTHALATE AND TOLUENE WERE THE MOST FREQUENTLY DETECTED ORGANIC PRIORITY POLLUTANT COMPOUNDS IN THE LIQUID SAMPLES. THE INORGANIC COMPOUNDS MOST FREQUENTLY DETECTED IN LIQUID AND SOLID SAMPLES WERE LEAD, ZINC, CHROMIUM AND BARIUM. A MORE DETAILED DESCRIPTION OF THE ANALYTICAL RESULTS CAN BE FOUND IN THE SAND SPRINGS PETROCHEMICAL COMPLEX REMEDIAL INVESTIGATION REPORT.

POTENTIAL IMPACTS OF THE SITE ON HUMAN HEALTH AND THE ENVIRONMENT

BASED ON THE INFORMATION GATHERED IN STUDIES OF THE SITE, EPA HAS CONCLUDED THAT THE SITE POSES FOUR MAJOR RISKS TO HUMAN HEALTH AND THE ENVIRONMENT. THESE ARE:

1. DIRECT CONTACT - MANY OF THE ORGANIC COMPOUNDS (BENZENE, TETRACHLOROETHYLENE, AND OTHERS) FOUND ON THE SITE HAVE BEEN DETERMINED TO BE CARCINOGENICS. ABSORPTION THROUGH THE SKIN OR OTHER ROUTES OF INADVERTENT INGESTION THEREFORE POSE POTENTIAL HEALTH RISKS. IN ADDITION, THE WASTES AND SURFACE WATERS WERE FOUND TO BE HIGHLY ACIDIC.

2. AIR EMISSIONS - CONSISTING OF ACID FUMES AND VOLATILE ORGANIC COMPOUNDS ALSO POSE POTENTIAL HEALTH THREATS. AN EXTREME EXAMPLE OF ACUTE MEDICAL IMPACT IS EVIDENT IN AN ACCIDENT THAT OCCURRED IN 1980. DURING EXCAVATION FOR SANITARY SEWER IMPROVEMENTS ON THE WEST SIDE OF THE LARGE ACID SLUDGE PIT, SLUDGE FROM THE PIT WAS UNCOVERED AND A NUMBER OF PEOPLE REQUIRED MEDICAL ATTENTION FROM BREATHING FUMES (PROBABLY SULPHURIC ACID). DURING THE REMEDIAL INVESTIGATION, LOW LEVELS OF TRICHLOROETHYLENE AND SULPHURIC OXIDES WERE
3. SURFACE WATERS - ARE POLLUTED BY THE RUNOFF FROM THE SITE, ESPECIALLY DURING HEAVY RAINS. THERE ARE 550,000 GALLONS OF CONTAMINATED LIQUIDS CONTAINED IN THE SURFACE IMPOUNDMENT AND 165,000 GALLONS OF LIQUID IN THE GLEN WYNN LAGOONS.

4. GROUNDWATER - IS BEING CONTAMINATED DIRECTLY BY THE GLEN WYNN LAGOONS AND INDIRECTLY BY RUNOFF FROM THE MAIN SITE. RELATIVELY CLEAN SANDS WERE FOUND BENEATH THE MAIN WASTE DEPOSITS ABOVE UNDERLYING GROUNDWATER, INDICATING THAT DIRECT CONTAMINATION BY THE MAIN WASTE DEPOSITS DOES NOT APPEAR TO BE SIGNIFICANT. LARGE VOLUMES OF RUNOFF WATER (IN HEAVY RAINS THE SITE IS SUBMERGED) DO, HOWEVER, CARRY CONTAMINANTS OFF THE MAIN WASTE DEPOSITS TO MIX WITH CONTAMINANTS FROM THE OTHER WASTE DEPOSITS. THIS EVENTUALLY SINKS INTO THE GROUNDWATER FROM STANDING POOLS OF WATER IN LOW PLACES ON-SITE.

IT SHOULD BE NOTED THAT THE STUDY OF SAND SPRINGS GROUNDWATER IS BEING CARRIED OUT SEPARATELY. EPA HAS DETERMINED HOWEVER, THAT REMEDIYING THE IDENTIFIED SOURCES OF CONTAMINATION WILL NOT CONFLICT WITH THE ULTIMATE REMEDY FOR THE SITE.

II. ENFORCEMENT

BACKGROUND

APPROXIMATELY 300 POTENTIALLY RESPONSIBLE PARTIES (PRPS) HAVE BEEN IDENTIFIED AT THE SITE. SPECIAL NOTICE MAY BE PROVIDED TO THE PRPS TO CONDUCT THE REMEDIAL DESIGN AND ACTION.

TO DATE, TWO PRPS HAVE TAKEN ACTION AT THE SITE; ARCO AND THE SAND SPRINGS HOME. THE SAND SPRINGS HOME, PERFORMED A REMOVAL ACTION IN 1984 UNDER THE TERMS OF A UNILATERAL ADMINISTRATIVE ORDER. ARCO CONDUCTED PILOT STUDIES UNDER AN ADMINISTRATIVE ORDER.

PILOT STUDIES


STABILIZATION WAS EVALUATED AS A POTENTIAL REMEDY FOR THE ACID SLUDGES. THIS TECHNOLOGY USES A STABILIZING AGENT, SUCH AS LIME, TO REDUCE THE MOBILITY OF THE CONTAMINANTS AND INCREASE THE BEARING CAPACITY OF THE MASS CONTAINING THE CONTAMINANTS. THE TOXICITY CHARACTERISTICS LEACHING PROCEDURE (TCLP) WAS USED TO EVALUATE THE PERFORMANCE OF THIS TECHNOLOGY.
THE ANALYTICAL RESULTS SHOW THAT WITHOUT FURTHER TREATMENT FREE LIQUID CONTAMINANT CONCENTRATIONS WERE NOT REDUCED TO MEET RCRA LAND BAN RESTRICTIONS. THE UNCONFINED COMPRESSION STRENGTH OF THE STABILIZED MATERIAL WAS DETERMINED BY THE EPA CINCINNATI LABORATORY TO BE 1.8 POUNDS PER SQUARE INCH (PSI), WHICH DOES NOT MEET THE RECOMMENDED DISPOSAL CRITERIA REQUIRING A COMPRESSION STRENGTH OF 150 PSI.


III. COMMUNITY RELATIONS HISTORY

ON JULY 24, 1984, THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) ISSUED A NEWS RELEASE ANNOUNCING THAT FUNDS HAD BEEN AWARDED TO THE OKLAHOMA STATE DEPARTMENT OF HEALTH (OSDH) TO CONDUCT THE RI/FS AT THE SAND SPRINGS SITE.


THE PUBLIC MEETING WAS HELD IN SAND SPRINGS ON AUGUST 4, 1987. THE MEETING WAS CHANGED FROM THE ORIGINAL PUBLIC LIBRARY LOCATION TO THE CITY COUNCIL CHAMBERS SO THAT THE LARGE CROWD OF INTERESTED PEOPLE COULD BE ACCOMMODATED. ABOUT 180 PEOPLE ATTENDED THE MEETING WHICH BEGAN AT 7:00 PM AND ENDED AT MIDNIGHT.

DURING THE MEETING, REQUESTS WERE MADE FOR EPA TO EXTEND THE PUBLIC COMMENT PERIOD. THAT REQUEST WAS GRANTED BY THE PRESIDING OFFICIAL AND THE COMMENT PERIOD WAS EXTENDED UNTIL SEPTEMBER 1, 1987. A NEWS RELEASE WAS ISSUED BY THE EPA ON AUGUST 7 ANNOUNCING THE EXTENSION. IN ADDITION TO THE AGENCY MEDIA LIST, THE NEWS RELEASE WAS MAILED TO ALL PERSONS KNOWN TO HAVE AN INTEREST IN THE SITE.

COMMUNITY CONCERNS CENTERED ON POTENTIAL AIR POLLUTION FROM THERMAL DESTRUCTION, POTENTIAL ADVERSE ECONOMIC IMPACTS ON THE CITY AND WHETHER EPA WOULD GUARANTEE THAT, IF THERMAL DESTRUCTION WERE SELECTED, THE DEVICE WOULD BE REMOVED AFTER CLEANUP WAS COMPLETED. FURTHER DETAILS CONCERNING COMMUNITY RELATIONS ARE CONTAINED IN APPENDIX C.

IV. ALTERNATIVES EVALUATION

EVALUATION CRITERIA

SECTION 121(A)(B) AND (D) OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT CONTAINS NINE FACTORS WHICH EPA MUST CONSIDER IN SELECTING A REMEDY FOR A SUPERFUND SITE. THESE ARE SUMMARIZED BELOW:
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1. **CONSISTENCY WITH OTHER ENVIRONMENTAL LAWS (ARARS)**

   IN DETERMINING APPROPRIATE REMEDIAL ACTIONS AT SUPERFUND SITES, CONSIDERATION MUST BE GIVEN TO THE REQUIREMENTS OF OTHER FEDERAL AND STATE ENVIRONMENTAL LAWS, IN ADDITION TO CERCLA AS AMENDED BY SARA. PRIMARY CONSIDERATION IS GIVEN TO ATTAINING APPLICABLE OR RELEVANT AND APPROPRIATE FEDERAL AND STATE PUBLIC HEALTH AND ENVIRONMENTAL REGULATIONS AND STANDARDS. NOT ALL FEDERAL AND STATE ENVIRONMENTAL LAWS AND REGULATIONS ARE APPLICABLE TO EACH SUPERFUND RESPONSE ACTION. THE COMPLIANCE OF EACH REMEDIAL ALTERNATIVE WITH ALL APPLICABLE OR RELEVANT AND APPROPRIATE ENVIRONMENTAL LAWS IS SHOWN IN TABLE 3.

2. **REDUCTION OF TOXICITY, MOBILITY OR VOLUME**

   THE DEGREE TO WHICH ALTERNATIVES EMPLOY TREATMENT THAT REDUCES TOXICITY, MOBILITY, OR VOLUME MUST ALSO BE ASSESSED. RELEVANT FACTORS ARE:

   S THE TREATMENT PROCESSES THE REMEDIES EMPLOY AND MATERIALS THEY WILL TREAT;
   S THE AMOUNT OF HAZARDOUS MATERIALS THAT WILL BE DESTROYED OR TREATED;
   S THE DEGREE OF EXPECTED REDUCTION IN TOXICITY, MOBILITY, OR VOLUME;
   S THE DEGREE TO WHICH THE TREATMENT IS IRREVERSIBLE;
   S THE RESIDUALS THAT WILL REMAIN FOLLOWING TREATMENT, CONSIDERING THE PERSISTENCE, TOXICITY, MOBILITY, AND PROPENSITY FOR BIOACCUMULATION OF SUCH HAZARDOUS SUBSTANCES AND THEIR CONSTITUENTS.

3. **SHORT-TERM EFFECTIVENESS**

   THE SHORT-TERM EFFECTIVENESS OF ALTERNATIVES MUST BE ASSESSED; CONSIDERING APPROPRIATE FACTORS AMONG THE FOLLOWING:

   S MAGNITUDE OF REDUCTION OF EXISTING RISKS;
   S SHORT-TERM RISKS THAT MIGHT BE POSED TO THE COMMUNITY, WORKERS, OR THE ENVIRONMENT DURING IMPLEMENTATION OF AN ALTERNATIVE INCLUDING POTENTIAL THREATS TO HUMAN HEALTH AND THE ENVIRONMENT ASSOCIATED WITH EXCAVATION, TRANSPORTATION, AND REDISPOSAL OR CONTAINMENT;
   S TIME UNTIL FULL PROTECTION IS ACHIEVED.

4. **LONG-TERM EFFECTIVENESS AND PERMANENCE**

   ALTERNATIVES ARE ASSESSED FOR THE LONG-TERM EFFECTIVENESS AND PERMANENCE THEY AFFORD ALONG WITH THE DEGREE OF CERTAINTY THAT THE REMEDY WILL PROVE SUCCESSFUL. FACTORS CONSIDERED ARE:

   S MAGNITUDE OF RESIDUAL RISKS IN TERMS OF AMOUNTS AND CONCENTRATIONS OF WASTE REMAINING FOLLOWING IMPLEMENTATION OF A REMEDIAL ACTION, CONSIDERING THE PERSISTENCE, TOXICITY, MOBILITY, AND PROPENSITY TO BIOACCUMULATE OF SUCH HAZARDOUS SUBSTANCES AND THEIR CONSTITUENTS;
   S TYPE AND DEGREE OF LONG-TERM MANAGEMENT REQUIRED, INCLUDING MONITORING AND OPERATION AND MAINTENANCE;
   S POTENTIAL FOR EXPOSURE OF HUMAN AND ENVIRONMENTAL RECEPTORS TO REMAINING WASTE CONSIDERING THE POTENTIAL THREAT TO HUMAN HEALTH AND THE ENVIRONMENT ASSOCIATED WITH EXCAVATION, TRANSPORTATION, REDISPOSAL, OR CONTAINMENT;
   S LONG-TERM RELIABILITY OF THE ENGINEERING AND INSTITUTIONAL CONTROLS, INCLUDING UNCERTAINTIES ASSOCIATED WITH LAND DISPOSAL OF UNTREATED WASTES AND RESIDUALS;
   S POTENTIAL NEED FOR REPLACEMENT OF THE REMEDY.
5. IMPLEMENTABILITY

THE EASE OR DIFFICULTY OF IMPLEMENTING THE ALTERNATIVES ARE ASSESSED BY CONSIDERING THE FOLLOWING TYPES OF FACTORS:

- Degree of difficulty associated with constructing the technology;
- Expected operational reliability of the technologies;
- Need to coordinate with and obtain necessary approvals and permits (e.g., NPDES, dredge and fill permits for off-site actions) from other offices and agencies;
- Availability of necessary equipment and specialists;
- Available capacity and location of needed treatment, storage, and disposal services.

6. COST

THE TYPES OF COSTS THAT SHOULD BE ASSESSED INCLUDE THE FOLLOWING:

- Capital cost;
- Operation and maintenance costs;
- Net present value of capital and O&M costs;
- Potential future remedial action costs.

7. COMMUNITY ACCEPTANCE

THIS ASSESSMENT SHOULD LOOK AT:

- Components of the alternatives that the community supports;
- Features of the alternatives about which the community has reservations;
- Elements of the alternatives which the community strongly opposes.

8. STATE ACCEPTANCE

EVALUATION FACTORS INCLUDE ASSESSMENTS OF:

- Components of the alternatives the state supports;
- Features of the alternatives about which the state has reservations;
- Elements of the alternatives under consideration that the state strongly opposes.

9. OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT


EPA IS ALSO DIRECTED BY SARA TO GIVE PREFERENCE TO REMEDIAL ACTIONS THAT UTILIZE TREATMENT TO REMOVE CONTAMINANTS FROM THE ENVIRONMENT. OFF-SITE TRANSPORT AND DISPOSAL WITHOUT TREATMENT IS THE LEAST PREFERRED OPTION WHERE PRACTICABLE TREATMENT TECHNOLOGIES ARE AVAILABLE.

DESCRIPTION OF ALTERNATIVES

IN CONFORMANCE WITH THE NATIONAL CONTINGENCY PLAN, INITIAL REMEDIAL APPROACHES WERE SCREENED TO DETERMINE WHICH MIGHT BE APPROPRIATE FOR THIS SITE. (SEE THE FEASIBILITY STUDY FOR DETAILS OF THIS EVALUATION). FROM THESE POSSIBLE REMEDIES, SIX ALTERNATIVES WERE CHOSEN FOR
MORE DETAILED EVALUATION AND COMPARISON WITH THE REMEDY SELECTION CRITERIA OUTLINED ABOVE. EACH IS SUMMARIZED BELOW:

ALTERNATIVE 1, NO ACTION - THIS REMEDY CONSISTS PRIMARILY OF RESTRICTING PUBLIC ACCESS TO THE CONTAMINATED AREAS AND MONITORING THE SITE. THE AREAS WOULD BE SECURED USING FENCING AND WARNING SIGNS. SITE MONITORING WILL INVOLVE AIR MONITORING AND AN ESTABLISHED WARNING SYSTEM FOR EVACUATION OF THE NEARBY PUBLIC IN CASE CONTAMINATION IS DETECTED ABOVE ANY APPLICABLE STANDARDS. GROUNDWATER AND BERM CONDITIONS WILL BE MONITORED PERIODICALLY. THE ESTIMATED COST TO IMPLEMENT THE "NO ACTION" ALTERNATIVE IS $525,000.

ALL FIVE OF THE REMAINING ALTERNATIVES REQUIRE EXCAVATION OF THE CONTAMINATED MATERIALS. IF ANY WASTE REMAINS ON-SITE, A LANDFILL CONSTRUCTED IN COMPLIANCE WITH RCRA REQUIREMENTS WILL BE USED TO REDUCE GROUNDWATER INFILTRATION AND THE CHANCES OF ANY CONTAMINANTS MIGRATING OFF-SITE. IN ADDITION THE SITE WILL BE MONITORED FOR AT LEAST 30 YEARS.


THE SPECIFIED TREATMENT UNIT WILL BE CAPABLE OF REMOVING THE METAL AND ORGANIC CONTAMINANTS FROM THE LIQUIDS TO RESULT IN CONCENTRATIONS THAT COMPLY WITH FEDERAL AND/OR STATE STANDARDS FOR DIRECT DISCHARGE TO THE ARKANSAS RIVER. STORMWATER WILL BE COLLECTED WITHIN THE INDIVIDUAL AREAS AS THEY ARE BEING REMEDIATED. IT IS ASSUMED THAT THE COLLECTED STORMWATER WILL HAVE SIMILAR OR LOWER CONCENTRATIONS OF HAZARDOUS SUBSTANCES AS THE SURFACE IMPOUNDMENT LIQUIDS AND WILL BE TREATED IN THE SAME MANNER.

ALTERNATIVE 2, ON-SITE THERMAL DESTRUCTION - INVOLVES REMOVING AND TRANSPORTING THE HAZARDOUS MATERIAL TO AN ON-SITE THERMAL TREATMENT UNIT. MATERIALS HANDLING WILL LIKELY INCLUDE HAULING THE HAZARDOUS WASTE TO THE THERMAL DESTRUCTION UNIT, POSSIBLY ADDING CHEMICALS TO NEUTRALIZE THE LOW PH SLUDGES, MIXING THE WASTE AND CHEMICALS TO MAKE THEM AS HOMOGENEOUS AS POSSIBLE, AND REDUCING THE SOLID MATERIALS TO A SUITABLE SIZE FOR THERMAL DESTRUCTION. STACK GASES WILL BE SCRUBBED AND TREATED PRIOR TO ATMOSPHERIC RELEASE. THE RESIDUAL ASH WILL BE TESTED, SOLIDIFIED, AND LANDFILLED TO COMPLY WITH RCRA REQUIREMENTS, IF NECESSARY. THE ESTIMATED COST OF THIS ALTERNATIVE IS $67 MILLION.

ALTERNATIVE 3, SOLIDIFICATION AND ON-SITE LANDFILL - IN GENERAL, SOLIDIFICATION TECHNOLOGIES INVOLVE UNIFORMLY COMBINING THE HAZARDOUS MATERIAL WITH CEMENTITIOUS MATERIALS, SUCH AS PORTLAND CEMENT OR FLY ASH AND LETTING THE MIXTURE HARDEN. THIS REMEDY INVOLVES NEUTRALIZING AND EXCAVATING THE HAZARDOUS MATERIAL AND PLACING IT IN AN ON-SITE BLENDING UNIT FOR MIXING WITH THE SOLIDIFICATION AGENT. THE SOLIDIFIED MIXTURE WOULD BE DISPOSED OF IN AN ON-SITE RCRA SPECIFICATION LANDFILL. PRIOR TO LANDFILLING, RELEVANT TESTS WOULD BE PERFORMED TO CONFIRM THE EFFECTIVENESS OF THE SOLIDIFICATION TECHNOLOGY. IMPLEMENTATION OF THIS ALTERNATIVE MAY PRODUCE A TOTAL VOLUME INCREASE OF 50 TO 200 PERCENT THAT OF THE ORIGINAL VOLUME. A FENCE WOULD BE INSTALLED TO RESTRICT SITE ACCESS AND GROUNDWATER MONITORING WOULD BE PERFORMED FOR AT LEAST A 30 YEAR PERIOD FOLLOWING CLOSURE. THE COST OF THIS ALTERNATIVE IS ESTIMATED TO BE $38 MILLION.

ALTERNATIVE 4, ON-SITE SOLVENT EXTRACTION - THIS REMEDY ENTAILS THE EXCAVATION AND NEUTRALIZATION OF THE HAZARDOUS SLUDGES, TREATMENT IN AN ON-SITE FACILITY, AND PROPER DISPOSAL OF THE THREE BY-PRODUCTS (OIL, WATER, AND SOLIDS). SOLVENT EXTRACTION TREATMENT INCLUDES SIZING AND PRETREATING THE MATERIAL PRIOR TO EXTRACTING THE OIL WITH A SOLVENT. EACH WASTE SYSTEM OF OIL, WATER, AND SOLIDS WILL REQUIRE SAMPLING AND ANALYSIS TO DETERMINE THE APPROPRIATE METHOD OF DISPOSAL. THIS ALTERNATIVE WOULD REQUIRE PILOT
STUDIES PRIOR TO DEVELOPMENT OF PERFORMANCE SPECIFICATIONS TO DETERMINE THE DEGREE TO WHICH PRODUCTS MAY BE CONTAMINATED AND HOW TO TREAT THE OIL, WATER, AND SOLIDS PRODUCT STREAMS, IF NECESSARY. THE ESTIMATED COST OF THIS REMEDY IS $272 MILLION.


ALTERNATIVE 6, OFF-SITE SOLVENT EXTRACTION - THIS REMEDY IS SIMILAR TO ALTERNATIVE 4, ALTHOUGH IT REQUIRES TRANSPORTING THE MATERIAL OFF-SITE TO A TREATMENT FACILITY IN COMPLIANCE WITH THE SUPERFUND OFF-SITE POLICY. THE ESTIMATED COST OF THE OFF-SITE SOLVENT EXTRACTION ALTERNATIVE IS $294 MILLION.

EVALUATION OF ALTERNATIVES

THE DEGREE THAT THE SIX REMEDIAL ALTERNATIVES MEET THE NINE SELECTION CRITERIA IS CONTAINED IN TABLE 4. THE FOLLOWING VALUES WERE ASSIGNED TO COMPARE REMEDIAL SELECTION CRITERIA:

++ ALTERNATIVE WOULD GREATLY EXCEED A SELECTION CRITERION WHEN COMPARED TO OTHER ALTERNATIVES.

+ ALTERNATIVE WOULD EXCEED A CRITERION IN COMPARISON TO OTHER ALTERNATIVES.

0 ALTERNATIVE CAN BE DESIGNED TO MEET THE SELECTION CRITERION.

- SPECIAL EFFORTS WILL BE NECESSARY IN THE DESIGN OF THE REMEDY TO MEET THE SELECTION CRITERION.

-- IN COMPARISON TO OTHER REMEDIES, THESE ALTERNATIVES WOULD PRESENT MOST DIFFICULTY IN ACHIEVING A SELECTION CRITERION.

THE RATIONALE FOR THE RATINGS ASSIGNED IN THIS TABLE IS AS FOLLOWS:

1. COMPLIES WITH ARARS (I.E., MEETS OR EXCEEDS APPLICABLE, OR RELEVANT AND APPROPRIATE FEDERAL AND STATE REQUIREMENTS).

A. NO ACTION WAS ASSIGNED A "--" BECAUSE IT WOULD VIOLATE RCRA CORRECTIVE ACTION REQUIREMENTS REQUIRING REMEDIATION OF A HAZARDOUS WASTE SITE AND DOES NOT COMPLY WITH THE NATIONAL CONTINGENCY PLAN PROVISIONS TO RESPOND TO A THREAT OF RELEASE.

B. ON-SITE THERMAL DESTRUCTION WAS RATED "+" BASED ON THE GROWING BODY OF KNOWLEDGE THE AGENCY HAS ABOUT THE ABILITY OF THIS PROCESS TO MEET ENVIRONMENTAL STANDARDS AND THE HIGHLY INCINERABLE CHARACTERISTICS OF WASTE AT THE SITE. IN ADDITION, AN ON-SITE PILOT TEST OF A THERMAL DESTRUCTION UNIT SHOWED THAT 99.99% DESTRUCTION OF ORGANICS (A RCRA REQUIREMENT) WAS ACHIEVABLE AFTER FUEL TO AIR RATIOS WERE ADJUSTED. ALL OTHER STANDARDS (AND WATER QUALITY STANDARDS) SHOULD BE MET AS WELL.

C. ON-SITE SOLIDIFICATION AND LANDFILL WAS RATED "--" FOR BOTH THE SOLIDIFICATION AND STABILIZATION PROCESSES EVALUATED BROADLY IN THE FEASIBILITY STUDY AND IN MORE DETAIL IN THE FIELD PILOT STUDIES. THE WASTE AT THIS SITE CONTAINS 50% ORGANIC COMPOUNDS RAISING DOUBTS ABOUT THE ABILITY OF STABILIZED OR SOLIDIFIED WASTE TO MEET
RCRA REQUIREMENTS IN THE LONG TERM. THE STABILIZATION PILOT TESTS SHOWED THAT STABILIZED WASTE MAY REQUIRE A SUPPORT STRUCTURE * TO SUPPORT A RCRA CAP DUE TO LOW COMPRESSIVE STRENGTHS (1.8 PSI). IT IS RECOMMENDED THAT LANDFILLED SOLIDS ATTAIN 150 PSI IF A CAP IS INSTALLED WITHOUT A SUPPORT STRUCTURE. LIQUIDS (UP TO 40% BY VOLUME) SEPARATED FROM STABILIZED MATERIAL WOULD REQUIRE FURTHER TREATMENT * BEFORE DISPOSAL TO MEET RCRA REQUIREMENTS. THE SOLIDIFIED WASTE CONTAINED VISIBLE CHUNKS OF WASTE FROM PEA TO FIST SIZE AND HAD A WIDE VARIATION IN COMPRESSIVE STRENGTHS (FROM 180 TO 650 PSI). TESTS TO DETERMINE THE LONG TERM ABILITY OF THE SOLIDIFYING MATRIX TO CONTAIN THE WASTE WERE NOT INCLUSIVE DUE TO THE LACK OF A RELIABLE TEST METHODOLOGY. A MODIFIED LEACHING TEST (SEE ORD REPORT) ON PILOT STUDY SAMPLES DID SHOW OBVIOUS DEGRADATION OF THE SOLIDIFYING MATRIX FOLLOWING ANALYSES FOR TOTAL ORGANIC CONTENT.

* NOT INCLUDED IN FEASIBILITY STUDY COST ESTIMATES.

FINALLY, AVAILABLE PILOT PROJECT DATA INDIRECTLY POINTS TO THE POTENTIAL FOR SIGNIFICANT AIR EMISSIONS FROM BOTH THE SOLIDIFICATION AND STABILIZATION PROCESSES. ANALYSIS OF SOLIDIFIED OR STABILIZED WASTE SHOWS THAT THE QUANTITY OF LOW VOLATILE COMPOUNDS REMAINED UNCHANGED IN TREATED SAMPLES. COMPOUNDS WITH HIGHER VOLATILITY HOWEVER, NEARLY DISAPPEARED. TULSA COUNTY IS DESIGNATED BY EPA AS NONATTAINMENT FOR OZONE; THE POSSIBILITY OF SIGNIFICANT ADDITIONS OF HYDROCARBON COMPOUNDS MUST BE CONSIDERED.

THE NET ASSESSMENT IS THAT SOLIDIFICATION OR STABILIZATION PROCESSES PRESENT DIFFICULT PROBLEMS WITH RESPECT TO MEETING ARARS.

D. OTHER ALTERNATIVES WERE ALL RATED "0" BECAUSE ALL INVOLVED TREATMENT PROCESSES THAT CAN BE DESIGNED TO MEET ARARS.

2. REDUCES: TOXICITY, MOBILITY, AND VOLUME

A. NO ACTION WAS RATED "-" BECAUSE IT DOES NOTHING TO REDUCE ANY OF THESE PARAMETERS.

B. ON-SITE THERMAL DESTRUCTION WAS RATED "+" IN EACH CATEGORY BECAUSE THIS PROCESS WOULD ELIMINATE ORGANIC COMPOUNDS THAT CONSTITUTE 50% OF THE WASTE.

C. SOLIDIFICATION/STABILIZATION WAS RATED DIFFERENTLY FOR EACH OF THE PARAMETERS.

I. MOBILITY - WAS RATED "+" BECAUSE PILOT STUDIES SUGGEST THIS REMEDY REDUCES MOBILITY. IT WAS NOT RATED "++" BECAUSE OF THE POSSIBILITY FOR LEACHING EXISTS EVEN THOUGH THE CONTAMINANTS WILL BE FIXED TO A SOLIDIFYING AGENT.

II. TOXICITY - WAS RATED "-" BECAUSE NONE OF THE METALS OR ORGANIC COMPOUNDS WERE REMOVED FROM THE WASTE EXCEPT THE ELIMINATION OF POSSIBLE AIR EMISSIONS.

III. VOLUME - WAS RATED "--" BECAUSE OF PILOT DATA SHOWING A VOLUMETRIC INCREASE OF 50% TO 200% FOR THESE REMEDIAL TECHNIQUES.

D. OTHER REMEDIES - WERE ALL RATED "+" BECAUSE EACH INVOLVES REMOVAL OF THE ORGANIC COMPONENTS OF THE WASTE.

3. SHORT-TERM EFFECTIVENESS

WITH THE EXCEPTION OF THE NO ACTION REMEDY ALL ALTERNATIVES WERE RATED AT LEAST "-"
BECAUSE OF THE POTENTIAL FOR RELEASE OF ACID FUMES OR OTHER NOXIOUS GASES DURING WASTE EXCAVATION. THIS PROBLEM CAN PROBABLY BE AVOIDED BY THE USE OF FOAMS, CAUTIOUS WORK PRACTICES, OR TEMPORARY ENClosures AND WILL NEED TO BE ADDRESSED IN THE DESIGN OF THE REMEDY.

OFF-SITE REMEDIES WERE ALL RATED "--" BECAUSE, IN ADDITION TO THE EXCAVATION PROBLEMS, TRANSPORTATION OF THE WASTE OFF-SITE POSES ADDITIONAL ENVIRONMENTAL RISKS. NO ACTION WAS ALSO, RATED "--" BECAUSE OF THE RISK THE SITE PRESENTS, AS DEMONSTRATED BY THE WATER COMPANY WORKER INJURIES.

4. LONG-TERM EFFECTIVENESS AND PERMANENCE

THE HIGHEST RATINGS, "++" WERE GIVEN TO THE THERMAL DESTRUCTION OPTIONS SINCE THEY ENTAILED THE DESTRUCTION OF ORGANICS AND SOLIDIFICATION OF ANY TOXIC ASH. SOLIDIFIED ASH SHOULD BE EXTREMELY STABLE IN THE ENVIRONMENT BECAUSE THE ORGANIC COMPOUNDS WILL HAVE BEEN ELIMINATED. LOWER RATINGS OF "+" WERE GIVEN TO THE SOLVENT EXTRACTION OPTIONS BECAUSE SLIGHT INEFFICIENCIES IN THE WATER-OIL-SOLIDS SEPARATION PROCESS WILL RESULT IN SOMEWHAT "DIRTIER" END PRODUCTS THAN THE THERMAL DESTRUCTION TECHNIQUES. THE SOLIDIFICATION ALTERNATIVE WAS GIVEN A "-" DUE TO THE GENERAL LACK OF PROVEN EFFECTIVENESS, PILOT STUDY DATA, AND DOUBTS ABOUT THE LONG TERM STABILITY. THE NO ACTION ALTERNATIVE WAS RATED "--" BECAUSE OF THE RISKS INVOLVED WITH LEAVING THE UNTREATED WASTE ON-SITE.

5. IMPLEMENTABILITY

ALL ALTERNATIVES THAT ENTAILED THE EXCAVATION OF THE WASTE WERE RATED AT LEAST "-" DUE TO EXPECTED DIFFICULTIES IN MATERIALS HANDLING. THESE PROBLEMS BECAME APPARENT DURING THE PILOT STUDIES AND WILL REQUIRE ATTENTION DURING THE DESIGN PHASE. THE PROCESSES THAT WOULD TREAT THE WASTE ON-SITE ARE JUDGED TO EACH HAVE THE SAME DEGREE OF IMPLEMENTABILITY. SOLIDIFICATION AND STABILIZATION WOULD LIKELY REQUIRE WASTE TO BE MORE FINELY PULVERIZED THAN MANY THERMAL DESTRUCTION TECHNIQUES AND REQUIRE STAGING AND CURING AREAS WITH ASSOCIATED LEACHATE COLLECTION AND TREATMENT SYSTEMS. ON THE OTHER HAND, THERMAL DESTRUCTION SYSTEMS WOULD REQUIRE EXHAUST GAS CAPTURE, POLLUTANT REMOVAL, AND TREATMENT SYSTEMS THAT WOULD NOT BE REQUIRED BY THE SOLIDIFICATION/STABILIZATION TECHNIQUES. OFF-SITE REMEDIES RECEIVED AN ADDITIONAL "-" DUE TO THE ADDED TRANSPORTATION PROBLEMS.

6. COST

ESTIMATED COSTS FOR EACH REMEDIAL ACTION ALTERNATIVE ARE SUMMARIZED IN TABLE 5. INCLUDED IN THIS TABLE ARE TOTAL CAPITAL AND IMPLEMENTATION COSTS, ANNUAL OPERATION AND MAINTENANCE COSTS, TOTAL PRESENT WORTH, AND REPLACEMENT COSTS. REPLACEMENT COSTS WERE INCLUDED TO EVALUATE THE COSTS INVOLVED IN REMEDIATION IF THE ALTERNATIVE WERE TO FAIL. THE POTENTIAL FOR FAILURE WAS DETERMINED TO BE GREATEST FOR THE ON-SITE SOLIDIFICATION REMEDY, SINCE THE POTENTIAL FOR CONTAMINANTS LEACHING FROM THE SOLIDIFIED MATERIAL EXISTS. REPLACEMENT COST IS ESTIMATED TO BE $100 MILLION, ASSUMING ON-SITE THERMAL DESTRUCTION IS THE REPLACEMENT CLEAN UP TECHNOLOGY.

THE NO ACTION REMEDY HAS THE LOWEST PRESENT WORTH OF THE ALTERNATIVES, BUT HAS AN ANNUAL OPERATING AND MAINTENANCE COST OF OVER $25,000. THIS EXPENSE IS DUE TO GROUNDWATER MONITORING, AIR MONITORING, AND SITE INSPECTIONS.

THE PROJECTED COST FOR ON-SITE THERMAL DESTRUCTION IS $67 MILLION, WHICH IS OVER $350 MILLION LESS THAN OFF-SITE THERMAL DESTRUCTION. THE PRIMARY REASON FOR THIS DIFFERENCE IS THE HIGHER COST THAT VENDORS CHARGE AT PERMITTED OFF-SITE FACILITIES. THESE COSTS CAN BE ATTRIBUTED TO OFF-SITE PERMITTING REQUIREMENTS AND THE LIABILITIES INCURRED BY THE OPERATORS.

THE ON-SITE SOLIDIFICATION ALTERNATIVE WAS ESTIMATED TO COST $38 MILLION. THE LARGEST
PORTION OF THIS COST CAN BE ATTRIBUTED TO CONSTRUCTION AND IMPLEMENTATION EXPENSES.

TRANSPORTATION COSTS ARE THE PRIMARY REASON FOR THE DIFFERENCE IN THE COST BETWEEN ON-SITE AND OFF-SITE SOLVENT EXTRACTION. ALTHOUGH ON-SITE SOLVENT EXTRACTION IS LESS EXPENSIVE THAN OFF-SITE SOLVENT EXTRACTION, THE ON-SITE VERSION ALSO REQUIRES ANNUAL OPERATION AND MAINTENANCE WHICH IS NOT REQUIRED FOR OFF-SITE TREATMENT.

7. COMMUNITY ACCEPTANCE

AT THE PUBLIC MEETING ON AUGUST 4, 1987, THE RESIDENTS’ COMMENTS CENTERED ON THE ON-SITE THERMAL DESTRUCTION AND THE SOLIDIFICATION ALTERNATIVES. THERE WAS GENERAL AGREEMENT FAVORING SOME FORM OF REMEDIAL ACTION FOR THE SITE.

THE COMMUNITY WAS CONCERNED THAT THE SITE WOULD BE USED IN THE FUTURE TO DESTROY HAZARDOUS WASTE FROM OTHER SITES, THAT THE THERMAL DESTRUCTION OPTION WOULD ADD TO EXISTING AIR POLLUTION AND THAT THE LOCAL ECONOMY MIGHT SUFFER FROM THE PRESENCE OF A HAZARDOUS WASTE INCINERATOR. SOME RESIDENTS FAVORED DESTRUCTION OF THE WASTE, HOWEVER. BECAUSE OF THE AFOREMENTIONED CONCERNS, THE ON-SITE THERMAL DESTRUCTION OPTION WAS RATED AS LESS ACCEPTABLE TO THE COMMUNITY THAN SOLIDIFICATION/STABILIZATION. ON-SITE THERMAL DESTRUCTION RECEIVED A RATING OF "-", WHILE THE SOLIDIFICATION REMEDY RECEIVED A RATING OF "+". A RATING OF "0" WAS GIVEN TO THE OTHER REMEDIAL ALTERNATIVES DUE TO A LACK OF COMMENT ABOUT THESE OPTIONS.

8. STATE ACCEPTANCE

THE OKLAHOMA STATE DEPARTMENT OF HEALTH CITED CONCERNS SIMILAR TO THOSE VOICED BY RESIDENTS. LIKEWISE, THE ON-SITE THERMAL DESTRUCTION REMEDY RECEIVED A RATING OF "-", THE SOLIDIFICATION REMEDY RECEIVED A RATING OF "+", AND ALL OTHER REMEDIES WERE RATED "0".

9. OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

ON-SITE AND OFF-SITE THERMAL DESTRUCTION RECEIVED THE HIGHEST RATING OF "++". THERMAL TREATMENT RESULTS IN ELIMINATION OF THE CONTAMINATED MATERIAL. THE THERMAL TREATMENT UNIT WILL BE DESIGNED TO MEET RCRA STANDARDS. IT IS POSSIBLE THAT NOXIOUS GASES WILL BE GIVEN OFF BY EXCAVATION ACTIVITY, BUT A CONTINGENCY PLAN WILL BE DEVELOPED TO ADDRESS THIS PROBLEM. THAT LEVEL OF DESTRUCTION REQUIRED BY RCRA, 99.99% OF THE ORGANIC CONTAMINATION, SHOULD BE DESTROYED. SOLIDIFICATION OF THE FLY ASH THAT MIGHT CONTAIN METALS, HAS BEEN SHOWN TO BE VERY STABLE IN THE ENVIRONMENT.

ON-SITE SOLIDIFICATION WAS GIVEN A LOWER RATING OF "+". THIS RATING IS LARGELY DUE TO THE FACT THAT THE SOURCE OF THE CONTAMINATION WILL NOT BE DESTROYED AND THE POTENTIAL FOR LEACHING OF CONTAMINANTS EXISTS.

ON-SITE AND OFF-SITE SOLVENT EXTRACTION WERE GIVEN A RATING OF "0". SOLVENT EXTRACTION WOULD SEPARATE THE OIL, WATER AND SOLID PHASES BUT MAY REQUIRE FURTHER TREATMENT OF EACH WASTE STREAM TO MEET RCRA DISPOSAL CRITERIA. THE CONTAMINANTS WILL NOT BE DESTROYED AND THE POTENTIAL FOR FUTURE EXPOSURE EXISTS.

THE RISK INVOLVED WITH LEAVING UNTREATED WASTE ON-SITE IS THE PRINCIPAL REASON THAT THE NO ACTION ALTERNATIVE RECEIVED A RATING OF "--".

#ON

OPERATION AND MAINTENANCE (O&M)

#FA

FUTURE ACTIONS

NO FUTURE ACTIONS ARE ANTICIPATED FOR THE SOURCE CONTROL OPERABLE UNIT. FUTURE GROUNDWATER REMEDIATION WILL BE ADDRESSED IN THE MAIN SITE OPERABLE UNIT. THE PROPOSED REMEDIAL ACTION IS CONSIDERED PERMANENT. IF, HOWEVER, SIGNIFICANT, UNFORESEEN, OFF-SITE MIGRATION OR CONTAMINATION OCCURS AS A RESULT OF THE SITE, APPROPRIATE REMEDIAL MEASURES WILL BE TAKEN.

#SCH

REMEDIAL ACTION SCHEDULE

APPROVE REMEDIAL ACTION (SIGN ROD) SEPTEMBER 1987

COMPLETE ENFORCEMENT NEGOTIATIONS JANUARY 1988

OBLIGATE FUNDS (START REMEDIAL DESIGN) JANUARY 1988
FOR STATE OR US ARMY CORPS OF ENGINEERS
TO CONDUCT REMEDIAL DESIGN (ASSUMING
THE PRPS DO NOT TAKE OVER)

COMPLETE DESIGN MARCH 1989

OBLIGATE FUNDS TO START REMEDIAL ACTION MARCH 1989

#APPENDIX A

##TABLE 1

**HIGHEST COMPOUND CONCENTRATIONS FOR SOLID SAMPLES**

<table>
<thead>
<tr>
<th>Compound</th>
<th>Concentration</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INORGANIC COMPOUNDS (MG/KG)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMALL ACID</td>
<td>317.5</td>
<td>BENZOIC ACID</td>
</tr>
<tr>
<td>SLUDGE PIT</td>
<td>66.5</td>
<td>CHRYSENE *</td>
</tr>
<tr>
<td>ZINC *</td>
<td>38.9</td>
<td>TOTAL XYLENE</td>
</tr>
<tr>
<td>LARGE ACID</td>
<td>617.5</td>
<td>CHRYSENE *</td>
</tr>
<tr>
<td>SLUDGE PIT</td>
<td>239.1</td>
<td>BENZO(A)PYRENE *</td>
</tr>
<tr>
<td>CHROMIUM *</td>
<td>235.6</td>
<td>BENZOIC ACID</td>
</tr>
<tr>
<td>RIVER ACID</td>
<td>235.9</td>
<td>CHRYSENE *</td>
</tr>
<tr>
<td>SLUDGE PIT</td>
<td>192.8</td>
<td>TOTAL XYLENE</td>
</tr>
<tr>
<td>CHROMIUM *</td>
<td>151.1</td>
<td>PHENANTHRENE *</td>
</tr>
<tr>
<td>SOUTH GLEN</td>
<td>2,022</td>
<td>TETRACHLOROETHENE *</td>
</tr>
<tr>
<td>WYNN LAGOON</td>
<td>1,845</td>
<td>TRICHLOROETHANE *</td>
</tr>
<tr>
<td>BARIUM</td>
<td>760.5</td>
<td>TOTAL XYLENE</td>
</tr>
<tr>
<td>NORTH GLEN</td>
<td>3,775</td>
<td>TOLUENE *</td>
</tr>
<tr>
<td>WYNN LAGOON</td>
<td>3,422</td>
<td>TETRACHLOROETHANE *</td>
</tr>
<tr>
<td>COPPER *</td>
<td>2,745</td>
<td>TOTAL XYLENE</td>
</tr>
<tr>
<td>CHEMLINK</td>
<td>164.8</td>
<td>TOTAL XYLENE</td>
</tr>
<tr>
<td>WASTE PITS</td>
<td>27.4</td>
<td>4-METHYL-2-PENTANONE</td>
</tr>
<tr>
<td>ZINC *</td>
<td>23.7</td>
<td>2-METHYLNAPHTHALEN</td>
</tr>
<tr>
<td>SURFACE</td>
<td>3,504</td>
<td>2-METHYLNAPHTHALENE *</td>
</tr>
<tr>
<td>IMPOUNDMENT</td>
<td>2,077</td>
<td>P-CHLORO-M-CRESOL *</td>
</tr>
<tr>
<td>BARIUM</td>
<td>1,246</td>
<td>BIS-(2-ETHYLPHEXYL)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PHTHALATE *</td>
</tr>
</tbody>
</table>

* PRIORITY POLLUTANT COMPOUND
(A) TENTATIVELY IDENTIFIED COMPOUNDS WERE NOT INCLUDED (E.G., HYDROCARBONS)
(B) AN ESTIMATED VALUE.
### Table 2

**HIGHEST COMPOUND CONCENTRATIONS FOR LIQUID SAMPLES**

<table>
<thead>
<tr>
<th></th>
<th>HIGHEST CONCENTRATION</th>
<th>HIGHEST (A) CONCENTRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INORGANIC COMPOUNDS (MG/L)</strong></td>
<td><strong>ORGANIC COMPOUNDS (MG/L)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>SOUTH GLEN</strong></td>
<td><strong>WYNN LAGOON</strong></td>
<td></td>
</tr>
<tr>
<td><strong>ZINC</strong> *</td>
<td>627</td>
<td><strong>BIS(2-ETHYLHEXYL)PHTHALATE</strong> * 11.0</td>
</tr>
<tr>
<td><strong>BARIUM</strong></td>
<td>596</td>
<td><strong>TRANS 1,2-DICHLOROETHENE</strong> * 1.20</td>
</tr>
<tr>
<td><strong>LEAD</strong> *</td>
<td>593</td>
<td><strong>TOLUENE</strong> *</td>
</tr>
<tr>
<td><strong>NORTH GLEN</strong></td>
<td><strong>WYNN LAGOON</strong></td>
<td></td>
</tr>
<tr>
<td><strong>CHROMIUM</strong> *</td>
<td>10,460</td>
<td><strong>TOLUENE</strong> *</td>
</tr>
<tr>
<td><strong>ZINC</strong> *</td>
<td>5,873</td>
<td><strong>BIS(2-ETHYLHEXYL)PHTHALATE</strong> * 0.330</td>
</tr>
<tr>
<td><strong>LEAD</strong> *</td>
<td>2,692</td>
<td><strong>TRANS 1,2-DICHLOROETHENE</strong> * 0.280</td>
</tr>
<tr>
<td><strong>SURFACE IMPOUNDMENT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ZINC</strong> *</td>
<td>742</td>
<td><strong>CHRYSENE</strong> *</td>
</tr>
<tr>
<td><strong>LEAD</strong> *</td>
<td>366</td>
<td><strong>BENZO(A)PYRENE</strong> *</td>
</tr>
<tr>
<td><strong>BARIUM</strong></td>
<td>189</td>
<td><strong>BIS(2-ETHYLHEXYL)PHTHALATE</strong> * 0.0049</td>
</tr>
</tbody>
</table>

* PRIORITY POLLUTANT COMPOUND

(A) TENTATIVELY IDENTIFIED COMPOUNDS NOT INCLUDED (E.G., HYDROCARBONS).
## TABLE 6

### ANTICIPATED EXCAVATIONS

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>CONTAMINATED INTERVAL</th>
<th>ESTIMATED VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMALL ACID PIT</td>
<td>0 TO 6' - 9'</td>
<td>14,489</td>
</tr>
<tr>
<td>LARGE ACID PIT</td>
<td>0 TO 6' - 9'</td>
<td>46,775</td>
</tr>
<tr>
<td>RIVER ACID PIT</td>
<td>0' TO 8' - 10'</td>
<td>37,995</td>
</tr>
<tr>
<td>SOUTH GLEN WYNN LAGOON</td>
<td>0' TO 5' - 7'</td>
<td>1,133</td>
</tr>
<tr>
<td>NORTH GLEN WYNN LAGOON</td>
<td>0 TO 2' - 3'</td>
<td>648</td>
</tr>
<tr>
<td>CHEMLINK WASTE PITS</td>
<td>0' TO 1' - 2'</td>
<td>627</td>
</tr>
<tr>
<td>ROUND RIVER PIT</td>
<td>0' TO 16' - 18'</td>
<td>2,844</td>
</tr>
<tr>
<td>LEVEE PIT</td>
<td>3' - 10'</td>
<td>4,537</td>
</tr>
<tr>
<td>EAST SPRAY POND</td>
<td>4' - 8'</td>
<td>1,589</td>
</tr>
<tr>
<td>WEST SPRAY POND</td>
<td>2' - 8'</td>
<td>3,756</td>
</tr>
<tr>
<td>CON-RAD SLUDGE</td>
<td>0' TO 7' - 8'</td>
<td>8,889</td>
</tr>
<tr>
<td>SURFACE IMPOUNDMENT SEDIMENTS</td>
<td>0' TO 1' - 2'</td>
<td>2,055</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>125,337 CU. YDS</strong></td>
</tr>
</tbody>
</table>

### CONTAMINATED LIQUIDS

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>ESTIMATED VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOUTH GLEN WYNN LAGOON</td>
<td>76,300</td>
</tr>
<tr>
<td>NORTH GLEN WYNN LAGOON</td>
<td>89,000</td>
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<tr>
<td>SURFACE IMPOUNDMENT</td>
<td>545,987</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>711,287 GALS.</strong></td>
</tr>
</tbody>
</table>
APPENDIX B

DEPARTMENT OF HEALTH & HUMAN SERVICES

MEMORANDUM

DATE: SEPTEMBER 29, 1987

FROM: SENIOR REGIONAL REPRESENTATIVE
REGIONAL OFFICE FOR HEALTH RESPONSE
ATSDR/ROHR-VI

TO: PAUL SIEMINISKI
REMEDIAL PROJECT MANAGER
ALONM SECTION (6H-SA)

THE AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY (ATSDR) HAS BEEN REQUESTED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA) TO REVIEW AND EVALUATE THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY AND ENDANGERMENT ASSESSMENT DATA THAT WAS GENERATED FROM THE SAND SPRINGS SUPERFUND SITE LOCATED IN SAND SPRINGS, OK.

CURRENTLY THE ATSDR IS REVIEWING THESE DOCUMENTS TO PROVIDE EPA WITH A COMPREHENSIVE HEALTH ASSESSMENT FOR THIS SITE.

BASED ON OUR REVIEW TO DATE, THE ATSDR REGIONAL OFFICE FOR HEALTH RESPONSE IN CONSULTATION WITH STAFF AT ATSDR - HEADQUARTERS IS OF THE OPINION THAT THE SAND SPRINGS SUPERFUND SITE DOES POSE A CURRENT AND POTENTIAL PUBLIC HEALTH THREAT.

INITIAL INDICATIONS ARE THAT ATSDR RECOMMENDATIONS WILL BE DIRECTED TOWARD UNACCEPTABLE RISKS ASSOCIATED WITH DIRECT PUBLIC CONTACT AND/OR POTENTIAL AIR RELEASES FROM THIS SITE.

CARL R. HICKAM, R.S.
APPENDIX C

#RS

SAND SPRINGS (PETROCHEMICAL COMPLEX)
SAND SPRINGS, OKLAHOMA
RESPONSIVENESS SUMMARY

THIS COMMUNITY RELATIONS RESPONSIVENESS SUMMARY IS DIVIDED INTO TWO SECTIONS:

SECTION I: BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS. THIS SECTION PROVIDES A BRIEF HISTORY OF COMMUNITY INTEREST AND CONCERN RAISED DURING THE REMEDIAL PLANNING ACTIVITIES AT THE SAND SPRINGS SUPERFUND SITE.

SECTION II: SUMMARY OF MAJOR COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND THE EPA RESPONSES TO THE COMMENTS. BOTH WRITTEN AND SPOKEN COMMENTS ARE CATEGORIZED BY TOPICS. EPA RESPONSES TO THESE RELEVANT MAJOR TOPICS ARE ALSO PRESENTED.

I. BACKGROUND ON COMMUNITY INVOLVEMENT

THE SAND SPRINGS PETROCHEMICAL COMPLEX SUPERFUND SITE LIES THREE MILES WEST OF TULSA ALONG THE ARKANSAS RIVER, IN THE CITY OF SAND SPRINGS, OKLAHOMA. THE SITE IS IN AN INDUSTRIAL COMPLEX WITH NO RESIDENTIAL NEIGHBORHOODS NEARBY. THERE IS ONE FAMILY LIVING WITHIN THE SITE BOUNDARIES.

DURING THE AUGUST 1984 ON-SITE ASSESSMENT CONDUCTED BY THE OSDH, EVERY BUSINESS AND INDUSTRY OCCUPYING THE SITE WAS CONTACTED ALONG WITH THE RESIDENT FAMILY. MANY PEOPLE EXPRESSED CONCERN ABOUT ACID PITS FROM THE OLD ON-SITE REFINERY. CONCERN WAS EXPRESSED ABOUT AN INCIDENT WHERE CONSTRUCTION ACTIVITIES EXPOSED PART OF ONE PIT AND THE RELEASED FUMES CAUSED A FACTORY TO BE EVACUATED. SEVERAL PEOPLE REQUIRED MEDICAL ATTENTION. THE FAMILY LIVING ON SITE EXPRESSED CONCERN ABOUT THE POOR QUALITY OF GROUNDWATER. THEY HAD DRILLED TWO WELLS, NEITHER OF WHICH COULD BE USED BECAUSE OF THE POOR WATER QUALITY.

ON THE AFTERNOON OF AUGUST 4, 1987, OFFICIALS OF THE EPA MET WITH SAND SPRINGS CITY OFFICIALS TO BRIEF THEM ABOUT THE RESULTS OF THE STUDIES ON THE SITE AND DISCERN EPA’S PREFERRED REMEDY. AMONG THOSE IN ATTENDANCE WERE MAYOR GEORGE HOOPER, CITY MANAGER LOY CALHOUN, CHAMBER OF COMMERCE REPRESENTATIVE JIM DOUGHERTY, COUNTY COMMISSIONER JOHN SELPH AND SOME FIFTEEN OTHER OFFICIALS. DURING THE MEETING A GREAT DEAL OF CONCERN WAS EXPRESSED THAT IF EPA FINALLY SELECTED ON-SITE INCINERATION AS THE REMEDY, CONSIDERABLE ECONOMIC HARDSHIP COULD BE SUFFERED BY THE CITY. IT IS BELIEVED THAT INCINERATION GOING ON IN SAND SPRINGS WOULD DISCOURAGE NEW BUSINESS FROM LOCATING IN THE CITY. FURTHER FEARS WERE EXPRESSED THAT ONCE AN INCINERATOR WAS ON-SITE, IT COULD BE USED TO INCINERATE HAZARDOUS MATERIALS FROM OTHER SOURCES. THE LEADERSHIP WAS ADAMANT THAT THE PEOPLE OF SAND SPRINGS WOULD NOT WANT THAT OUTCOME. THAT EVENING AT 7:00 P.M., THE PUBLIC MEETING WAS SCHEDULED TO BEGIN AT THE PAGE MEMORIAL LIBRARY. SO MANY PEOPLE ARRIVED THAT THE MAYOR AND CITY MANAGER OFFERED THE CITY COUNCIL CHAMBERS. THE PRESENTORS AND AUDIENCE WENT ACROSS THE STREET TO THE CITY OFFICES AND THE MEETING COMMENCED. SOME 180 PEOPLE WERE IN ATTENDANCE.

II. SUMMARY OF MAJOR COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND THE EPA RESPONSES TO THE COMMENTS.

1. COMMENT: THERE IS NOT A GOOD ESTIMATE OF THE AMOUNT OF CONTAMINATED SOILS ON-SITE.

RESPONSE: EPA DISAGREES. SUFFICIENT INFORMATION HAS BEEN GATHERED TO FORMULATE A DECISION ON BASIC CLEAN UP CONCEPT. ADDITIONAL INFORMATION WILL BE GATHERED DURING DESIGN
STUDIES, TO THE EXTENT IT IS NEEDED, TO ACCURATELY FIX CONSTRUCTION SPECIFICATIONS.

2. COMMENT: EPA FAILED TO PROVIDE SUFFICIENT TIME TO REVIEW AND EVALUATE THE IMPACT ON THE PLAN BY THE COMMUNITY AND BY POTENTIALLY RESPONSIBLE PARTIES (PRPS).

RESPONSE: A TWO WEEK PUBLIC NOTICE AND THREE WEEK PUBLIC COMMENT PERIOD WAS PROVIDED. AS A TWENTY ONE DAY PUBLIC COMMENT PERIOD IS REQUIRED BY THE NATIONAL CONTINGENCY PLAN. IN ADDITION, A TWO WEEK EXTENSION TO THE PUBLIC COMMENT PERIOD, FOR A TOTAL OF SEVEN WEEKS, WAS PROVIDED. IN ADDITION, SEPARATE NOTICES WERE SENT TO THE PRPS TO ALERT THEM TO THE IMPENDING DECISION THOUGH NOT REQUIRED BY THE STATUTE OR REGULATIONS. DESIGN PLANS WILL NOT COMMENCE UNTIL PRP'S HAVE BEEN GIVEN TIME TO INDICATE WHETHER THEY WISH TO TAKE OVER THE PROJECT. MOST OF THE QUESTIONS RAISED BY THE PUBLIC RELATE TO DESIGN ISSUES AND WILL BE THE TOPIC OF THE FUTURE PUBLIC MEETINGS AS THE DESIGN PLANS PROGRESS.

3. COMMENT: LITTLE OR NO CONSIDERATION HAS BEEN GIVEN TO THE HORRENDOUS COST IMPOSED ON PRIVATE INDUSTRY THAT IS OBVIOUSLY PASSED ON TO THE CONSUMER.

RESPONSE: EPA DISAGREES WITH THIS CONCLUSION; COST EFFECTIVENESS IS A MAJOR CONSIDERATION IN SELECTING A REMEDY. THE COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA) AS AMENDED BY THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA) AND THE NATIONAL CONTINGENCY PLAN OF 1985 (NCP) REQUIRE CONSIDERATION OF COST FROM THE STANDPOINT OF ELIMINATING HIGHER COSTS ALTERNATIVES WHEN COMPARING ALTERNATIVES WHICH ARE EQUALLY PROTECTIVE OF PUBLIC HEALTH AND THE ENVIRONMENT.

4. COMMENT: EPA HAS FAILED TO GIVE ADEQUATE CONSIDERATION TO THE POTENTIAL ENVIRONMENTAL AND HEALTH RISKS THAT WOULD BE IMPOSED BY THE THERMAL DESTRUCTION PROCESS.

RESPONSE: EPA DISAGREES WITH THIS CONCLUSION. MUCH MORE INFORMATION IS AVAILABLE REGARDING THE REDUCTION AND CONTROL OF EMISSIONS FROM THERMAL TREATMENT PROCESSES. FURTHERMORE, STANDARDS FOR EMISSIONS HAVE BEEN SET AND CAN BE MET WITH THE THERMAL TREATMENT PROCESS. VOLATILE ORGANIC RELEASES, REACTIVE PROCESSES AND CONTROLLABILITY OF EMISSIONS FROM THE STABILIZATION AND SOLIDIFICATION PROCESSES ARE NOT AS WELL KNOWN.

5. COMMENT: EPA HAS FAILED TO GIVE ADEQUATE CONSIDERATION TO THE POTENT ECONOMIC AND SOCIAL IMPACT ON THE COMMUNITY WHICH WOULD BE IMPOSED BY THE THERMAL DESTRUCTION PROCESS.

RESPONSE: CONCERNS OF THE LOCAL COMMUNITY HAVE BEEN INCORPORATED INTO THIS RECORD OF DECISION AND WILL BE ADDRESSED IN MORE DETAIL IN THE DESIGN OF THE REMEDY. THE THERMAL DESTRUCTION SYSTEM HAS BEEN DEFINED AS A TEMPORARY OPERATION THAT WILL BE REMOVED FROM THE SITE. THE DESIGN WILL ENSURE THAT THE OPERATION OF THIS SYSTEM WILL BE ENVIRONMENTALLY SOUND AND UNOBTRUSIVE. WASTES FROM OTHER SITES WILL NOT BE TREATED AT SAND SPRINGS. FINALLY, BY ELIMINATING THE EXPOSED HAZARDOUS WASTE, EPA BELIEVES THAT THE COMMUNITY WILL BENEFIT SocialLY AND ECONOMICALLY AS WELL.

6. COMMENT: "SOLIDIFICATION WOULD MORE EFFECTIVELY DEAL WITH THE PROBLEM OF A MAJORITY OF THE WASTE AND WOULD PROTECT PUBLIC HEALTH AND ENVIRONMENT WITHOUT AIR, WATER AND HAZARDOUS ASH GENERATED BY INCINERATION AT A DRASTICALLY LOWER COST."

RESPONSE: WHILE A HAZARDOUS WASTE LANDFILL OF SOLIDIFIED WASTE WOULD PROTECT PUBLIC HEALTH IN THE SHORT TERM, THE LONG TERM STABILITY OF THIS MATERIAL IS NOT PROVEN.

7. COMMENT: WHAT GUARANTEE IS THERE TO THE CITIZENS OF SAND SPRINGS THAT THE SITE WILL NOT BE USED AS A COMMERCIAL INCINERATOR FOR WASTES FROM OTHER SITES IN THE FUTURE?
RESPONSE: THE EPA PROPOSAL STATED THAT THE THERMAL DESTRUCTION UNIT WOULD BE USED ONLY DURING REMEDIAL ACTIVITIES AT THE SAND SPRINGS SITE AND WOULD BE DISMANTLED AND REMOVED FROM THE SITE FOLLOWING THOSE ACTIVITIES.

8. COMMENT: CITIZENS NEED A WRITTEN GUARANTEE THAT THE THERMAL DESTRUCTION UNIT WILL OPERATE 99.99 PERCENT EFFICIENTLY ALL THE TIME.

RESPONSE: IF EMPLOYED, STATES THAT THE THERMAL DESTRUCTION UNIT WILL BE REQUIRED TO MEET THE 99.99 PERCENT COMBUSTION STANDARDS OF RCRA IN ADDITION TO ALL STATE AND FEDERAL EMISSIONS STANDARDS.

9. COMMENT: SOLIDIFICATION MEETS THE REQUIREMENTS OF SARA FOR TREATMENT WHICH PERMANENTLY AND SIGNIFICANTLY REDUCES THE VOLUME, TOXICITY, OR MOBILITY OF THE HAZARDOUS SUBSTANCES.

RESPONSE: EPA DISAGREES WITH MUCH OF THESE CLAIMS. BASED ON THE TECHNICAL INFORMATION OBTAINED DURING THE PILOT STUDIES, SOLIDIFICATION INCREASES, RATHER THAN REDUCES, VOLUME; TOXICITY REMAINS ESSENTIALLY THE SAME; AND, THE MOBILITY OF ORGANIC CONTAMINANTS IS UNKNOWN OVER THE LONG TERM. A MORE DETAILED DISCUSSION OF THESE FINDINGS IS PROVIDED IN THE BODY OF THE RECORD OF DECISION.

10. COMMENT: WHY DOES EPA NOT HAVE TO GO THROUGH THE PERMIT PROCESS AS WOULD PRIVATE INDUSTRY?

RESPONSE: CERCLA AS AMENDED BY SARA EXEMPTS EPA REMEDIAL ACTION FROM GOING THROUGH THE ADMINISTRATIVE PROCESS OF ACQUIRING A PERMIT FOR ON-SITE ACTIVITY, HOWEVER, EPA IS REQUIRED TO MEET STANDARDS OF STATE AND FEDERAL ENVIRONMENTAL LAWS.

11. COMMENT: TULSA CITY-COUNTY DEPARTMENT OF HEALTH HAS NOT BEEN ADEQUATELY INVOLVED IN THE SANDS SPRINGS PROJECT.

RESPONSE: THE TULSA CITY-COUNTY DEPARTMENT OF HEALTH ENTERED INTO AN INTERAGENCY AGREEMENT WITH THE OKLAHOMA STATE DEPARTMENT OF HEALTH (OSDH) AND RECEIVED FUNDING FROM THE OSDH-EPA COOPERATIVE AGREEMENT TO CONDUCT SAMPLING AT THE SITE. THE SANDS SPRINGS SITE ACTIVITIES WERE A "STATE-LEAD" PROJECT AND COORDINATION SHOULD BE INITIATED AT THE CITY/COUNTY HEALTH DEPARTMENT LEVEL BY THE STATE.

12. COMMENT: CAN A LOCAL GOVERNMENT OR AGENCY BE A PARTY TO AN EPA CONSENT DECREE WITH A POTENTIALLY RESPONSIBLE PARTY (PRP) TO INSURE THAT AN ON-SITE THERMAL DESTRUCTION UNIT WOULD NOT BE USED TO TREAT WASTE FROM OTHER SITES?

RESPONSE: YES, SECTION 113(I) OF CERCLA (42 U.S.C. SS9613(I) PROVIDES THE RIGHT OF INTERVENTION TO ANY PERSON WHO HAS AN INTEREST RELATING TO THE SUBJECT OF A COURT ACTION WHICH MAY BE IMPAIRED OR IMPEDED BY JUDICIAL DISPOSITION OF THAT ACTION. THUS, IF A LOCAL GOVERNMENT OR AGENCY CAN SHOW THE COURT THAT IT HAS AN INTEREST IN THE ACTION AND THAT THE LOCAL GOVERNMENT'S INTEREST WILL BE IMPAIRED IF THE GOVERNMENT IS NOT ALLOWED TO BE A PARTY TO THE ACTION, THAT GOVERNMENT MAY INTERVENE AS A PARTY. IF IT CHOOSES TO BE SO, THE INTERVENOR WILL SHARE ALL THE RIGHTS AND RESPONSIBILITIES AND COSTS BORNE BY OTHER PARTIES.

13. COMMENT: IF ON-SITE THERMAL DESTRUCTION IS SELECTED, HOW LONG WILL THE PROCESS TAKE?

RESPONSE: THE FEASIBILITY STUDY ESTIMATED 3.5-4 YEARS TO CONDUCT THE REMEDIAL DESIGN, PROCUREMENT OF CONTRACTOR AND ON-SITE THERMAL DESTRUCTION OF THE WASTES.
14. COMMENT: "INCINERATION IS NOT FAVORED AT THE SAND SPRINGS SITE BECAUSE TULSA COUNTY
   ALREADY HAS EXISTING AIR POLLUTION PROBLEMS. ANOTHER SOURCE OF AIR POLLUTION WHICH
   MIGHT CAUSE TULSA COUNTY TO EXCEED AMBIENT AIR QUALITY STANDARDS IS NOT WANTED.".

   RESPONSE: THE EXISTING MAJOR SOURCE OF PARTICULATE MATTERS, SHEFFIELD STEEL, IS SCHEDULED
   TO COME INTO COMPLIANCE IN THE NEXT YEAR. THE INCINERATOR EMISSIONS WOULD HAVE AN
   INSIGNIFICANT IMPACT ON AIR QUALITY.

15. COMMENT: SOLIDIFICATION SHOULD GET MORE CONSIDERATION BEFORE A DECISION IS MADE.

   RESPONSE: SOLIDIFICATION WAS CONSIDERED IN DETAIL DURING THE FEASIBILITY STUDY AND ACTUAL
   PILOT STUDIES. ADEQUATE INFORMATION IS AVAILABLE ON WHICH TO BASE A DECISION.

16. COMMENT: "HOW DANGEROUS IS THE ACID SLUDGE TO WORKERS IN THE AREA?".

   RESPONSE: ACID SLUDGE AT THE SAND SPRINGS SITE CURRENTLY POSES A DIRECT CONTACT THREAT
   DUE TO THE HIGHLY ACIDIC CHARACTERISTIC OF THE WASTE (THIS MEANS SKIN BURNS CAN RESULT
   FROM TOUCHING THE MATERIAL). THERE HAVE ALSO BEEN REPORTS OF RESPIRATORY TRACT
   IRRITATIONS REQUIRING HOSPITAL TREATMENT OF WORKERS IN AND AROUND THE ACID SLUDGE MATERIAL
   DUE TO THE RELEASE OF SULFURIC ACID GASES. THE POTENTIAL ALSO EXISTS FOR WORKERS TO COME
   IN CONTACT WITH ACIDIC SURFACE RUNOFF WATERS. A HEALTH AND SAFETY PLAN WILL BE DEVELOPED
   PRIOR TO THE INITIATION OF ON-SITE ACTIVITIES.

17. COMMENT: DID EPA MAKE ITS FINAL DECISION ON SELECTING A REMEDY FOR SAND SPRINGS PRIOR TO
   THE PUBLIC MEETING?

   RESPONSE: NO. CERCLA REQUIRES EPA TO INDICATE A PREFERENCE TO ALLOW THE PUBLIC AN
   OPPORTUNITY TO FOCUS THEIR COMMENTS. A FINAL DECISION ON SELECTING A REMEDY IS NOT MADE
   UNTIL AFTER THE PUBLIC COMMENT PERIOD, THEN ALL COMMENTS ARE REVIEWED AND CONSIDERED AND
   THE RECORD OF DECISION IS SIGNED.

18. COMMENT: SOLIDIFICATION TECHNOLOGIES ARE ONLY EXPERIMENTAL AND HAVE NOT BEEN PROVEN.

   RESPONSE: SOLIDIFICATION TECHNOLOGIES CAN BE EFFECTIVE ON LOW ORGANIC WASTES AND HEAVY
   METALS. HIGH ORGANIC WASTE SUCH AS THE ACID SLUDGE AT THE SAND SPRINGS SITE CREATES
   DIFFICULTIES IN PRODUCING A NON-LEACHABLE PRODUCT, AS SHOWN IN THE PILOT STUDIES.

19. COMMENT: "WHAT INTERACTION WILL THERE BE BETWEEN THE CURRENTLY ON-GOING GROUNDWATER STUDY
   AND THOSE RECOMMENDATIONS FOR CLEAN-UP COMPARED TO WHAT EPA IS RECOMMENDING TO DO WITH THE
   ACID SLUDGE PITS.".

   RESPONSE: THE NCP REQUIRES OPERABLE UNITS TO BE CONSISTENT WITH OVERALL REMEDIES.
   INFORMATION FROM THE GROUNDWATER STUDY IS CURRENTLY BEING UTILIZED. THE FEASIBILITY STUDY
   FOR THE GROUNDWATER IS SCHEDULED FOR COMPLETION IN EARLY 1988, WHICH COINCIDES WITH THE
   BEGINNING OF THE DESIGN PHASE FOR THE SOURCE CONTROL REMEDY. COORDINATION FOR TREATMENT
   OPTIONS AND IMPLEMENTATION LOGISTICS WILL BE ADDRESSED AT THAT TIME.

20. COMMENT: NO SAMPLES WERE TAKEN OUTSIDE THE ACTUAL SLUDGE PITS.

   RESPONSE: PHASE I OF THE REMEDIAL INVESTIGATION ADDRESSES THE KNOWN MAJOR SOURCES OF
   CONTAMINATION AND SAMPLES WERE TAKEN FROM THESE AREAS PRIMARILY TO CHARACTERIZE AND
   QUANTIFY THESE KNOWN SOURCES.

   PHASE II SAMPLING WAS CONDUCTED OVER THE ENTIRE 235 ACRE SITE AND THIS INFORMATION IS
BEING UTILIZED, AS EVIDENCED IN THE INCLUSION OF THE ADDITIONAL SUBSURFACE AREAS OF CONTAMINATION IN THE SOURCE CONTROL OPERABLE UNIT.

21. COMMENT: HOW MANY TIMES HAS THERMAL DESTRUCTION BEEN USED AND WHAT HAS BEEN THE OUTCOME WHEN IT WAS USED?

RESPONSE: THERMAL DESTRUCTION HAS BEEN SHOWN TO BE EFFECTIVE IN DESTROYING ORGANIC POLLUTANTS IN LITERALLY THOUSANDS OF APPLICATIONS. EPA IS CONVINCED THAT, WITH ADEQUATE POLLUTION CONTROL ENGINEERING, THERMAL DESTRUCTION CAN BE EFFECTIVE AT THE SAND SPRINGS SITE.

22. COMMENT: WHY IS THERE SUCH A GREAT DIFFERENCE IN COST BETWEEN ON AND OFF-SITE INCINERATION?

RESPONSE: TRANSPORTATION IS A PORTION OF THE COST DIFFERENCE. THE COST FOR INCINERATION BOTH ON AND OFF-SITE AS WELL AS ALL OTHER ALTERNATIVES ARE BASED ON ACTUAL VENDOR QUOTES AND HISTORICAL INFORMATION.

23. COMMENT: WHAT IS THE BASIS FOR NAMING THE FOUR EASTERN SLUDGE PITS IDENTIFIED IN THE FACT SHEET AS THE CHEM LINK WASTE PITS. CAN THE NAME BE CHANGED?

RESPONSE: THESE PITS WERE NAMED THE CHEM LINK PITS FOR EASE OF IDENTIFICATION BECAUSE THEY ARE WITHIN THE CHEM LINK FACILITY BOUNDARY. THEIR NAMES MAY BE CHANGED IN THE DESIGN PHASE OF THIS PROJECT.

24. COMMENT: INCINERATION OF THE SAND SPRINGS SLUDGES WILL RESULT IN A VOLUME REDUCTION OF ONLY 40-50%.

RESPONSE: PILOT STUDIES WERE CONDUCTED USING ONE PARTICULAR THERMAL DESTRUCTION TECHNOLOGY WHICH REQUIRED THE ADDITION OF NEUTRALIZERS PRIOR TO PROCESSING. OTHER TECHNOLOGIES COULD REQUIRE CONSIDERABLY LESS OR NO NEUTRALIZATION. LABORATORY INCINERATION TESTS ON 19 SAMPLES INDICATE AN AVERAGE VOLUME REDUCTION OF APPROXIMATELY 85%. EVEN 40% OR 50% REDUCTION IN VOLUME IS CONSIDERED "SIGNIFICANT".

25. COMMENTS: THE FEDERAL GUIDELINES WHICH OSDH HAD TO FOLLOW TO PRODUCE THE REMEDIAL INVESTIGATION AND FEASIBILITY STUDY (RI/FS) REPORTS ARE FAULTY AND DO NOT ALLOW THE FREEDOM TO GATHER DETAILED ENGINEERING DATA NEEDED TO BUILD A DESIGN. NOT ENOUGH ENGINEERING DATA IS AVAILABLE TO MAKE A TREATMENT SELECTION AT THIS TIME.

RESPONSE: EPA DISAGREES WITH THIS VIEWPOINT. THE RI/FS MET THE STATUTORY AND REGULATORY REQUIREMENTS. DETAILED ENGINEERING INFORMATION, NECESSARY FOR THE DESIGN STAGE, IS NOT NEEDED TO SELECT A REMEDIAL CONCEPT.

26. COMMENT: THE RISK OF AIR EMISSIONS AND RUNOFF CONTAMINATION HAVE NOT BEEN ADDRESSED.

RESPONSE: EPA DISAGREES. THESE ROUTES OF EXPOSURE HAVE BEEN FULLY ADDRESSED IN THE FEASIBILITY STUDY AND SUMMARIZED IN THE BODY OF THE RECORD OF DECISION.

27. COMMENT: HOW ARE YOU GOING TO PROTECT THE GROUNDWATER FROM FURTHER CONTAMINATION WHILE EXCAVATING FOR THE REMOVAL OPTIONS.

RESPONSE: DETAILS OF PROTECTION OF THE GROUNDWATER DURING EXCAVATION WILL BE ADDRESSED IN THE UPCOMING DESIGN PHASE.
28. COMMENT: THE FEASIBILITY STUDY DOES NOT GIVE THE SOLVENT EXTRACTION ALTERNATIVE CREDIT FOR 200,000 BARRELS OF OIL THAT COULD BE RECOVERED BY SOLVENT EXTRACTION.

RESPONSE: THE FEASIBILITY STUDY VIEWED THE OIL BEING EXTRACTED FROM THE HAZARDOUS WASTE AS ALSO BEING HAZARDOUS UNDER RCRA. THIS WOULD RENDER IT A NON-SALABLE PRODUCT AND THEREFORE REQUIRING ADDITIONAL TREATMENT.

29. COMMENT: TREATED MATERIAL PRODUCED DURING THE STABILIZATION/SOLIDIFICATION PILOT STUDIES PASSED THE TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) TEST AND THEREFORE THESE PROCESSES SHOULD BE CONSIDERED EFFECTIVE.

RESPONSE: THE TCLP TEST WAS ONLY ONE OF MANY ANALYTICAL AND PHYSICAL TESTS PERFORMED AND CONSIDERED DURING THE REMEDY SELECTION PROCESS. ALTHOUGH SOME SAMPLES MET EXISTING LEACHING STANDARDS FOR LANDFILLABLE MATERIALS UNDER RCRA, OTHER SAMPLES DID SHOW EVIDENCE OF LEACHING CONTAMINANTS. LEACHING OF CONTAMINANTS WAS ALSO SEEN IN OTHER ANALYTICAL EXTRACTION TECHNIQUES CONDUCTED BY THE EPA CINCINNATI LABORATORY. LEACHING OF CONTAMINANTS, EVEN AT LOW LEVELS, INDICATES QUESTIONABLE LONG TERM EFFECTIVENESS AND PERMANENCE OF THESE STABILIZATION/SOLIDIFICATION TECHNIQUES. ALSO THERE IS CONCERN THAT THE TCLP TEST MAY NOT DETECT ALL POTENTIAL CONTAMINANTS DUE TO THE FILTERING MECHANISM OF THE TEST AND THE OILY NATURE OF THE WASTE.

30. COMMENT: DO PRPS HAVE TO IMPLEMENT THE RECORD OF DECISION OR CAN NEW CONCEPTS AND IDEAS FOR STUDY BE REVIEWED?

RESPONSE: AFTER THE RECORD OF DECISION IS SIGNED FOR A CONCEPTUAL REMEDY A TREATMENT PROCESS WITHIN THOSE TECHNOLOGIES SHOULD BE IMPLEMENTED EITHER BY THE PRP OR EPA. THE DETAILS OF IMPLEMENTATION OF THE REMEDY ARE ADDRESSED IN THE DESIGN PHASE.

31. COMMENT: HOW CAN PEOPLE WHO HAVE RECEIVED NOTIFICATION LETTERS OF BEING A PRP FIND OUT ADDITIONAL INFORMATION REGARDING THEIR POSITION.

RESPONSE: CONTACT FOIA REQUESTOR BRANCH CHIEF, EPA REGION 6 ENFORCEMENT BRANCH.

32. COMMENT: "WHY ARE SEPARATE ENTITIES ON ONE GEOGRAPHIC LOCATION BOUND INTO ONE SUPERFUND SITE CREATING PRPS THAT SHOULD HAVE A SMALL RESPONSIBILITY AND A SMALL SITE, INTO A PRP WITH A LARGER RESPONSIBILITY AND A LARGE SITE?".

RESPONSE: THE SUPERFUND SITE BOUNDARIES WERE DELINEATED BASED ON THE EXPECTED EXTENT OF CONTAMINATION.

33. COMMENT: ARE THE COST ESTIMATES IN THE FEASIBILITY STUDY ACTUAL CONTRACTOR COSTS TO DO THE WORK OR ARE THEY SITE COSTS PLUS STATE AND EPA OVERSIGHT COSTS.

RESPONSE: COST ESTIMATES IN THE FEASIBILITY STUDY ARE ESTIMATES WITHIN THE RANGE OF -30% TO +50% OF THE COSTS TO IMPLEMENT THE REMEDIES AND DO NOT INCLUDE STATE OR EPA OVERSIGHT COSTS. THESE COST FIGURES ARE ONLY VALID FOR COMPARISON OF THE ALTERNATIVES STUDIED, THEY DO NOT REPRESENT ACTUAL BIDS.

34. COMMENT: THE FINAL REMEDY THAT EPA SELECTS SHOULD RECOGNIZE THE DIFFERENT TYPES OF WASTE PRESENT AT THE SAND SPINGS SITE.

RESPONSE: EPA AGREES. THE VARIABILITY IN WASTES HAS BEEN TAKEN INTO CONSIDERATION.

35. COMMENT: IT WOULD BE FEASIBLE TO SOLIDIFY THE ACID SLUDGES ON THE SITE IN ONE YEAR WHICH
IS NOT ACHIEVABLE BY THERMAL DESTRUCTION.

RESPONSE: THE FEASIBILITY STUDY INDICATES ALL REMEDIES COULD BE IMPLEMENTED IN APPROXIMATELY 3-4 YEARS. ACTUAL IMPLEMENTATION TIME FOR SOLIDIFICATION AND THERMAL DESTRUCTION IS COMPARABLE, HOWEVER, IT IS VARIABLE DEPENDING ON THE AMOUNT OF EQUIPMENT, NUMBER OF TREATMENT UNITS ETC., WHICH IS UTILIZED.

36. COMMENT: WHERE DID THE TESTING CRITERIA FOR THE SOLIDIFICATION PILOT STUDIES COME FROM?

RESPONSE: THE EPA CINCINNATI LABORATORY SUPPLIED THE DOCUMENT "TEST METHODS FOR SOLIDIFIED WASTE CHARACTERIZATION" WHICH WAS INCORPORATED INTO THE WORKPLAN OF THE EPA ADMINISTRATIVE ORDER WITH ARCO.

37. COMMENT: AN ADEQUATE HEALTH RISK ASSESSMENT OF THE EXISTING HEALTH RISKS AT THE SITE AND DETERMINATION OF THE HEALTH RISKS OF THE REMEDIAL ALTERNATIVES HAS NOT BEEN CONDUCTED.

RESPONSE: AT SITES WHERE SOURCE CONTROL REMEDIAL MEASURES ARE EVALUATED, AS FOR THE SAND SPRINGS SITE, A QUALITATIVE ASSESSMENT OF THE POTENTIAL PUBLIC HEALTH THREATS IN THE ABSENCE OF REMEDIAL ACTION IS GENERALLY CONDUCTED. THIS WAS ACCOMPLISHED IN THE SAND SPRINGS SOURCE CONTROL OPERABLE UNIT ENDANGERMENT ASSESSMENT UNDER THE COOPERATIVE AGREEMENT WITH OSDH. QUANTITATIVE HEALTH RISK ASSESSMENTS ARE NOT REQUIRED FOR ALTERNATIVE SELECTION OR DESIGN OF SOURCE CONTROL REMEDIES.

38. COMMENT: THE SOURCE CONTROL OPERABLE UNIT FEASIBILITY STUDY DOES NOT SATISFY THE NATIONAL CONTINGENCY PLAN BECAUSE IT IS BASED ON INADEQUATE DATA AND ON EVALUATIONS WHICH HAVE NOT ADEQUATELY ADDRESSED THE REQUIREMENTS OF THE NATIONAL CONTINGENCY PLAN, THE SUPERFUND AMENDMENTS AND AUTHORIZATION ACT, OR THE EPA GUIDANCE ON FEASIBILITY STUDIES UNDER CERCLA.

RESPONSE: ADEQUATE DATA HAS BEEN GATHERED AND THE EVALUATIONS HAVE BEEN CONDUCTED TO SATISFY THOSE NECESSARY GUIDANCE DOCUMENTS AND STATUTORY REQUIREMENTS ON WHICH TO BASE A DECISION FOR A SOURCE CONTROL REMEDY.

39. COMMENT: THE SELECTION OF A SOURCE CONTROL REMEDY FOR THE GLEN WYNN LAGOONS IS UNNECESSARY SINCE REMOVAL OF THE MAJORITY OF WASTE AT THIS FACILITY HAS ALREADY BEEN COMPLETED.

RESPONSE: ONLY THE DRUMMED AND CONTAINERIZED WASTE HAVE BEEN REMOVED FROM THE GLEN WYNN FACILITY. NO WASTES HAVE BEEN REMOVED FROM THE GLEN WYNN LAGOONS.

40. COMMENT: IN ACCORDANCE WITH A CONSENT ORDER, ARCO DEVELOPED FOR EPA SITE PERFORMANCE DATA SPECIFIC TO THE EFFECTIVENESS OF THREE REMEDIAL ALTERNATIVES (I.E., THERMAL DESTRUCTION, STABILIZATION AND SOLIDIFICATION) FOR THE ACID SLUDGE AT THE SAND SPRINGS PETROCHEMICAL COMPLEX. USE OF THIS DATA GIVES THE AGENCY A BASIS FOR SELECTING A REMEDIAL ALTERNATIVE FOR THE ACID SLUDGE PONDS CONSISTENT WITH A PERMANENT REMEDY FOR THE SITE, AS PREFERRED UNDER SARA.

RESPONSE: EPA AGREES. THE PILOT STUDIES HAD A MAJOR INFLUENCE ON THE REMEDY SELECTED.

41. COMMENT: HUMAN HEALTH AND THE ENVIRONMENT CAN BE PROTECTED AS WELL AS THE STUDIED ALTERNATIVES BY MUCH SIMPLER REMEDIES. WHY NOT JUST ADD ADDITIONAL FENCING AROUND THE SITE AND INCREASE SECURITY OR COVER THE WASTES WITH A SIMPLE EARTEN CAP?

RESPONSE: INCREASED SECURITY AT THE SITE MAY REDUCE THE CHANCE FOR DIRECT HUMAN CONTACT WITH THE WASTES BUT IT WOULD DO NOTHING TO SOLVE THE SURFACE AND GROUNDWATER POLLUTION
That is taking place. Installation of a simple cap is not practical because of the instability of the tarry sludges; on warm days the weight of the cap would cause sludges to ooze out from under or through the cap. Both of these approaches fall far short of meeting the minimum requirements of the CERCLA.

42. Comment: Why not use an oil extraction thermal process to treat the waste? The sale of the thousands of barrels of oil derived would offset expenses and bring the total cost down to $24 million.

Response: The oil extraction thermal process is similar to the solvent extraction process, except that it uses heat instead of solvents to separate the oil, water, and solids. Unfortunately, RCRA regulations state that any constituent derived from a hazardous waste must be treated as hazardous until proven otherwise. The overall cost of this alternative would be much greater than $24 million since the oil could not be sold and the remaining hazardous constituents would require further treatment prior to disposal.

43. Comment: How much residual ash will be created by thermal destruction and where will it be disposed?

Response: Thermal destruction would be used to treat approximately 125,000 cubic yards of waste. EPA studies indicate that thermal destruction will attain an 85 percent reduction in volume, while ARCO’s studies, using a neutralizing material before thermal treatment, indicate a 40 to 50 percent reduction in volume. If the neutralizing material is not required to treat the waste, an estimated 18,750 cubic yards of residual ash will remain after thermal destruction. The residual ash would be solidified, if necessary, and landfilled on-site.

44. Comment: What types of air quality problems does solidification pose?

Response: Pilot studies have shown that some volatile compounds are driven off during excavation and mixing of the waste with the solidifying agent. Mass emission rates have not been quantified.

45. Comment: Has the solidification remedy been sufficiently tested over the range of the waste?

Response: Solidification pilot studies were only conducted on the surficial acid sludge waste. Additional waste characterization and pretreatment studies will need to be performed on the subsurface petroleum wastes.

46. Comment: "It seems surprising that after five years of preliminary study when no information was available on the site, a hurried rod must be prepared."

Response: A hurried rod has not been prepared. The alternative evaluation process has been ongoing since the initial stages of the remedial investigation/feasibility study. The record of decision is merely a summarization and culmination of these studies.
# APPENDIX D

## ADMINISTRATIVE RECORD

### JOB NO. SS-1977

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ORIGINATOR: LARRY WRIGHT
ORIGINATOR - AFFILIATION: USEPA (6AE6H)
RECIPIENT: MIKE WRIGHT
RECIPIENT - AFFILIATION: TULSA COUNTY HEALTH DEPT.
DESCRIPTION: ACCIDENT AT SS PIT
NUMBER OF PAGES: 1
DOCUMENT NUMBER SEQUENCE: 5

JOB. NO. SS-1981

DOCUMENT DATE: 1/9/81
DOCUMENT TYPE: RCRA COMPLIANCE INSPECTION RPT. FACILITIES CHECKLIST
ORIGINATOR: INDUSTRIAL WASTE DIVISION
ORIGINATOR - AFFILIATION: OSDH
RECIPIENT: INDUSTRIAL SOLID WASTE DIVISION
RECIPIENT - AFFILIATION: OSDH
DESCRIPTION: MONTHLY RPT. W/SHIPPING MANIFESTS
NUMBER OF PAGES: 11
DOCUMENT NUMBER SEQUENCE: 6

DOCUMENT DATE: 2/2/81
DOCUMENT TYPE: MONTHLY REPORT CONTROLLED INDUSTRIAL WASTE RECEIVING SITE
ORIGINATOR: GLENN WYNN
ORIGINATOR - AFFILIATION: SITE OWNER/OPERATOR
RECIPIENT: INDUSTRIAL AND SOLID WASTE DIVISION
RECIPIENT - AFFILIATION: OSDH
DESCRIPTION: MONTHLY REPORT WITH SHIPPING MANIFESTS
NUMBER OF PAGES: 11
DOCUMENT NUMBER SEQUENCE: 7

DOCUMENT DATE: 2/19/81
DOCUMENT TYPE: LETTER
ORIGINATOR: DIANA DUTTON
ORIGINATOR - AFFILIATION: USEPA (6AE)
RECIPIENT: GLENN WYNN
RECIPIENT - AFFILIATION: -------
DESCRIPTION: INITIAL INSPECTION OF SITE
NUMBER OF PAGES: 7
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RECIPIENT - AFFILIATION
DESCRIPTION                              ARTICLE ON SOLVENT RECOVERY BUSINESS & PROCESS
NUMBER OF PAGES                          2
DOCUMENT NUMBER SEQUENCE                 14

JOB. NO. SS-1981

DOCUMENT DATE                            10/2/81
DOCUMENT TYPE                            CONTROLLED INDUSTRIAL WASTE SHIPPING MANIFEST
ORIGINATOR                               BOB OSSERY
ORIGINATOR - AFFILIATION                 VACUUM PRESSURE TANK TRUCK SERVICES
RECIPIENT
RECIPIENT - AFFILIATION                 OSDH
DESCRIPTION                              WASTE SHIPPING MANIFESTS & MONTHLY RECEIVING SITE REPORTS
NUMBER OF PAGES                          2
DOCUMENT NUMBER SEQUENCE                 15

DOCUMENT DATE                            10/22/81
DOCUMENT TYPE                            RCRA INSPECTION SITE IDENTIFICATION
ORIGINATOR                               KENNETH C. BURNS, SENIOR
ORIGINATOR - AFFILIATION                 OSDH
RECIPIENT
RECIPIENT - AFFILIATION
DESCRIPTION                              COMPLIANCE INSPECTION RPT. OF RESOURCE RECOVERY & REFINING CORP.
NUMBER OF PAGES                          7
DOCUMENT NUMBER SEQUENCE                 16

DOCUMENT DATE                            10/22/81
DOCUMENT TYPE                            RCRA COMPLIANCE INSPECTION REPORT
ORIGINATOR                               INDUSTRIAL WASTE DIVISION
ORIGINATOR - AFFILIATION                 OSDH
RECIPIENT
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DESCRIPTION                              FACILITY STANDARDS CHECKLIST
NUMBER OF PAGES                          13
DOCUMENT NUMBER SEQUENCE                 17
JOB NO. SS-1981

DOCUMENT DATE  10/22/81
DOCUMENT TYPE  RCRA INSPECTION
ORIGINATOR  KENNETH C. BURNS, SR. ENVIRONMENTAL SPECIALIST
ORIGINATOR - AFFILIATION  DH
RECIPIENT  RCRA FILE
RECIPIENT - AFFILIATION  SITE IDENTIFICATION & INSPECTION INFORMATION
DESCRIPTION  
NUMBER OF PAGES  1
DOCUMENT NUMBER SEQUENCE  18

DOCUMENT DATE  10/23/81
DOCUMENT TYPE  INDUSTRIAL WASTE RECEIVING SITE MONTHLY RPT.
ORIGINATOR  INDUSTRIAL & SOLID WASTE DIVISION
ORIGINATOR - AFFILIATION  OSDH
RECIPIENT  RCRA FILE
RECIPIENT - AFFILIATION  MONTHLY RPT. OF DELIVERED WASTE FOR SEPTEMBER, 1981
DESCRIPTION  
NUMBER OF PAGES  1
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DOCUMENT DATE  11/16/81
DOCUMENT TYPE  LEASE
ORIGINATOR  S. NEAL JOHNSON
ORIGINATOR - AFFILIATION  SANDSPRINGS HOME
RECIPIENT  SAM FARMER
RECIPIENT - AFFILIATION  RECYCLON CORPORATION
DESCRIPTION  LEASE FOR PURPOSE OF CONDUCTING RE-REFINING & TREATMENT OF SOLVENTS, CRUDE & LUBE OILS
NUMBER OF PAGES  6
DOCUMENT NUMBER SEQUENCE  20

DOCUMENT DATE  12/18/81
DOCUMENT TYPE  SPILL PREVENTION CONTROL & COUNTERMEASURE PLAN
ORIGINATOR  DENNIS G. KELLEY
ORIGINATOR - AFFILIATION  O'KELLEY ENGINEERS
RECIPIENT  GLENN WYNN SERVICES, INC.
DESCRIPTION  PLAN TO PREVENT AND CONTAIN OIL SPILLS
NUMBER OF PAGES  9
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DOCUMENT TYPE: MEMORANDUM
ORIGINATOR: ROD HUFFMAN
ORIGINATOR - AFFILIATION: PILES
RECIPIENT: LISTING OF VIOLATIONS BY RECYCLON FOUND DURING INSPECTION
NUMBER OF PAGES: 1
DOCUMENT NUMBER SEQUENCE: 26

JOB NO. SS-1982

DOCUMENT DATE: 8/27/82
DOCUMENT TYPE: PETITION
ORIGINATOR: STATE OF OKLAHOMA
ORIGINATOR - AFFILIATION: DISTRICT COURT TULSA COUNTY
RECIPIENT: STATE OF OKLAHOMA
DESCRIPTION: PET. FOR A TRO PROHIBITING RECYCLON FROM RECEIVING AT SITE
NUMBER OF PAGES: 9
DOCUMENT NUMBER SEQUENCE: 27

DOCUMENT DATE: 8/27/82
DOCUMENT TYPE: AFFIDAVIT
ORIGINATOR: ROD HUFFMAN
ORIGINATOR - AFFILIATION: INSPECTOR
RECIPIENT: DISTRICT COURT TULSA COUNTY
DESCRIPTION: DEPOSITION OF UNCHANGED CONDITIONS AT SITE AFTER SEVERAL VISITS W/REMEDIAL ORDERS.
NUMBER OF PAGES: 3
DOCUMENT NUMBER SEQUENCE: 28

DOCUMENT DATE: 8/27/82
DOCUMENT TYPE: MEMORANDUM
ORIGINATOR: WILLIAM W. GORDON, JR., ENFORCEMENT OFFICER
ORIGINATOR - AFFILIATION: OSDH
RECIPIENT: MARK S. COLEMAN
RECIPIENT - AFFILIATION: DEPUTY COMMISSIONER FOR ENVIRONMENTAL HEALTH SVCS.
DESCRIPTION: MEMO TELLS OF "RECYCLON" CLEANUP AFTER HEARING OF POTENTIAL LAWSUIT AND LISTS ALTERNATIVES
NUMBER OF PAGES: 1
DOCUMENT NUMBER SEQUENCE: 29
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<td>Hon. David Moss, District Attorney</td>
<td>Request for prosecutorial procedures to facilitate compliance at site.</td>
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<td>Memorandum</td>
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<td>Files</td>
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DOCUMENT TYPE INDUSTRIAL WASTE RECEIVING SITE
ORIGINATOR BOB USSERY
ORIGINATOR - AFFILIATION SITE OWNER/OPERATOR
RECIPIENT INDUSTRIAL & SOLID WASTE DIVISION
RECIPIENT - AFFILIATION OSDH
DESCRIPTION MONTHLY REPORTS OF DELIVERED WASTE (JANUARY 1983)
NUMBER OF PAGES 5
DOCUMENT NUMBER SEQUENCE 34

JOB. NO. SS-1983

DOCUMENT DATE 4/10/83
DOCUMENT TYPE PETITION
ORIGINATOR STATE OF OKLAHOMA (OSDH)
RECIPIENT DISTRICT COURT TULSA COUNTY
RECIPIENT - AFFILIATION STATE OF OKLAHOMA
DESCRIPTION REQUEST FOR TRO & PERMANENT INJUNCTION PROHIBITING OPERATION.
NUMBER OF PAGES 5
DOCUMENT NUMBER SEQUENCE 35

DOCUMENT DATE 6/8/83
DOCUMENT TYPE CORRESPONDENCE
ORIGINATOR JOAN K. LEAVITT, J.D., COMMISSIONER OF HEALTH
ORIGINATOR - AFFILIATION OSDH
RECIPIENT HON. DAVID MOSS, DISTRICT ATTORNEY
RECIPIENT - AFFILIATION TULSA COUNTY COURTHOUSE
DESCRIPTION REQUEST FOR PROSECUTORIAL PROCEEDINGS UNDER 63 (O.S. 198)
NUMBER OF PAGES 1
DOCUMENT NUMBER SEQUENCE 36

DOCUMENT DATE 6/8/83
DOCUMENT TYPE QA SUMMARY
ORIGINATOR CYNTHIA PACHUNAS
ORIGINATOR - AFFILIATION OSDH
RECIPIENT OKLAHOMA STATE AGENCY
RECIPIENT - AFFILIATION SUMMARY SHEET - NPL
NUMBER OF PAGES 2
DOCUMENT NUMBER SEQUENCE 37
DOCUMENT DATE 7/5/83
DOCUMENT TYPE INDUSTRIAL WASTE RECEIVING SITE MONTHLY RPTS. (JUNE-DEC. 1983)
ORIGINATOR BOB USSERY
ORIGINATOR - AFFILIATION SITE OWNER/OPERATOR
RECIPIENT INDUSTRIAL AND SOLID WASTE DIVISION
RECIPIENT - AFFILIATION OSDH
DESCRIPTION MONTHLY REPORTS OF DELIVERED WASTE
NUMBER OF PAGES 8
DOCUMENT NUMBER SEQUENCE 38

DOCUMENT DATE 8/11/83
DOCUMENT TYPE PETITION
ORIGINATOR STATE OF OKLAHOMA (OSDH)
ORIGINATOR - AFFILIATION
RECIPIENT DISTRICT COURT TULSA COUNTY
RECIPIENT - AFFILIATION STATE OF OKLAHOMA
DESCRIPTION PRAYER FOR CIVIL PENALTY ASSESSMENT FOR DESCRIBED VIOLATIONS
NUMBER OF PAGES 7
DOCUMENT NUMBER SEQUENCE 39

DOCUMENT DATE 1/25/84
DOCUMENT TYPE ROUTE SLIP
ORIGINATOR KEN BURNS
ORIGINATOR - AFFILIATION OSDH
RECIPIENT JEFF GILLEY
RECIPIENT - AFFILIATION EPA-6
DESCRIPTION FILE LISTINGS OF LIKELY TO BE FOUND SAND SPRINGS MATERIAL
NUMBER OF PAGES 13
DOCUMENT NUMBER SEQUENCE 40

DOCUMENT DATE 2/2/84
DOCUMENT TYPE INDUSTRIAL WASTE RECEIVING SITE MONTHLY REPORTS (JAN-APRIL '84)
ORIGINATOR BOB USSERY
ORIGINATOR - AFFILIATION SITE OWNER/OPERATOR
RECIPIENT INDUSTRIAL AND SOLID WASTE DIVISION
RECIPIENT - AFFILIATION OSDH
DESCRIPTION MONTHLY RECEIVING SITE REPORTS
NUMBER OF PAGES
DOCUMENT NUMBER SEQUENCE 41

DOCUMENT DATE 3/1/84
DOCUMENT TYPE ACTION MEMO
ORIGINATOR DICK WHITTINGTON, P.E.
ORIGINATOR - AFFILIATION REGIONAL ADMINISTRATOR (6A)
RECIPIENT LEE M. THOMAS, ASSISTANT ADMINISTRATOR
RECIPIENT - AFFILIATION SOLID WASTE AND EMERGENCY RESPONSE
DESCRIPTION BASIS FOR DECISION TO SPEND SUPERFUND MONEY FOR IMMEDIATE REMOVAL ACTION
NUMBER OF PAGES 4
DOCUMENT NUMBER SEQUENCE 42
DOCUMENT DATE                            3/2/84
DOCUMENT TYPE                            ADMINISTRATIVE ORDER
ORIGINATOR                               DICK WHITTINGTON, P.E.
ORIGINATOR - AFFILIATION                 USEPA
RECIPIENT                                RODNEY WILSON, CLAIRE WILSON,
                                          BILL CREEL, DENNIS BERGSTROM,
                                          DAVID NIEMAN, FRED WHITTIER
RECIPIENT - AFFILIATION                  WYNN SITE OPERATING CORPORATIONS
DESCRIPTION                              ORDERS VARIOUS ACTIONS TO BE
                                          TAKEN BY SITE OPERATORS
NUMBER OF PAGES                          13
DOCUMENT NUMBER SEQUENCE                 43

DOCUMENT DATE                            3/13/84
DOCUMENT TYPE                            ADMINISTRATIVE ORDER
ORIGINATOR                               DICK WHITTINGTON
ORIGINATOR - AFFILIATION                 U.S.E.P.A.
RECIPIENT                                SAMUEL C. FARMER, PEGGY FARMER, JEFFREY B. NOOLEEN
RECIPIENT - AFFILIATION                  RECYCLON CORPORATION, WYNN SITE
DESCRIPTION                              ORDER DIRECTS ACTION TO PROTECT PUBLIC HEALTH AND
                                          THE ENVIRONMENT
NUMBER OF PAGES                          12
DOCUMENT NUMBER SEQUENCE                 44

DOCUMENT DATE                            5/9/84
DOCUMENT TYPE                            NOTICE OF PUBLIC MEETING
ORIGINATOR                               OSDH
ORIGINATOR - AFFILIATION                 GENERAL PUBLIC
RECIPIENT                                GENERAL PUBLIC
RECIPIENT - AFFILIATION                  GENERAL PUBLIC
DESCRIPTION                              SUMMARY OF WORK TO BE PERFORMED AT SITE
NUMBER OF PAGES                          12
DOCUMENT NUMBER SEQUENCE                 45

DOCUMENT DATE                            5/31/84
DOCUMENT TYPE                            COMMUNITY RELATIONS PLAN
ORIGINATOR                               OSDH
ORIGINATOR - AFFILIATION                 INTERESTED PARTIES
RECIPIENT                                INTERESTED PARTIES
RECIPIENT - AFFILIATION                  INTERESTED PARTIES
DESCRIPTION                              PLAN TO KEEP INTERESTED PARTIES INFORMED OF
                                          PROGRESSION SITE
NUMBER OF PAGES                          11
DOCUMENT NUMBER SEQUENCE                 46
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<td>Doerner, Stuart, Saunder, Daniel &amp; Anderson</td>
<td>All Parties Listed as &quot;Generators&quot;</td>
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<td>Larry Gutierrez</td>
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DOCUMENT DATE                            7/15/87
DOCUMENT TYPE                            NEWS RELEASE
ORIGINATOR                               KAREN L. BROWN
ORIGINATOR - AFFILIATION                 OSDH
RECIPIENT
RECIPIENT - AFFILIATION
DESCRIPTION                              ANNOUNCEMENT OF 8/4/87 PUBLIC MEETING EXPLAINING CLEANUP OPERATIONS
NUMBER OF PAGES                          2
DOCUMENT NUMBER SEQUENCE                 87

DOCUMENT DATE                            7/30/87
DOCUMENT TYPE                            REPORT
ORIGINATOR                               KEVIN JACKSON
ORIGINATOR - AFFILIATION                 JACOBS ENGINEERING GROUP, INC.
RECIPIENT                                JUNE BOZICH
RECIPIENT - AFFILIATION                  EPA REGION 6
DESCRIPTION                              SUMMARY OF COMPLIANCE MONITORING ACTIVITIES
NUMBER OF PAGES                          12
DOCUMENT NUMBER SEQUENCE                 88.
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JOB NUMBER: OKD980748446

DOCUMENT DATE: 09/25/84
DOCUMENT TYPE: MEMO/PLAN
ORIGINATOR: RONNIE ROMO - QA
ORIGINATOR - AFFILIATION: U.S. E.P.A. (6)
RECIPIENT: PAUL SIEMINSKI, PROJECT OFFICER
RECIPIENT - AFFILIATION: U.S. E.P.A. (6) 6AW-SS
DESCRIPTION: REVISED QA/QC PLAN PAGES
NUMBER OF PAGES: 21

DOCUMENT NUMBER

JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX
JOB NUMBER: OKD980748446

DOCUMENT DATE: 06/02/87
DOCUMENT TYPE: LETTER
ORIGINATOR: R. WALTER SIMMONS, MGR.
ORIGINATOR - AFFILIATION: ARCO PETROLEUM PRODUCTS CO.
RECIPIENT: ROBERT E. HANNESCHLAGER
RECIPIENT - AFFILIATION: U.S. E.P.A. (6) SAND SPRINGS FILE
DESCRIPTION: UPDATED WORK PLAN - INCINERATION/SOLIDIF.
NUMBER OF PAGES: 3

DOCUMENT NUMBER

DOCUMENT DATE: 06/29/87
DOCUMENT TYPE: COVER LETTER/SAMPLE ANALYSES FOR WELLS
ORIGINATOR: LISA LYHANE - ENVIRONMENTAL ENGINEER
ORIGINATOR - AFFILIATION: U.S. E.P.A. SUPERFUND PROGRAM/SOLID WASTE DIV.
RECIPIENT: PAUL SIEMINSKI
RECIPIENT - AFFILIATION: U.S. E.P.A. REGION VI
DESCRIPTION: SAMPLE ANALYSIS FOR PHASE II MONITOR WELLS
NUMBER OF PAGES: 43

DOCUMENT NUMBER

DOCUMENT DATE: 06/30/87
DOCUMENT TYPE: MEMORANDUM
ORIGINATOR: RAGAN BROYLES, CHIEF
ORIGINATOR - AFFILIATION: U.S. E.P.A. REGION VI (6T-AS)
RECIPIENT: STEVE GILREIN, CHIEF
RECIPIENT - AFFILIATION: U.S. E.P.A. REGION VI (6H-SA)
DESCRIPTION: SOLIDIFICATION PROCESS AIR MONITORING
NUMBER OF PAGES: 2

DOCUMENT NUMBER
08/12/87
LETTER
WAYNE HILLIN - ATTORNEY
RESOURCES CONSERVATION COMPANY
JN. MATHES & ASSOC., INC.
ESTIMATED COST CLEANUP REMEDY
4

08/12/87
LETTER
FRANK SMITH - ENVIRONMENTAL ENGINEER
BURGESS-NORTON MANUFACTURING COMPANY
AL DAVIS, DIRECTOR (HWD)
U.S. E.P.A. (6)
PUBLIC HEARING 08/04/87
3

JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX
JOB NUMBER: OKD980748446
08/13/87
COVER LETTER/REPORT
LISA LYHANE - ENVIRONMENTAL ENGINEER
U.S. E.P.A. SUPERFUND PROGRAM
PAUL SIEMINSKI
U.S. E.P.A.
COVER LETTER/DRAFT RI REPORT
114

08/14/87
LETTER
M. F. REECE - ASSISTANT DIRECTOR
TULSA CITY -COUNTY HEALTH DEPARTMENT
CARL EDLUND, CHIEF
U.S. E.P.A. (6) SUPERFUND PROGRAMS
COMMENTS RE: ROD
2
DESCRIPTION
PRELIMINARY COMMENTS RE:
COMPLETED STUDIES

NUMBER OF PAGES
2

DOCUMENT NUMBER

JOB NAME:  SAND SPRINGS PETRO-CHEMICAL COMPLEX
JOB NUMBER:  OKD980748446

DOCUMENT DATE
08/18/87

DOCUMENT TYPE
LETTER

ORIGINATOR
JOEL BURCAT - ATTORNEY

ORIGINATOR - AFFILIATION
LAW FIRM - RHOADS & SINON

RECIPIENT
CARL EDLUND, CHIEF

RECIPIENT - AFFILIATION
U.S. E.P.A. (6) SUPERFUND PROGRAMS

DESCRIPTION
PUBLIC COMMENTS RE: RI/FS

NUMBER OF PAGES
2

DOCUMENT NUMBER

DOCUMENT DATE
08/21/87

DOCUMENT TYPE
LAB RESULTS

ORIGINATOR
EDWIN BARTH - ENVIRONMENTAL ENGINEER

ORIGINATOR - AFFILIATION
U.S. E.P.A. (WASHINGTON, D.C.)

RECIPIENT
PAUL SIEMINSKI - RPM

RECIPIENT - AFFILIATION
U.S. E.P.A. REGION VI

DESCRIPTION
PILOT WORK

NUMBER OF PAGES
8

DOCUMENT NUMBER
DOCUMENT DATE 08/21/87
DOCUMENT TYPE MEMORANDUM
ORIGINATOR EDWIN F. BARTH - ENVIRONMENTAL ENGINEER
ORIGINATOR - AFFILIATION U.S. E.P.A. - REMEDIAL ACTION STAFF
RECIPIENT PAUL SIEMINSKI, RPM - REGION VI
RECIPIENT - AFFILIATION U.S. E.P.A.
DESCRIPTION SUMMARY OF SOLIDIFIED MATERIALS TESTS
NUMBER OF PAGES 8

JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX
JOB NUMBER: OKD980748446

DOCUMENT DATE 08/24/87
DOCUMENT TYPE MEMORANDUM/ATTACHMENTS
ORIGINATOR ALLYN M. DAVIS, DIRECTOR
ORIGINATOR - AFFILIATION U.S. E.P.A. REGION VI (6H)
RECIPIENT WALTER KOVALICK, DEPUTY DIRECTOR
RECIPIENT - AFFILIATION U.S. E.P.A. WASHINGTON (WH-548)
DESCRIPTION FOLLOW-UP TO ROD BRIEFING
NUMBER OF PAGES 5

DOCUMENT DATE 08/25/87
DOCUMENT TYPE LETTER
ORIGINATOR GEORGE HOOPER, MAYOR
ORIGINATOR - AFFILIATION CITY OF SAND SPRINGS
RECIPIENT ROBERT LAYTON, JR. - REGIONAL AD.
RECIPIENT - AFFILIATION U.S. E.P.A. REGION VI
DESCRIPTION RESPONSE TO ROD
NUMBER OF PAGES 3

DOCUMENT DATE 08/27/87
DOCUMENT TYPE LETTER/ENCLOSURES
ORIGINATOR R. FENTON ROOD, DIRECTOR
ORIGINATOR - AFFILIATION OKLAHOMA STATE DEPARTMENT OF HEALTH
RECIPIENT CARL EDLUND, CHIEF
RECIPIENT - AFFILIATION SUPERFUND PROGRAMS BRANCH
DESCRIPTION COMMENTS RE: REMEDY
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SEPTEMBER 16, 1987

ALLYN M. DAVIS, DIRECTOR
HAZARDOUS WASTE MANAGEMENT DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1445 ROSS AVENUE
DALLAS, TEXAS 75202-2733

DEAR DR. DAVIS:

THE OKLAHOMA STATE DEPARTMENT OF HEALTH (OSDH) DOES NOT CONCUR WITH THE ALTERNATIVE OF ON-SITE INCINERATION CHOSEN BY THE REGION VI ENVIRONMENTAL PROTECTION AGENCY FOR THE SAND SPRINGS PETROCHEMICAL COMPLEX SUPERFUND SITE.

AS STATED IN THE PUBLIC MEETING AND THROUGH WRITTEN COMMENTS, THE OSDH PREFERS A SOLIDIFICATION PROCESS FOR THE ACID SLUDGE WASTES WHICH WILL BE MORE PROTECTIVE OF PUBLIC HEALTH THAN INCINERATION. INCLUDED IN THOSE COMMENTS IS THE RATIONALE FOR OUR PREFERENCE AND AN EXPLANATION OF HOW SOLIDIFICATION MEETS THE REQUIREMENTS OF THE NCP AND CERCLA AS AMENDED BY SARA. PLEASE REFER TO OUR PREVIOUS FORMAL COMMENTS FOR THE APPROPRIATE EXPLANATIONS AND RATIONALE.

ENCLOSED ARE OSDH COMMENTS ON THE DRAFT RECORD OF DECISION RECEIVED ON SEPTEMBER 8, 1987.

SINCERELY,

MARK S. COLEMAN, DEPUTY COMMISSIONER
FOR ENVIRONMENTAL HEALTH SERVICES

ENCLOSURE.