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FINAL
RCRA FACILITY ASSESSMENT REPORT
U.S. ARMY YAKIMA TRAINING CENTER
YAKIMA, WASHINGTON
EPA I.D. NO. WAD 821405 3995

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1.0 INTRODUCTION

This section of the RCRA Facility Assessment Report outlines the purpose and scope of the RCRA Facility Assessment (RFA). Other report sections are also described.

1.1 PURPOSE AND SCOPE OF THE RFA PROGRAM

The 1984 Hazardous and Solid Waste Amendments (HSWA) to the Resource Conservation and Recovery Act (RCRA) provide authority to the Environmental Protection Agency (EPA) to require comprehensive corrective action on all solid waste management units (SWMUs) and other areas of concern (AOCs) at interim status hazardous waste management facilities where a release(s) of hazardous constituents has occurred. These include RCRA interim status facilities, those applying for Part B permits, and those undergoing closure. The intent of this authority is to address previously unregulated constituents released to air, surface water, groundwater, and soil, as well as the generation of subsurface gases.

A major activity of the EPA's corrective action program consists of the RFA. According to the EPA's RCRA Facility Assessment Guidance Document (1), the purposes of the RFA are to:

1. Identify and gather information on releases at RCRA-regulated facilities;

2. Evaluate solid waste management units (SWMUs) and other areas of concern (AOCs) for releases to all media and regulated units for releases to media other than groundwater;

3. Make preliminary determinations regarding releases of concern and the need for further actions and interim measures at the facility; and

4. Screen from further investigation those SWMUs which do not pose a threat to human health or the environment.

The three basic steps of the RFA consist of a preliminary review (PR) of existing files and other generally available information, a visual site inspection (VSI) to confirm and/or obtain additional information on past or present releases, and when warranted, a sampling visit to fill data gaps by obtaining field and analytical data.

2.0 FACILITY DESCRIPTION

2.1 LOCATION AND HISTORY

The U.S. Army Yakima Training Center (YTC) is located approximately 5 miles north of the City of Yakima, Washington (Figure 1). The facility occupies 261,451 acres with a Cantonment Area occupying approximately 1,000 acres. The majority of the support services and maintenance activities take place in the Cantonment Area. The Washington Army National Guard MATES and the Marine and Army Reserve Centers are all located in the Cantonment Area. Other areas located throughout the YTC include an active landfill, an old Cantonment Area, a white phosphorus pit, the Yakima Research Station (YRS), Range Control, the Central Impact Area, the Multipurpose Range Complex (MRPC), and Range 14 UMTU (Figure 2). The sewage treatment plant is located approximately 0.5 miles west of the Cantonment Area outside the facility boundary.(2,3)

YTC was used for training artillery, infantry, and engineering units, during World War II. In 1941 and 1942, the U.S. Army leased 160,000 acres from a variety of groups including private individuals, county, state, and federal agencies. Prior to 1941, the land was used for ranching and mining operations. The first encampment was located in temporary buildings in the old Cantonment Area, where concrete slabs and foundations remain. In 1942 and 1943, another temporary encampment was constructed in the current Cantonment Area. The current Cantonment Area was constructed in 1951, during the Korean War. During 1950 and 1951, YTC acquired additional land to expand the facility to approximately 261,000 acres. Since that time, the balance of the land has been acquired to include the 261,451 acres with an additional 65,000 acres along the northern side currently in the process of being acquired.(2)

There are approximately 40 residents at the facility and a working population of 150 to 200. The facility can accommodate up to 30,000 soldiers per day with an average of 2,500 soldiers per day.(2)

2.2 IDENTIFICATION OF SOLID WASTE MANAGEMENT UNITS

During the course of this assessment, 77 solid waste management units (SWMUs) and 38 Areas of Concern (AOCs) were identified. These are listed below in Table 1. Locations of the SWMUs and AOCs are shown on Figures 2, 3, and 4.

2.3 FACILITY OPERATIONS

The facility can be divided between the Cantonment Area and the Down Range Area. In the Cantonment Area there are currently five areas where vehicle maintenance occurs: the Main Motor Pool Area,

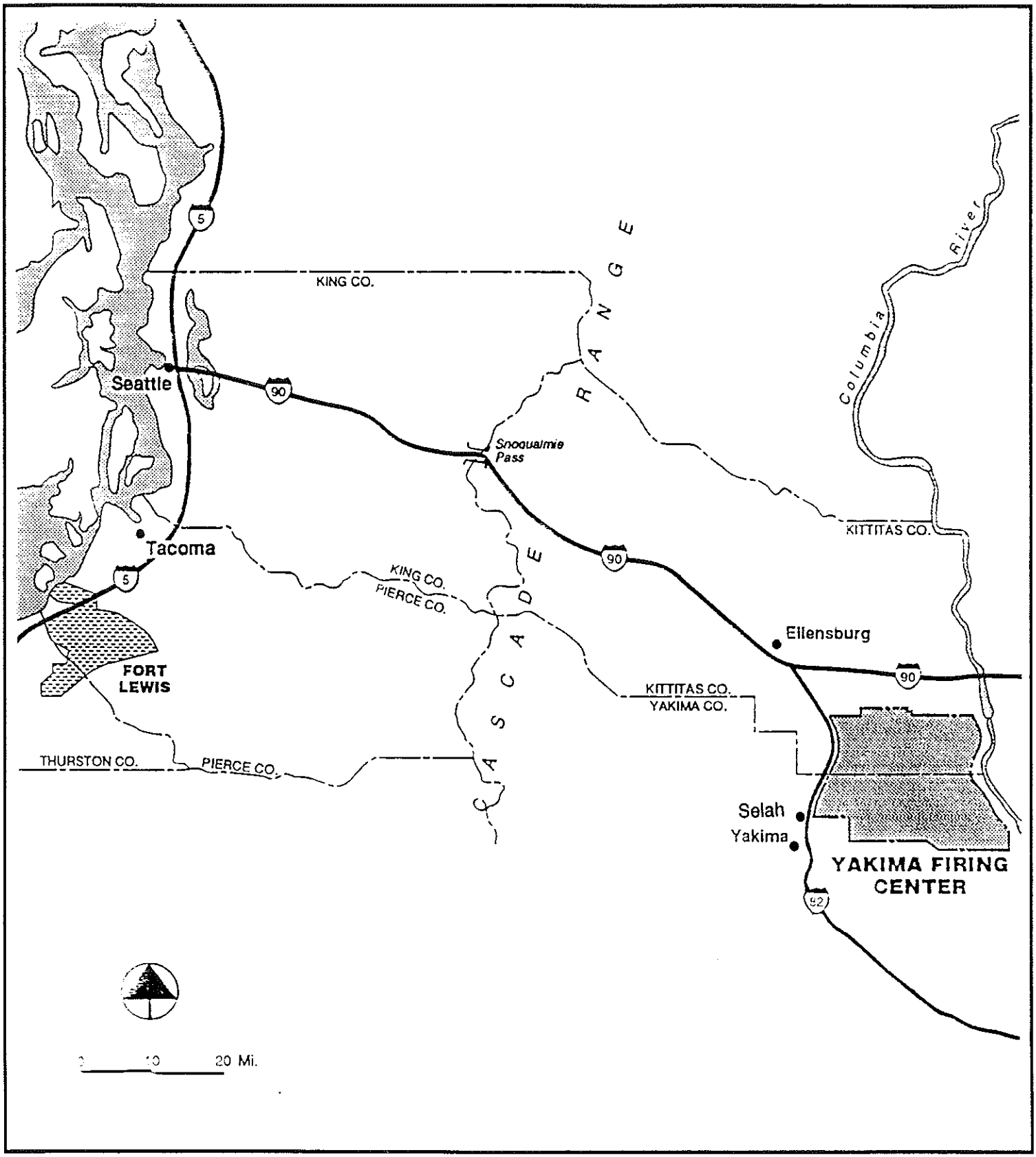

Figure 1

SITE LOCATION MAP
Source: Reference 4

Table 1

SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN AT YAKIMA TRAINING CENTER

SWMU/AOC NO.	DESCRIPTION
SWMU 1	Satellite Accumulation/Other Temporary Storage Areas
SWMU 2	Dip Tanks
SWMU 3	90 Day Accumulation Area
SWMU 4	Former Hazardous Waste Storage Area
SWMU 5	Former Pesticide Handling Area
SWMU 6	Former Transformer Storage Area
SWMU 7	Former Containers Next to Fence
SWMU 8	Contaminated Soil North of Building 810
SWMU 9	810 Baghouse
SWMU 10	Former Building 810 Paint Booth
SWMU 11	Former Building 951 Paint Booth
SWMU 12	Medical Clinic Silver Recovery Machine
SWMU 13	Dental Clinic X-Ray Developing Machine
SWMU 14	Former Dental Clinic X-Ray Developing Machine
SWMU 15	Former Army Reserve Stoddard Solvent Wash Tank
SWMU 16	Marine Reserve POL Storage Building
SWMU 17	Main Motor Pool Former Waste Battery Acid Container
SWMU 18	MATES Battery Room
SWMU 19	MATES Hazardous Waste Storage Area
SWMU 20	MATES Waste Oil Tank
SWMU 21	MATES Oil Filter Press
SWMU 22	Former PCS Stockpile Area
SWMU 23	National Guard Battery Room
SWMU 24	National Guard Underground Waste Oil Tank
SWMU 25	Old Petroleum, Oil, and Lubricant Yard
SWMU 26	Ammunition Storage Point
SWMU 27	Former Ammunition Storage Point Burn Pits
SWMU 28	Old Wire Storage Area
SWMU 29	New Wire Storage Area
SWMU 30	Range Control Battery Room
SWMU 31	MRPC Drain Field
SWMU 32	MRPC Collection Drum
SWMU 33	MRPC Waste Oil Tank
SWMU 34	Waste Oil Tanks
SWMU 35	Bldg 319 Underground Storage Tank
SWMU 36	Bldg 319 Underground Storage Tank
SWMU 37	Bldg 319 Underground Storage Tank
SWMU 38	Bldg 323-1 Underground Storage Tank
SWMU 39	Bldg 323-2 Underground Storage Tank
SWMU 40	Bldg 323-3 Underground Storage Tank
SWMU 41	Bldg 339 Underground Storage Tank
SWMU 42	Bldg 845-2 Underground Storage Tank
SWMU 43	Bldg 845-3 Underground Storage Tank
SWMU 44	Bldg 845-4 Underground Storage Tank
SWMU 45	Bldg 845-5 Underground Storage Tank
SWMU 46	Bldg 845 Underground Storage Tank
SWMU 47	Bldg 805/806 Underground Storage Tank
SWMU 48	MATES Bldg 951-4 Underground Storage Tank
SWMU 49	Bldg 970-1 Underground Storage Tank
SWMU 50	Bldg 970-2 Underground Storage Tank

Table 1 (Continued)

SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN AT YAKIMA TRAINING CENTER

SWMU/AOC NO.	DESCRIPTION
SWMU 51	Active Landfill
SWMU 52	Soil Stockpile
SWMU 53	Transfer Station
SWMU 54	Former Cantonment Landfill
SWMU 55	Two Former Landfill Pits
SWMU 56	Former Landfill Pit
SWMU 57	Former Landfill/Burn Pit
SWMU 58	Former Bivouac Landfill Pits
SWMU 59	Fire Training Pit
SWMU 60	White Phosphorus Pit
SWMU 61	Range 14 UMTU Area
SWMU 62	Main Vehicle Wash Rack
SWMU 63	Main Motor Pool (Bldg 319) Oil/Water Separator
SWMU 64	Marine Reserve "Tank Rack" Oil/Water Separator
SWMU 65	Army Reserve Shop Oil/Water Separator
SWMU 66	Bldg 845 Oil/Water Separator
SWMU 67	Bldg 845 Oil/Water Separator
SWMU 68	Bldg 301 (TMP) Oil/Water Separator
SWMU 69	MATES Bldg 951 Oil/Water Separator
SWMU 70	Bldg 323 Oil/Water Separator
SWMU 71	New National Guard Facility Oil/Water Separator
SWMU 72	POL 1 Oil/Water Separator
SWMU 73	POL 1 Oil/Water Separator
SWMU 74	Sanitary Sewer System
SWMU 75	Sewage Treatment Plant
SWMU 76	Yakima Research Station Sewage Lagoons
SWMU 77	Surface Water Drainage System
AOC 1	Former Central Vehicle Wash Rack
AOC 2	Former Building 319 Vehicle Wash Rack
AOC 3	Building 812 Wash Rack
AOC 4	POL Fuel Point
AOC 5	Hazardous Materials Storage Area
AOC 6	Dud Areas
AOC 7	Buried Munitions
AOC 8	Cobra Range Above-Ground Storage Tank
AOC 9	Bldg 223A Underground Storage Tank
AOC 10	Bldg 223B Underground Storage Tank
AOC 11	Bldg 223C Underground Storage Tank
AOC 12	Bldg 223D Underground Storage Tank
AOC 13	Bldg 223 Underground Storage Tank
AOC 14	Bldg 301 Underground Storage Tank
AOC 15	Bldg 319A Underground Storage Tank
AOC 16	Bldg 319B Underground Storage Tank
AOC 17	Bldg 323 Underground Storage Tank
AOC 18	Bldg 323 Underground Storage Tank
AOC 19	Bldg 321 Underground Storage Tank
AOC 20	Bldg 321 Underground Storage Tank

Table 1 (Continued)

SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN AT YAKIMA TRAINING CENTER

SWMU/AOC NO.	DESCRIPTION
AOC 21	Bldg 434 Underground Storage Tank
AOC 22	Bldg 810-1 Underground Storage Tank
AOC 23	Bldg 810-2 Underground Storage Tank
AOC 24	Bldg 833A Underground Storage Tank
AOC 25	Bldg 833B Underground Storage Tank
AOC 26	Bldg 833 Underground Storage Tank
AOC 27	Bldg 845-1 Underground Storage Tank
AOC 28	Bldg T-1470 Underground Storage Tank
AOC 29	Bldg T-1470 Underground Storage Tank
AOC 30	Bldg T-2020 Underground Storage Tank
AOC 31	Bldg T-2020 Underground Storage Tank
AOC 32	Bldg T-2020 Underground Storage Tank
AOC 33	Bldg 450 Bladder Site
AOC 34	MRPC Forward Refueling Area
AOC 35	West Side of Central Impact Area Forward Refueling Area
AOC 36	GC003913 Forward Refueling Area
AOC 37	Law Enforcement Pistol Range
AOC 38	Military Pistol Range

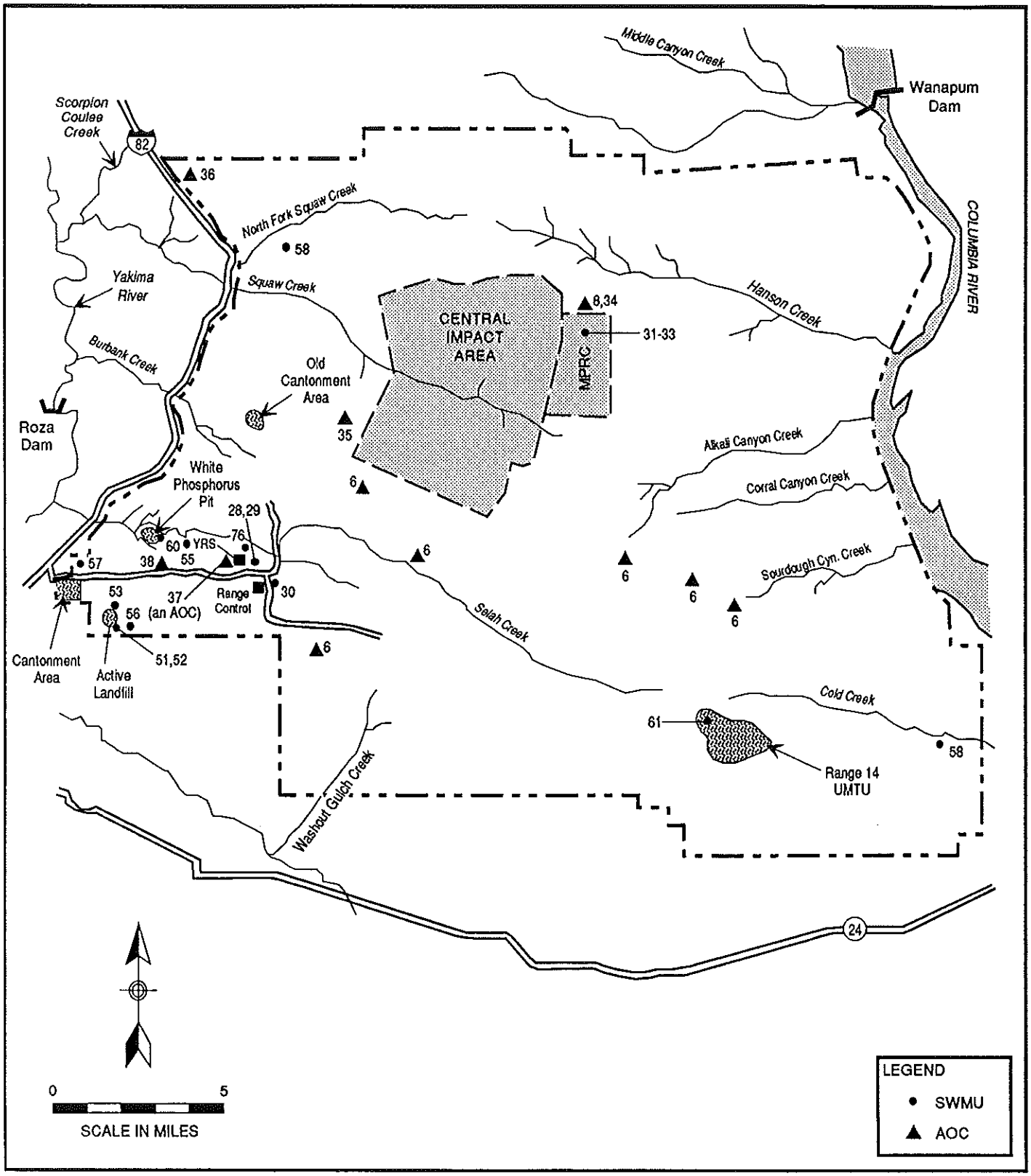

Figure 2

YAKIMA TRAINING CENTER
FACILITY SWMU AND AOC LOCATION MAP

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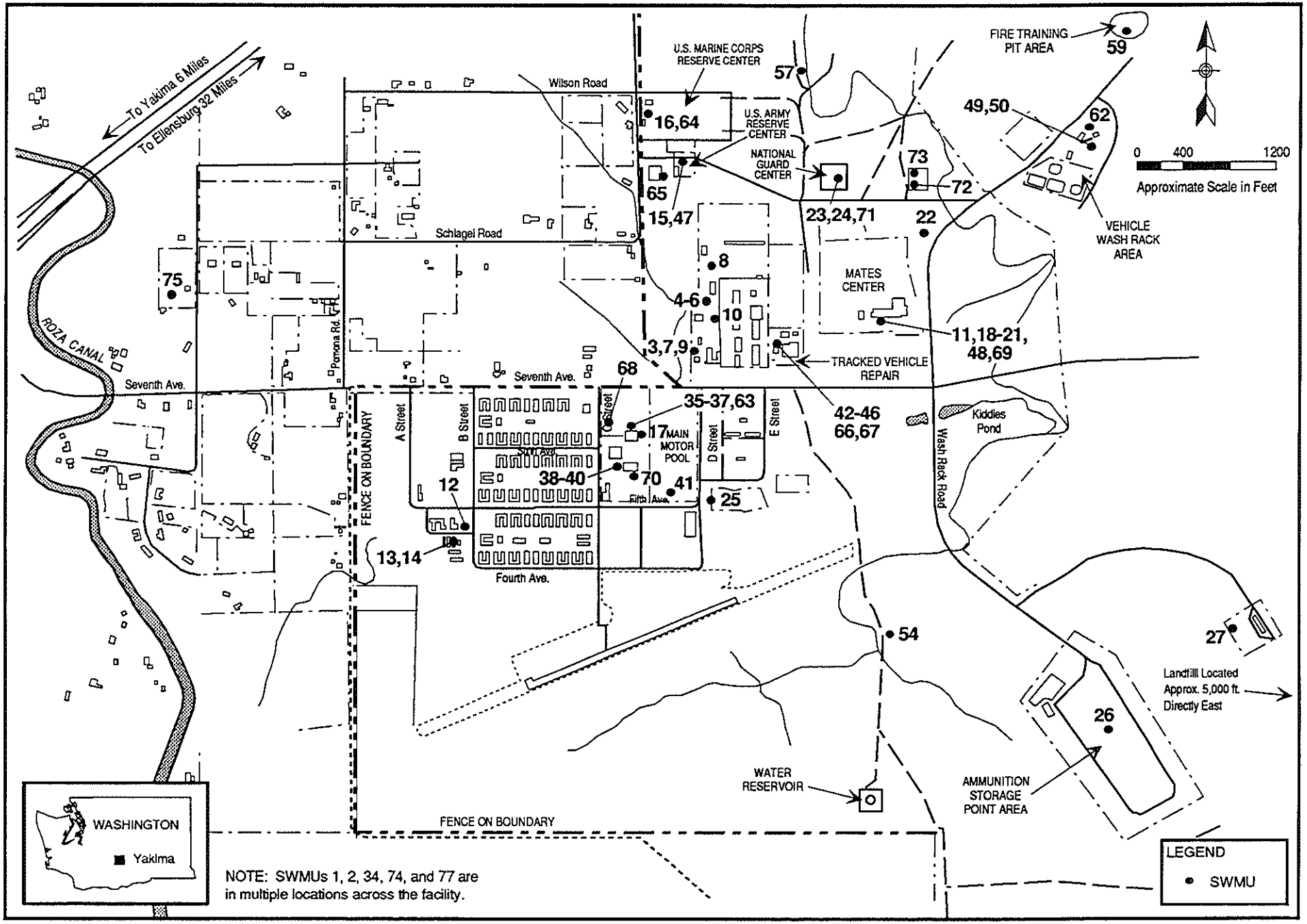

Figure 3

YAKIMA TRAINING CENTER
CANTONMENT AREA SWMU LOCATION MAP

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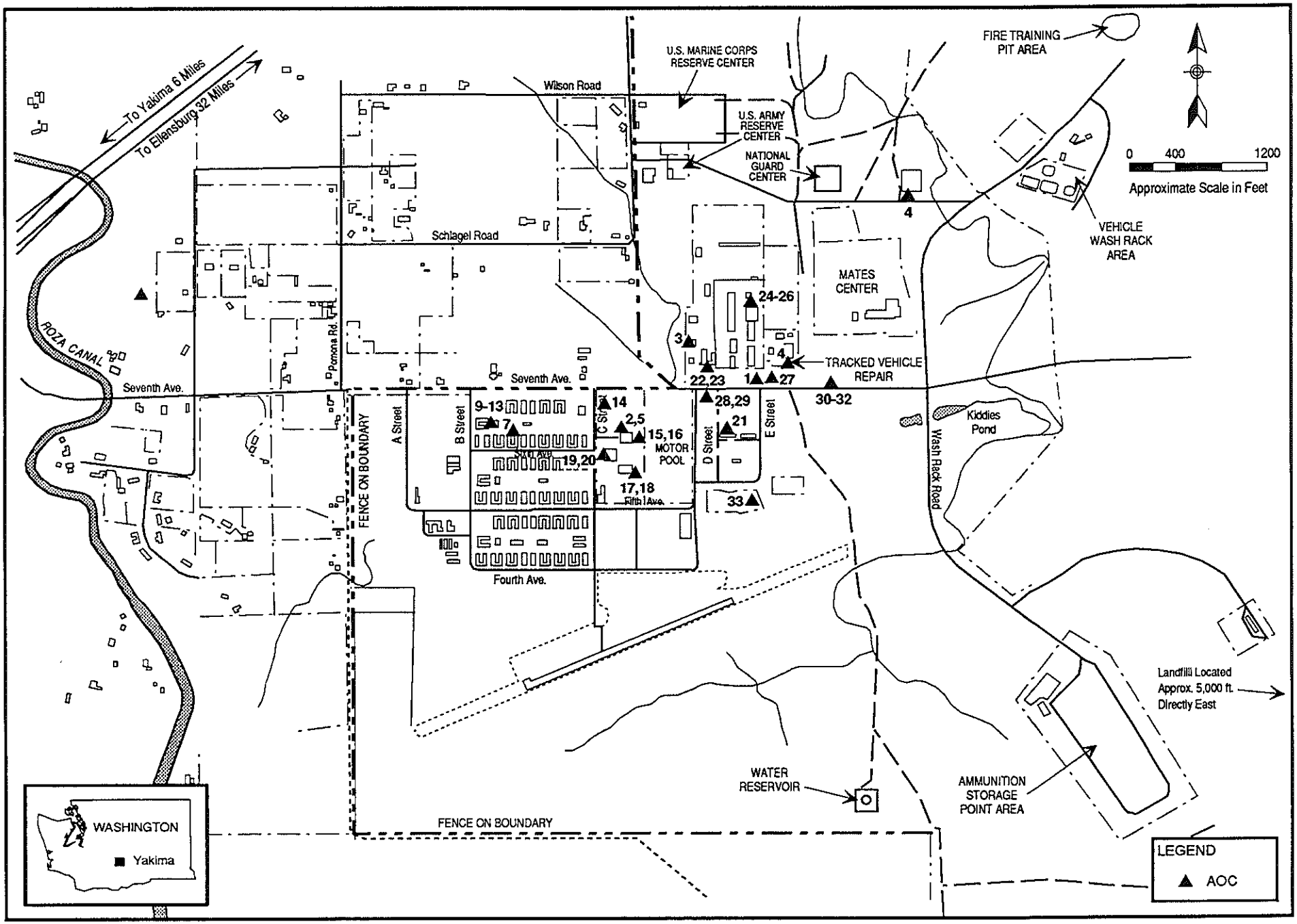

Figure 4

YAKIMA TRAINING CENTER
CANTONMENT AREA AOC LOCATION MAP

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the MATES area, the new National Guard area, the Marine Reserve Center, and the Army Reserve Center. The MATES area is operated by Washington Army National Guard. This portion of the YTC has a separate EPA ID number.

The Main Motor Pool Area or transportation motor pool is in Building 319 and the surrounding lot (Figure 3). All vehicle maintenance except machine work is done in this area. Building 319 has concrete floors with drains that are routed through an oil/water separator (SWMU 63) then to the sanitary sewer. Hazardous materials used in this area include Stoddard solvent, battery acid, antifreeze, oils, and lubricants. Previously waste oil, spent solvent, and lubricants were all placed in the former waste oil USTs (SWMUs 36 and 37), which were emptied by a contractor. In 1982, approximately 2,000 pounds per year of waste oil and solvents were generated. Waste antifreeze was drummed and stored in the old POL (petroleum, oil, and lubricants) yard (SWMU 25). This waste antifreeze generated in this area is then shipped to Fort Lewis for disposal. Prior to 1989, waste antifreeze was dumped in the waste oil UST. Currently, waste oil is stored in portable waste oil tanks (SWMU 34). All other wastes including; batteries, antifreeze, diesel, diesel filters, grease, rags, and dry sweep are stored in individual containers, primarily drums in accumulation areas. See SWMU 1 for details. All wastes are moved to the yard adjacent to Building 810, where they are stored in their respective locations and arrangements are made for off site disposal. The only hazardous materials storage in this area is immediately north of Building 319 and consists of an open, covered shed with a concrete pad and no berm (AOC 5). Several drums with unknown contents have historically been stored on the adjacent bare ground. At the time of the VSI there was a drum of soil from a hydraulic fluid spill located adjacent to the shed. YTC personnel reported that an above-ground storage tank used to store solvent had been located adjacent to the shed until it started to leak. At the time of the VSI the tank was empty and located on the adjacent former wash rack (AOC 2).(4,5)

The Washington Army National Guard Mobilization and Training Equipment Site (MATES) has been a tenant of the Yakima Training Center since 1968. MATES tracked vehicle repair originally took place in Building 845, the tracked vehicle repair shop. In 1975 or 1976, MATES started using Building 951 for their repairs. The number of tracked vehicles MATES has in inventory has increased from 40 to about 450. The main activity at this location is maintenance and engine changes for these 450 vehicles and other wheeled vehicles in eastern Washington owned by the National Guard. Hazardous substances used include solvents (naphtha), battery acid, antifreeze, oils, other lubricants, diesel fuel, unleaded gasoline, and kerosene. The approximate 1,000 gallons per year of waste solvent that was generated by this operation was stored in its original containers and picked up by Safety-Kleen. Currently, a distillation unit is borrowed from the state approximately every

six months and the spent solvents (mineral spirits) from the MATES facilities and other National Guard facilities at YTC are regenerated on site. Previously waste oil and lubricants were stored in a former waste oil UST (SWMU 48) and picked up by a contractor. Waste antifreeze disposal has been arranged by YTC and historically approximately 2,000 pounds per year of battery acid were shipped to Fort Lewis. All hazardous waste except waste oil and lubricants is stored in its original containers in the hazardous waste storage area (SWMU 19). Prior to construction of the hazardous waste storage area in 1986 the wastes were stored in the same area along the fence line. Washington National Guard Environmental Office, Camp Murry, manages disposal of hazardous wastes generated at MATES with YTC occasionally arranging for waste disposal.(4)

At the time of the VSI a new National Guard Facility had just opened. Vehicle maintenance is performed at this unit. The new unit has a waste oil underground storage tank that has connections into the shop and oil/water separator to receive all waste oil directly. There was a battery storage room that was going to have the drain plugged and the floor sealed. All other wastes were collected in containers and stored in a covered accumulation area without any sides. Waste solvents were to be distilled at MATES.(6)

The Marine Reserve Center Bravo Company 4th Tank Battalion has been located in Building 851 since 1972. Ten battle tanks are located and maintained at this unit. Cleaning and maintenance occurs at the "tank rack." Hazardous substances used include oil, lubricants, hydraulic fluid, Stoddard solvent, parts cleaner, and diesel fuel. The POL building (SWMU 16) is fully enclosed, vented and has a concrete floor with a 6-inch berm. It is used to store all hazardous materials. The portable waste oil above-ground storage tank, (SWMU 34) (used for storage of waste oil generated by this area's operations) has a capacity of over 300 gallons and is located in a concrete berm. All hazardous wastes are disposed through arrangements made by YTC or Fort Lewis. Water from the rack and shop floor drains passes through an oil/water separator (SWMU 64) prior to discharging to a drain field.(4)

The Army Reserve Center 737th POL Transport is located in Building 805/806 and has 50 trucks. Maintenance consists primarily of oil changes and lubrication with occasional engine changes. This is done in the maintenance shop and parking lots. The maintenance shop has one floor drain that discharges to an oil/water separator (SWMU 65) and then a drain field. Drainage from the parking areas is routed through the same oil/water separator (SWMU 65). Hazardous materials used include antifreeze, battery acid, and mineral spirits in a dip tank. Safety-Kleen replaces the mineral spirits in the dip tank. Previously there was a 20-gallon Stoddard solvent dip tank. Previously waste oil and spent solvents were stored in a former UST (SWMU 47) that was emptied by a contractor.

Currently, waste oil is collected in a portable above-ground storage tank. Typically only one of twenty six 5,000-gallon fuel trailers located at this facility contains fuel at any one time.(4)

There are seven active vehicle wash facilities in the Cantonment Area. The main vehicle wash rack (SWMU 62) is self contained and only generates waste oil since the wash water is recycled after passing through an oil/water/sediment separator into a holding pond. The MATES area has two adjacent wash racks used for washing tanks, large parts and components and steam cleaning. The water passes through an oil/water separator (SWMU 69) prior to discharging to the sanitary sewer (SWMU 49). The Motor Repair area and the new National Guard facility each have a wash rack that is used to wash equipment and connected to an oil/water separator that discharges to the sanitary sewer. The "tank rack" area in the Marine Reserve unit is connected to an oil/water separator (SWMU 64) that discharges to a drain field. Buildings 319 and 323 in the TMP area both have wash racks inside that are connected to oil/water separators that discharge to the sanitary sewer. (3,6,7)

Near the Cantonment Area there is a landfill that currently receives demolition materials (SWMU 51) and several inactive landfills or pits (SWMUs 54 through 57). SWMU 51 previously received solid wastes from the Cantonment Area and field training activities. The only reported unauthorized hazardous materials placed in the landfill were small arms ammunition, pyrotechnics, and asbestos. Many of the former landfills were only used for a very short time period. In some of the landfills and pits wastes were routinely burned. Historic down range bivouac sites had pits excavated for trash disposal and then covered when the area was no longer used (SWMU 58). The locations of many of these pits is unknown.(4)

The last fire training was conducted in 1990 with all training being performed in one pit (SWMU 59) located in the Cantonment Area. According to YTC personnel, drums were partially filled with fuel and ignited. The fire was then extinguished. In the process of putting out the fires fuel would be washed out of the barrels and onto the ground.(4)

Refueling is primarily conducted in the Cantonment Area at the POL central fuel point (AOC 4), which currently consists entirely of above-ground storage tanks. Prior to 1989 there were also underground storage tanks located in this area. There was also a former fuel point near Building 450 that had underground storage tanks. The underground storage tanks were removed in 1988. Located near Building 450 is a former bladder site (AOC 33) where 50,000 gallon rubber fuel bladders were used for fueling vehicles and contained JP-4 (aviation fuel). In addition to these units, there are Down Range Forward Area refueling areas (AOCs 34 through 36) where 1,000 gallon bladders are used for fueling vehicles.(4)

The ammunition storage point is located approximately 3,000 feet southeast of the Cantonment Area. The area is secured with a fence and consists of ten weather proof concrete igloos, two conex (shipping containers), a warehouse, and a storage yard. There is also a temporary storage area adjacent to the fence that is used only during training activities. Spent brass casings from small arms munitions are stored here in previously used 55-gallon drums. Prior to 1991, any residual liquids from the previous drum contents were emptied into a 40 by 50 foot area (SWMU 26). Prior to 1985, packing materials were burned in a pit (SWMU 27) located approximately 400 yards northeast of the office. There is a temporary ammunition storage point located down range near the northwest corner of the YTC, where covered ammunition is stored on pallets for no longer than five days. The area is fenced and lighted.(4)

Buried World War II munitions were discovered in the Cantonment Area (AOC 7). The buried munitions discovered near Building 218 in the early 1950s were probably practice rounds. Those were removed and probably turned over to the ammunition storage area people. The bangelor torpedoes and bazooka rockets found near Building 217 were removed also by EOD personnel in 1987 or 1988. The structures in the area prohibit determining if all of the munitions have been removed.(4)

Training activities at YTC are primarily large scale maneuvers using tracked and wheeled vehicles and aircraft (helicopters). Weapons used for firing include small arms, machine guns, grenades, mortars, artillery, tank main guns, anti-armor weapons, bombs, and rockets (aircraft assault). The small arms and grenated ranges are the most intensely used.(5)

There are three dud areas located in Ranges 15, 7/8, and Training Area 9A, Range 14 UMTU, and the central impact area down range where access is restricted and live munitions are fired for training purposes. The duds (fired but unexploded munitions) have been removed from these areas, which are still used for training. Only Range 14 has been used for detonation of waste munitions. Range 14 (SWMU 61) is used for both training and disposal. Waste munitions are detonated in Range 14 by explosive ordnance demolition (EOD) units. Navy, Army, and Air Force all use Range 14, with the Navy using it the most. To detonate the ordnance trenches are excavated with the waste ordnance placed in the pit, charges placed with the ordnance, and chain link fencing placed on top to reduce the distance metal travels. The area is cleared and the ordnance exploded. The area is then searched for unexploded ordnance and metal fragments. These are all placed back in the pit and detonated. Currently all craters are filled. Historically some craters were left open but these are all being filled.(4,7)

On July 26, 1989, the Multi-Purpose Range Complex (MPRC), located immediately east of the central impact area, began servicing mobile

electric-powered targets. Waste solvents, waste batteries, and oil are generated from these activities and sent to the Cantonment Area for disposal.(4)

2.3.1 Hazardous Waste Management

The YTC facility typically manages the following hazardous waste streams:

- Petroleum solvents
- Chlorinated solvents
- Paint, thinner, and lacquer
- Herbicides/pesticides
- Batteries
- Contaminated oil
- PCBs

Table 2 presents additional information on management of these waste streams at YTC.

Hazardous materials used in the maintenance areas include solvent, battery acid, antifreeze, oils, and lubricants. Waste oil and lubricants are all placed in the waste oil portable aboveground storage tanks (SWMU 34) or other waste oil tanks (SWMUs 20, 24, and 33) located in each maintenance area. The tanks are emptied by a contractor. Waste batteries are accumulated in totes and in battery storage rooms. They are sent off site for recycling. Waste solvents from MATES and National Guard dip tanks are distilled at MATES, approximately every six months. Safety-Kleen dip tanks are serviced by Safety-Kleen. All other wastes are placed in drums and sent to the 90-day storage area (SWMU 3) until they are shipped off site for disposal or recycling.(4,6,7)

2.3.2 Non-Hazardous Waste Management

The YTC facility typically manages the following categories of non-hazardous and state regulated wastes:

- Municipal/solid wastes
- Scrap metal
- Waste Oil
- Petroleum contaminated Soil
- Antifreeze
- Waste Water

Municipal type solid wastes are generated in the Cantonment Area and during field training activities. Currently, these wastes are

Table 2
HAZARDOUS WASTE MANAGEMENT AT YAKIMA TRAINING CENTER

Waste Category	Hazardous Waste Codes	Dates Managed	Annual Quantity of Wastes Managed
Solvents 1,1,1-Trichloroethane, trichloroethene, tetrachloroethene	F002, U226, WP01, WP02, WT01	1992 1993 1994	2,305 lbs 100 lbs 1 container
Paint, varnish, mineral spirits, solvent	D001, D007, D008, D009, D035, F003, F005, WT01, WT02, WC01	1990 1992 1993 1994 1995	938 lbs 3,544 lbs 9,076 lbs 16 containers 6 containers
Creosote	U051, WT01, WC01	1992 1993	302 lbs 604 lbs
Lubricant (1-butoxyethanol, barium <10,000 mg/l dinonyinaphthalene sulfate)	D001, D005, WT02	1993	15 lbs
Pesticides and Herbicides (2,4,5-T)	U232, D017, WT01, WP01, WC01	1993 1995	85 lbs 2 containers
Explosives and propellants	D003, D005, D008, P087, WT02	1992 1993	276 lbs 529 lbs
Polychlorinated biphenyls		1992 1994 1995	183 lbs 1 container 1 container
Batteries	D001, D002, D003, D005, D006, D007, D008, D009, WT01, WT02, WC01	1990 1992 1993 1994 1995	2,001 lbs 5,611 lbs 2,897 lbs 33 containers 29 containers
Carburetor cleaner and degreaser	D002, D007, D026, F001, F002, F004, WT01 WT02, WP01, WC01	1990 1992 1993 1994 1995	180 lbs 81 lbs 168 lbs 2 containers 2 containers
Naphtha solvent	D001	1990 1994	8,772 lbs 1 container

Table 2 (Continued)
HAZARDOUS WASTE MANAGEMENT AT YAKIMA TRAINING CENTER

Waste Category	Hazardous Waste Codes	Dates Managed	Annual Quantity of Wastes Managed
Fuel and spills	D001, D006, D018, WT02, WC02	1992 1993 1994 1995	625 lbs 14,052 lbs 254 containers 81 containers
Decontamination solution DS-2 (diethylenetriamine, butyl cellosolve, sodium hydroxide)	D002, WT01	1992 1993 1994	145 lbs 100 lbs 2 containers
Potassium hydroxide solutions	D002, WT02	1993	167 lbs
Calcium hypochlorite hydrate	D001, D002, D003, WT02	1992 1993	145 lbs 145 lbs
Hydrochloric acid	D002, WT02	1993	48 lbs
Zinc chromate putty	D007, WT01, WC01	1992 1993	80 lbs 100 lbs
Flammable lab packs	D001, WL01, WT01	1992 1993	257 lbs 331 lbs
Activated carbon	D001, D003	1992 1993	10 lbs 10 lbs
X-Ray developer (hydroquinone, sodium hydroxide, sodium sulfate)	D002, WT02, WC01	1992	32 lbs
Cleaning compound (potassium hydroxide, dipropylene glycol monomethyl ether)	D002, WT02	1993	579 lbs
Misc Washington State Wastes including low level PCBs and antifreeze	WT01, WT02, WC01, WL01	1992 1993 1994 1995	3,009 lbs 11,669 lbs 155 containers 142 containers
MEK/MEK rags (<20,000 mg/l)	D035, WT02	1993	8 lbs 1 container
Tank bottom sludge (cadmium, chromium, lead)	D006, D007, D008, WC01, WT01	1993	600 lbs
Spent charcoal filters with hexavalent chromium	D007, WT02	1990	20 lbs
References (7,8,9,10,11,12,13)			

placed in a drop box at the transfer station (SWMU 53) and disposed at the Yakima County Terrace Heights landfill. Historically, the wastes have been buried and/or burned in a number of on site landfills and pits.(6,7)

Scrap metal is accumulated then sent off site to be recycled.(6,7)

Waste oil is accumulated and stored in storage tanks (SWMUs 20, 24, 33, and 34). In the past waste motor oil was used for dust control on the roads and small quantities of oil associated with maintenance in the field were disposed on site.(5)

Contaminated soil from spills of fuel and other material on site has been placed in stock piles or spread at the active landfill (SWMU 51). Currently, there is a contaminated soil storage area (SWMU 8) where most of the soil is contained in drums or drop boxes.(6)

Historically waste antifreeze in the Main Motor Pool Area was drummed and stored in the old POL (petroleum, oil, and lubricants) yard (SWMU 40). Waste antifreeze from all locations was then shipped to Fort Lewis for disposal. Prior to 1989, waste antifreeze in the Main Motor Pool Area was dumped in the former waste oil UST. Currently waste antifreeze is accumulated in the 90-day storage area (SWMU 3) then shipped off site.(4,6,7)

Waste water is generated from cleaning vehicles and parts. Waste water passes through oil/water separators prior to being discharged to the sewer system, drain fields, or surface water drainage.(6,7)

2.4 REGULATORY HISTORY

2.4.1 RCRA Notification and Permit History

A notification of hazardous waste activity was filed on August 16, 1980. Fort Lewis submitted their initial Part A Application on November 19, 1980 for open burning and detonation of 80 tons of D001 and D003 waste. A revised Part A Permit Application, prepared October 31, 1985, was submitted with the Part B Application on November 4, 1985 for Range 14 open burning and detonation of 10,000 pounds of D001 and D003 explosive wastes.(14,15,16)

On January 28, 1986 and on August 16, 1987 Fort Lewis filed a subsequent Notification of Hazardous Waste Activities for Yakima Firing Center identifying them as a treater/storer/disposer of D001 and D003 wastes. The 1986 application also indicated they generated off-specification oil and marketed it to a burner.(17,18)

On October 26, 1993 a Notification of Dangerous Waste Activities was filed. It identified YTC as a generator, transporter, TSD, and marketer and burner of fuels. The notification was for a one time quantity of 4,500 lbs beyond the 7,000 lbs per month for a total

shipment of 15,000 lbs of a variety of wastes.(6) A revised Part B Permit Application for Range 14 was filed in November of 1988.(19)

The Washington Army National Guard MATES facility submitted an initial Notification of Dangerous Waste Activities in 1984 identifying themselves as a generator of hazardous wastes under ID number WA8214005395 (this is different than YTC's EPA ID number). In 1986, the MATES facility submitted another Notification of Dangerous Waste Activities.(20,21)

2.4.2 RCRA Compliance History

According to the EPA files, at least six RCRA inspections have been conducted at the YTC facility between June 1986 and June 1994 Results of the six RCRA inspections are summarized below:

- June 10, 1986 - EPA conducted a RCRA compliance inspection at YTC. Discrepancies between the Part B Permit and what was actually occurring were noted. DOT manifests were being used instead of Hazardous Waste manifests. Wastes quantities and descriptions were not being checked during unloading prior to detonation. There was no Notice of Violation in the files.(22)

- June 22, 1987 - EPA and Ecology conducted a joint RCRA compliance inspection at YTC. During the inspection it was determined that RCRA regulations were not being followed. YTC personnel stated a California court case exempts munitions from RCRA requirements. Both EPA and Ecology prepared inspection reports. Both reports mention follow-up on this court case. The EPA report stated that the court case could not be located. It was noted that YTC was using either DOT or DOD manifests to transport waste munitions. Records were kept of who entered the range, but none were kept regarding waste. There was no Notice of Violation in the files.(23,24)

- June 23, 1989 - EPA and Ecology conducted a joint compliance inspection with Ecology being the lead agency and EPA providing oversight. YTC reported they were following procedures described in their 1988 Part B permit application. However, no ordnance has been disposed since submittal of the permit so the inspectors could not determine if this was the case. There had not been any environmental monitoring of the site and it was not clear if there were procedures to ensure that only ordnance and explosives were being treated at the site. According to the inspection report a letter was to be sent to the facility to follow up on these issues.(16,25)

- June 25 1992 - Ecology conducted a compliance inspection and found a number of violations including: materials that may

be hazardous being landfilled without characterization; containers in poor condition and unlabeled; petroleum based solvents being mixed with waste oil; and manifests not being retained. At the MATES facility they found containers stored outside of the waste storage area that were not secured or labelled.(26,27)

- September 21, 1993 - Ecology conducted a compliance inspection with EPA participation at the MATES facility. During the inspection it was noted that wastes were being stored over 90 days.(28)

- June 1, 1994 - Ecology conducted a compliance inspection and found one drum without an accumulation date.(29)

2.4.3 Other Permits

The landfill was operating under a Municipal Solid Waste Permit Application submitted to Ecology in January 1994, prior to changing to a demolition debris landfill.(30)

The sewage treatment plant located 0.5 miles west of the Cantonment Area discharges effluent to the Yakima River under NPDES permit number WA0021962.(4)

3.0 ENVIRONMENTAL SETTING

3.1 LOCATION AND SURROUNDING LAND USE

The YTC occupies over 260,000 acres in the south central portion of Washington State (Figure 1). The eastern border of the facility is along the Columbia River, the major drainage route of the Columbia Basin. The Moxee and Black Valleys are situated along the southern boundary, and the Yakima River drainage parallels the western boundary. Badger Pocket, the eastern extent of the Ellensburg Valley, and the Boylston Mountains lie along the northern boundary. Within this large area only a small portion is devoted to permanent military housing and installations. The bulk of the area of the YTC is undeveloped lands used for purposes of military maneuvers and weapons training. The Cantonment Area, wherein most of the hazardous materials are handled, is restricted to the western-most extent of the facility, immediately east of the city of Selah (Figure 1). Hazardous materials handling areas outside the Cantonment Area are the base landfill and the UMTU disposal area (Figure 2).(2,4)

Land use in the areas around the YTC is primarily agricultural or undeveloped grazing lands. The areas around Selah, Moxee and Black Rock Valleys, and Badger Pocket are host to either irrigated orchards and farmland, or dry land wheat farming. Two major hydroelectric dams, the Wanapum and Priest Rapids, are located on the Columbia River near the eastern border of the YTC. The U.S. Department of Energy's Hanford Facility is located approximately ten miles to the east.(2,4)

The YTC is situated in the Columbia Basin Ecoregion, which is characterized by sagebrush/wheatgrass steppe and grasslands. Xerolls are the most common soils in the region. Landforms in the Columbia Basin Ecoregion are characterized by irregular plains and table lands with moderate to high relief. Elevations on the YTC vary from approximately 440 feet along the eastern border with the Columbia River, to over 4,000 feet along some of the major east-west trending ridges.(31,32)

The City of Selah derives all its drinking water from groundwater taken from relatively deep wells drilled near the Yakima River. These wells are approximately 3 miles south west of the Cantonment Area at the YTC.(33)

3.2 METEOROLOGY

The YTC is located within the semiarid Columbia Basin. Precipitation, mostly in the form of snow, is generally limited to the winter months and averages 8.8 inches. Mean annual temperature is 51° F, with the coldest month being January which averages 28° F., and the warmest month July which averages 72° F. The average annual potential evapotranspiration is estimated to be

between 25 to 37 inches which limits significant local recharge to aquifers at the site from precipitation.(2,4)

3.3 SURFACE HYDROLOGY

Due to the arid climate, most of the surface drainages on the YTC do not sustain streams throughout the year. Of the streams on site, only Alkali Creek, Cold Creek and Squaw Creek are perennial (Figure 5). Stream flow in drainages other than these is usually episodic, being associated with spring or storm runoff. However, numerous springs are present on the YTC, which provide flow to certain drainages.(2,4)

A surface water divide exists across the central YTC approximately parallel to the Columbia and Yakima Rivers (Figure 5). Alkali and Cold Creek both flow to the east into the Columbia River drainage basin. Squaw Creek flows to the west into the Yakima River. No gaging stations are present on any of these streams and therefore there is no flow information for them. The Cantonment Area is situated within a local drainage basin without any perennial streams (Figure 5).(2,3,4)

3.3.1 Site Surface Water Runoff

Surface water runoff from the YTC's hazardous waste management areas in the Cantonment Area is drained by a series of unlined, open ditches which feed into a main ditch that eventually discharges to the Yakima River (Figures 3 and 5).(2,4,27)

Surface drainage from past and present YTC operations areas outside the Cantonment Area mostly drain to the Yakima River basin. However, drainage from the Range 14 UMTU area, which is located along the surface water divide between Selah and Cold Creeks, contributes surface runoff to both of the Yakima and Columbia River drainages (Figure 5).(2,4,31)

Two irrigation canals are located to the west of the site along the Yakima River valley. They are below the elevation of the Cantonment Area. However, runoff from the area does not contribute to their flow.(2,4,31)

Over 140 springs have been developed on the YTC for use as drinking water or livestock watering in the past. Since no more livestock will be at YTC after December 1995, the spring will cease to be used.(2,4,7)

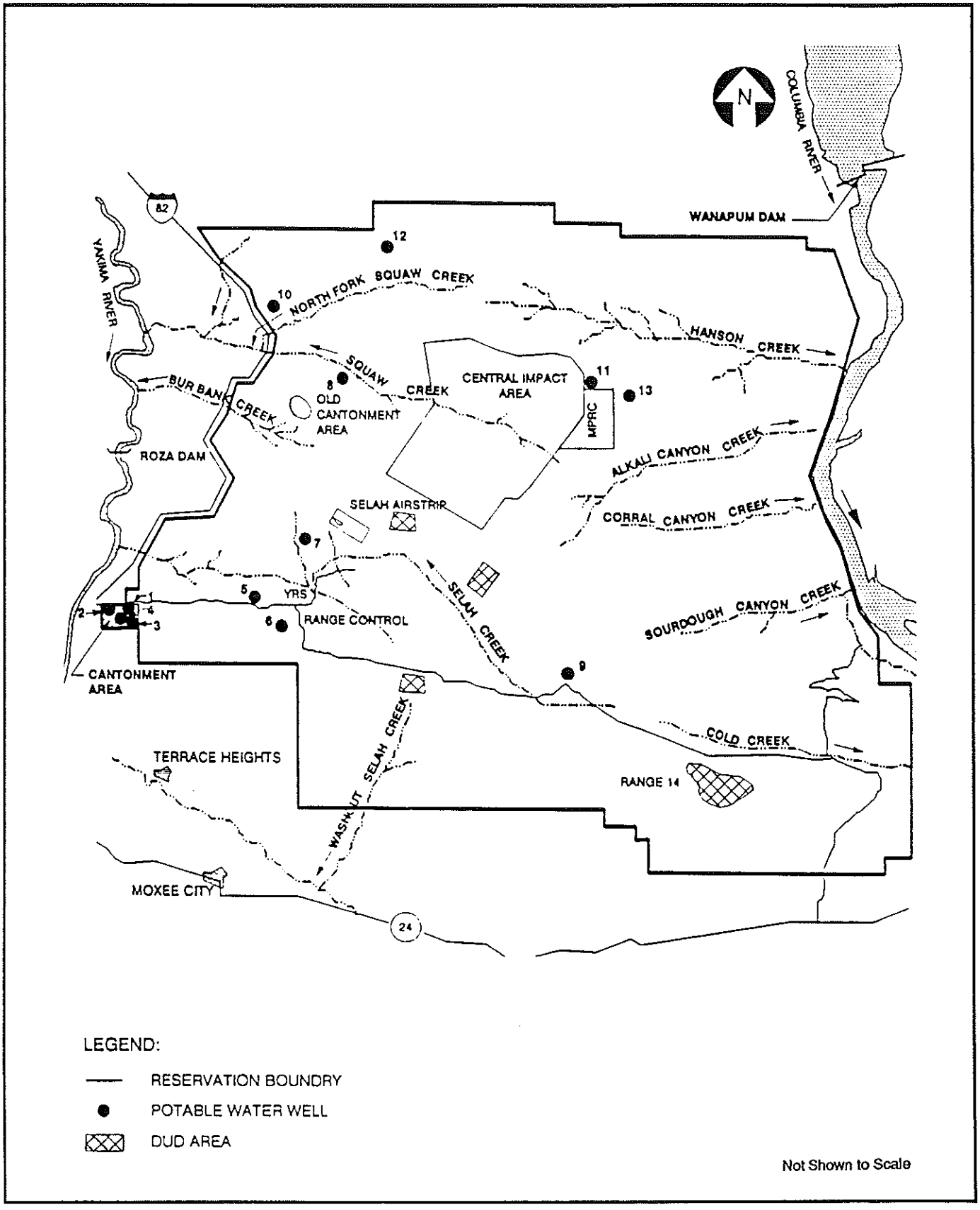


Figure 5

SURFACE WATER BODIES
Source: Reference 2

3.4 GEOLOGY AND GROUNDWATER HYDROLOGY

3.4.1 Geology

The oldest geologic unit exposed at the YTC is represented by the regionally extensive basalt flows of the Columbia River Basalt Group. The Group is over 4,000 feet thick in the vicinity of the YTC, based on results of nearby drilling for oil and gas. Intercalated within and, in some places, overlying the basalts are groups of sedimentary beds of varying thickness which formed during quiescent periods between eruption of basalt flows. These sedimentary units comprise the Ellensburg Formation. The Ellensburg Formation is thickest in the area of the cantonment where it is preserved as an erosional remnant within a syncline formed with the underlying basalts. Overlying the erosional unconformity above the folded Columbia River basalts and sediments of the Ellensburg Formation are various Quaternary to Recent alluvial sequences, the most continuous of which are the gravel deposits in the flood plain of the Yakima River. Associated Quaternary fanglomerates, loess, alluvium and landslide deposits mantle areas of the YTC.(34,35,36,37)

3.4.2 Regional Groundwater Hydrology

Several regionally significant aquifers exist within the Columbia River Basalt Group; these aquifers are utilized for potable and irrigation water supplies, both locally and throughout the Columbia Basin. Typically, these aquifers are best developed within the flow tops of basalt flows where rapid cooling has formed a permeable matrix of vesicular, rubbly basalt. While the interbeds between flows may also contain groundwater, they are typically fine grained and therefore less productive.(34,35)

Water within these aquifers typically exist under confined conditions because of the very low permeability of the intervening massive interiors of basalt flows which act as aquitards. The majority of recharge to these aquifers occurs to the west where the basalt flows are exposed in the foothills of the Cascade Mountains in the upper Yakima River basin. However, the uppermost basalt flow, named the Pomona, is both erosionally and depositionally truncated in the area of the YTC, and therefore aquifers associated with it may be receiving recharge from more local sources. (34,35,38,39)

The Columbia River Basalts in the vicinity of the YTC have been folded along approximate east-west axes that are reflected by the trends of ridges on site which are the expressions of anticlinal ridges separated by synclinal valleys. Groundwater in the interflow zones in the basalts is controlled by the structural attitudes of the enclosing basalt flows. Regional groundwater flow in the basalt aquifers is typically from the crests of anticlinal ridges towards the intervening synclinal valleys, and then down-

gradient in the valleys towards the Yakima River. Therefore, groundwater is present in the basalts at elevation on the ridges, as well as beneath the valleys where the confining pressures are occasionally enough to promote artesian flow in wells. Many of the springs on the YTC are a result of erosional exposures of the interflow aquifers along ridges. Fault zones within the basalts are also locally influencing groundwater flow in the interflow aquifers.(38,39,40)

That portion of the Upper Ellensburg Formation, where it exists above the basalts, also contains aquifers within more permeable lithologies within the fluvial sequence. However, the productivity of these aquifers is usually less than the interflow aquifers. Groundwater in the Ellensburg is typically confined to semi-confined.(31,38,39)

The gravels along the Yakima flood plain to the west have productive, shallow, unconfined aquifers that are probably in hydraulic communication with the Yakima River.(33)

3.4.3 YTC Groundwater

The large area and relatively complex geology of the YTC precludes making generalizations about the occurrence of groundwater in relation to all hazardous waste management areas. The best characterized area of the facility is the Cantonment Area where recent installation of groundwater monitoring wells has aided in interpretation of groundwater conditions there. Groundwater in other areas of the YTC is less well understood due to the lack of wells completed in sediments overlying the basalts and limited geologic mapping.

Currently, the facility has thirteen wells onsite that are used as sources of drinking water. Four of these thirteen wells are located in the Cantonment Area, while the remainder are located primarily throughout the western half of the YTC for purposes of providing water for various YTC operations.(2)

Generally, hazardous waste management areas at the YTC can be considered to reside in one of two arbitrarily defined areas based on geology and available information. The Cantonment Area, by virtue of the number of monitoring wells available and the presence of a thick section of Ellensburg Formation, will be considered as one area, while the remainder of the YTC area will be considered as another. The discussion of groundwater outside the Cantonment Area will be referenced relative to the waste disposal areas for purposes of discussion only, not because of any intrinsic relation between waste management practices and hydrogeology at the YTC.

3.4.3.1 Cantonment Area Groundwater

In support of a site investigation of the Cantonment Area, thirteen monitoring wells were installed in 1993 in and around waste management areas. Four monitoring wells are also in place around the YTC sanitary landfill to the east of the Cantonment Area. In addition to the monitoring wells, there are four drinking water wells in the Cantonment Area and numerous off site private drinking water wells immediately to the west of the Cantonment Area.(2)

Of the thirteen monitoring wells installed in 1993, eleven were completed at the base of the Pomona basalt flow contact with the Selah Interbed. Two of the wells, ASP-1 and ASP-2, were completed in the Ellensburg Formation (Figures 6, 7, and 8). Well FTP-1, was drilled to 140 feet below ground surface (bgs), but was eventually completed at 20 feet bgs because of free petroleum product encountered in the well. Drilling logs for the four groundwater wells in the Cantonment Area were not obtained for the present report, but they were drilled to depths of 430 to 600 feet which suggests they were probably completed in interflow aquifers in the basalts.(2)

It is apparent from an examination of the monitoring well logs that there was no saturated zone present above the Pomona basalt in the season they were drilled (Figures 7 and 8). The Pomona basalt flow is encountered in the wells at increasingly deeper levels bgs from north to south across the Cantonment Area. This is a reflection of the deepening of the Pomona basalt as it approaches the synclinal axis associated with the Yakima Ridge fold. The Ellensburg Formation strikes east-west and dips from 5 to 10 degrees to the north where it outcrops due south of the Cantonment Area. As the anticlinal axis of Yakima Ridge is approached further to the south, dips of the Ellensburg increase to as much as 25 degrees to the north near its contact with the underlying Pomona basalt which is exposed along the north flank of the ridge.(2,34)

Based on stratigraphic intercepts in the monitoring wells at the Cantonment Area and domestic wells to the west, the contact between the Selah Interbed and the overlying Pomona flow is dipping to the west, which suggests the syncline, and therefore the aquifer, is plunging in this direction. Results of contouring of groundwater elevations in the eleven wells completed at the base of the Pomona basalt indicate the groundwater is in a confined state and is flowing to the west-northwest towards the Yakima River. An average gradient of 4.4×10^{-3} was calculated for this aquifer during February - April 1993.(2)

Monitoring wells ASP-1 and ASP-2, completed in sediments of the Ellensburg Formation above the Pomona basalt, at the Ammunition Storage area, also encountered groundwater which is probably in an aquifer above the interflow aquifer in the basalts. Because there

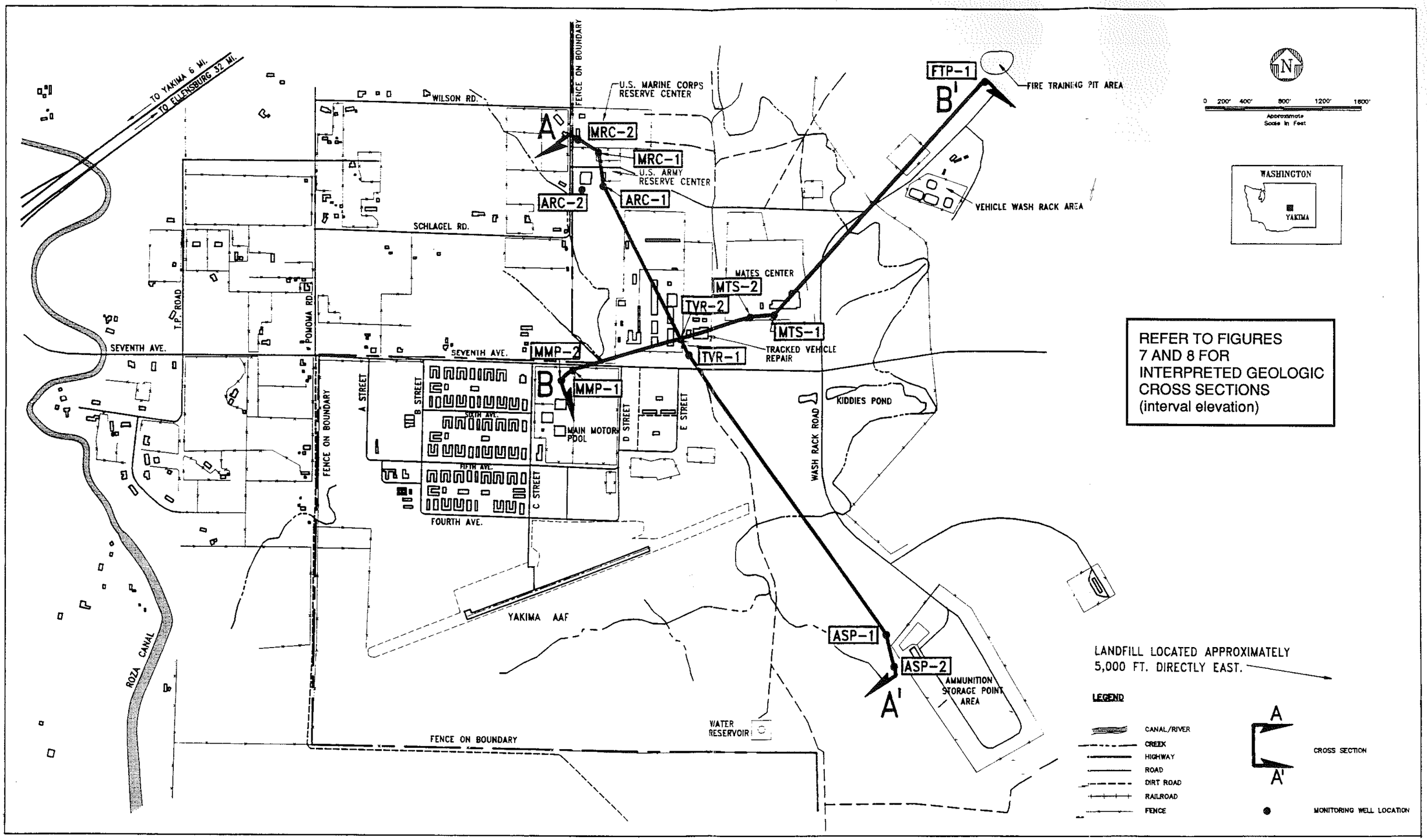
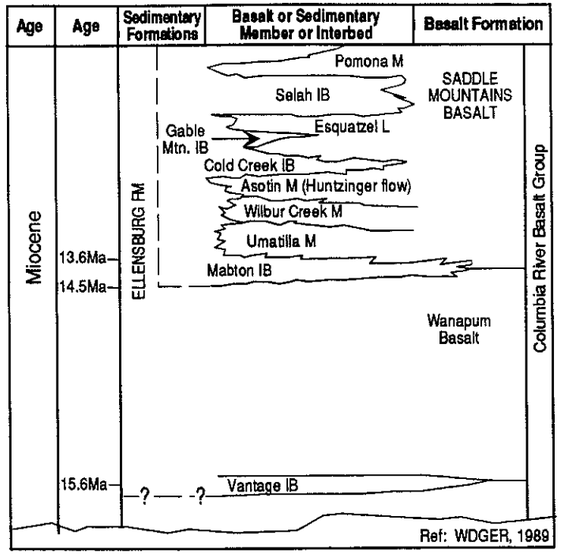
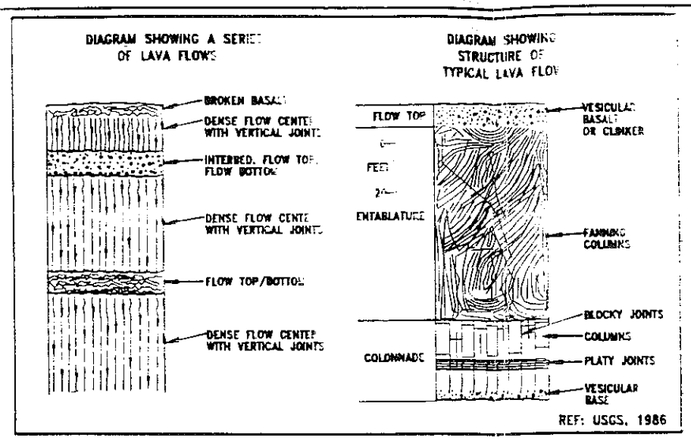


Figure 6

GEOLOGIC CROSS-SECTION LOCATIONS
Source: Reference 2





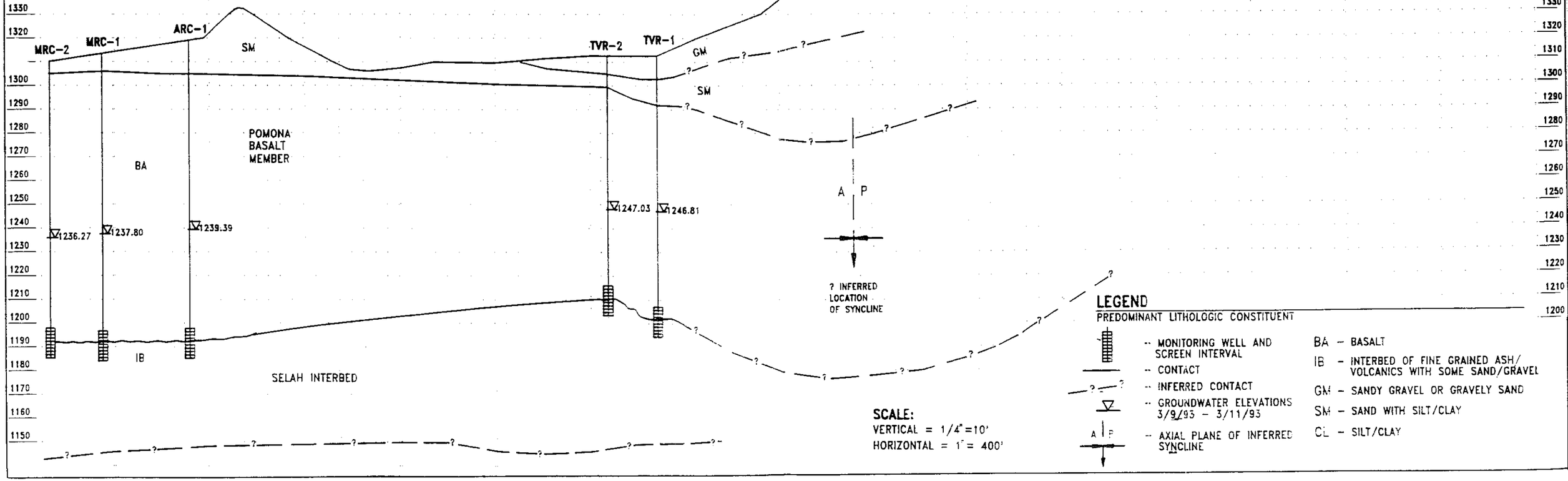


Figure 7

INTERPRETED GEOLOGIC CROSS-SECTION A-A'
Source: Reference 2

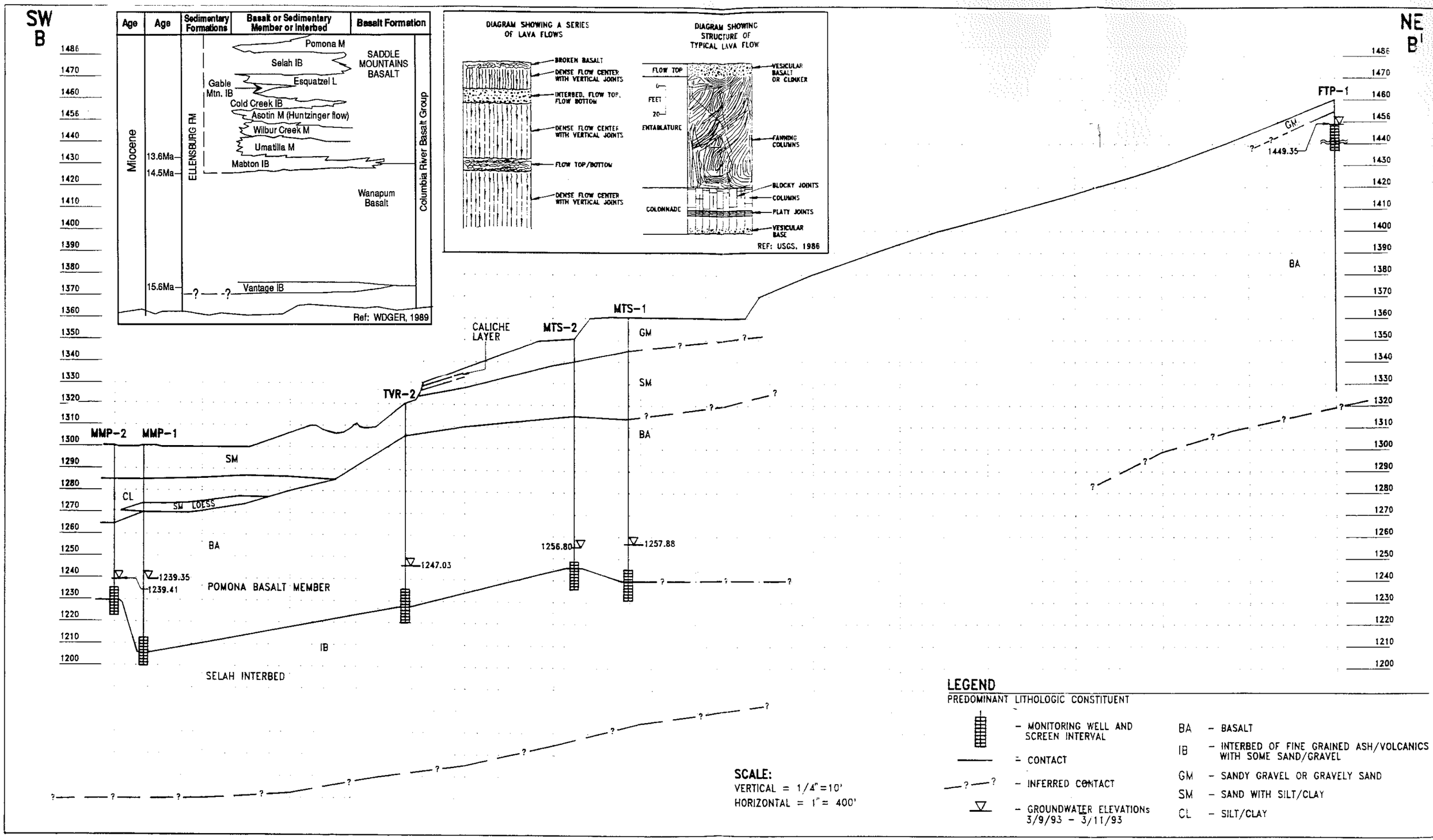


Figure 8

INTERPRETED GEOLOGIC CROSS-SECTION B-B'
Source: Reference 2

are only two wells at this location, which are screened at different elevations, it is not possible to make an interpretation of the flow direction of the groundwater in the Ellensburg formation from these wells. However, it is interesting to note that the water elevation in well ASP-2 was over 11 feet lower than that in well ASP-1. Given that well ASP-2 is screened at a lower elevation in the Ellensburg, this could imply a downward gradient in groundwater flow at this location.(2)

3.4.3.2 Remainder of YTC

Outside the Cantonment Area there are several areas that have been used in the past to treat or dispose of wastes. Past waste management practices at most of these areas is poorly documented, except for the UMTU area which is currently being assessed for compliance with RCRA standards.(41)

3.4.3.2.1 UMTU and DUD Areas Groundwater

The character of groundwater in the current UMTU area (Range 14) is not well established because of the lack of wells within or immediately adjacent to the area. Available geologic maps indicate the area is not covered by the Ellensburg Formation, but does contain a thin mantle of loess and alluvium over a substrate of the Yakima Basalt Group. These surface sediments probably do not contain significant water bearing horizons except during periods of runoff or recharge. The underlying Yakima Basalts do contain groundwater probably in a confined state in interflow zones.(35,41)

The UMTU area occupies a unique position in that it straddles the surface water divide between Selah Creek and Cold Creek. Of the five gullies draining the area, three flow into the Cold Creek drainage which disappears into alluvium on the Hanford site to the west. The other two gullies drain into the intermittent Selah Creek which eventually discharges to the Yakima River to the west. One of these gullies has a spring in it, the nature of which is unknown.(31,41,42)

Three DUD areas are noted on the YTC Army base map, and discussed in the Preliminary Assessment report (Figure 2). Wastes were not disposed in these areas. However, there could be residuals from ordnance in these areas. These areas are located on the south side of Umtanum Ridge which is the surface expression of an anticlinal fold in the Yakima Basalts. Available geologic mapping indicates the basalts are overlain by a mantle of eolian to alluvial sediments on the lower slopes, with basalts outcropping on the upper slopes. While no wells are known to be present in these areas, it can be inferred that any groundwater present is likely to be found only in appreciable quantity in confined aquifers within the basalts. The mantle of sediments over the basalts probably do not host extensive saturated zones capable of producing groundwater throughout the year.(4,35,42)

3.4.3.2.2 Landfill/Burn Pit Areas Groundwater

In addition to the demolition debris landfill onsite, there are eight other inactive landfill/burnpit areas that have been used for waste disposal. Two of these areas were temporarily used as down range bivouac sites. The remaining seven areas are located in the vicinity of the present Cantonment Area, and therefore the geology and groundwater occurrence is probably similar to the Cantonment Area as discussed above. It is likely that the uppermost aquifers beneath any of these areas are present within the Ellensburg Formation, if it is present. The Pomona basalt would separate these potential water bearing horizons from the aquifers in interflow zones beneath it.(2,4)

Of the nine landfill/burnpit areas, only the current demolition landfill has groundwater monitoring wells located around it.(2)

The history of waste management around the other five areas varies for each site. Other than the current landfill which has been in operation since 1968, the only landfill used extensively was in operation from 1954 to 1968. The other four landfills were in operation from one month to one year. The geology and groundwater around these is not well documented. Based on the geology in wells at the Cantonment Area, there is probably only a thin veneer of Ellensburg sediments present beneath those sites to the north, while the sites along the south flank of Yakima ridge will probably be underlain by varying thicknesses of the Ellensburg Formation depending on structural position relative to the folds (Figures 7 and 8).(2,4)

3.4.3.2.3 White Phosphorous Burial Site Groundwater

A small area located near Selah Creek, labeled "DANGER, WP Burial Area" was used in the past to bury an unknown type of material apparently containing white phosphorous (WP) prior to 1974. The burial site is not well located on available maps, but documentation suggests it is present on a bluff between Selah Creek and a tributary to it (Figure 2).(2,43)

While no groundwater monitoring wells are known to be installed at the site there is unlikely to be significant groundwater present on this bluff. The bluff is underlain by an erosional remnant of Ellensburg Formation, which depositionally overlies the Pomona Basalt which outcrops on the face of the bluff. While small perched lenses of groundwater may be present in the Ellensburg, it is doubtful that they are connected to any of the more extensive aquifers used for potable water onsite. Any water recharged from the surface of the bluff would probably discharge to surface water from springs developed on the face of the bluff. No permanent springs emanating from the bluff were noted on any maps reviewed for this analysis.(35,42)

3.4.3.2.4 Old Cantonment Area Groundwater

The first Cantonment Area at YTC was located on the ridge line of Umtanum Ridge in 1941. This area is no longer used, as it was replaced by the current Cantonment Area which was constructed in 1942. Little is known about the specific locations of any waste disposal sites associated with the first Cantonment Area. Geologic maps of this area indicate the Yakima Basalt group is exposed at the surface with very little if any younger sediments present over them. Therefore, any water bearing horizons in this area are most probably in confined aquifers present in the interflow zones within the basalts. Without further knowledge of any waste disposal practices in this area, it is difficult to infer any more about groundwater relative to them.(4,35)

3.5 SITE CONTAMINATION

3.5.1 Fuel Contamination

There have been over 50 fuel spills reported at YTC since 1993. Some of the larger spills are summarized below.

3.5.1.1 MATES Fuel Contamination

There was one spill at the MATES facility when approximately 50 gallons of diesel fuel leaked onto the ground from a leaking fuel cell on October 1989. The fuel was removed by burning it under the direction of the YTC fire department. This was not in compliance with the MATES Environmental Specialist's directions.(44)

There were eight fuel spills reported for the MATES area since 1993 with the largest spill being approximately 50 gallons.(6,7)

In 1989, when two former underground storage tanks were removed discolored water was identified. Samples were collected that contained 0.24 ppm of phenol, 0.06 ppm of TOX, 7.5 μg/l of benzene, 18 μg/l of toluene, and 180 μg/l of xylene. Since TPH was tested for but not detected the source of the contamination was in question. However, it was suggested that the discoloration could have resulted from the lignan-based dust suppressant.(45)

3.5.1.2 POL Fuel Contamination

On April 16, 1986, 20 gallons of diesel was spilled at POL Station #2 (AOC 4). It was cleaned then covered with dirt.(4)

On May 2, 1988, 706 gallons of diesel was spilled in POL 2 containment berm (AOC 4). Soil from the berm was removed and taken to the sanitary landfill (SWMU 51).(4)

Three additional small spills were reported for the POL area since 1993.(6,7)

The POL fuel point has had large fuel spills in the past. On May 17, 1989 over 1,100 gallons of diesel spilled at POL Station X (AOC 4) when an above-ground tank was overfilled. Approximately 600 gallons was contained and removed. Over 500 gallons spilled to the ground. The standing diesel was burned, while the residue was removed, taken to the landfill (SWMU 51), and spread.(4)

In November 1990, 1,600 gallons of diesel fuel spilled when fuel was being off-loaded from a tanker truck at POL 1 (AOC 4) and the wrong valve was closed. The product went to a fill tank and came up through a vent pipe at POL 2. Dirt was placed in the clay lined berm to soak up the spill. When the dirt was being shovelled of the liner was ripped. Even though the liner was repaired the integrity is questionable. Fuel also spilled over the top of the berm into the former PCS stockpile area (SWMU 22).(6,7)

On August 22, 1994, JP-8 was being recirculated back into the tanks at POL 1 (AOC 4) and a valve was not shut all the way. This resulted in some of the fuel being placed in another tank and approximately 1,000 gallons spilling into the berm at POL 1. The liner was not secured and fuel leaked under the liner into the lower berm. Approximately 800 gallons of fuel was pumped out of the berms. Gravel was also removed and the liners slit to facilitate removal. The liners were repaired but the integrity is still questionable. Remediating POL 1 and POL 2 and replacing the liners is a high priority project for YTC.(6,7)

3.5.1.3 Other Fuel Contamination

Down Range there have been approximately 25 fuel spills including one at MRPC since 1993. The largest reported quantity was 100 gallons.(6,7)

Fuel spills have been reported to the sanitary sewer, 4 gallons of oil and antifreeze at Building 845 in January 1995. In December 1994, one gallon of diesel entered the storm drain at Building 216. The other spills not described above were either cleaned up with absorbent or soil was removed.(6,7)

3.5.2 Site Inspection

In 1993 a Site Inspection was conducted for the U.S. Army Corp of Engineers. Groundwater, soil, and sediment samples were collected from the demolition debris landfill, the Main Motor Pool Area, the MATES facility, the tracked vehicle repair shop, the Army Reserve Center, the Marine Reserve Center, the fire training pit, the vehicle wash rack, and the Ammunition Storage Point, 11 drinking water wells, and onsite creeks and drainages and the Yakima River. All samples collected during the site inspection were analyzed for volatiles, semivolatiles, pesticides, PCBs, TPH as diesel, and Target Analyte List metals.(2)

The current demolition landfill had four monitoring wells surrounding it. However, three of the four were dry and were not sampled. The one monitoring well that was sampled contained arsenic, barium, cadmium, chromium, cobalt, copper, lead, manganese, mercury, nickel, vanadium, and zinc above background concentrations.(2)

The vehicle maintenance areas (the Main Motor Pool, the MATES facility, the tracked vehicle repair shop, the Army Reserve Center, and the Marine Reserve Center) all had soil samples collected from the area. Soil samples to two feet below ground surface did not contain elevated concentrations of hazardous substances. Subsurface samples at the Main Motor Pool Area and the MATES facility both contained elevated concentrations of beryllium. The source of the beryllium was not identified. The groundwater samples collected at these locations were not reported to document releases by the Site Inspection. However it should be noted that a number of the groundwater wells contain contaminants. TPH as diesel (490 µg/l and 300 µg/l) was detected in monitoring wells for the Main Motor Pool Area. The main motor pool monitoring wells appear to be upgradient from some potential sources of contaminants associated with the area, drain fields. Both of the MATES monitoring wells contained trichloroethylene, 7.4 µg/l to 7.9 µg/l. One MATES well also contained arsenic, chromium, lead, and manganese. Both track vehicle repair shop monitoring wells contained arsenic, TPH as diesel (250 µg/l and 180 µg/l), and trichloroethylene (35 µg/l and 14 µg/l). One of the wells also contained toluene at 5.8 µg/l. Both of the Army Reserve Center wells contained TPH as diesel (540 µg/l and 400 µg/l). One or both contained acetone, arsenic, barium, lead, manganese, and zinc. The Marine Reserve Center wells contained 190 µg/l to 28 µg/l of TPH as diesel. They also contained arsenic.(2)

The fire training pit area consisted of three potential sources of contamination. The fire training pit proper and stock piles of soils believed to have been removed from the pit contained pyrene, arsenic, and lead. The soil stock pile from the vehicle wash rack contained lead at an estimated quantity. The monitoring well at the fire training pit is reported to contain primarily product which consisted of 2,600,000 µg/l of TPH as diesel, 60 µg/l of ethylbenzene, 1,100 µg/l of xylene, 600 µg/l of dibenzofuran, 1,100 µg/l of fluorene, 2,500 µg/l of 2-methylnaphthalene, and 1,000 µg/l of naphthalene. The following elements were above drinking water standards; arsenic at 73 µg/l, barium at 9,000 µg/l, beryllium at 25 µg/l, cadmium at 19 µg/l, lead at 410 µg/l, manganese at 4,100 µg/l, and nickel at 140 µg/l.(2)

Two soil samples were collected at the main vehicle wash rack and contained lead (13 mg/kg), cadmium (4.2 mg/kg), xylenes (36 µg/kg), and TPH as diesel (18J mg/kg) above background concentrations.(2)

The surface soil samples at the ammunition storage point contained cadmium (21 mg/kg), lead (57 mg/kg), zinc (580 mg/kg), butyl benzyl phthalate (4,000 µg/kg), and TPH as diesel (11,100J mg/kg). The subsurface samples contained beryllium (0.90 mg/kg) and TPH as diesel (18J mg/kg) above background concentrations.(2)

As part of the site inspection drinking water wells around the YTC were sampled. Barium and zinc were detected at elevated concentrations in a few of the wells but were not tied directly to a source.(2)

Sediment samples were also collected from surface water drainages. Elevated levels of arsenic, copper, lead, manganese and zinc were detected in selected downstream samples. Kiddies Pond contained elevated copper and lead concentrations, which may have originated from any of the previously discussed sources in this section. Lead was detected in the Cold Creek Road culvert without any source identified. Larry's Swimming Pool contained arsenic, lead, manganese, and zinc, which may have originated in the Cantonment Area.(2)

3.5.3 Domestic Well Samples

As a follow-up to the 1993 Site Inspection, Yakima Health District sampled 12 domestic wells within 0.25 miles of the site in late February and early March of 1995. The samples were analyzed for volatile organics using EPA Method 524.2. Only one of the samples contained any detectable compounds. Styrene was detected in one well at 0.1 µg/l, which was also the detection limit.(46)

4.0 DESCRIPTION OF INDIVIDUAL UNITS

Seventy-seven solid waste management units (SWMUs) and thirty eight areas of concern were identified and evaluated during the preliminary review (PR) of the YTC site files. The following sections provide descriptive and historical information on each SWMU. Locations of each SWMU or AOC can be found on Figures 2, 3 or 4.

4.1 SWMU 1 - SATELLITE ACCUMULATION/OTHER TEMPORARY STORAGE AREAS

(Photos 1-20, 1-34, 2-5, 2-13, 2-25, 2-32, 2-34, 2-36, 3-16, 3-20, 3-21, 3-22, 4-1, 4-5, 4-10, 4-11, 4-13, 4-14, 4-15, 4-16, 4-20, 4-21, 4-24, 4-25, 4-26, 4-34, and 4-35)

4.1.1 Information Summary

Unit Description: SWMU 1, includes satellite accumulation areas and other locations where small numbers of containers of waste were temporarily stored. The numbers and locations of these areas are likely to change as operations throughout YTC change. The following storage areas were documented at the time of the VSI. However, there are likely to be areas where wastes were stored that were not visited during the inspection. The areas are discussed below and summarized in Table 3.

- The Medical Clinic has a plastic container that is used to store waste water from the silver recovery unit. The container was stored outside on concrete under a roof. YTC collected at least seven samples of waste water from the silver recovery unit during one sampling episode. Up to 460 μg/l of silver was detected in those samples with results available at the time of this report.(6,7)

- The U.S. Army Reserve Center has one accumulation area. It had one dirty grease barrel, two oily rag containers, and a screen for draining oil filters.(6)

- The U.S. Marine Corps Reserve Center had one unlabeled yellow and black drum that contained soil.(6)

- The POL area had two areas where wastes were stored. The first consisted of three 55-gallon drums in covered drum storage containers (polypacks) and a tray with a rack to contain spills. This area was on gravel. The second area consisted of three drums that contained material cleaned up from a spill. Two 55-gallon drums were non-hazardous debris, while the third was a 35-gallon drum labeled as flammable. These drums were located on the concrete pad at POL 2.(6)

Table 3
Summary of Accumulation Areas

Building/Area	Description of Accumulation Area	Photo Number
Medical Center	One plastic container to store water located on concrete with a roof and open sides.	1-20
U.S. Army Reserve	One dirty grease barrel, two oily rag containers, and a screen for draining oil filters all located inside building.	1-34
U.S. Marine Corps Reserve Center	One unlabeled yellow and black drum containing soil located outside.	None
POL Area	Two polypacks containing drums and one drip pan. These sit on gravel except one of the polypacks, which has a concrete pad.	2-5
	Two 55-gallons drums of debris and a 35-gallons drum of flammable materials on the concrete fuel pad.	2-13
MATES	35-gallon drum of soil in a covered area with pavement.	2-25
	Cans for rags and floor sweep located throughout Building 951.	None
	Accumulation area with six drums is outside but is covered and is on concrete with cracks.	2-32
	Container for waste antifreeze was outside on concrete with a seam.	2-34
Motor Repair	Container of antifreeze on a pallet on gravel outside.	None
	Accumulation area inside building with 5-gallon containers, 35-gallon drums, and 55-gallon drums.	2-36
	Accumulation area inside building with mostly empty drums.	None
YRC	One drum of waste oil outside on concrete with a roof.	None
National Guard	Open drum of oily dirt located outside on wash rack.	None
	Accumulation area outside on concrete with a roof.	3-16

Table 3
Summary of Accumulation Areas

Building/Area	Description of Accumulation Area	Photo Number
TMP (Building 323)	Plastic tote with holes in the bottom for battery storage located inside the building.	3-20
	Area inside building for accumulating waste oil and filters adjacent to polypack with 55-gallon drums of antifreeze and diesel.	3-21 & 3-22
124th EEP	Polypack on soil that contained 55-gallon drums of diesel and antifreeze.	4-1
Rec area	One polypack was visible from the TMP area that sat on asphalt.	None
TMP (Buidling 319)	There was an accumulation area where oil filters were drained located inside the building.	4-10
	55-gallon drums for accumulation diesel filters, contaminated dry sweep, and rags were located inside the building.	4-11
	A polypack inside the building contained diesel and antifreeze.	4-13
	Plastic tote with holes in the bottom for battery storage located inside the building.	4-16
	Each work area inside the building had 35-gallon drums for accumulating rags and dry sweep.	4-14 & 4-15
Building 319	One drum containing contaminated soil was located outside.	4-15
MRPC Main Shop	One 55-gallon drum of waste floor sweep was located inside the building.	None
	One 55-gallon drum of waste hydraulic fluid was located inside the building in a plastic tub.	4-20
	Spray paint cans and batteries were accumulated in plastic totes inside the building.	4-21
	A 55-gallon drum on a platform with wheels located inside the building contained 6-volt batteries.	None

Table 3
Summary of Accumulation Areas

Building/Area	Description of Accumulation Area	Photo Number
MRPC Fueling Area	A 55-gallon drum located outside with no containment was used to catch drips from the diesel fuel nozzle.	4-24
	A shed with a concrete floor and one open side contained 55-gallon drums of soil and debris.	4-25 & 4-26
MRPC Second Shop	A used oil drum and a rack for draining fuel filters were located inside the building.	None
Range Control	One accumulation area inside Building 1807 had 55-gallon drums of used dry sweep and oily rags and a 5-gallon container.	4-34 & 4-35

- The MATES area had a number of accumulation areas observed during the VSI. The first was a 35-gallon drum of soil under a covered area. Spent solvent from sixteen dip tanks is distilled here every six months or as needed. There were cans for rags and floor sweep located throughout the shop (Building 951). Waste is stored in an accumulation area that is outside but covered. Drums are stored on pallets on concrete with cracks. At the time of the VSI there were drums containing oil filters, contaminated rags, floor sweep, flammable turbo shaft oil, FRH filters, and paint related wastes. A container for collecting waste antifreeze was observed on a pallet outside the building on concrete with a seam. (6)

- The Motor Repair Area had a waste antifreeze container on a pallet on gravel. There was an accumulation area inside the building that had drums which contained waste oil, fuel filters, turbo shaft oil, contaminated rags, floor sweep, waste petro in 5-gallon, 35-gallon, and 55-gallon containers, dry cell batteries, solvent tank filters, paint waste, and petro filters. A second accumulation area had mostly empty drums labeled for debris and floor sweep, three containers of oil/dirt/water, two containers of ethylene glycol, and containers for turbine oil, transmission fluid, and hydraulic fluid. (6)

- There was one waste oil drum observed at the YRC that was located on a concrete slab with a roof but which had no sides or berm. (6)

- Drums containing wastes were observed in two locations at the National Guard facility. An opened drum of oily dirt that was not labeled and had not been classified was sitting at the wash rack where the dirt had been removed. Waste antifreeze, three drums of waste solvent, and one drum labeled "Hazardous Waste" were located in a second area which was covered and on concrete with a fence but no berms.

- In the TMP area (Building 323) there was one plastic tote with holes in the bottom that contained used batteries that are sent out for recycling. There was also a hazardous waste accumulation area that had a polypack with two 55-gallon drums of antifreeze and diesel. Used grease and flashlight batteries were collected in 5-gallon plastic pails. Two more polypacks for diesel and antifreeze were observed. (6)

- One hazardous waste accumulation area that consisted of a polypack that contained two 55-gallon drums of used diesel and antifreeze was observed at the 124th EEP. (6)

- One polypack was observed in the Rec Area. However, the area was not visited so the contents were not identified. (6)

- In the TMP area (Building 319) there was one accumulation area with a waste oil drum for draining filters. Stored in a second area were also 55-gallon drums which contained diesel filters, dry sweep with oil, and grease rags. A polypack container in a third area contained a 35-gallon drum of diesel and a 55-gallon drum of antifreeze. Used batteries were accumulated in a plastic tote with holes in the bottom. These were sent out to be recycled. In each work area there were also 35-gallon drums for accumulating diesel fuel rags, grease rags, dry sweep, and solvent rags.(6)

- One drum of soil from cleaning up a hydraulic fluid leak was located adjacent to the hazardous waste storage area near Building 319.(6)

- At the MRPC in the main shop there were five separate areas noted where wastes were accumulated. One 55-gallon drum of waste floor sweep was in the first area. A second area contained a 55-gallon drum of waste hydraulic fluid in a plastic tub. Spray paint cans and small batteries were placed in green plastic totes in a third area. The fourth area had a 55-gallon drum on a platform with wheels which contained waste 6-volt batteries. Used alkaline batteries in a blue plastic container were the fifth area.(6)

- At the MRPC fueling area that had two small diesel above-ground storage tanks and one small gasoline above-ground storage tank there was a drum that was used to collect drips from the diesel fuel nozzle. There was a shed behind the fueling area that contained three 55-gallon drums of soil and debris. The shed had a concrete floor and three sides. There was a stain at the back of the shed, possibly from fuel. The shed also had a small above-ground storage tank which contained product. The second shop had a used oil drum with a rack for filters.(6)

- At Range Control there was one accumulation area that had one 55-gallon drum for used dry sweep, one 55-gallon drum for oily rags, and one 5-gallon container for waste hydraulic oil.(6)

Dates of Operation: The dates of operation will vary by the area with some of them existing only briefly. These areas were present at the time of the VSI.(6)

Wastes Managed: Any wastes generated at YTC including used dry sweep, oily rags, waste oil, waste fuel, waste solvent, contaminated soil, used batteries, waste antifreeze, waste water, and paint related wastes are accumulated in drums or other containers.(6)

Release Controls: Release controls vary by area from only the container on soil to containers located in trays or polypacks located inside buildings.(6)

History of Releases: No releases were identified from containers used to accumulate wastes. However, there have been releases from containers at former SWMU 7.(6)

4.1.2 Conclusions

There is a low potential for release of hazardous constituents to air, groundwater, soil, or surface water or to generate subsurface gas for containers located inside buildings or with secondary containment (i.e. polypacks). However, those drums that are unprotected without containment may have a medium potential to release to soil if they are accidently tipped, overfilled, or leak. Those containers that have a potential for release include: Motor Repair antifreeze containers, a National Guard open drum of oily dirt located outside, a Building 319 drum of soil, and a MRPC 55-gallon drum for collecting diesel fuel drips.

4.2 SWMU 2 - DIP TANKS
(Photos 1-26, 2-31, 3-6, 3-12, 3-23, and 4-17)

4.2.1 Information Summary

Unit Description: SWMU 2, dip tanks are located throughout the facility and primarily consist of three kinds, Safety-Kleen dip tanks, dip tanks that contain mineral spirits that are regenerated at MATES, and dip tanks that are emptied and disposed of by YTC. Safety-Kleen maintains and removes the spent solvent from their dip tanks. The other dip tanks used by MATES and the new National Guard Facility also use mineral spirits which is periodically distilled onsite at the MATES facility. Approximately two times per year a distillation unit is brought on site to distill the solvent. During the VSI it was noted that a number of the dip tanks were open but not actively being used. The following dip tanks were observed during the VSI.(6)

- 1 Safety-Kleen dip tank at the U.S. Army Reserve Center.(6)
- The MATES (1 observed) and new National Guard (2 observed) facilities have a combined total of 16 dip tanks that use mineral spirits. The spent mineral spirits are distilled onsite with a distillation unit that is obtained from the State. The distillation takes place in a covered area at MATES where a drum of soil was observed during the VSI.(6)
- 1 Safety-Kleen dip tank at the TMP Building 323.(6)
- There was one solvent dip tank in the TMP in Building 319 that is cleaned out by the shop personnel approximately every two years and the waste solvent is shipped off site.(6)

Dates of Operation: The dates these tanks came into use are variable. They were all present at the time of the VSI.(6)

Wastes Managed: Used mineral spirits in the Safety-Kleen tanks and MATES tanks.(6)

Release Controls: The dip tanks are located inside buildings on concrete floors.(6)

History of Releases: No releases were reported.(6)

4.2.2 Conclusions

There is a low potential for release of hazardous constituents to air, groundwater, soil, or surface water or to generate subsurface gas unless materials are spilled while the tanks are being used and there are cracks in the floors or other ways for the solvents to migrate.

4.3 SWMU 3 - 90 DAY ACCUMULATION AREA
(Photos 1-3, 1-4, and 1-5)

4.3.1 Information Summary

Unit Description: SWMU 3, the current 90 day accumulation area is located west of Building 810 in a graveled area surrounded by a chainlink fence. Hazardous wastes from throughout YTC are accumulated in 13 locking metal sheds equipped with trays to contain any spills located beneath the grates that support the containers. Wastes are segregated by waste type with different sheds having different waste types. At the time of the VSI there were a variety of wastes including TCA sodium azide potassium, dimathame, hydrochloric acid, ferrous ammonium, a combustible liquid, waste water with trisodium phosphate, and PFSS solvent degreaser. All of the containers had been stored less than 90 days. Container reports from 1994 and 1995 include the following wastes; ethylene glycol, debris, oily rags, fuel, used oil, non-PCB transformers, PCB transformer and ballast, zinc dust, paint, paint thinner, batteries, trichloroethylene, solvents, DS-2 decontaminating agent, and pesticides. The total number of containers for 1994 was 505 and as of July 1995 there were 345 containers. Most of the containers were fuel and oil related materials. Wastes from this location are shipped by contracts that are arranged by either Fort Lewis or YTC. Seldom are wastes shipped to Fort Lewis for processing. This unit started operating in the spring of 1994 and was operating at the time of the VSI.(6,7)

In a 1994 inspection, a photo of the 90 day storage area shows a fenced area with bare ground and a metal shed. The metal shed looks as though there may be a drip pan in the bottom. Methylene chloride was stored in the storage area at that time.(29)

Dates of Operation: The area became active in 1994 and was active at the time of the VSI.

Wastes Managed: All wastes generated throughout YTC. The wastes present at the time of the VSI included TCA sodium azide potassium, dimathame, hydrochloric acid, ferrous ammonium, waste fuel, waste water with trisodium phosphate, waste batteries, and PFSS solvent degreaser.(6,7)

Release Controls: The wastes are contained in locking metal sheds with trays to contain spills.(6,7)

History of Releases: None.(6,7)

4.3.2 Conclusions

Based on the containment there is a low potential for release of hazardous constituents to air, groundwater, soil, or surface water

or to generate subsurface gas. There may be a potential for releases to soil when the containers are being moved in and out of the storage sheds if they tip.

4.4 SWMU 4 - FORMER HAZARDOUS WASTE STORAGE AREA
(Photos 1-9 and 1-10)

4.4.1 Information Summary

Unit Description: SWMU 4, the former hazardous waste storage area, was located on asphalt and is delineated by yellow lines. The area is located north of the range management building number 816. According to YTC personnel, when the area was used there were portable berms and sand bags surrounding the area but no cover. Next to the pavement is a natural drainage that is bare soil with some vegetation (Photo 1-9). An inventory list from 1993 is summarized in Table 2 and included containers of fuel, pesticides, solvents, batteries, antifreeze, paint waste, paint thinner, rags, transformers, oily debris, waste MEK, hydrochloric acid, sodium hydroxide, and cleaning compound. There was a battery storage area, within the hazardous waste storage area. Spent lead batteries are stored on pallets. The acid was removed from the batteries and stored in plastic drums. Periodically a recycler picked up the batteries.(6,7,26)

The area has been used for hazardous waste storage since at least 1989 when it was paved. Batteries were stored at Range Control and the TMP prior to the area being paved.(6,7)

A 1993 inspection, describes the 90 day storage area as consisting of an impervious pad with an inflatable boom approximately eight inches high with a capacity of approximately 400 gallons. The same reports also states that the Army is purchasing a building for 90 day storage and will place the wastes in temporary containment/storage buildings. Four drums of waste were identified in the storage area that had exceeded the 90 day limit. They were to be shipped to Fort Lewis immediately.(28)

Dates of Operation: The start date is unknown. However, it was active prior to 1989 and was still active during a 1993 inspection. It was inactive at the time of the VSI.(6,28)

Wastes Managed: An inventory list from 1993 included containers of fuel, pesticides, solvents, batteries, antifreeze, paint waste, paint thinner, rags, transformers, oily debris, waste MEK, hydrochloric acid, sodium hydroxide, and cleaning compound.(7)

Release Controls: The area is lined with asphalt and there were reported to be portable berms and sand bags surrounding the area when it was in use. The area would drain into a natural drainage.(6,28)

History of Releases: There is no information indicating releases from this unit have occurred.

4.4.2 Conclusions

Currently there is a low potential for releases to air, surface water, groundwater, or soil, or to generate subsurface gas from SWMU 4. Historically, if there were any spills on the pavement they would have washed into the natural drainage resulting in a moderate potential for releases to soil.

4.5 SWMU 5 - FORMER PESTICIDE HANDLING AREA
(Photo 1-6 and 1-7)

4.5.1 Information Summary

Unit Description: SWMU 5 the former pesticide handling area was located in Building 815. The area was active from 1965 through 1990, when YTC lost their pest controller status. Herbicides and pesticides were stored in the storage building in separate rooms with cement floors. The building was marked with signs and there were showers and eye washes in the formulation area. Mixing was performed on an asphalt slab outside the building that did not have any curb. The applicator equipment was also rinsed here. After removing asbestos wall board and the pesticides from the building it burnt down in 1992. A concrete foundation with some stains was visible at the time of the VSI. The asphalt next to the foundation was cracked with patches missing.(5,6)

Pesticides and herbicides present in 1982 included KROVAR II, Roundup, Ureabor, Cytrol, Diquat, Casoron G-4, Casoron G-10, DMA, Tordon 10K, Diazinon, D-TOX 4E (Diazinon), Baygon 1,5 chenagro, Lindane 25% WP, Titan aerosol, Kilzone aerosol, Patrol aerosol, Squad aerosol, Swat aerosol, P.O.W. wasp spray, Diazinon 2% dust, Malathion 57%, Lindane 75%, Lindane 1.7E, Pivalyl bait, and Pivalyl 4% concentrate.(5)

Pesticides currently stored onsite at the Main Vehicle Wash Rack (SWMU 63) include: Rodeo (Glysophate), Tordon 22K (picloram), Oust, Krovar I DF, Trimec, Banvel, Arsenal, Treflan, Caseron (norsac), Surefire, Activator 90, and Roundup.(6)

Dates of Operation: Pesticides were handled in the area from 1966 to 1990, when YTC lost their pest controller status.(6,7)

Wastes Managed: Applicator equipment was rinsed after pesticide and herbicide applications. The types of pesticides and herbicides used are listed above.(6)

Release Controls: The area is paved. However, at the time of the VSI there were patches of concrete missing along with cracks.(6)

History of Releases: There is no record of any releases.

4.5.2 Conclusions

The historic integrity of the asphalt and concrete is unknown. However, if current conditions are indicative of the asphalt at the time of use there is a moderate potential for soil contamination. There is a low potential for releases to air, surface water, and groundwater or to generate subsurface gas.

4.6 SWMU 6 - FORMER TRANSFORMER STORAGE AREA
(Photo 1-11 and 1-12)

4.6.1 Information Summary

Unit Description: SWMU 6, the transformer storage area was located immediately north of SWMU 4, the former hazardous waste storage area (Photo 1-12). During a 1992 inspection, a yellow plastic overpack drum containing PCB wastes was observed. During the VSI, a gravel covered area with no additional containment was observed where new transformers were present (Photo 1-11). According to YTC personnel, one or two transformers were removed in January 1993 and all PCB containing transformers were removed in 1987. The area where the PCB transformers had been stored was a little to the south of the current transformer storage area near an area where the fill is eroding.(6,26)

Dates of Operation: The start date is unknown. However, waste PCBs were present during a 1992 inspection. There were transformers present at another location during the VSI. However, none were reported to contain PCBs.(6,26)

Wastes Managed: Waste PCBs.(26)

Release Controls: The area is gravel covered with no additional containment.(6)

History of Releases: There is no information indicating releases from this unit have occurred.

4.6.2 Conclusions

Currently there is a low potential for releases to air, surface water, groundwater, or soil or to generate subsurface gas from SWMU 6. Historically there may have been a moderate potential for releases to soil including natural drainage areas.

4.7 SWMU 7 - FORMER CONTAINERS NEXT TO FENCE (Photo 1-1)

4.7.1 Information Summary

Unit Description: SWMU 7 is located west of the range management building (810). During a 1992 inspection, containers were identified on both sides of a chain link fence. On the east side of the fence was a 55-gallon overpack drum that was unlabeled but contained two 5-gallon containers and several rags. The material was reported to be decontamination agent (DS-2), a corrosive. On the west side of the fence were one 55-gallon drum of waste motor oil, one partially full 1-gallon can of paint that contained 7.5% lead and was also flammable, and two 5-gallon containers, labelled "Engine Gas Path" (a cleaning compound), that were corroded and leaking. During the 1992 inspection, the two 5-gallon containers and contaminated soil were placed in plastic in a 55-gallon overpack drum.(26)

During the VSI, an area was identified by YTC personnel where investigation derived waste, soil and purge water, had been stored. The soil and purge water were sampled and determined to be non-hazardous. The soil was dumped and the purge water was disposed in the sanitary sewer. This area is believed to be close to the area where the drums were observed during the 1992 inspection.(6,7)

The area along the fence has historically been used as a storage area for material worth keeping such as barbed wire, re-useable timber, concrete, telephone poles, coal, wood chips etc. Currently it is a fenced area.(6,7,26)

Dates of Operation: The start date is unknown. However, waste was present during a 1992 inspection. YTC believes all the drums were removed in 1993.(6,26)

Wastes Managed: Waste motor oil, lead based paint, and cleaning compound were identified during the 1992 inspection. Soil and purge water from sampling was also stored in the area.(6,7,26)

Release Controls: At least part of the drums would have been located directly on soil.(26)

History of Releases: During the 1992 inspection contaminated soil was identified and was removed.(26)

4.7.2 Conclusions

There is a low potential for releases to air, surface water, groundwater, or to generate subsurface gas from SWMU 7. There is a high potential for releases to soil and along natural drainage areas based on past spills.

4.8 SWMU 8 - CONTAMINATED SOIL NORTH OF BUILDING 810 (Photo 1-13)

4.8.1 Information Summary

Unit Description: SWMU 8, is a gravel covered area where drums and four 3 to 10 yard drop boxes containing contaminated soil are stored. YTC began using the area in November 1994 after a vehicle shed was removed. During the VSI it was observed that there were some drums that contained soil but did not have lids. The soil is contaminated with petroleum products and comes from throughout YTC. Some of it was diesel contaminated and came from MATES. YTC works with the Yakima County Health District for permits to dispose of the soil. YTC tests and disposes of the soil at Ron Anderson Rock and Demolition.(6,7)

Dates of Operation: YTC began storing wastes at this location in November of 1994 and was still using the area at the time of the VSI.(6,7)

Wastes Managed: Contaminated soil.(6,7)

Release Controls: Containers are stored on pallets or directly on the gravel covered ground.(6)

History of Releases: None reported.(6)

4.8.2 Conclusions

Based on the containment and materials present there is a low potential for release of hazardous constituents to air, groundwater, or surface water or to generate subsurface gas. Since some of the containers appear to have been stored without lids for a period of time and there is no other containment there is a moderate potential for releases to the soil

4.9 SWMU 9 - 810 BAGHOUSE

(No Photo)

4.9.1 Information Summary

Unit Description: SWMU 9, is a baghouse located at Building 810. It is used to collect sawdust generated in the carpenter shop in Building 810.(6,7)

Dates of Operation: The baghouse was installed in 1990 and was present at the time of the VSI.(6,7)

Wastes Managed: Sawdust.(6)

Release Controls: The baghouse is a release control for sawdust emissions.(6)

History of Releases: None known.(6)

4.9.2 Conclusions

Based on the only waste being sawdust there is a low potential for release of hazardous constituents to air, groundwater, soil, or surface water or to generate subsurface gas.

4.10 SWMUs 10 and 11 - FORMER PAINT BOOTHS
(No Photo)

4.10.1 Information Summary

Unit Description: SWMUs 10 and 11, two former paint booths were in Building 810 and Building 951. The paint booth in Building 810 operated on a limited basis from 1950 to 1989. The paint booth was not used and was continually being upgraded to meet new regulations so YTC decided to remove it. The Building 810 paint booth was tested for lead based paint and was determined to be clean. The paint booth in Building 951 used furnace filters and a fan to control paint overspray. It was also removed because it did not use current technology. Neither paint booth was present at the time of the VSI.(6,7)

Dates of Operation: The paint booth in Building 810 operated from 1950 to 1989. The paint booth in Building 951 operated from 1974 to 1991.(6,7)

Wastes Managed: Overspray from paint was collected on furnace filters.(6)

Release Controls: The paint booth served as a release control for the paint overspray.(6)

History of Releases: None.(6)

4.10.2 Conclusions

Since the paint booths no longer exist and since past activities (and wastes) were contained inside buildings there is a low potential for releases of hazardous constituents to air, groundwater, soil, or surface water or to generate subsurface gas.

4.11 SWMUs 12 THROUGH 14 - MEDICAL AND DENTAL CLINIC SILVER RECOVERY/X-RAY SOLUTIONS (Photos 1-19, 1-20, and 1-21)

4.11.1 Information Summary

Unit Description: The medical clinic and the dental clinic both located on the facility, generate spent X-ray solutions and solutions from silver recovery operation. The medical clinic has a silver recovery machine (SWMU 12, Photo 1-19). The silver and effluent from the silver recovery machine (spent developer/fixer) that is stored in a plastic container (SWMU 1) immediately outside the clinic door (Photo 1-20) are sent to Fort Lewis for recycling and disposal, respectively. Previously the effluent from the silver recovery was discharged to the sewage treatment plant. Currently, YTC is in the process of testing the effluent for waste determination. The highest silver concentration detected in the samples that have been analyzed at the time of this report was 460 µg/l. The results were not available for the additional samples.(6,7)

The dental clinic only operates approximately four time per year. Currently, X-rays are developed in a developing machine (SWMU 13) that has its own catch tanks. These are emptied about once a year and the spent solution is sent to Fort Lewis. The dental clinic had a machine (SWMU 14) with silver recovery that has not been functional for approximately one year (Photo 1-21 shows both machines).(6)

Dates of Operation: The start dates for the silver recovery machine in the medical clinic and former X-ray developing machine in the dental clinic are unknown. The current X-ray developing machine in the dental clinic has been in operation for approximately one year. The former X-ray developing machine in the dental clinic ceased to operate approximately one year ago. All of the machines were present at the time of the VSI.(6)

Wastes Managed: Spent developer and fixer from x-ray development and silver from the silver recovery machine are the wastes.(6)

Release Controls: The waste solutions are contained in the silver recovery machine and the current and former x-ray developing machines in the dental clinic. The silver recovery effluent is stored in a plastic 55-gallon drum on concrete under cover.(6)

History of Releases: There is no record of any releases.

4.11.2 Conclusions

Currently, there is a low potential for releases to soil, surface water, groundwater, and air and to generate subsurface gas. Historically, when solutions were discharged to the sewage

treatment plant there may have been releases to surface water if the treatment process had not removed all of the contaminants.

4.12 SWMU 15 - FORMER ARMY RESERVE STODDARD SOLVENT WASH TANK
(No Photo)

4.12.1 Information Summary

Unit Description: This SWMU consisted of a dip tank which contained approximately 20 gallons of Stoddard solvent. It was located in the Army Reserve Area during the 1991 Preliminary Assessment. This type of dip tank is no longer used at the facility and was replaced by Safety-Kleen dip tanks (SWMU 2) after 1991.(4,6)

Dates of Operation: The start date is unknown. However, the unit was present and contained Stoddard Solvent during the 1991 Preliminary Assessment. The unit was not present at the time of the VSI.(4,6)

Wastes Managed: Stoddard solvent from cleaning parts.(4)

Release Controls: Unknown.

History of Releases: There is no information indicating releases from this unit have occurred.

4.12.2 Conclusions

Based on the dip tank being located inside a building, the potential for releases to air, surface water, groundwater, or soil or to generate subsurface gas are low.

4.13 SWMU 16 - MARINE RESERVE POL STORAGE BUILDING (Photos 1-36 and 2-1)

4.13.1 Information Summary

Unit Description: The POL storage building is located near Building 851. The building, constructed in 1989, has a bermed concrete floor with aluminum siding and a vented roof. In addition to some hazardous waste, all hazardous materials at the Marine Reserve Center are stored in this unit (with the exception of diesel fuel).(4,6)

An above-ground storage tank located inside the POL storage building in concrete containment with a berm, is used to store waste oil. The tank has a capacity of over 300 gallons. Formerly the waste oil tank was maintained and cleaned at the "tank rack". Water from the rack is discharged through an oil/water separator (SWMU 64) to a drain field.(4,6,7)

In addition to the waste oil stored in the tank, other wastes that may be stored in the building include residual lubricants, hydraulic fluid, Stoddard solvent, and parts cleaner solvents.(4)

Dates of Operation: The start date is unknown. However, the unit was active at the time of the 1991 Preliminary Assessment and the VSI.(4,6)

Wastes Managed: Waste lubricants, hydraulic fluid, waste oil Stoddard solvent, and solvents from parts cleaners.(4)

Release Controls: The building is enclosed and has a concrete floor with a berm. The concrete is in good condition. However, there were seams in the floor.(4,6)

History of Releases: There is no information indicating releases from this unit have occurred.

4.13.2 Conclusions

Since the wastes are contained, there is a low potential for releases to groundwater, soil, air, and surface water or to generate subsurface gas. However, if there were ever any major spills the seams in the concrete could allow minor amounts of contaminants to reach the soil resulting in a moderate potential for releases.

4.14 SWMU 17 - MAIN MOTOR POOL FORMER WASTE BATTERY ACID CONTAINER (Photo 4-12)

4.14.1 Information Summary

Unit Description: SWMU 17, a waste battery container was a 15-gallon container used to store battery acid at the Main Motor Pool Area. The container took approximately two years to be filled. When the container was full disposal was handled by Fort Lewis Defense Reutilization Marketing Office. This container was located in the battery room, which is no longer in use. Wipe tests were collected in March 1995 and contained lead ranging from 53 $\mu g/ft^3$ to 480 $\mu g/ft^3$. The area was cleaned and sampled again on May 26, 1995. One of three samples contained 200 $\mu g/ft^3$ of lead which is the action level The area is to be cleaned again and resampled. (4,6,7)

Dates of Operation: The start date is unknown. However, the unit was active at the time of the 1991 Preliminary Assessment and was inactive at the time of the VSI. (4,6)

Wastes Managed: Waste battery acid. (4)

Release Controls: The battery acid was located inside an enclosed room. (6)

History of Releases: There is no indication releases from this unit have occurred.

4.14.2 Conclusions

Since the unit is out of service and was historically located inside a building, there is a low potential for releases to air, surface water, groundwater, or soil. The potential to generate subsurface gas is low based on the materials that were present.

4.15 SWMU 18 - MATES BATTERY ROOM
(Photo 2-30)

4.15.1 Information Summary

Unit Description: The MATES Battery Room has a drain which was identified as a sump during a 1992 inspection. The shop sump was reported to have been pumped out by Valley Septic and the contents disposed somewhere at YTC. The contents were reported to have been analyzed by the Army and designated as non-hazardous. There is no analytical data in the file to confirm this. Waste acid from batteries has in the past and is currently stored in this room. The drain was observed during the VSI. YTC could not determine where the drain goes and they plan on capping it and installing secondary containment. The floor is also to be coated with epoxy.(6,7,27)

Dates of Operation: The start date is unknown. However, the sump was active at the time of the 1992 Inspection. The room was being used for waste storage during the VSI.(6,27)

Wastes Managed: Waste battery acid.(6)

Release Controls: The room functions as the containment. There is a drain in the floor that discharges to an unknown location.(6)

History of Releases: There is no information indicating releases from this unit have occurred.

4.15.2 Conclusions

There is a low potential for releases of hazardous substances to air or to generate subsurface gas from SWMU 18. The potential for releases to surface water, groundwater and soil are unknown since it is unknown where the drain discharges.

4.16 SWMU 19 - MATES HAZARDOUS WASTE STORAGE AREA (Photo 2-23)

4.16.1 Information Summary

Unit Description: The MATES hazardous waste storage area is a 90 day accumulation area that was constructed in 1986. It has a roof and a concrete floor with a 3-inch berm. The sides are covered with canvas. The area was fenced approximately one year ago. At the time of the VSI there were two boxes of batteries being stored in the unit. It has been used to store waste solvent, waste antifreeze, and waste battery acid in the original containers. At the time of the Preliminary Assessment is was common for there to be approximately six 30-gallon drums of solvent. According to the Preliminary Assessment Report, Safety-Kleen picked up the waste solvent and supplied product solvent. Approximately, 1,000 gallons of waste solvent were generated each year. Waste antifreeze was handled by YTC personnel and approximately 2,000 pounds of waste battery acid was processed through Fort Lewis DRMO each year. The Preliminary Assessment Report also states that "The Washington National Guard Office, Camp Murray, manages disposal of hazardous wastes generated at MATES." Currently, Camp Murray handles most waste disposal, with YTC occasionally arranging for disposal.(4)

A 1992 inspection, describes a waste storage shed that is approximately 10 feet square with a bermed impervious concrete floor. During the inspection two unlabelled unsecured drums of waste antifreeze were observed outside of the shed with no secondary containment. MATES personnel stated that waste antifreeze was sometimes stored for up to a year before it was disposed.(27)

The MATES former hazardous waste storage area, that was used until the new storage area was constructed in 1986 was located directly under the current storage area along the fence line and had no containment. It was used to store waste solvent, waste antifreeze, and waste battery acid in their original containers.(4)

Dates of Operation: The start date is unknown. However, MATES moved to its current location in 1975 or 1976. The current storage containment was constructed in 1986 and was active at the time of the VSI.(4,6,7)

Wastes Managed: Waste batteries, solvents, antifreeze, and battery acid.(4,6)

Release Controls: The solvent is stored in drums and other original containers. The storage area has a roof, a concrete floor, and a berm. The batteries were stored in boxes. Prior to 1986 no additional containment beyond the containers was provided.(4,6)

History of Releases: There is no information indicating releases from this unit have occurred.

4.16.2 Conclusions

Since the wastes are in containers within containment, currently, there is a low potential for releases to air, surface water, groundwater, soil, or to generate subsurface gas. However, historically the potential for releases to the soil is moderate since if there were any spills they would have been directly to the soil.

4.17 SWMU 20 - MATES WASTE OIL TANK
(Photos 2-28)

4.17.1 Information Summary

Unit Description: SWMU 20, the waste oil tank at MATES is a 400 gallon above-ground storage tank that is covered and sits on a concrete pad. The tank has a drain that collects spills or any overflow and routes it to the oil/water separator (SWMU 69). At the time of the VSI there were two associated drums of waste fuel ready to be added to the tank. Diesel and FRH a synthetic fuel are also disposed with the waste oil. Basin Oil removes and disposes of the oil.(6,7)

Dates of Operation: The tank was installed on May 10, 1995 and was in use at the time of the VSI.(6,7)

Wastes Managed: Used oil with diesel and FRH drained from vehicles are collected and stored in the tank.(6,7)

Release Controls: The tank sits on concrete and has a drain that connects to the oil/water separator. However, there is no berm or other containment surrounding the tank.(6,7)

History of Releases: No releases were reported.(6,7)

4.17.2 Conclusions

There is a low potential for release of hazardous constituents to air, groundwater, soil, or surface water or to generate subsurface gas unless large quantities of materials are spilled while the tank is being used.

4.18 SWMU 21 - MATES OIL FILTER PRESS
(Photos 2-33)

4.18.1 Information Summary

Unit Description: This SWMU consists of an oil filter press that is located outside under cover on concrete with cracks. During the VSI there was a drum under the filter to collect the waste oil and one beside the press for pressed waste filters.(6)

Dates of Operation: The oil filter press was installed in 1993 and was in operation at the time of the VSI.(6,7)

Wastes Managed: Used oil and filters are both collected in 55-gallon drums.(6)

Release Controls: The filter press located outside under a roof sits on concrete that is cracked.(6)

History of Releases: No releases were reported.(6)

4.18.2 Conclusions

There is a low potential for release of hazardous constituents to air, groundwater, soil, or surface water or to generate subsurface gas.

4.19 SWMU 22 - FORMER PCS STOCKPILE AREA
(Photo 2-12)

4.19.1 Information Summary

Unit Description: The former PCS stockpile area was located inside the fenced area of POL-2. The petroleum contaminated soil that was stockpiled in this area was generated from various military training activities and spills. The area was used for about 1.5 years starting in 1992. The soil was removed in late 1993. The area had contained 564 yards of soil, which was relocated to SWMU 52, another stockpile area. The stockpile was not lined, bermed, or covered. The area was not sampled nor was an effort made to remove soil that was obviously contaminated. There had been a fuel spill that had contaminated all or part of the area.(6,7)

Dates of Operation: The stockpile was present in 1992 and 1993.(7)

Wastes Managed: Petroleum contaminated soil.(7)

Release Controls: There was no liner resulting in the underlying soils being impacted.(7)

History of Releases: There was obvious soil contamination when the stockpile was removed. This contamination has not been removed.(7)

4.19.2 Conclusions

There is a high potential for release of hazardous constituents to soil. Since there is no containment and known surface soil contamination there is a moderate potential for releases to air. Based on the location and materials present there is a low potential for releases to surface water or to generate subsurface gas. The potential for releases to groundwater is moderate based on releases to soil.

4.20 SWMU 23 - NATIONAL GUARD BATTERY ROOM
(Photos 3-7)

4.20.1 Information Summary

Unit Description: This SWMU consists of an enclosed room used for the storage of batteries. Batteries are currently stored on secondary containment. The floor is equipped with a blind sump. However, there is a drain in the corner next to an emergency shower. The facility is new and the National Guard plans on sealing the floor and installing shelves to store the batteries. During the VSI, YTC environmental personnel requested that the drain be sealed. A spill pallet was observed in the room that had used batteries and waste acid.(6)

Dates of Operation: The facility had just opened a few days before the VSI.(6)

Wastes Managed: Used batteries and waste acid.(6)

Release Controls: The battery room is enclosed with a blind sump. However, there is also a drain in the room.(6)

History of Releases: No releases were reported.(6)

4.20.2 Conclusions

There is a low potential for release of hazardous constituents to air, groundwater, soil, or surface water or to generate subsurface gas unless materials are spilled before the drain is sealed.

4.21 SWMU 24 - NATIONAL GUARD UNDERGROUND WASTE OIL TANK (Photos 3-9, 3-10, and 3-13)

4.21.1 Information Summary

Unit Description: The waste oil tank at the National Guard facility is an underground single-walled 10 gauge steel tank with zinc anodes. The 300-gallon tank receives oil directly from a lube pit, an oil filter crusher, an oil drain, and an oil/water separator (SWMU 71).(6,7)

Dates of Operation: Since the National Guard facility opened a few days before the VSI, the tank became active in June of 1995.(6,7)

Wastes Managed: Used oil is collected in the tank.(6,7)

Release Controls: The tank is a steel underground storage tank with zinc anodes.(6,7)

History of Releases: No releases were reported.(6,7)

4.21.2 Conclusions

There is a low potential for release of hazardous constituents to air, groundwater, soil, or surface water or to generate subsurface gas.

4.22 SWMU 25 - OLD PETROLEUM, OIL, AND LUBRICANT YARD (Photos 5-8 through 5-11)

4.22.1 Information Summary

Unit Description: SWMU 25, the old petroleum, oil, and lubricant yard was used to store waste antifreeze in drums. The yard was located at the end of 5th Avenue and D Street in the GSA yard. When a sufficient quantity accumulated to fill a 55-gallon drum, waste antifreeze was shipped to Fort Lewis DRMO for disposal.(4)

At the time of the VSI the yard was mostly empty. According to Larry Fein, the area was not a yard as such, but had a pit with drums of oil and lubricant. The current fence on the east was added later. The area is not used much any more. However, there was one drum that contained greasy rags. There were also four empty drums and one that contained water. The drums were removed on June 19, 1995 following the VSI.(6,7)

This area was also the former fueling area called POL 1. There were three 12,000 gallon underground fuel tanks, two contained gasoline and one 12,000 contained diesel. Since these tanks were removed in 1987 before the underground storage tank regulations came into effect, there is no documentation of whether contaminated soil exists or not. These tanks were installed in 1951.(6,7)

Dates of Operation: The start date is unknown. However, prior to 1989 it was common practice to dump waste antifreeze in a former waste oil UST (SWMU 35). Antifreeze was being stored at the old petroleum, oil, and lubricant yard at the time of the 1991 Preliminary Assessment. The yard was not being used for antifreeze, oil, or lubricant storage during the VSI.(4,6)

Wastes Managed: Waste antifreeze was stored in the yard. Historically, fueling operations occurred here.(4,6,7)

Release Controls: None.(6)

History of Releases: There is no information indicating releases from this unit have occurred.

4.22.2 Conclusions

Currently the potential for releases to air and surface water or to generate subsurface gases is low. Since the area was used for fueling operations and there is no analytical data to indicate that all contaminated soil from fueling was removed, there is an unknown potential for releases to soil and groundwater. Historically, there was a high potential for releases to soil based on contaminated soil.

4.23 SWMU 26 - AMMUNITION STORAGE POINT
(No Photo)

4.23.1 Information Summary

Unit Description: The ammunition storage point (ASP) consists of ten "igloos," a warehouse and a storage yard. It is located 3,000 feet southeast of the Cantonment Area. The area is restricted, fenced, and monitored by security. No photographs of the area are allowed.(2,4,6)

Brass casings from spent munitions are recovered from the firing ranges and stored in empty 55-gallon drums at the ASP until they are recycled. Prior to 1991, when the drums arrived at the ASP they contained hazardous residuals which included solvents, fuels, and oils. These residuals were dumped on the ground in the southwest corner of the storage yard at the bottom of the slope outside a doorway to the main building. This area is approximately 40 by 50 feet and is comprised of heavily stained, compacted gravelly sandy soil. Currently clean drums are obtained from Ft. Lewis. Holes may be drilled in the bottoms of the drums to allow water to drain out. In the past drums from YTC that contained residues were dumped at the central vehicle wash rack (SWMU 62) prior to being used for storage of brass casings.(2,4,6,7)

The surface soil samples collected at the ammunition storage point during the 1993 Site Inspection contained cadmium, lead, zinc, butyl benzyl phthalate, and TPH as diesel. The subsurface samples contained beryllium and TPH as diesel.(2)

Dates of Operation: The start date is unknown. However, the unit was active at the time of the 1991 Preliminary Assessment and at the time of the VSI.(4)

Wastes Managed: Brass casings from munitions are currently managed. Solvents, fuel, and oil residuals were managed in the past. Soil samples indicated cadmium, lead, zinc, butyl benzyl phthalate, and TPH as diesel are present.(2,4)

Release Controls: None. Residues were dumped directly on the soil.(2,4)

History of Releases: Soil samples indicated cadmium, lead, zinc, butyl benzyl phthalate, and TPH as diesel are present.(2,4)

4.23.2 Conclusions

There is a low potential for releases to air, surface water, or to generate subsurface gas. The potential for releases to soil is high based on the soil samples. The potential for releases to groundwater is low to moderate based on the releases to the soil.

4.24 SWMU 27 - FORMER AMMUNITION STORAGE POINT BURN PITS (Photo 3-3)

4.24.1 Information Summary

Unit Description: This SWMU consists of two former burn pits located approximately 400 yards northeast of the Ammunition Storage Point office within the temporary ammunition storage area. The pits were approximately 30 feet by 150 feet and were used for burning ammunition packaging materials including wood products reportably treated with pentachlorophenol. The area was used until 1985. Currently, the area is covered. However, during the VSI metal strapping, wood, and cardboard were visible.(4,6,7)

Dates of Operation: The date the burn pits began being used is unknown. However, they were in operation until 1985 when operations ceased.(4,7)

Wastes Managed: Wastes were primarily ammunition packaging materials including wood that was reportedly treated with pentachlorophenol.(4,6,7)

Release Controls: There are no known release controls. The pits were unlined.(4,6)

History of Releases: There is no information indicating that releases have occurred.

4.24.2 Conclusions

Since the pits are covered with soil and the only visible materials are metal bands, wood, and cardboard the potential for releases to air and surface water is low. The potential to generate subsurface gas is low based on the types of wastes disposed in SWMU 27. The potential for releases to soil is moderate. The potential for releases to groundwater is low to moderate based on the potential for soil releases.

4.25 SWMUs 28 AND 29 - WIRE STORAGE AREAS
(Photos 3-4 and 3-5)

4.25.1 Information Summary

Unit Description: SWMUs 28 and 29, the old and new wire storage areas are located approximately 1,000 and 1,500 feet west of Range Control, respectively. Both areas are bare soil enclosed by a fence and are used to store scrap metal, wood, and 55-gallon drums.(3)

SWMU 28, the old area is not considered to be active. However, wire pallets, and five empty 55-gallon drums that were welded together to form markers were present at the time of the VSI. According to a 1993 report, in the past, the area was used extensively for storage of drums reported to contain solvents, fuels, and lubricants. During the VSI, Larry Fein of YTC stated that empty drums were possibly stored to make the markers like those viewed during the VSI. Currently the area is being overgrown by weeds and grass.(3,6,7)

SWMU 29, the new area is currently active. In July of 1992, there were approximately 150 to 200 empty or mostly empty 55-gallon drums of solvents, fuels, and lubricants that were in poor condition stored on the bare ground. Larry Fein of YTC was not aware of drums of hazardous waste being stored in this area. At the time of the VSI there was one drum containing kerosene present.(3,6,7)

Dates of Operation: The start dates are unknown. However, the new wire storage area was active as of 1992 and the VSI.(3,6)

Wastes Managed: Scrap metal, spent ordnance, 55-gallon drums that are apparently mostly empty but some reportedly contained solvents, fuels, and lubricants.(3,6)

Release Controls: None

History of Releases: There is no information indicating releases from this unit have occurred.

4.25.2 Conclusions

Assuming no large quantities of hazardous materials were spilled there is a low potential for releases to air, surface water, and groundwater or to generate subsurface gas from SWMUs 28 and 29. Any spilled materials would be released to the soil. If there were drums present in poor condition with hazardous material, there is moderate potential for soil contamination.

4.26 SWMU 30 - RANGE CONTROL BATTERY ROOM
(Photo 4-32)

4.26.1 Information Summary

Unit Description: This unit is located at the range control facility which is approximately five miles east of the Cantonment Area. Electric-powered targets are maintained at this location. Currently, gel-cells are the only batteries used down range and stored at range control. Approximately five years ago was the last time that batteries containing liquid were used. At that time waste battery acid was stored in a 20-gallon drum. The drum was shipped to Fort Lewis DRMO for disposal.(4,6,7)

Dates of Operation: The start date is unknown. However, the unit was active at the time of the 1991 Preliminary Assessment and at the time of the VSI.(4,6)

Wastes Managed: Formerly waste battery acid was stored. Currently waste gel-cell batteries are stored.(4,6)

Release Controls: The batteries are stored inside a building with a concrete floor.(6)

History of Releases: There is no information indicating releases from this unit have occurred.

4.26.2 Conclusions

Based on the types of materials being stored and the containment within the building there is a low potential for releases to air, surface water, groundwater, or soil or to generate subsurface gas.

4.27 SWMU 31 - MRPC DRAIN FIELD
(Photos 4-22 and 4-23)

4.27.1 Information Summary

Unit Description: This unit is located behind the MRPC buildings and receives sewage from MRPC including the shops via a septic tank. MRPC is not connected to any other sewer system.(6,7)

Dates of Operation: The start date is unknown however it was active at the time of the VSI.(6,7)

Wastes Managed: The drain field has received sewage from MRPC. It is unknown if any other wastes from the shops have been disposed here.(6)

Release Controls: The drain field is the final disposal location for sewage.(6,7)

History of Releases: There is no indication there have been releases from this unit.

4.27.2 Conclusions

There is a low potential for releases of hazardous substances to air or surface water or to generate subsurface gas. The potential for releases to soil and groundwater are unknown, since it is unknown exactly what materials have been disposed in the drain field.

4.28 SWMU 32 - MRPC COLLECTION DRUM
(No Photo)

4.28.1 Information Summary

Unit Description: SWMU 32 is the MRPC target shop collection drum that is buried behind the target shop and is connected to the drains. This drum collects material from the floor drains and is periodically pumped out. In a memo dated June 15, 1995, personnel at MRPC were directed to cease placing any wastes in the drum. It was also noted that the drum would be sampled.(6,7)

Dates of Operation: The start date is unknown. However, it was active at the time of the VSI.(6,7)

Wastes Managed: Wastes from the target shop drains.(6,7)

Release Controls: The drum is the collection point for wastes from the target shop and has no additional containment.(6,7)

History of Releases: There is no information indicating releases from this unit has occurred.

4.28.2 Conclusions

There is a low potential for releases of hazardous substances to air and surface water or to generate subsurface gas. There is an unknown potential for releases to groundwater and soil since the exact wastes accumulated in the drum and the integrity of the drum is unknown.

4.29 SWMU 33 - MRPC WASTE OIL TANK
(Photo 4-27)

4.29.1 Information Summary

Unit Description: This unit consists of an above-ground waste oil tank that is located over soil behind a storage shed at the MRPC. According YTC personnel the tank is being phased out.(6,7)

Dates of Operation: The date the tank came into use is unknown. However, it was active at the time of the VSI. A June 15, 1995 memorandum states that the tank is to be sampled and no additional materials should be added.(6,7)

Wastes Managed: Used oil is collected in the tank.(6,7)

Release Controls: The tank is a steel above-ground storage tank. No secondary containment exists beneath the tank.(6,7)

History of Releases: No releases were reported.(6,7)

4.29.2 Conclusions

There is a low potential for release of hazardous constituents to air, groundwater, or surface water or to generate subsurface gas. The potential for materials to spill while the tank is being used makes the potential for releases to soil low to moderate.

4.30 SWMU 34 - WASTE OIL TANKS

(Photos 1-7, 1-8, 1-33, 1-36, 2-1, 2-9, 2-35, 3-24, 4-1, 4-3, and 4-33)

4.30.1 Information Summary

Unit Description: This SWMU consists of a number of 465-gallon rectangular metal tanks, designed to be portable, that are used to store waste oil. These tanks are located throughout YTC wherever waste oil is generated. Most are located in concrete or asphalt and at least five are located on bare soil. Only one tank located inside a building has secondary containment. The following tanks were observed at the time of the VSI;

- 5 empty tanks outside Building 810 (Photos 1-7 and 1-8)
- 2 tanks in use outside Building 810 (Photos 1-7 and 1-8)
- 1 tank at the U.S. Army Reserve Center (Photo 1-33)
- 1 tank at the U.S. Marine Corps Reserve that has secondary containment in SWMU 16 (Photo 1-36 and 2-1)
- 1 empty tank in the POL area that was pumped out a year ago and is to be removed (Photo 2-9)
- 2 tanks in the Motor Repair Area (Photo 2-35)
- 1 tank was located at YRC (No Photo)
- 1 tank at the TMP Building 319 (Photo 4-3)
- 1 tank at the TMP Building 323 (Photo 3-24)
- 1 tank at the 124th EEP (Photo 4-1)
- 2 tanks at Range Control (Photo 4-33)(6)

Dates of Operation: YTC began using these tanks in about 1992 and they were present at the time of the VSI.(6,7)

Wastes Managed: Waste oil.(6)

Release Controls: The tanks do not have any additional release controls unless they are placed in containment as one of them is. Some are directly placed on bare soil.(6)

History of Releases: No releases were reported.(6)

4.30.2 Conclusions

There is a low potential for release of hazardous constituents to air, groundwater, or surface water or to generate subsurface gas. The potential for materials to spill while being transferred in or out of the tanks makes the potential for releases to soil low to moderate.

4.31 SWMUs 35 THROUGH 50 - FORMER WASTE OIL UNDERGROUND STORAGE TANKS (Photos 2-26 and 3-25)

4.31.1 Information Summary

Unit Description: SWMUs 35 through 50, the former waste oil underground storage tanks (USTs) were used to store waste oil, spent solvent, and lubricants. Prior to 1989, waste antifreeze was dumped into the main motor pool UST (SWMU 35). The waste oil was periodically picked up by a contractor for disposal. The waste oil tanks are summarized in Table 4.(4)

All the tanks have been removed along with any contaminated soil except for SWMUs 43 and 44. SWMUs 43 and 44 were removed in 1991 and contaminated soil associated with them is still present.(47,48,49)

Wastes Managed: Waste oil, solvent, lubricants, and antifreeze were managed in some tanks.(4)

Release Controls: Unknown.

History of Releases: There is contaminated soil remaining from SWMUs 43 and 44.(49)

4.31.2 Conclusions

The potential for releases is low to air, surface water, groundwater, soil, or to generate subsurface gas from all SWMUs except SWMUs 43 and 44. There is documented soil contamination at SWMUs 43 and 44 indicating a high potential for release to soil. This also indicates there is a moderate potential for release to groundwater at SWMUs 43 and 44.

Table 4
SUMMARY OF WASTE OIL UNDERGROUND STORAGE TANKS

SWMU	Location	Size (gal)	Contents	Dates
35	Main Motor Pool Bldg. 319	250+	Waste Oil, spent solvent, waste and lubricants, and antifreeze Samples below MTCA levels	1980 - 1991
36	Bldg 319	250	Waste Oil, spent solvent, waste and lubricants, and antifreeze Samples below MTCA levels	Unknown - 1991
37	Bldg 319	250	Waste Oil, spent solvent, waste and lubricants, and antifreeze Samples below MTCA levels	Unknown - 1991
38	Bldg 323-1	250+	Waste Oil Samples below MTCA levels	1980 - 1991
39	Bldg 323-2	250+	Waste Oil Samples below MTCA levels	1980 - 1991
40	Bldg 323-3	250+	Waste Oil Samples below MTCA levels	1980 - 1991
41	Bldg 339	250+	Waste Oil Samples below MTCA levels	1980 - 1991
42	Bldg 845-2 #9 Pegasus	250+	Waste Oil Samples below MTCA levels	1975 - 1991
43	Bldg 845-3 #10 Pegasus	250+	Waste Oil Contamination remaining under adjacent building	1975 - 1991
44	Bldg 845-4 #11 Pegasus	250+	Waste Oil Contamination remaining under adjacent building	1975 - 1991
45	Bldg 845-5 #12 Pegasus	250+	Waste Oil Samples below MTCA levels	1975 - 1991
46	Bldg 845 #14 Pegasus	650	Waste Oil Samples below MTCA levels	1980 - 1991
47	Bldg 806/805	300	Waste Oil Samples below MTCA levels	1984-1991
48	Washington Army National Guard - MATES Bldg 951-4	2,000	Waste Oil and lubricants samples below MTCA levels	1968-1995
49	Bldg 970-1	850	Waste Oil from oil skimmer samples below MTCA levels	1985 - 1994
50	Bldg 970-2	1,350	Waste Oil from oil skimmer samples below MTCA levels	1985 - 1994

(References: 6,48,49,50)

4.32 SWMU 51 - ACTIVE LANDFILL
(Photo 5-4)

4.32.1 Information Summary

Unit Description: SWMU 51 is an active landfill that covers approximately 5 acres and is 15 to 20 feet deep. The landfill is located approximately 1.9 miles southeast of the Cantonment Area. Since April 1994, only demolition debris, including dirt from the main vehicle wash rack (SWMU 62), has been disposed in the one open cell of the landfill. Prior to April 1994, when the landfill was receiving municipal wastes, approximately 5,700 cubic yards of waste per year were disposed in the landfill with a volume of approximately 73,000 cubic yards of wastes disposed between 1969 and 1991. In addition to the waste generated by field training and cantonment activities, sewage sludge, oil and fuel contaminated soils, and munitions packaging material were deposited.(2,4,6,51,52)

The landfill was reported to catch fire three or four times per year. The fires were attributed to unauthorized material, including ammunition and pyrotechnics being placed in the landfill. Asbestos was also reported to have been deposited in the landfill. Between 1988 and 1990, four monitoring wells were installed around the landfill. Up to 52 μg/l of lead have been detected in MW-1, which is 119 feet deep. This well is the only well downgradient of the landfill that has been sampled.(2)

Even though the landfill had four monitoring wells surrounding it, three of the four were dry and were not sampled during 1993 site inspection activities. The one monitoring well (MW-4) that was sampled contained arsenic (9.4 mg/l), barium (340 mg/l), cadmium (7.2 mg/l), chromium (110 mg/l),copper (62.41 mg/l),lead (56 mg/l), manganese (1,200 mg/l) and zinc(1,400 mg/l) above background concentrations.(2)

During an inspection on August 7, 1992, the inspectors observed that materials being placed in the landfill were not being screened satisfactorily. This was confirmed by reports that on several occasions equipment operators had run over cylinders of unknown gas. The gas had irritated the eyes and noses of persons nearby.(53)

By October 1994 all of the cells used for municipal wastes were covered. Those cells covered prior to 1994 were capped with ten inches of topsoil, a 24 inch barrier layer with a permeability of 10^{-5} cm/sec, and a 12 inch minimum subgrade. The cells covered in 1994 were covered with six inches of topsoil, 18 inches of backfill, and an 8-inch barrier layer with a permeability of 10^{-6} cm/sec. The final cover is sloped from two percent to 33 percent, with ditches to divert runoff around the landfill. Currently, the

landfill is permitted as an active Demolition Waste Landfill by the Yakima County Health Department.(6,7)

Dates of Operation: The landfill received municipal wastes from 1974 to 1994. At the time of the VSI, only demolition debris and dirt from the main vehicle wash rack were being disposed there.(2,6,7)

Wastes Managed: Historically wastes disposed included municipal type wastes from field training and the Cantonment Area, sewage sludge, oil and fuel contaminated soils, and munitions packaging materials. Also disposed were unauthorized materials including ammunition, pyrotechnics, and asbestos. Currently the landfill receives concrete, wood, asphalt, and dirt from the main wash rack (SWMU 62).(2,6,7)

Release Controls: Except for the active cell receiving demolition wastes, the landfill is capped as described above. Runoff is diverted by drainage ditches. There is no liner.(6,7)

History of Releases: At least one downgradient well was found to contain arsenic, barium, cadmium, chromium, copper, lead, manganese, and zinc in the groundwater above background levels.(2)

4.32.2 Conclusions

Based on the available information there is currently a low potential for release of hazardous constituents to air, or surface water. Analytical results indicate there have been releases to groundwater implying there are also releases to subsurface soils resulting in a high potential for releases to soil and groundwater. The potential to generate subsurface gas is moderate since there are municipal wastes and the landfill is capped.

4.33 SWMU 52 - SOIL STOCKPILE AREA
(Photo 5-6)

4.33.1 Information Summary

Unit Description: SWMU 52, the soil stockpile area is used to store and treat petroleum contaminated soil. Currently, YTC is storing and treating soil at this unit from the main vehicle wash rack. This soil has TPH levels up to 5,900 mg/kg. The contaminated soil is being mixed to reduce the TPH levels so that it may be disposed in the adjacent landfill (SWMU 51).(6,7)

A former stockpile in the same area consisted of 2,543 tons of heavy oil range petroleum contaminated soil that originated primarily from UST removals. Soil excavated from ten former UST locations was moved to this area in late 1993. The remainder of the soil in the former stockpile was from spill cleanup activities. Approximately 564 cubic yards of soil from a former soil stockpile (SWMU 22) was moved to this location in late 1993. Since the soil was petroleum contaminated it was taken to Anderson Rock and Demolition (Rocky Top Landfarm) for disposal in January 1995. Following removal of the soil, soil samples were collected from 15 locations at a depth of approximately one foot below the former stockpile. Seven samples out of the original 15 samples contained cadmium above MTCA levels. It was determined that these were false positive results and the seven locations were resampled with the cadmium detected below MTCA levels.(6,7)

Dates of Operation: Initially soil was stored here from at least 1993 until it was removed in January 1995. Soil from the main vehicle wash rack is currently being treated at this location to reduce the TPH levels.(6,7)

Wastes Managed: Soil containing TPH diesel and TPH oil above MTCA levels from underground storage tank removals, spill cleanup, and the main vehicle wash rack is stored here.(6,7)

Release Controls: None. Soil is being mixed to reduce TPH concentrations. Any liner would be torn during mixing operations.(6,7)

History of Releases: No releases were reported.(6,7)

4.33.2 Conclusions

Based on the sample results there is a low potential for release of hazardous constituents to air, groundwater, subsurface soil, or surface water or to generate subsurface gas. However, since the samples were collected at a depth of one foot and soil with TPH is currently present the potential for surface soil releases is high.

4.34 SWMU 53 - TRANSFER STATION
(Photo 5-7)

4.34.1 Information Summary

Unit Description: This unit consists of a metal drop box on a concrete slab. Trash from throughout YTC is collected here and stored temporarily, then transported off site to Terrace Heights landfill.(6,7)

Dates of Operation: The transfer station began operating in April 1994 when SWMU 51 closed and was active at the time of the VSI.(6,7)

Wastes Managed: Municipal wastes from throughout the YTC.(6)

Release Controls: The trash is collected in a drop box that sits on concrete with no additional containment.(6)

History of Releases: No releases were reported.(6)

4.34.2 Conclusions

Based on the materials being handled, there is a low potential for release of hazardous constituents to air, groundwater, or surface water or to generate subsurface gas. There is a low to moderate potential for soil releases if materials are spilled.

4.35 SWMU 54 - FORMER CANTONMENT LANDFILL
(Photo 3-2)

4.35.1 Information Summary

Unit Description: This former landfill for the current Cantonment Area, was located approximately 0.25 miles north of the water tank reservoir on the east side of the road. The landfill occupied approximately 10,000 square feet. The landfill became active prior to 1954. The exact location could not be identified. However, during the VSI a hill with vegetation that consisted of more grass and less sagebrush was observed.(4,6)

Dates of Operation: The start date was prior to 1954 and the date of closure was during the 1950's.(4)

Wastes Managed: Probably similar wastes to SWMU 51 the current landfill even though there is no specific information.(4)

Release Controls: The area was most likely covered with soil with no additional containment.(6)

History of Releases: There is no information indicating that releases have occurred.

4.35.2 Conclusions

Since the landfill has been inactive and has probably been covered with soil, the potential for releases to air and surface water are likely low. The potential for releases to groundwater, or soil, or to generate subsurface gas from SWMU 54 are unknown.

4.36 SWMU 55 - TWO FORMER LANDFILL PITS
(No Photo)

4.36.1 Information Summary

Unit Description: This SWMU consists of two former landfill pits and a landfill all of which are located approximately one mile northeast of the former landfill/burn pit (SWMU 57). The two pits were approximately six feet deep and nine feet wide and received wastes from the Cantonment Area. It is estimated that the pits accumulated approximately 16,000 cubic yards of waste between 1968 and 1969. The landfill was operated in this same area between 1969 and 1974. During construction of the new National Guard Machine Gun Range, concrete debris was found by the construction crew.(4,6,7)

Dates of Operation: The two pits were used between 1968 and 1969. The landfill was used between 1969 and 1974.(4,6,7)

Wastes Managed: Probably similar wastes to SWMU 51 the current landfill even though there is no specific information.(4,6)

Release Controls: The pits and landfill were most likely covered with soil. No liner or other containment were in place during operation or currently.(6)

History of Releases: There is no information indicating that releases have occurred.

4.36.2 Conclusions

Based on similar areas observed during the VSI it is likely that there is a low potential to release to surface water and air. The potential for releases to groundwater, soil, and to generate subsurface gas is unknown.

4.37 SWMU 56 - FORMER LANDFILL PIT
(Photo 5-5)

4.37.1 Information Summary

Unit Description: This SWMU consists of a former landfill pit that was located approximately 0.5 miles east of the current landfill (SWMU 51). The pit was reportedly used for one month in 1969, until it was determined the distance was too far to transport wastes from the Cantonment Area. If the pit was used in the summer it could have a capacity of approximately 2,500 cubic yards. The area that was observed during the VSI where the landfill was located was the edge of a hill with different vegetation than the surrounding area. An animal hole was also present with plastic visible in the excavated soil.(4,6)

Dates of Operation: The pit was reportedly used for one month in 1969.(4)

Wastes Managed: Probably similar wastes to SWMU 51 the current landfill even though there is no specific information.(4)

Release Controls: The landfill was covered with soil.(6)

History of Releases: There is no information indicating that releases have occurred.

4.37.2 Conclusions

The potential for releases to air and surface water are low. The potential for releases to groundwater, and soil or to generate subsurface gas are unknown.

4.38 SWMU 57 - FORMER LANDFILL/BURN PIT
(Photos 1-29 and 1-30)

4.38.1 Information Summary

Unit Description: This unit was a former landfill/burn pit that was located approximately 800 feet north of the maintenance and supply area (DEH compound). Wastes disposed in this unit included municipal refuse, tank batteries, paint cans, and empty oil containers. The wastes were placed in east/west oriented open unlined pits/trenches and burned as frequently as the pits were filled. Burning occurred as frequently as every day or two during the peak times in the summer. The Cantonment Area would generate approximately five cubic yards of material per week in the winter and 500 to 600 cubic yards of waste per week in the summer. Troop training activities also contributed waste to the landfill. The landfill/burn pit was in use between 1954 and 1974. The area where the pits were located was observed during the VSI. The only indication of the existence of these pits was where the soil was in small piles and the vegetation differed from the surrounding area.(4,6)

Dates of Operation: The landfill/burn pit was in operation between 1954 and 1974.(4,7)

Wastes Managed: Wastes disposed were primarily refuse, but also included tank batteries, paint cans, and empty oil containers. The quantities of waste managed ranged from approximately 5 cubic yards per week in the winter to 500 to 600 cubic yards in the summer.(4)

Release Controls: Since no burned areas or wastes were visible, the area was likely covered with soil. The pits were unlined.(4)

History of Releases: There is no information indicating that releases have occurred.

4.38.2 Conclusions

Based on observations during the VSI there is a low potential for releases to air and surface water. The potential is unknown for releases to groundwater and soil or to generate subsurface gas.

4.39 SWMU 58 - FORMER BIVOUAC LANDFILL PITS
(No Photo)

4.39.1 Information Summary

Unit Description: This SWMU includes all former bivouac landfill pits located Down Range throughout the facility, that were used for waste disposal during training activities prior to 1983. Two large pits were constructed in 1982-83 that were 14 feet wide, 12 feet deep, and 300 feet long in Training Area 12 along Cold Creek and in Training Area 3A north of Squaw Creek. The Preliminary Assessment report suggests that there may be pits along Cold Creek at the site of the old Coffin Ranch from the 1960s. Prior to the VSI, YTC personnel looked for some of these landfill pits but could not locate any in the above described locations. The pits would have received ammunition, POL products, ration cans, etc.(4,6,7)

Dates of Operation: The pits were used prior to 1983.(4)

Wastes Managed: Wastes would have included ammunition, POL products, ration cans, etc.(4,6)

Release Controls: Most likely these pits were covered with soil similar to SWMUs 54 through 56.(6)

History of Releases: There is no information indicating that releases have occurred.

4.39.2 Conclusions

Based on similar areas observed during the VSI it is likely that there is a low potential to release to surface water and air and an unknown potential to release to groundwater, soil, and to generate subsurface gas.

4.40 SWMU 59 - FIRE TRAINING PIT
(Photo 2-22)

4.40.1 Information Summary

Unit Description: This unit, located approximately 0.5 miles northeast of Building 951, was last used in 1990. The pit was unlined and used two or three times per year. According to the 1993 Site Inspection, when the pit was in use, it would be saturated with water and then 500 to 1,000 gallons of aviation fuel, diesel fuel, or leaded gasoline would be poured into the pit, ignited, and then extinguished. However, during the VSI, Larry Fein with YTC stated that the last liquid fires were in the mid-1980's and that fuel was placed in drums, lit and then extinguished. He said the material used to extinguish the fires would usually overflow along with the fuel. However, he was not aware of any instances when fuel was dumped on the ground as described in the 1993 Site Inspection Report. The constituents of the materials used to extinguish the fires are unknown. Between the mid-1980's and 1990 the pit was also used to burn wood.(2,6,7)

Until approximately 1991, the pit was used to store piles of waste sand filter and sediments from the vehicle wash rack waste water recycling system (SWMU 62). Recent wash rack sediment samples contained up to 5,900 mg/kg of TPH. It is unknown if the sediment disposed here contained similar concentrations. Piles of sand and debris were observed at the time of the VSI.(2,6,7)

During the 1993 Site Inspection three different areas in the fire training pit were sampled. Two of these, the fire training pit proper, and stockpiles of soils believed to have been removed from the pit, contained pyrene, arsenic, and lead. The soil stockpile from the vehicle wash rack contained lead at an estimated quantity. The monitoring well was reported to contain primarily product which consisted of 2,600,000 µg/l of TPH as diesel, 60 µg/l of ethylbenzene, 1,100 µg/l of xylene, 600 µg/l of dibenzofuran, 1,100 µg/l of fluorene, 2,500 µg/l of 2-methylnaphthalene, and 1,000 µg/l of naphthalene. The following elements were present above drinking water standards in the monitoring well; arsenic at 73 µg/l, barium at 9,000 µg/l, beryllium at 25 µg/l, cadmium at 19 µg/l, lead at 410 µg/l, manganese at 4,100 µg/l, and nickel at 140 µg/l.(2)

Dates of Operation: The start date is unknown. However, the unit was used as a fire training pit until the mid-1980s. Between the mid-1980s and 1990 wood was burned in the pit. More recently, sand filter and sediments from the vehicle wash rack waste water recycling system along with other debris have been disposed at this unit and were observed during the VSI.(2,6,7)

Wastes Managed: Sand filter and sediments from the vehicle wash rack waste water recycling system and other debris are present at this site. Also present are residual aviation fuel, diesel fuel,

and leaded gasoline along with any other materials from the fire training practices.(2,6,7)

Release Controls: None.

History of Releases: Soil contamination was documented during the 1993 Site Inspection, along with product in a nearby monitoring well.(2)

4.40.2 Conclusions

Based on the current conditions and the types of materials disposed, there is a low potential for release of hazardous constituents to air, and surface water, or to generate subsurface gas. Based on sampling results, there is a high potential for releases to soil and possibly groundwater based on the past activities at the pit and the documented contamination.

4.41 SWMU 60 - WHITE PHOSPHORUS PIT
(Photos 4-37 and 5-1)

4.41.1 Information Summary

Unit Description: This SWMU is located at grid FG 998738, approximately 2.5 miles northeast of the Cantonment Area. The two acre area is fenced and posted " DANGER, WP Burial Area." Exactly who was responsible for burying the material, the date, the quantity, and the type of material buried are unknown. Current and former employees indicate the material was buried before they worked there. The Army is in the process of characterizing the site. The surface has been cleared of shrapnel, live ordnance, debris, and other materials. A 1945 document titled "Mortar Firing Tables" was found during surface clearing activities. These materials were observed in piles on the edge of the area cleared during the VSI. On June 7-8, 1995 EOD personnel conducted a magnetometer survey and located buried materials.(6,7,43)

Dates of Operation: The date the material was buried is unknown. However, former employees report that it must have been prior to 1974. The material is still buried onsite.(6,7,43)

Wastes Managed: White phosphorous or "Lucky Crystals" were buried at this location based on the presence of a sign. However, the Army is unsure as to what is actually buried. "Lucky Crystals" is a piezoelectric crystal element used to initiate fume detonation in some mortar and artillery munitions. Shrapnel, live ordnance, debris, and other material were recently removed from the surface.(6,7,43)

Release Controls: The area is covered with soil.(6)

History of Releases: There is no documentation of releases from this unit.(43)

4.41.2 Conclusions

Based on the available information there is likely a low potential for release of hazardous constituents to air, and surface water, or to generate subsurface gas. There is a unknown potential for releases to soil and possibly groundwater based on the past activities at the pit.

4.42 SWMU 61 - RANGE 14 UMTU AREA
(No Photos)

4.42.1 Information Summary

Unit Description: SWMU 61, Range 14 UMTU area, is under RCRA Part B permit. This unit consists of approximately 70 acres in the northwest corner of Range 14 that are used for disposal of munitions. Historically wastes were burned and detonated. Currently wastes are only detonated. Explosive Ordnance Demolition (EOD) teams detonate unserviceable munitions. In the past YTC detonated a wide variety and quantity of munitions. Any where from zero to over 500,000 pounds of munitions have been detonated during any one year. Detonation of explosives is limited to 2,000 pounds per detonation due to noise limitations. Approximately 20 to 25 craters 10 to 12 feet deep and 10 to 25 feet in diameter have been created from explosive detonation activities. Historically, some craters were filled and others were not backfilled. The walls on those craters that were not backfilled may have collapse due to erosion. Currently, old craters have been filled or are being filled. Current practices require that craters are filled.(4,6,7,24,54)

Ordnance is unloaded and placed in the treatment area in trenches in prescribed configuration, with initiating explosives if required, with chain link fencing placed over the top. The ordnance is then detonated. Following treatment the area is visually inspected for unexploded ordnance, which is either detonated in place or collected and retreated in the treatment area. The ordnance is not reported to have been recently burned in recent inspection reports.(24,54)

In May 1995, EOD personnel cleared the surface of unexploded ordnance and metal. The scrap metal is to be sold at an unspecified date. A new road into the area was also constructed at that time.(6,7)

In 1993, the northwestern corner of Range 14, where the ordnance is destroyed, was sampled. Soil samples were collected at four locations along four transects; two detonation craters, a burn area, and watercourses. Some samples analyzed for NO_2/NO_3 were above background concentrations in both surface and subsurface samples. Arsenic, beryllium, and cadmium were detected above EPA Region III risk based concentrations and Washington State MTCA levels for carcinogens. However, they did not exceed noncarcinogenic screening levels. Explosive and semivolatile compounds were detected in several samples. However, the only compound detected above EPA or MTCA levels was RDX at 28 $\mu g/g$, which was above the EPA Region III risk based concentration of 26 $\mu g/g$.(55)

Three monitoring wells were installed in May 1994 around the unserviceable munitions treatment area. They were sampled in October 1994 and again in January 1995. The samples contained some elements. Most of these elements were detected within two times the concentrations in the background well. The one exception is vanadium which was detected in both sampling rounds in monitoring wells MWU-1 and MWU-2 between 20 and 22 μg/l and was undetected in the in the background well MWU-3 with a detection limit of 10 μg/l.(56)

Dates of Operation: The date the unit became active is unknown. However, it is currently active.(6,7)

Wastes Managed: Waste munitions and explosives. A 1982 report listed the following types and quantities of wastes burned on a quarterly basis: smokeless powder (360 kg), TNT (270 kg), small arms (225 kg), cartridge-activated devices (225 kg), dynamite (90 kg), and propellants (180 kg). The following wastes were detonated on a quarterly basis: TNT (450 kg), 5-in projectile containing picric acid (4,000 kg), compound B (5,400 kg), HMX (6,350 kg), C-4 (113 kg), tetryl boosters/fuzes (57 kg), tovex which is civilian dynamite (27 kg), dynamite (45 kg), and PETN that is a high velocity initiator for other explosives (45 kg).(5)

Release Controls: None.

History of Releases: The only reported releases have been to surface soil in Range 14 where the EOD activities have occurred.

4.42.2 Conclusions

Based on the activities that occur in the unit there is a high potential for air releases at the time the ordnance is being exploded. However, these would be limited to a few times a year when disposal occurs. Based on sample results there is also a high potential for releases to surface soils. However, the extent of contamination is limited. The potential for releases to surface water, and groundwater or to generate subsurface gas is low based on the sampling and types of materials present.

4.43 SWMU 62 - MAIN VEHICLE WASH RACK
(Photos 2-14 through 2-21)

4.43.1 Information Summary

Unit Description: SWMU 62 is the main vehicle wash rack and consists of four separate wash racks that drain to two oil/water separators with two associated waste oil tanks, a sedimentation system, and a pesticide storage area. The main vehicle wash rack is located approximately 0.3 miles northeast of the MATES facility Building 951 in Building 975 on KD Range Road. Vehicles are rinsed with water which is collected and recycled. The water passes through a sedimentation system which includes an oil/water/sediment separator and a sand filter. After the water passes through the sedimentation system it is stored in a pond until it is pumped back to the wash rack and reused. Recovered oil is stored in the waste oil tanks until it is picked up by a waste oil contractor. There are piles of waste sand filter and sediments that have been disposed at the fire training pit (SWMU 29) and currently at the landfill. At least once, the sediments were removed from the pit associated with the oil/water separator and taken to the soil stockpile area (SWMU 52) where they have been analyzed and are being mixed until the TPH levels are low enough for disposal in the landfill (SWMU 51). At the time of the VSI there was visible oil staining on the concrete near one waste oil above-ground storage tank. The other pit with an oil/water separator had sediments and a visible sheen on the oil on both sides of the oil/water separator.(2,4,6,7,26)

Pesticides and other agricultural chemicals are stored in Building 975 in a containment berm with plywood walls in the wash rack area. This structure is not designed for storage of hazardous materials. Pesticide equipment is cleaned at the site of application. Pesticides that have been stored include: Norsac 4G Caseron (Diclobenel), Caseron G-10 (Diclobenel), Apollo 445 (2,4-D), Round-Up (Glysophate), Cytrol (Amitrol), Diquat (Diquat Bromide), Landmaster (2,4-D), Tordon 2K Pellets (Picloram), Rodeo (Glysophate), Arsenal, Atrazine 4L, Krovar 1, Baygon 1.5EC, Swat Aer. (Dimetatoulamide), Squad Aer (Pyrethium), Kilzone Aer. (2-hemolmethcarbamate), Patrol Aer. (Pyrethium), Dichoran L.O. (Pyrethium), Deadeye (Pyrethium), Vampire Dust (Pyrethium), Warafarin Concen., Zap 11 (Carboxylate). During a 1992 inspection minor spills of urea 46% (fertilizer) were observed on the floor of the pesticide storage building. It is not clear if this is the same area. At the time of the VSI pesticides were being mixed inside the building and spills of material were present on the floor. The floor contained a blind sump.(4,6,7)

Pesticides currently stored onsite include: 100 gallons of Rodeo (Glysophate), 14 gallons of Tordon 22K (picloram), 69 pounds Oust, 960 pounds of Krovar I DF, 15 gallons of Trimec, 20 gallons of Banvel, 10 pounds plus 10 gallons of Arsenal, one gallon of

Treflan, 735 pounds of Caseron (norsac), 18 gallons of Surefire, 11 quarts of Activator 90, and 100 gallons of Roundup.(6,7)

Two soil samples were collected during the 1993 Site Inspection at the vehicle wash rack and contained lead, cadmium, and xylenes.(2)

Residues remaining in drums from YTC that contained product are dumped at the Main Vehicle Wash Rack. Previously these drums were then taken to the Ammunition Storage Point (SWMU 26) where they were filled with brass casings.(7)

Dates of Operation: The wash rack became operational in 1980 and was active at the time of the VSI.(2,4,6)

Wastes Managed: Waste wash water from rinsing vehicles including oil and other petroleum products washed off the vehicles. Soil samples contained lead, cadmium, and xylenes. Samples from wash rack material at the stockpile area contained up to 5,900 mg/kg of TPH.(2,6,7)

Release Controls: The area is paved with the water being recirculated throughout the system. Oil is removed with oil/water separators and stored in above-ground storage tanks.(6,7)

History of Releases: Soil samples contained lead, cadmium, and xylenes.(2)

4.43.2 Conclusions

Based on the containment and materials present there is a low potential for release of hazardous constituents to air or surface water or to generate subsurface gas. There is a high potential for releases to soil based on the soil samples. The potential for releases to groundwater is moderate based on releases to soil.

4.44 SWMUs 63 THROUGH 73 - OIL/WATER SEPARATORS

(Photos 1-23, 1-24, 1-25, 1-35, 2-3, 2-4, 2-8, 2-27, 2-28, 2-29, 2-35, 2-37, 3-8, 3-14, 3-15, 3-18, 3-19, 4-8, and 4-9)

4.44.1 Information Summary

Unit Description: SWMUs 63 through 73, are oil/water separators. They are summarized in Table 5. Water passes through the oil/water separators and the oil is removed. The water is then discharged to the sanitary sewer, a drain field, or surface drainage.(6,7)

Dates of Operation: All of the oil/water separators were active at the time of the VSI. SWMU 71 was installed in 1995 and SWMUs 72 and 73 were most likely installed in the 1980s when the POL area was under construction. The start dates are unknown for the other oil/water separators(6,7)

Wastes Managed: Waste water and oil.(6,7)

Release Controls: The oil/water separator removes oil from water prior to discharge to the sanitary sewer, drain field, or surface drainage.(6,7)

History of Releases: According to the 1991 Preliminary Assessment report several oil/water separators have malfunctioned in the past, releasing contaminants to the surface water drainage system (SWMU 77) and the sanitary sewer (SWMU 74).(4)

4.44.2 Conclusions

Based on past malfunctions, the potential for releases to surface water is high for SWMUs 63, 67, 69, 70, and 71 and the potential for releases to soil is moderate and groundwater and surface water is unknown for SWMUs 64, 65, 66, 68, 72, and 73. All other potentials for releases to surface water, soil, and groundwater are low. The potential for releases to air or to generate subsurface gas is low based on the wastes managed in SWMUs 63 through 73.

Table 5
SUMMARY OF OIL/WATER SEPARATORS

SWMU	Location	Source of Waste	Discharge	Photo Number
63	Main Motor Pool Bldg 319	The oil/water separator receives water from the main shop and wash rack with a cracked floor and a drain.	Sanitary Sewer	4-8 4-9
64	Marine Reserve "tank rack"	The oil/water separator receives water from the "tank rack" from cleaning tanks. The concrete in wash rack was noted to be cracked during the VSI.	Drain Field	2-3 2-4
65	Army Reserve Shop	Two oil/water separators are in series. They receive water from floor drains in a shop, which has a former wash rack and a drain along the outside of the shop. The outside drain receives water from rinsing vehicles. The pavement in this area is cracked. Formerly there was a wash rack that discharged to the oil/water separators.	Drain Field	1-23 1-24 1-25
66	Bldg 845	A small oil/water separator on the east side of the wash rack receives water from shop floor drains and discharges to surface drainage.	Surface Drainage	2-35 2-37
67	Bldg 845	A large oil/water separator receives water from the wash rack and discharges to the sanitary sewer.	Sanitary Sewer	None
68	Bldg 301 (TMP)	A large oil/water separator that receives drainage from the entire TMP area.	Surface Drainage	None
69	MATES Bldg 951	The oil/water separator receives water from two wash racks with two drains. At the time of the VSI the soil surrounding the wash racks was wet from water not contained in the concrete. The concrete had visible cracks.	Sanitary Sewer	2-27 2-28 2-29
70	Bldg 323	The oil/water separator receives discharge from the floor drains and a wash rack with cracks in the concrete floor.	Sanitary Sewer	3-18 3-19
71	New National Guard Facility	One oil water separator receives drainage from the entire facility including floor drains from shops and a wash rack.	Sanitary Sewer	3-8 3-14 3-15
72	POL 1	An oil/water separator receives water from the front bermed area at POL 1.	Surface Drainage	2-8
73	POL 1	A second oil/water separator in the POL 1 area that receives water from the fuel pump area.	Surface Drainage	2-8
(References: 4,6,7)				

4.45 SWMU 74 - SANITARY SEWER SYSTEM

(No Photo)

4.45.1 Information Summary

Unit Description: The sanitary sewer system consists of six to twelve inch concrete pipes. The pipes transfer sewage from the Cantonment Area to the sewage treatment plant (SWMU 75). There are oil/water separators that remove oil from waste water prior to entering the sanitary sewer system. There have been oil spills that have entered the sanitary sewer system. (4,6,7)

Dates of Operation: The date the sanitary sewer system came into use is unknown. However, it has most likely been active since the treatment plant (SWMU 75) was constructed in 1951. It was active at the time of the 1991 Preliminary Assessment and during the VSI. (4,6,7)

Wastes Managed: Waste water from throughout the Yakima Training Center. (4,6,7)

Release Controls: The sewage treatment plant is used to treat waste water prior to discharge to the Yakima River. (4,6,7)

History of Releases: In January 1995 four gallons of oil and antifreeze entered the sewer system. (7)

4.45.2 Conclusions

Depending on the integrity of the concrete pipes, there is a low to moderate potential for releases to soil. There is a low potential for releases to air, surface water, groundwater, or to generate subsurface gas from SWMU 74.

4.46 SWMU 75 - SEWAGE TREATMENT PLANT
(Photo 3-1)

4.46.1 Information Summary

Unit Description: The sewage treatment plant, constructed in 1951, is located approximately 0.5 miles west of the Cantonment Area. The plant is designed for a flow of 715,000 gallons per day, with the actual average flow only being 90,000 gallons per day. The plant discharges effluent, under NPDES permit number WA0021962, approximately two miles to the west to the Yakima River at Harrison Road. The sludge that has been digested is placed in the onsite active landfill. Historically the sludge has been used as fertilizer in the Cantonment Area and by farmers.(4)

A former photographic laboratory discharged wastes directly to the sanitary sewer system. Waste sewage treatment plant reagents from pH, suspended solids, BOD_5, bacteria, and oil and grease were discharged. The photographic laboratory, which is no longer in operation, discharged waste solutions from developing black and white film. Neither laboratory is currently used. Currently tests for the sewage treatment plant are performed by adding a few drops of indicator, which is then dumped back into the waste water treatment plant.(4,6,7)

The sewage treatment plant consists of screening followed by a grit chamber, three primary clarifiers, two parallel trickling filters, three secondary clarifiers, and sludge removal and treatment. Only two of the primary and secondary clarifiers and one trickling filter are used when there is low flow. In 1987, the plant was remodeled to improve the recycling capacity of the plant between the secondary and primary clarifiers. A system to prevent fouling of the trickling filters by oil was also installed.(4)

The sludge is treated in primary and secondary anaerobic digesters and sludge drying beds. Digester gas is burned in a waste gas burner.(4)

At the time of the VSI water was being recirculated through the plant because the flow was too low for the plant to operate without recirculation. According to YTC personnel oil has occasionally been released to the plant. However the NPDES permitted levels have never been exceeded.(6,7)

Dates of Operation: The sewage treatment plant was constructed in 1951 and was active at the time of the VSI.(4)

Wastes Managed: Waste water from the sanitary sewers and oil/water separators located throughout the Yakima Training Center.(4)

Release Controls: The sewage treatment plant is used to treat waste water prior to discharge to the Yakima River.(4)

History of Releases: There is no information indicating releases from this unit have occurred.

4.46.2 Conclusions

There is a low potential for releases to groundwater, soil, or to generate subsurface gas. The potential for releases to air is moderate since any volatile compounds discharged in the water could evaporate. Based on the past releases of oil there is a high potential for releases to surface water.

4.47 SWMU 76 - YAKIMA RESEARCH STATION SEWAGE LAGOONS
(No photos allowed)

4.47.1 Information Summary

Unit Description: The sewage lagoons, are located on approximately five acres west of the Yakima Research Station and provide sewage treatment for the Research Station. There are three lagoons and a forth hole. One small lagoon is used for treatment with the overflow entering the second small lagoon. These two small lagoons were originally one large lagoon the size of the third lagoon, which is not used. The hole is approximately the size of all of the lagoons combined. The lagoons have a liner covered with broken rock. There is no discharge and water evaporates from the ponds. Since this is a closed system it is exempt from federal permits. The unit is in a secure guarded area and is fenced.(4,6,7)

Dates of Operation: The lagoons were constructed in 1972 and were active at the time of the VSI.(6,7)

Wastes Managed: Sewage from the Yakima Research Station.(4,6,7)

Release Controls: The lagoons are lined with adequate freeboard.(6,7)

History of Releases: There is no information indicating releases from this unit have occurred.

4.47.2 Conclusions

The potential is low for releases to surface water, groundwater, and soil or to generate subsurface gas. The potential for releases to air is moderate since any volatile compounds that are discharged to the lagoons could evaporate into the air.

4.48 SWMU 77 - SURFACE WATER DRAINAGE SYSTEM
(No Photo)

4.48.1 Information Summary

Unit Description: SWMU 77, the surface water drainage system, consists of open unlined drainage ditches in the Cantonment Area. Surface water flows into a ditch along the main road which discharges into the county ditches and ultimately the Yakima River.(4)

Storm water runoff is controlled through three detention ponds located along Cold Creek Road. The first is south of the DEH complex. The second is south of the of Building 845, and the third is south of the MATES facility. The pond south of Building 845 (Larry's Swimming Pool) was originally used as a holding pond for wash water from track vehicle maintenance. The wash water may have contained oils, greases, solvents, detergents, and other substances.(4)

SWMUs 65, 66, and 67, three oil/water separators discharge into the surface water drainage system.(4)

During the 1993 Site Inspection, sediment samples were collected from surface water drainages with elevated levels of arsenic, copper, lead, manganese, and zinc detected in selected downstream samples. Kiddies Pond contained elevated copper and lead concentrations, which may have originated from any of a variety of sources. Kiddies Pond is stocked with trout and is used for fishing and recreation by YTC residents. Lead was detected in the Cold Creek Road culvert without any source identified. Larry's Swimming Pool contained arsenic, lead, manganese, and zinc, which may have originated in the Cantonment Area.(2,6,7)

Dates of Operation: The date the system began operating is unknown. However, it was active at the time of the VSI.(6,7)

Wastes Managed: Currently surface water drainage receives discharges from four oil/water separators located in the Yakima Training Center. Historically one holding pond was used to store water from track vehicle maintenance.(6,7)

Release Controls: None.(4)

History of Releases: The 1993 sampling indicated that elevated levels of selected elements are being released into surface water drainage pathways.(2)

4.48.2 Conclusions

There is a high potential for releases to surface water based on the 1993 sediment samples. Since the sediments may be deposited as

soil there is a high potential for releases to soil. Based on the types of materials detected and the concentrations there is a low potential for releases to air and groundwater and low potential to generate subsurface gas. Kiddies pond, which is part of the surface water drainage system contained elevated levels and copper and lead and is used by YTC residents for fishing and recreation increasing their potential for exposure.

4.49 AOC 1 - FORMER CENTRAL VEHICLE WASH RACK
(Photo 1-17)

4.49.1 Information Summary

This unit was located on post at Cold Creek Road and E Street. It was in use from approximately 1966 to 1980. There was an outfall (002) authorized under an NPDES permit for discharge to the Yakima River for the wash rack. Prior to discharging to the river the water passed through a pond with a boom. The pond is located where "Larry's Swimming Pool" is currently located. However, there have been modifications to the pond. Currently the pond is used for storm water retention. During the Site Inspection the pond was sampled and contained arsenic, lead, manganese, and zinc.(2,4,6,7)

Currently the area is used for potable water. There were some damp areas visible around the rack at the time of the VSI.(6)

4.49.2 Conclusions

Currently there is a low potential for releases to air, surface water, or groundwater, or to generate subsurface gas from AOC 1. However, based on the sample results collected during the Site Inspection in the down gradient pond and the current wash rack there may be a moderate potential for soil contamination.

4.50 AOC 2 - FORMER BUILDING 319 VEHICLE WASH RACK
(Photos 4-6 and 4-7)

4.50.1 Information Summary

AOC 2, the Former Building 319 Vehicle Wash Rack, was located north of Building 319 near the northwest corner of the TMP lot. It was in use from approximately 1951 to 1968. The wash water discharged to the surface drainage system (SWMU 77). At the time of the VSI, there was an empty above-ground storage tank on the wash rack. It had previously stored solvents.(4)

4.50.2 Conclusions

This area is old and there is no documentation as to the potential for release to the soil. However, based on the other wash racks historically there may be a moderate potential for releases to soil. There is a low potential for releases to air, surface water, and groundwater, or to generate subsurface gas.

4.51 AOC 3 - BUILDING 812 WASH RACK
(Photos 1-15 and 1-16)

4.51.1 Information Summary

Unit Description: The Building 812 Wash Rack is located north of Building 812 in the DEH area. It is has been used to wash mud off of heavy equipment and is no longer used regularly. The wash water discharges via a pipe to the field behind the wash rack. The wash rack was in use prior to 1979. YTC personnel believe it may have been constructed in the 1950's along with the surrounding buildings. The wash rack is scheduled to be removed when the new pesticide management building is constructed.(4,6,7)

4.51.2 Conclusions

There is a low potential for releases to air, surface water, or groundwater, or to generate subsurface gas from AOC 3. Based on the soil sampling results at the current wash rack during the 1993 Site Inspection, there may be a moderate potential for soil contamination.

4.52 AOC 4 - POL FUEL POINT
(Photos 2-5 through 2-13)

4.52.1 Information Summary

The POL fuel point is the main fueling area for YTC and is divided by a road into POL 1 and POL 2. In the two areas there are currently eleven 20,000 gallon above-ground storage tanks, with three containing gas, six containing diesel fuel, and two containing JP-8. The tanks are all contained in berms. One of the berms in POL 1 has a blind sump with a valve that can be open to the second berm. The second berm discharges to an oil/water separator. Both of these berms are lined with a rubber geotech style liner. The berm containing the tanks in POL 2 is lined with bentonite clay over a plastic liner and was visibly stained at the time of the VSI. This was also the area where on August 22, 1994, approximately 1,000 gallons of JP-8 was spilled when a tank was accidently overfilled.(6,7)

On April 16, 1986, 20 gallons of diesel was spilled at POL 2. The spill was cleaned up then covered with dirt.(4)

On May 2, 1988, 706 gallons of diesel was spilled in POL 2 containment berm. Soil from the berm was removed and taken to the sanitary landfill (SWMU 51).(4)

Fuel spills have occurred at this AOC in the past. On May 17, 1989 over 1,100 gallons of diesel spilled at POL X when an above-ground tank was overfilled. Approximately 600 gallons of spilled material were contained and removed. Over 500 gallons spilled to the ground. The standing diesel was burned, while the residue contaminated soil was removed, taken to the landfill (SWMU 51), and spread.(4)

In November 1990, 1,600 gallons of diesel fuel spilled when fuel was being offloaded from a tanker truck at POL 1 and the wrong valve was closed. The product went to a fill tank and came up through a vent pipe at POL 2. Dirt was placed in the clay lined berm to soak up the spill. When the dirt was being shovelled of the liner was ripped. Even though the liner was repaired the integrity is questionable. Fuel also spilled over the top of its berm into the adjacent former PCS stockpile area (SWMU 22).(6,7)

On August 22, 1994, JP-8 was being recirculated back into the tanks at POL 1 and a valve was not shut all the way. This resulted in some of the fuel being placed in another tank and approximately 1,000 gallons spilling into the berm at POL 1. The liner was not secured and fuel leaked under the liner into the lower berm. Approximately 800 gallons of fuel was pumped out of the berms. Gravel was also removed and the liners slit to facilitate removal. The liners were repaired but their integrity is still questionable.

Remediating POL 1 and POL 2 and replacing the liners is a high priority project for YTC.(6,7)

Four underground storage tanks that had been installed in 1951 at POL 2 were removed in 1987. Two 20,000 gallon tanks had contained diesel while two 20,000 gallon tanks had contained regular gasoline. Reports were not available to document if there was associated contamination. At that same time POL X (currently POL 1) was built which included the construction of five 20,000 gallon above-ground storage tanks (3 contain gasoline and 2 contain diesel). POL 2 pumps were upgraded and the four 20,000 gallon diesel above-ground storage tanks that had been installed in 1982 were replaced. Gas and diesel fuel lines were installed from POL 1 to POL 2. Product is received at POL 1 and then transferred to POL 2. Retail diesel and gas are dispensed at POL 1 while bulk diesel and gas are dispensed at POL 2. In 1992, two 20,000 gallon JP-4 now containing JP-8 above-ground storage tanks were installed in POL 1 in the upper berm. These replaced the fuel bladder site (AOC 33).(6,7)

4.52.2 Conclusions

Based on the historic large spills and visible soil staining observed during the VSI there is a high potential for soil contamination. Depending on the depth of groundwater there is a moderate potential for releases. There is also a moderate potential for releases to air since when there is a spill the fuel would evaporate into the air. The potential for release to surface water is low since the area is not close to surface water. The potential to generate subsurface gas is low based on the materials present.

4.53 AOC 5 - HAZARDOUS MATERIALS STORAGE AREA
(Photos 4-3 and 4-4)

4.53.1 Information Summary

The Transportation Motor Pool Area (TMP) has a hazardous materials storage area. It is located north of Building 319 in a covered shed with open sides. Drums under the shed are placed on a concrete pad that does not have any berms for containment. Several drums with unknown contents were located on bare ground outside the shed at the time of the Preliminary Assessment in 1991. The area is surrounded by a locked chainlink fence.(4)

At the time of the VSI, there was one of the mobile used oil tanks located in the shed along with drums of product. Outside the shed was a drum of soil from cleaning up a recent hydraulic fluid leak. An empty unused above-ground storage tank located on the adjacent former wash rack had reportedly been located outside and adjacent to the storage shed. It had contained solvents and ceased to be used when it began to leak. The area where the tank was reported to have been located did not have any containment.(6,7)

4.53.2 Conclusions

The potential for releases to soil is moderate based on the long history of materials present and the reported leaking tank. There is a low potential for releases to surface water, groundwater, and air or to generate of subsurface gas.

4.54 AOC 6 - DUD AREAS

(No Photo)

4.54.1 Information Summary

This AOC includes two active dud areas located in Training Area 9A and Range 15 and four former DUD areas located in Range 7/8 and Training Areas 8 and 13 (two dud areas). The dud areas are used for demolition training and EOD activities. Three former DUD areas in Training Areas 8 and 13 were cleared of unexploded ordnance in the 1970s and ceased to be used in 1980. Range 7/8 was taken out of use in 1985.(4,5)

4.54.2 Conclusions

There is a low potential for releases to air, surface water, and groundwater, or to generate subsurface gas. There is a moderate potential for releases to soil from residuals remaining from explosives.

4.55 AOC 7 - BURIED MUNITIONS
(Photo 1-22)

4.55.1 Information Summary

Buried munitions have been found in the vicinity of Building 218, east of the No. 1 boiler plant and near Building 217, both in the Cantonment Area. The munitions were World War II vintage. The first discovery was made in the early 1950s, when munitions that were probably practice rounds were discovered and removed. They were probably turned over to the ammunition storage area. The other discovery was in 1987 or 1988, when bangelor torpedoes and bazooka rockets were found buried near Building 217. EOD personnel removed the munitions. Since there were structures that prohibited testing for the munitions no digging is allowed in the area.(4)

4.55.2 Conclusions

The potential for releases to soil, surface water, groundwater, and air and the generation of subsurface gas are low. The potential for releases to soil is unknown.

4.56 AOC 8 - COBRA RANGE ABOVE-GROUND STORAGE TANK (Photo 4-31)

4.56.1 Information Summary

There is a 250 gallon heating fuel tank with no secondary containment located at the Cobra Range. According to YTC personnel the tank will be removed soon. The date the tank was installed is unknown. (4,6,7)

4.56.2 Conclusions

The potential for releases to surface water, groundwater, and air are unknown. The potential for the generation of subsurface gas is low. If heating fuel spilled or leaked from the tank it would migrate directly to the soil. Therefore, release potential to soil is low to moderate.

4.57 AOCs 9 THROUGH 32 - UNDERGROUND PRODUCT STORAGE TANKS (Photos 1-2, 1-14, 1-18, and 4-2)

4.57.1 Information Summary

There were 24 underground storage tanks that did not contain wastes but product which are summarized in Table 6. There are 18 tanks still in use with the balance either being removed or filled with a slurry mix and remaining in place. The Preliminary Assessment Report stated that Fort Lewis planned to remove all remaining storage tanks. In 1982, there were reported to be approximately 52,000 gallons of regular gasoline storage and 36,000 gallons of diesel storage.(4,5)

Four tanks AOCs 24, 25, 26, and 27 all had soil samples that exceeded the state cleanup criteria for TPH. Even though removal was recommended by the contractor there is no indication in the files if contaminated soil was removed or if it remains in place.(57)

There was a report that oil spills had been associated with Buildings 248 and 833 near the boiler plants. There is also an allegation that there were several leaking gasoline and diesel underground storage tanks at "Controlma" area Points 1 and 2.(58)

4.57.2 Conclusions

The potential for releases to surface water and air are low. The potential for the generation of subsurface gas is also low. Based on soil contamination associated with those tanks that were removed the potential for releases is high. The potential for releases to groundwater is moderate based on soil contamination.

Table 6
SUMMARY OF UNDERGROUND PRODUCT STORAGE TANKS

AOC	Location	Size (gal)	Contents	Installation Dates	Status*
9	Bldg 223A	12,000	Heating Oil #2, scheduled for removal in 1996	1951	Active
10	Bldg 223B	12,000	Heating Oil #2, scheduled for removal in 1996	1951	Active
11	Bldg 223C	12,000	Heating Oil #2, scheduled for removal in 1996	1951	Active
12	Bldg 223D	12,000	Heating Oil #2, scheduled for removal in 1996	1951	Active
13	Bldg 223	250	Heating Oil #2, scheduled for removal in 1996	1951	Active
14	Bldg 301	500	Heating Oil #2, contamination remains scheduled for removal in 1995	Unknown	1993
15	Bldg 319A	250	Heating Oil #2, cemented in place, sampling to be performed	1951	Out of use 1983
16	Bldg 319B	5,000	Heating Oil #2, cemented in place, sampling to be performed	1951	Out of use 1983
17	Bldg 323	5,000	Heating Oil #2, cemented in place, sampling to be performed	1951	Out of use 1983
18	Bldg 323	250	Heating Oil #2, cemented in place, sampling to be performed	1951	Out of use 1983
19	Bldg 321	5,000	Heating Oil #2, cemented in place, sampling to be performed	1951	Out of use 1983
20	Bldg 321	250	Heating Oil #2, cemented in place, sampling to be performed	1951	Out of use 1983
21	Bldg 434	500	Heating Oil #2, contamination remaining Scheduled to be removed in 1995	Unknown	1994
22	Bldg 810-1	1,000	Diesel, no closure report, out of use in 1979	1951	1985
23	Bldg 810-2	1,000	Regular Gasoline, no closure report, out of use in 1979	1951	1985
24	Bldg 833A	12,000	Heating Oil #2, scheduled for removal in 1996	1951	Active
25	Bldg 833B	12,000	Heating Oil #2, scheduled for removal in 1996	1951	Active

Table 6
SUMMARY OF UNDERGROUND PRODUCT STORAGE TANKS

AOC	Location	Size (gal)	Contents	Installation Dates	Status*
26	Bldg 833	250	Heating Oil #2, scheduled for removal in 1996	1951	Out of use 1983
27	Bldg 845-1	12,000	Diesel no closure report	1968	1987
28	Bldg T-1470	12,000	Unknown, identified on 1954 blue print, no closure information, initial indications are that tanks do not exist	unknown	unknown
29	Bldg T-1470	12,000	Unknown, identified on 1954 blue print, no closure information, initial indications are that tanks do not exist	unknown	unknown
30	Bldg T-2020	600	Heating Oil #2, identified on 1954 blue print, no closure information, may still be in ground or may have been above-ground storage tanks	unknown	unknown
31	Bldg T-2020	600	Heating Oil #2, identified on 1954 blue print no closure information, may still be in ground or may have been above-ground storage tanks	unknown	unknown
32	Bldg T-2020	600	Heating Oil #2, identified on 1954 blue print no closure information, may still be in ground or may have been above-ground storage tanks	unknown	unknown

(References: 4,47,48,57,59,60)

4.58 AOC 33 - BUILDING 450 BLADDER SITE
(Photo 3-17)

4.58.1 Information Summary

As of the 1991 Preliminary Assessment, there were four 10,000-gallon and one 50,000-gallon JP-4 aviation fuel bladders located in unlined earth berms near Building 450. The bladders are made of rubber. They are inspected weekly for leaks and annually by the Yakima Clean Air Authority. They were replaced as needed and were replaced by permanent above-ground storage tanks in 1991. In 1982, there was reported to be an 80,000 gallon bladder for JP-4 the location was not specified. At the time of the VSI all the bladders were removed.(4,5,6,7)

4.58.2 Conclusions

The potential for releases to surface water, groundwater, and air are currently low. The potential for the generation of subsurface gas is also low. There is a historic potential for releases to soil from spills when the area was active since the bladders had no secondary containment.

4.59 AOCs 34 THROUGH 36 - FORWARD REFUELING AREAS (Photos 4-18, 4-28, and 4-30)

4.59.1 Information Summary

Even though downrange refueling areas are temporary, there are three areas that are routinely used. The refueling areas typically contain one or more 1,000 gallon rubber fuel bladders. The first refueling area is immediately north of MRPC and has a concrete enclosure designed to hold a fuel bladder. The second is immediately north of Range 16 on the west side of the Central Impact Area and has an earth bermed area to hold a fuel bladder. The other area is used less often and is located at GC003913 and is used by vehicles entering or leaving YTC.(4)

4.59.2 Conclusions

The first and third refueling area are still used. The potential for releases to surface water, groundwater, and air are low. The potential for the generation of subsurface gas is also low. There is a moderate potential for releases to soil from spilled fuel.

4.60 AOC 37 AND 38 - PISTOL RANGES
(No Photo)

4.60.1 Information Summary

There are two pistol ranges at YTC used for training. During the VSI, the range used to train local law enforcement officials was visited. It was observed that on the earth banks behind the targets there were a large number of lead slugs. The other pistol range used by YTC personnel was not visited but was reported to be similar by YTC personnel. The military pistol range was built in 1979 and was used by law enforcement officials until the other pistol range was constructed in 1992.(6,7)

4.60.2 Conclusions

The potential for releases to surface water, groundwater, and air and to generation of subsurface gas is low. However, there is a high potential for releases to soil.

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APPENDIX A
PHOTO DOCUMENTATION

Photo Log Yakima Training Center		
Photo #	Description	SWMU/AOC #
1-1	Facing west, location of former drums that contained soil and purge water from spring of 1993 sampling.	SWMU 7
1-2	Facing west, location of former USTs, removed in 1987.	AOCs 22 & 23
1-3	Facing north, 90-day hazardous materials storage area (13 sheds).	SWMU 3
1-4	Facing east, inside of one of the storage sheds.	SWMU 3
1-5	Facing east, drums inside a storage shed. Start dates are 4/11/95, 5/24/95, 5/15/95, 4/18/95, 5/12/95, 4/28/95, 6/9/95, 6/12/95, and 3/24/95.	SWMU 3
1-6	Facing north, location of former pesticide storage building, applicator equipment was rinsed on the southeast side of this area.	SWMU 5
1-7	Facing west, looking across the former pesticide storage area at portable waste oil storage tanks.	SWMUs 5 & 34
1-8	Facing north, emptying 55-gallon drum of waste oil into a waste oil storage tank.	SWMU 34
1-9	Facing west, drainage area behind the former hazardous waste storage area.	SWMU 4
1-10	Facing west, location of former hazardous waste storage area.	SWMU 4
1-11	Facing west, current transformer storage area that is located just north of the former transformer storage area.	SWMU 6
1-12	Facing south, location of former transformer storage area. Last used transformers were stored here in 1993. Former hazardous waste storage area in background near truck and trailer.	SWMUs 4 & 6
1-13	Facing north, location of contaminated soil storage. Soil is stored in both 55-gallon drums and drop boxes.	SWMU 8
1-14	Facing south, location of underground storage tanks for heating fuel.	AOCs 24-26
1-15	Facing west, Building 812 washrack located west of Building 810.	AOC 3
1-16	Facing west, drain for washrack that leads to field behind washrack.	AOC 3
1-17	Facing west, former central vehicle washrack. Currently, the area is used as a potable water supply.	AOC 1
1-18	Facing east, location of underground storage tanks.	AOCs 9-13
1-19	Facing west, silver recovery equipment in the medical clinic.	SWMU 12
1-20	Facing south, location where waste water from silver recovery is stored.	SWMU 1
1-21	Facing north, area in dental clinic where x-rays are developed.	SWMUs 13 & 14
1-22	Facing south, area where buried munitions were located.	AOC 7

Photo Log Yakima Training Center		
Photo #	Description	SWMU/AOC #
1-23	Facing west, oil/water separator at the Army Reserves.	SWMU 65
1-24	Facing west, oil/water separator at the Army Reserves.	SWMU 65
1-25	Facing west, area where equipment is rinsed with strip drain to oil/water separators at the Army Reserves.	SWMU 65
1-26	Facing east, Safety-Kleen dip tank inside Building 805/806 at the Army Reserves.	SWMU 2
1-27	Facing north, plastic portable berm surrounding fuel trailer at Army Reserves.	NA
1-28	Facing west, fuel trailer storage area at Army Reserves.	NA
1-29	Facing north, area where former landfill is located.	SWMU 56
1-30	Facing north, area where former landfill is located.	SWMU 56
1-31	Truck and fuel trailer parking area at the Army Reserves.	NA
1-32	Facing south, storage area equipped with a sump at the Army Reserves.	NA
1-33	Facing west, waste oil portable storage tank at the Army Reserves.	SWMU 34
1-34	Facing south, waste accumulation area at the Army Reserve.	SWMU 1
1-35	Facing north, former wash rack with a sump in the center that discharges to the oil/water separators.	SWMU 65
1-36	Facing west, POL storage building with portable waste oil storage tank, both wastes and product are stored here at the Marine Reserve Center.	SWMUs 16 & 34
2-1	Facing east, portable waste oil storage tank at the Marine Reserve Center.	SWMUs 16 & 36
2-2	Facing west, fuel pad at the Marine Reserve Center.	NA
2-3	Facing south, Marine Reserve Center drain field and oil/water separator for the tank wash rack.	SWMU 64
2-4	Facing north, Marine Reserve Center tank wash rack.	SWMU 64
2-5	Facing south, waste storage area at POL 1.	SWMU 1 AOC 4
2-6	Facing north, POL 1 above ground fuel storage tanks.	AOC 4
2-7	Facing west, berm around fuel storage tanks at POL 1.	AOC 4
2-8	Facing north, two oil/water separators at POL 1. The one in the foreground collects liquid from the fueling area.	SWMUs 72, 73 AOC 4
2-9	Facing south, area where former underground storage tanks were located. Currently, there is a portable waste oil tank visible.	AOC 4 SWMU 34

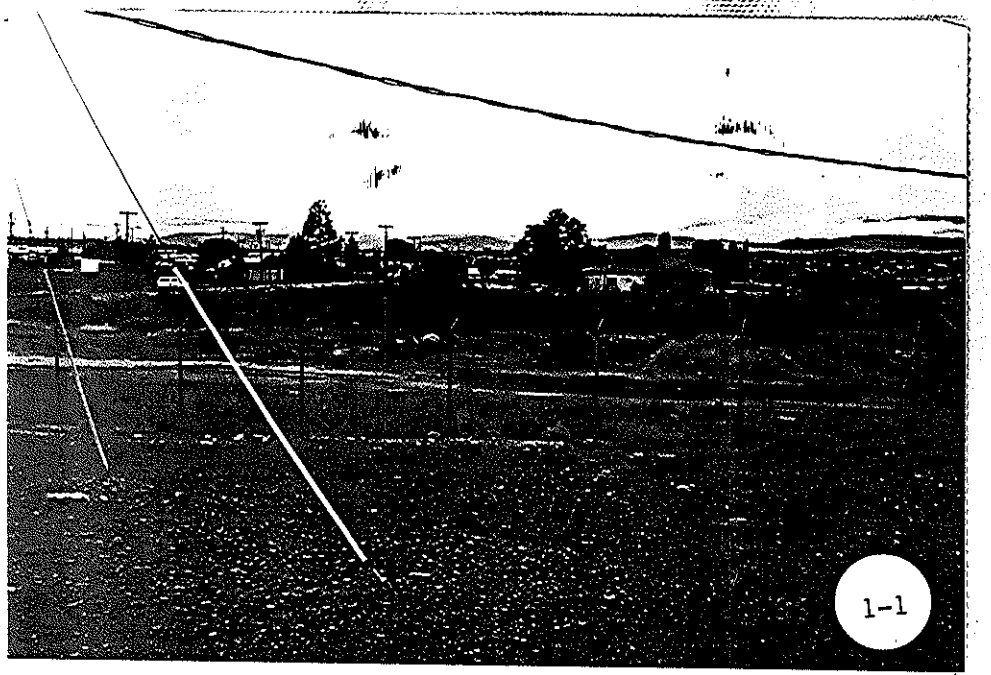
Photo Log Yakima Training Center		
Photo #	Description	SWMU/AOC #
2-10	Facing east, fuel storage tanks at POL 2.	AOC 4
2-11	Facing south, stain from spilled fuel at POL 2. There is no liner present.	AOC 4
2-12	Facing north, area where contaminated soil was stockpiled at POL 2.	SWMU 22 AOC 4
2-13	Facing west, POL 2 drums containing waste materials.	SWMU 1 AOC 4
2-14	Facing south, area inside building at main vehicle washrack where pesticides are mixed.	SWMU 62
2-15	Facing east, area inside building at main vehicle washrack where pesticides are stored.	SWMU 62
2-16	Facing west, oil/water separator at the main vehicle washrack.	SWMU 62
2-17	Facing north, edge of oil/water separator and washracks at main vehicle washrack.	SWMU 62
2-18	Facing west, washracks at main vehicle washrack.	SWMU 62
2-19	Facing northeast, washracks at main vehicle washrack.	SWMU 62
2-20	Facing south, second oil/water separator at main vehicle washrack.	SWMU 62
2-21	Facing east, sheen on water in oil/water separator at main vehicle washrack.	SWMU 62
2-22	Facing west, former fire training pit.	SWMU 59
2-23	Facing east, MATES hazardous waste storage area.	SWMU 19
2-24	Facing south, two double walled fiberglass underground storage tanks at MATES.	NA
2-25	Facing southeast, area where a drum of waste was observed and distillation of solvents from dip tanks occurs at MATES.	SWMU 1
2-26	Facing west, location of former waste oil underground storage tank at MATES.	SWMU 48
2-27	Facing north, oil/water separator that receives water from washrack and shop at MATES.	SWMU 69
2-28	Facing north, waste oil tank at MATES.	SWMU 20 & 69
2-29	Facing south, water draining off of the washrack at MATES.	SWMU 69
2-30	Facing south, battery room at MATES with waste acid drum.	SWMU 18
2-31	Facing south, dip tank at MATES.	SWMU 2
2-32	Facing northwest, accumulation area at MATES.	SWMU 1

Photo Log Yakima Training Center		
Photo #	Description	SWMU/AOC #
2-33	Facing north, oil filter press at MATES.	SWMU 21
2-34	Facing south, container for accumulating waste antifreeze at MATES.	SWMU 1
2-35	Facing northwest, oil/water separator and waste oil storage tank at the Motor Pool.	SWMUs 34 & 66
2-36	Facing northwest, accumulation area at the Motor Pool.	SWMU 1
2-37	Facing west, drain in shop floor that discharges to an oil/water separator in the Motor Pool.	SWMU 66
3-1	Facing south, sewage treatment plant.	SWMU 75
3-2	Facing north, possibly former landfill site.	SWMU 54
3-3	Facing east, former ammunition storage point burn pits.	SWMU 27
3-4	Facing east, new wire storage yard.	SWMU 29
3-5	Facing east, old wire storage yard.	SWMU 28
3-6	Facing south, dip tank at National Guard facility.	SWMU 2
3-7	Facing west, battery storage room at National Guard facility.	SWMU 23
3-8	Facing west, note floor drain under truck at the National Guard facility. Floor drains discharge to oil/water separator.	SWMU 71
3-9	Facing east, pit for changing oil and other maintenance at the National Guard facility. The oil drains directly to a waste oil underground storage tank.	SWMU 24
3-10	Facing west, drain for oil and oil crusher that are both connected to the waste oil underground storage tank at the National Guard facility.	SWMU 24
3-11	Facing north, oil product storage area at the National Guard facility.	NA
3-12	Facing north, a dip tank at the National Guard facility.	SWMU 2
3-13	Facing south, 300 gallon single walled steel waste oil underground storage tank with zinc anodes at the National Guard facility.	SWMU 24
3-14	Facing south, washrack that is connected to the oil/water separator at the National Guard facility.	SWMU 71
3-15	Facing west, oil/water separator at the National Guard facility.	SWMU 71
3-16	Facing west, waste accumulation area at the National Guard facility.	SWMU 1
3-17	Facing west, former fuel bladder area.	AOC 33
3-18	Facing east, washrack that drains to an oil/water separator in Building 323. Note cracks in concrete.	SWMU 70
3-19	Facing south, oil/water separator next to Building 323.	SWMU 70

Photo Log Yakima Training Center		
Photo #	Description	SWMU/AOC #
3-20	Facing west, used battery storage in Building 323.	SWMU 1
3-21	Facing west, waste accumulation area with diesel and solvent in Building 323.	SWMU 1
3-22	Facing west, oil storage location in Building 323 this photo in between 3-21 and 3-23.	SWMU 1
3-23	Facing northeast, Safety-Kleen dip tank in Building 323.	SWMU 2
3-24	Facing west, portable waste oil storage tank outside Building 323.	SWMU 34
3-25	Facing south, former underground storage tank location outside Building 323.	SWMUs 38-40
4-1	Facing south, waste oil portable storage tank and waste storage in polypack at 124th EEP.	SWMUs 1 & 34
4-2	Facing north, former heating oil underground storage tank location where there is contamination.	AOC 14
4-3	Facing west, hazardous materials storage area including anti-freeze, hydraulic oil, and a portable waste oil tank.	SWMU 34 AOC 5
4-4	Facing southeast, hazardous materials storage area.	AOC 5
4-5	Facing east, drums with contaminate soil adjacent to the hazardous materials storage area.	SWMU 1
4-6	Facing north, former washrack at Building 319.	AOC 2
4-7	Facing east, former solvent above ground storage tank located on the washrack at Building 319.	AOC 2
4-8	Facing south, oil/water separator outside Building 319.	SWMU 63
4-9	Facing south, washrack that drains to oil/water separator outside Building 319. Note cracks in the concrete.	SWMU 63
4-10	Facing north, waste oil storage inside Building 319.	SWMU 1
4-11	Facing east, waste diesel filter storage inside Building 319.	SWMU 1
4-12	Battery room where former waste battery acid container was stored in Building 323. The room is no longer used for battery storage.	SWMU 17
4-13	Facing west, polypack used for waste accumulation in Building 323.	SWMU 1
4-14	Facing west, drums for storing waste diesel contaminated rags in Building 323.	SWMU 1
4-15	Facing west, drum used for storing waste solvent rags in Building 323.	SWMU 1
4-16	Facing east, used battery storage in Building 323.	SWMU 1
4-17	Facing north, solvent dip tank in Building 323.	SWMU 2

Photo Log Yakima Training Center		
Photo #	Description	SWMU/AOC #
4-18	Facing south, staging and refueling area down range.	AOC 34
4-20	Facing west, waste accumulation area at MRPC.	SWMU 1
4-21	Facing south, used battery storage at MRPC.	SWMU 1
4-22	Facing west, drain field at MRPC.	SWMU 31
4-23	Facing north, septic tank at MRPC.	SWMU 31
4-24	Facing south, diesel above ground storage tank and drum for waste diesel.	SWMU 1
4-25	Facing west, waste storage area at MRPC.	SWMU 1
4-26	Facing west, waste storage area at MRPC. Note stain next to back wall.	SWMU 1
4-27	Facing east, waste oil above ground storage tank at MRPC.	SWMU 33
4-28	Facing north, bladder that contains 3000 gallons of calcium fluoride at MRPC.	NA
4-29	Facing east, product storage area with stains on the floor. This building has floor drains that discharge to a drum at MRPC.	NA
4-30	Facing south, diked area for fuel bladders at the Cobra Range.	NA
4-31	Facing south, heating oil above ground storage tank at the Cobra Range.	AOC 8
4-32	Facing north, gel cell battery storage area at Range Control.	SWMU 30
4-33	Facing west, two waste oil portable above ground storage tanks at Range Control.	SWMU 34
4-34	Facing north, waste accumulation area in Building 1807 at Range Control.	SWMU 1
4-35	Facing west, adjacent to photo 4-34, hydraulic fluid with container to catch overflow. There were stains on the floor in Building 1807 at Range Control.	SWMU 1
4-36	Facing south, dust collector that has not been used at MRPC.	NA
4-37	Facing southwest, white phosphorous pit.	SWMU 60
5-1	Facing south, white phosphorous pit.	SWMU 60
5-4	Facing south, landfill in distance.	SWMU 51
5-5	Facing west, former landfill.	SWMU 56
5-6	Facing west, former soil stockpile area.	SWMU 52
5-7	Facing west, transfer station.	SWMU 53
5-8	Facing west, container with oily papers at the GSA yard.	SWMU 25
5-9	Facing south, location of former underground storage tanks from former POL 1 at the GSA yard.	SWMU 25

Photo Log Yakima Training Center		
Photo #	Description	SWMU/AOC #
5-10	Facing north, area where waste antifreeze would have been stored at the GSA yard.	SWMU 25
5-11	Facing east, three empty drums and one containing waster at the GSA yard	SWMU 25



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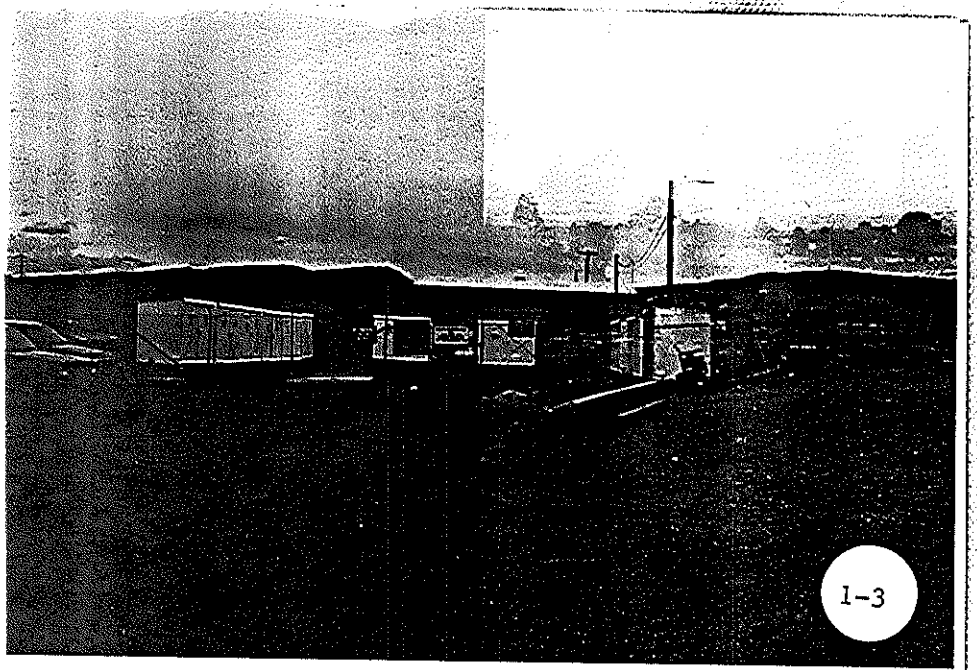

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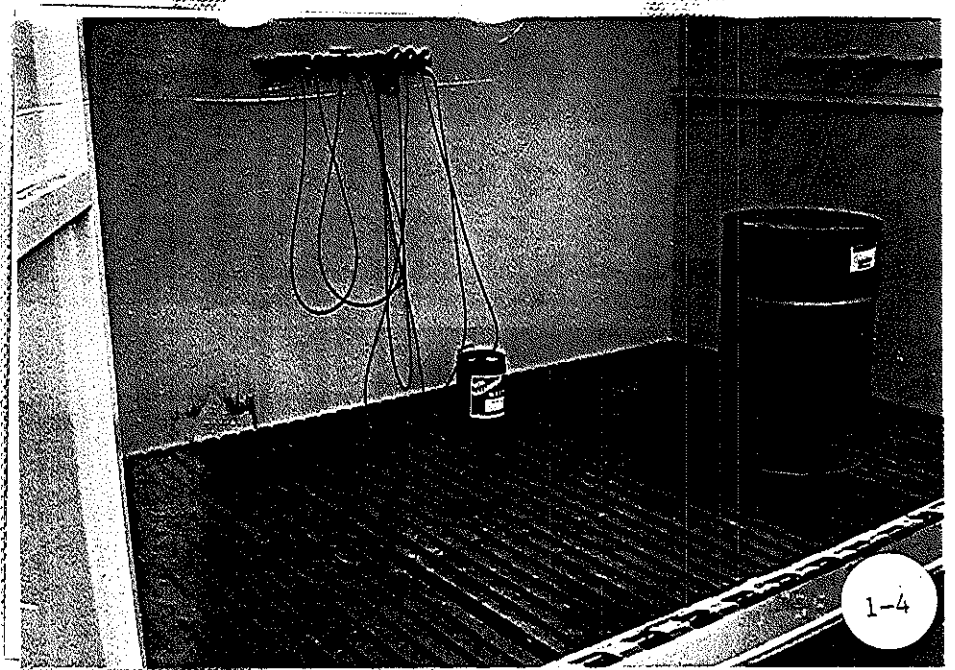

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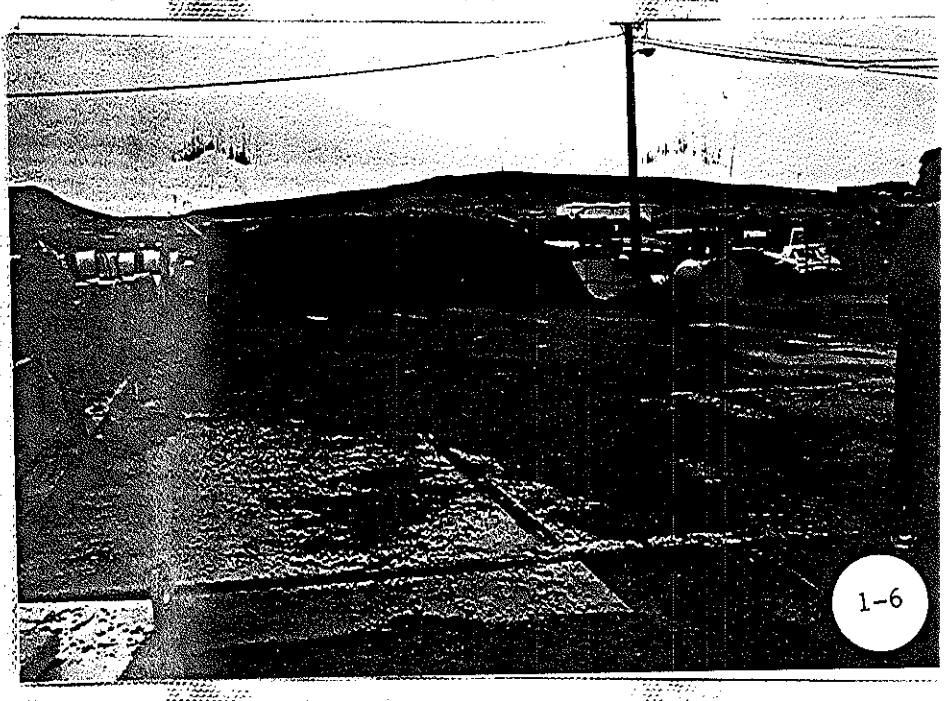
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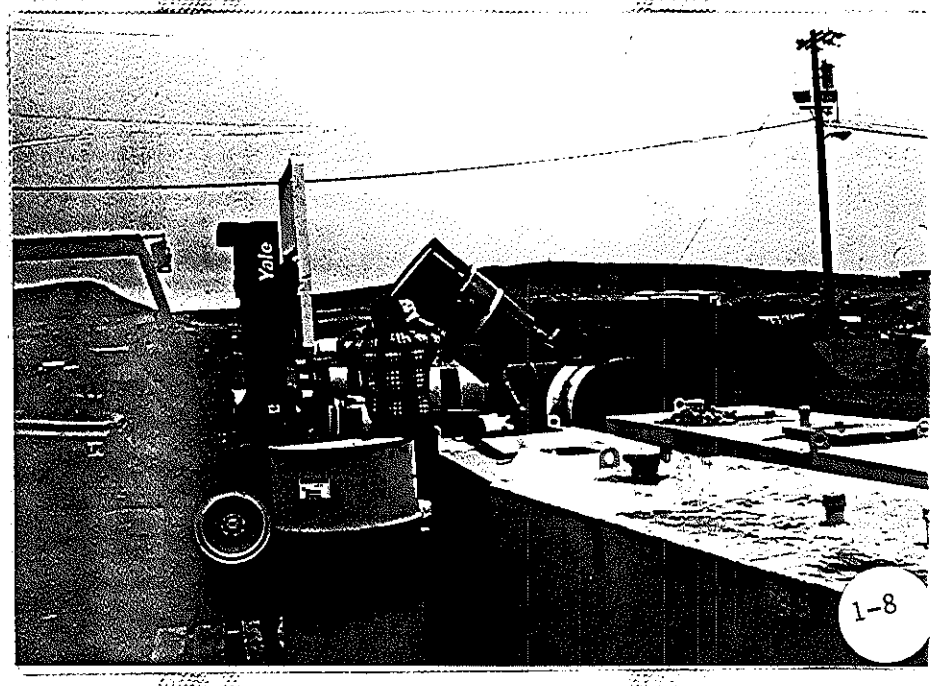

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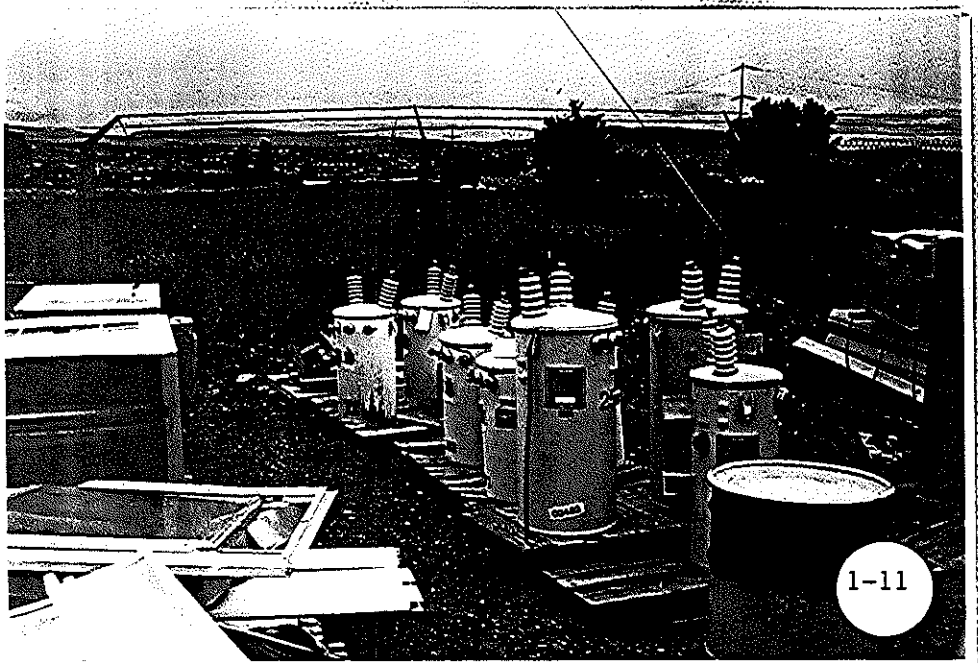

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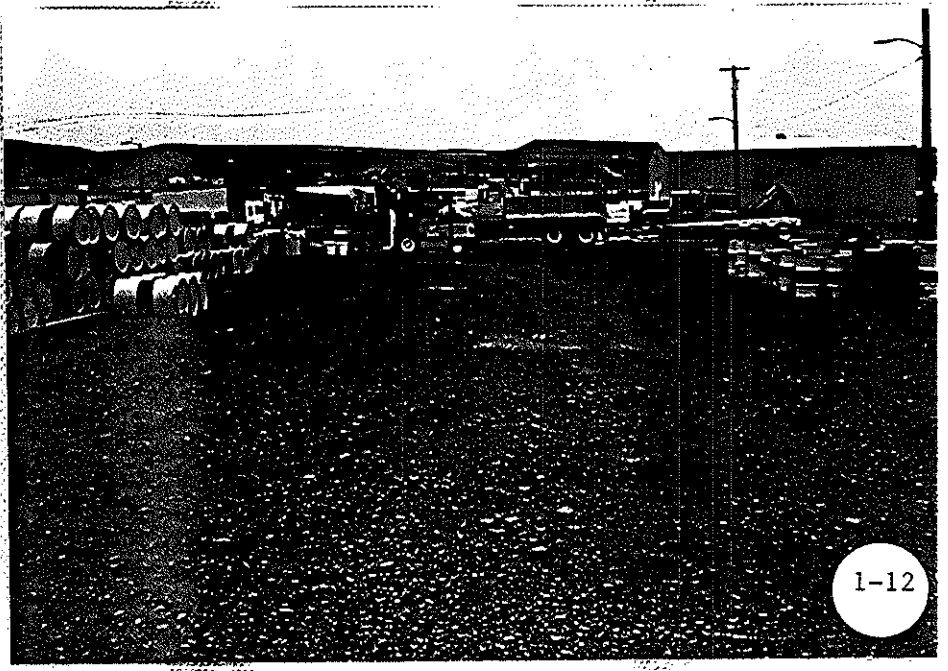

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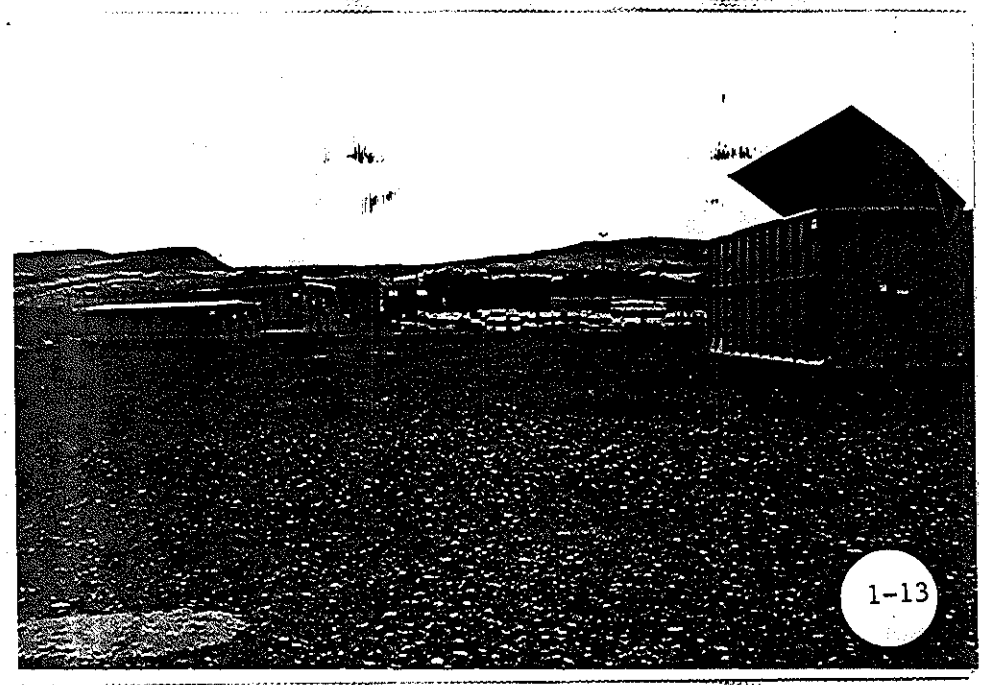

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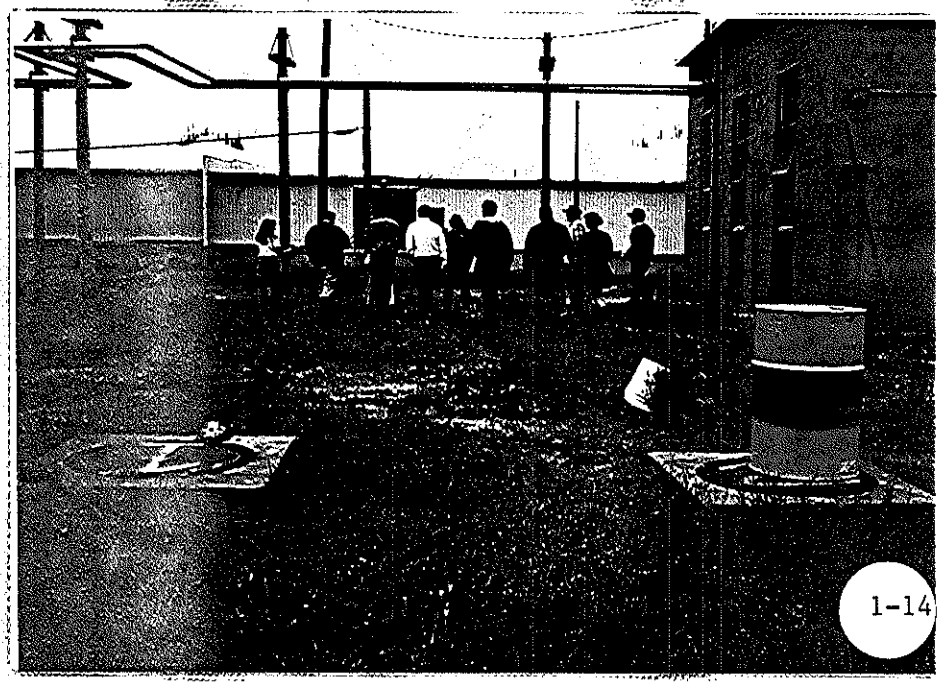

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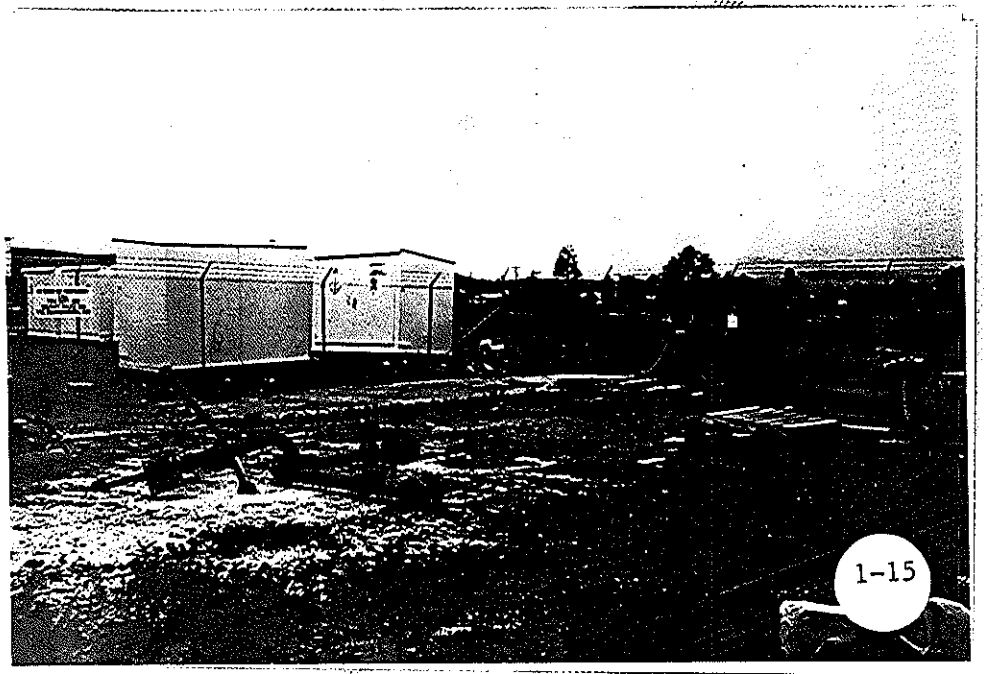

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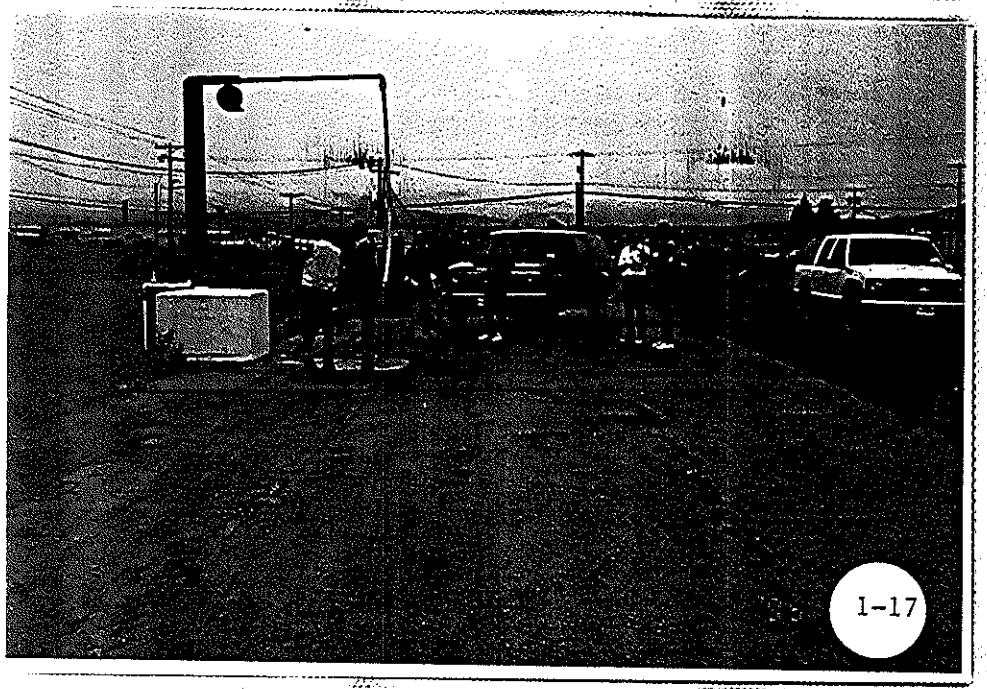

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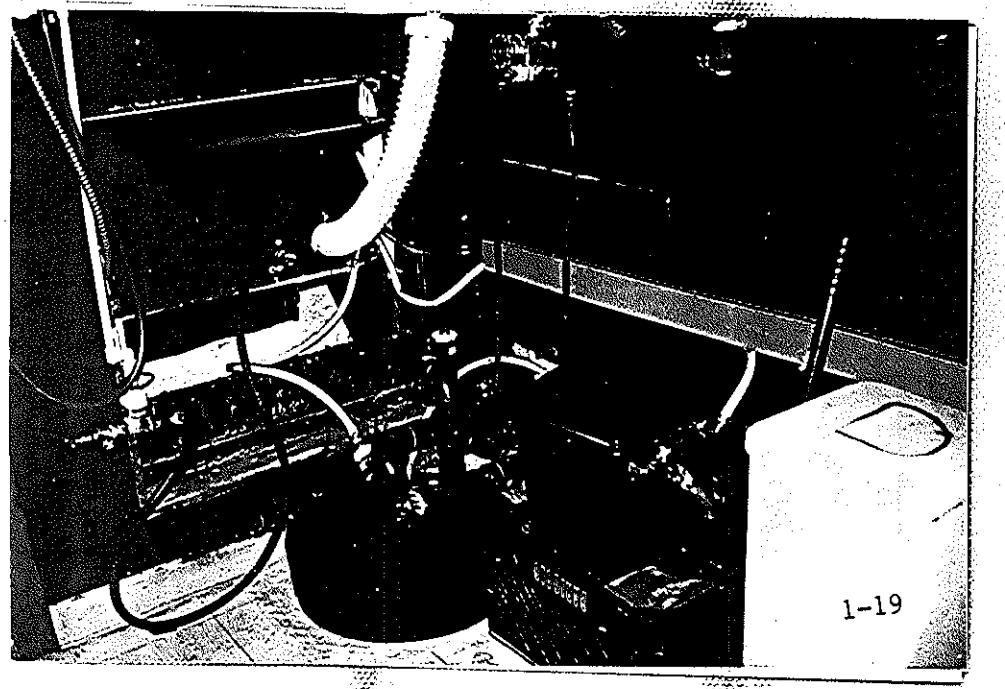

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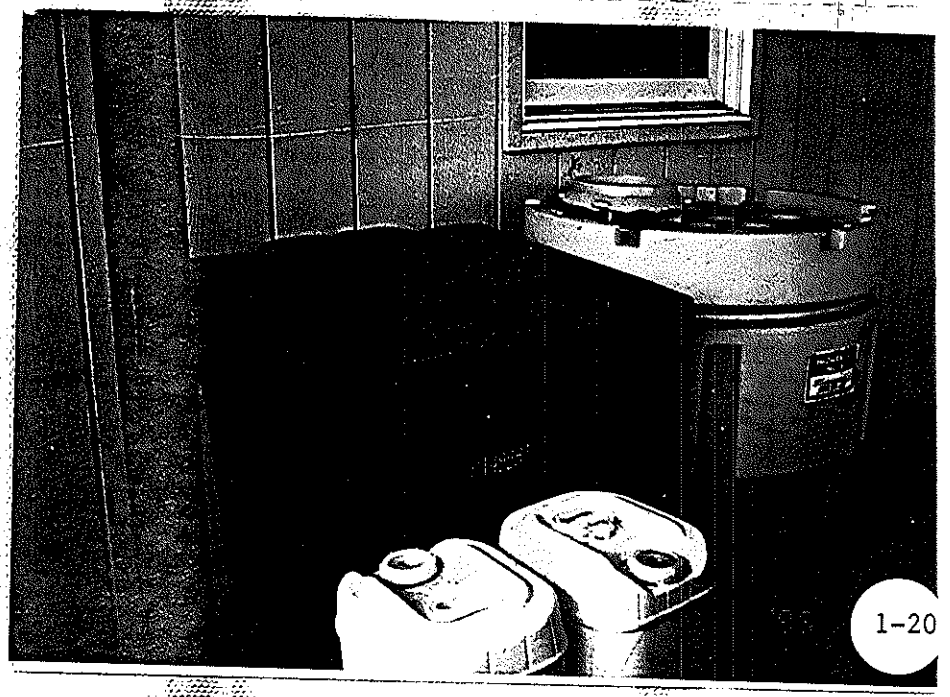

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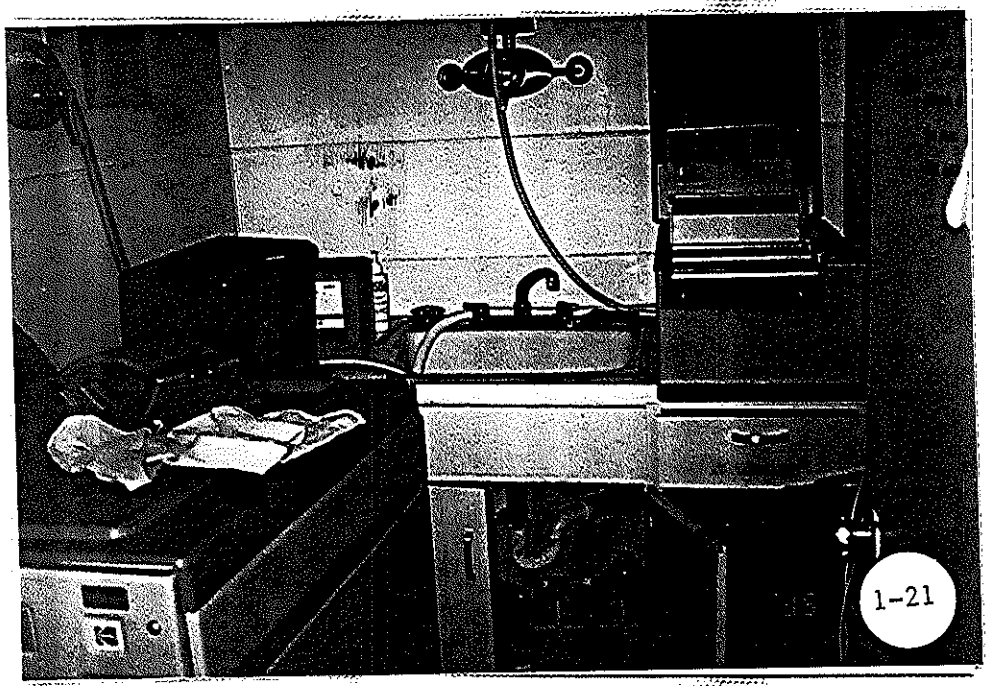
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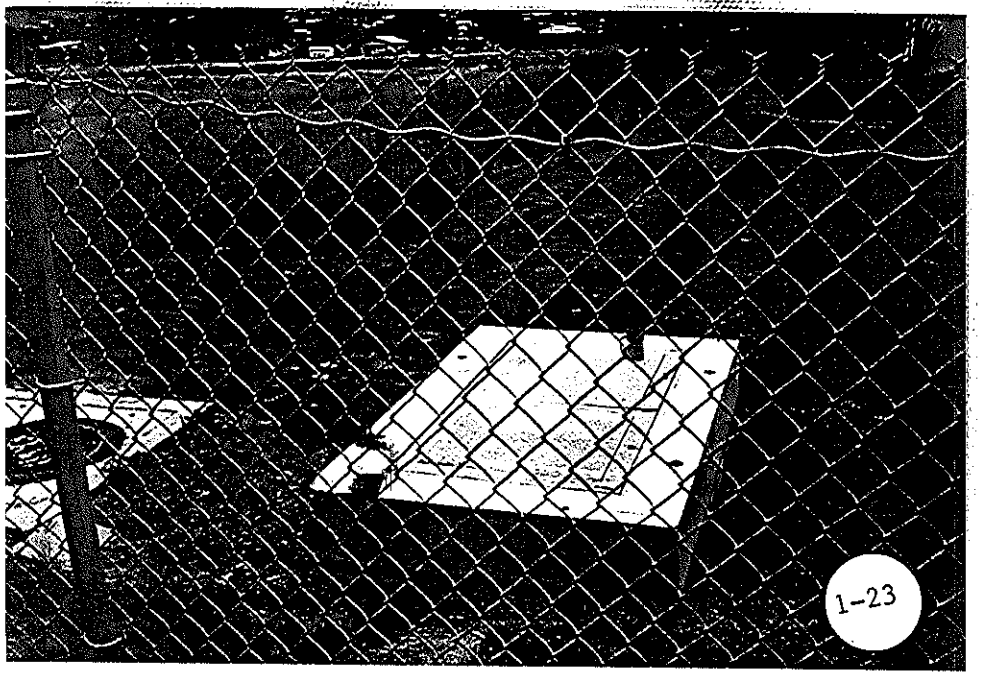
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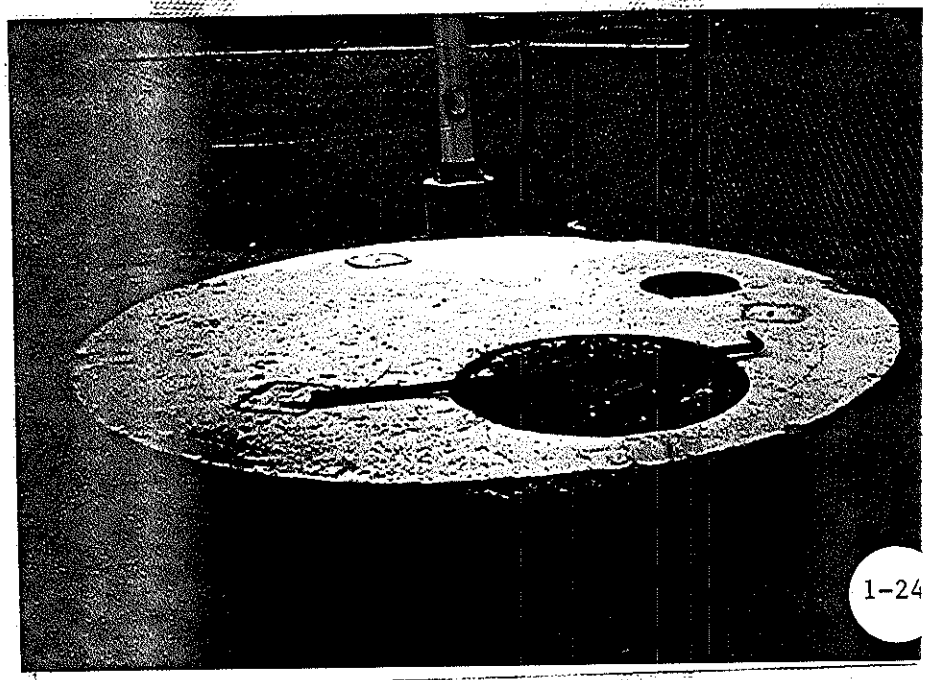
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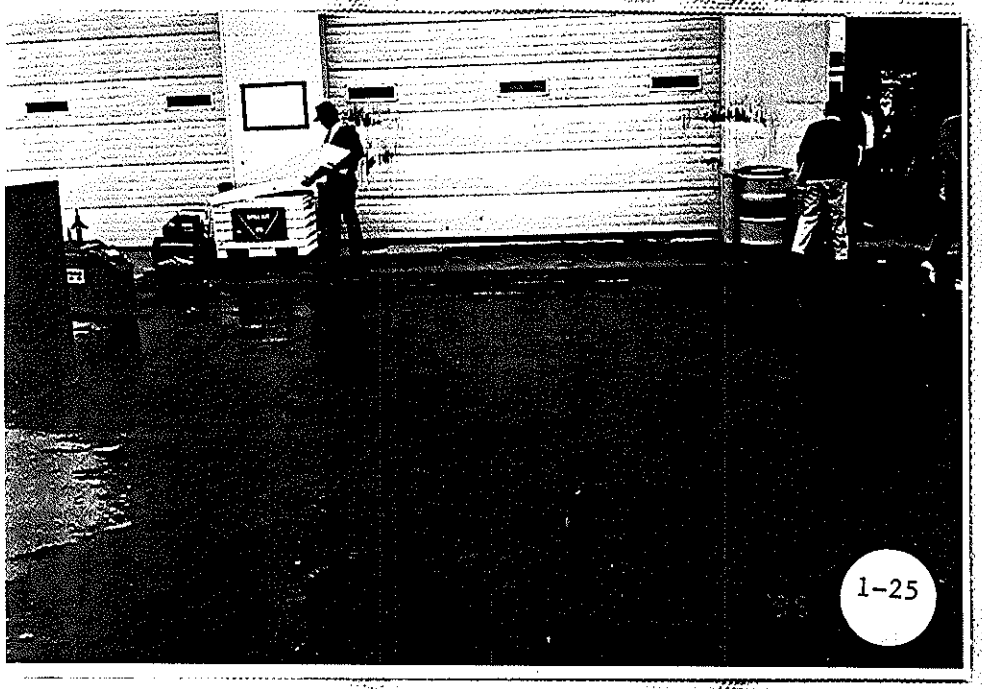

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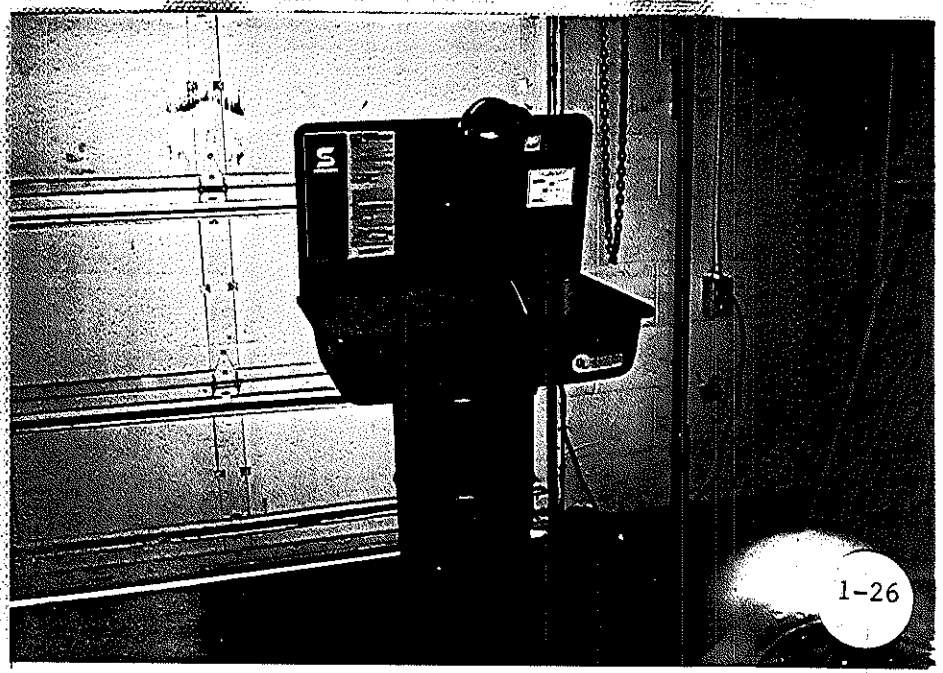

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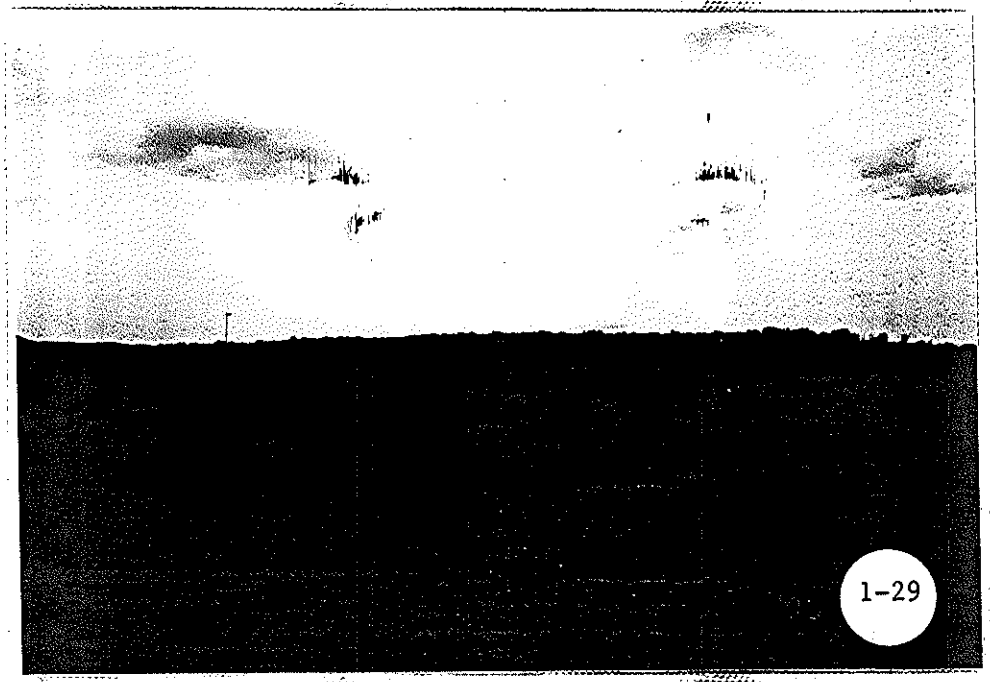

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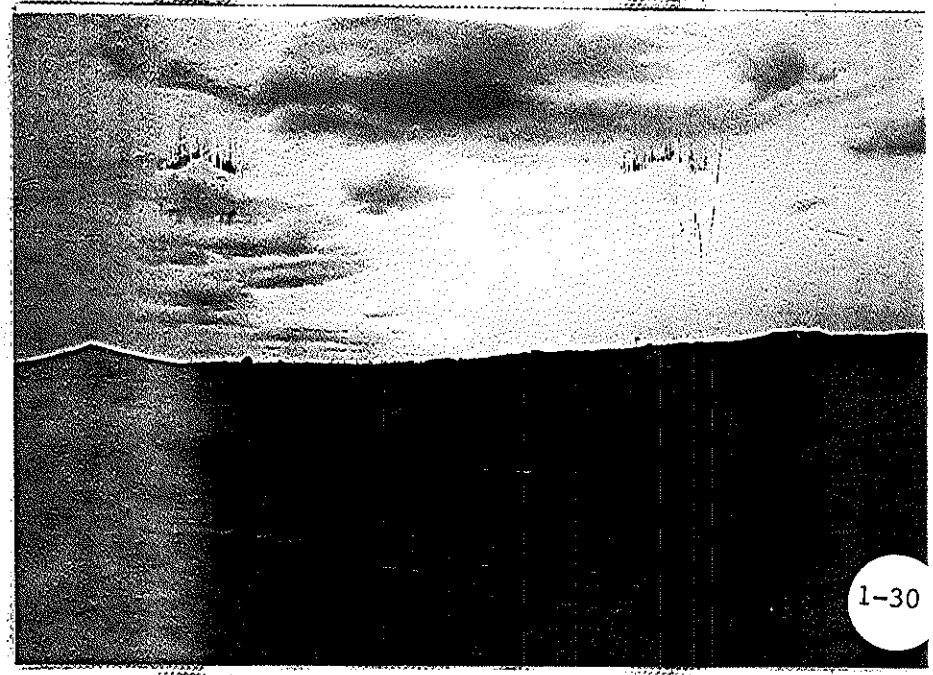

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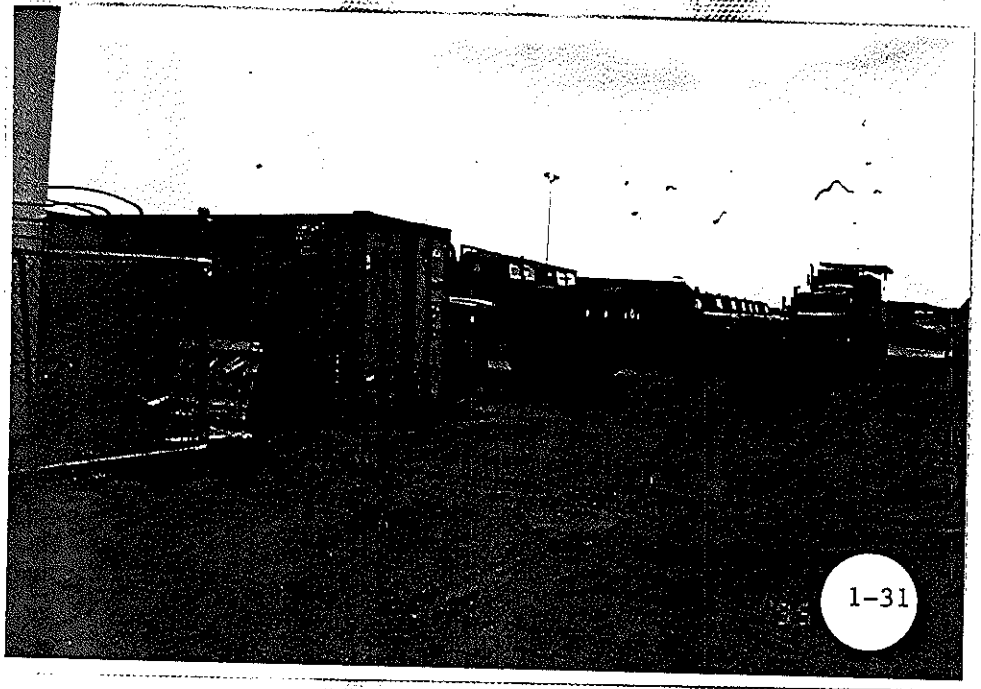

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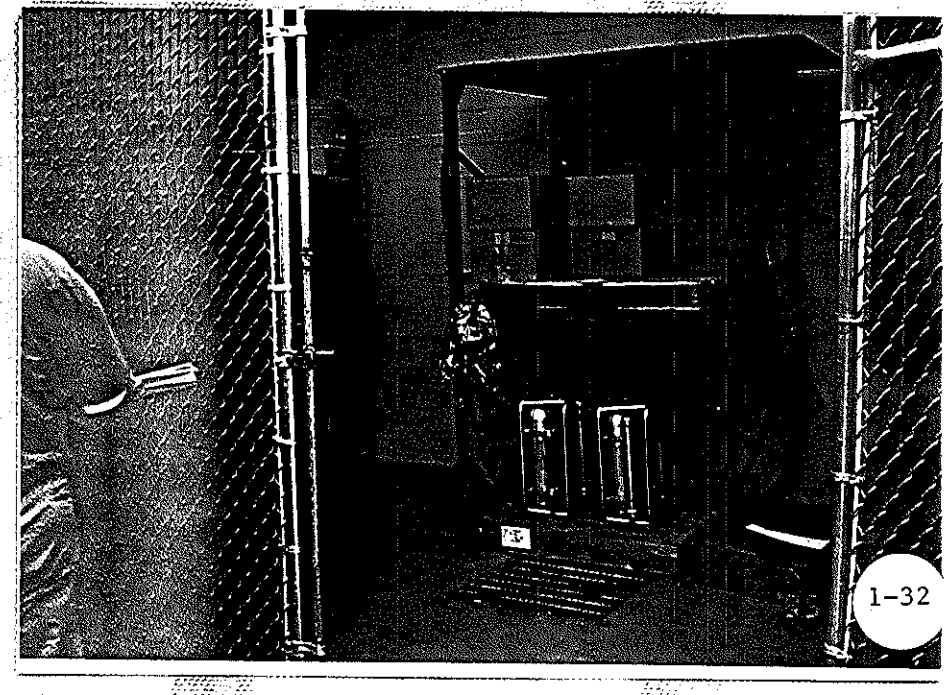

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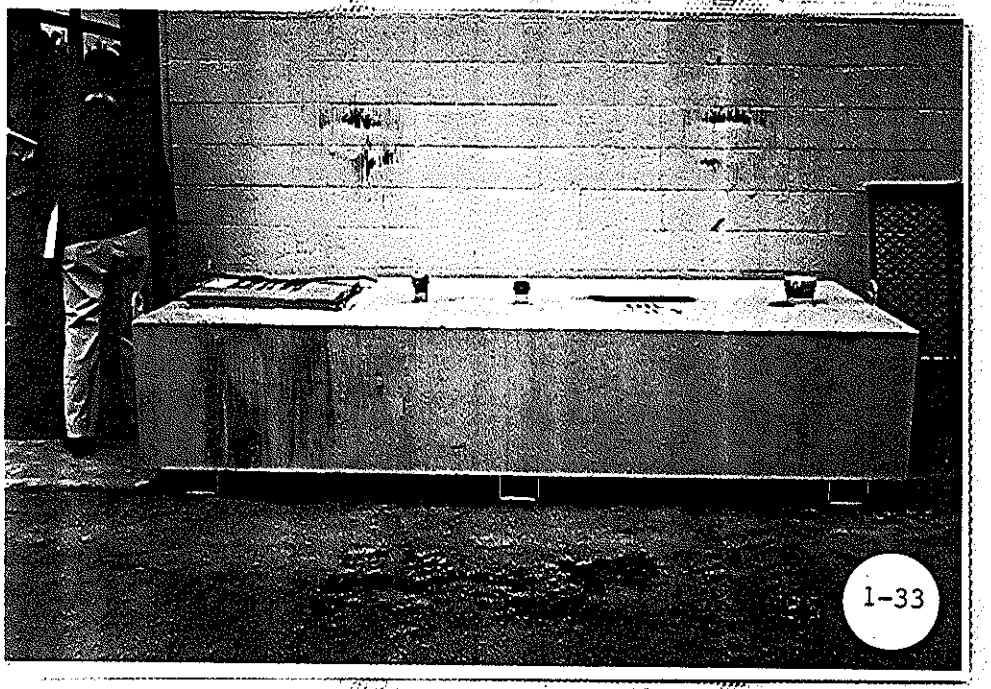

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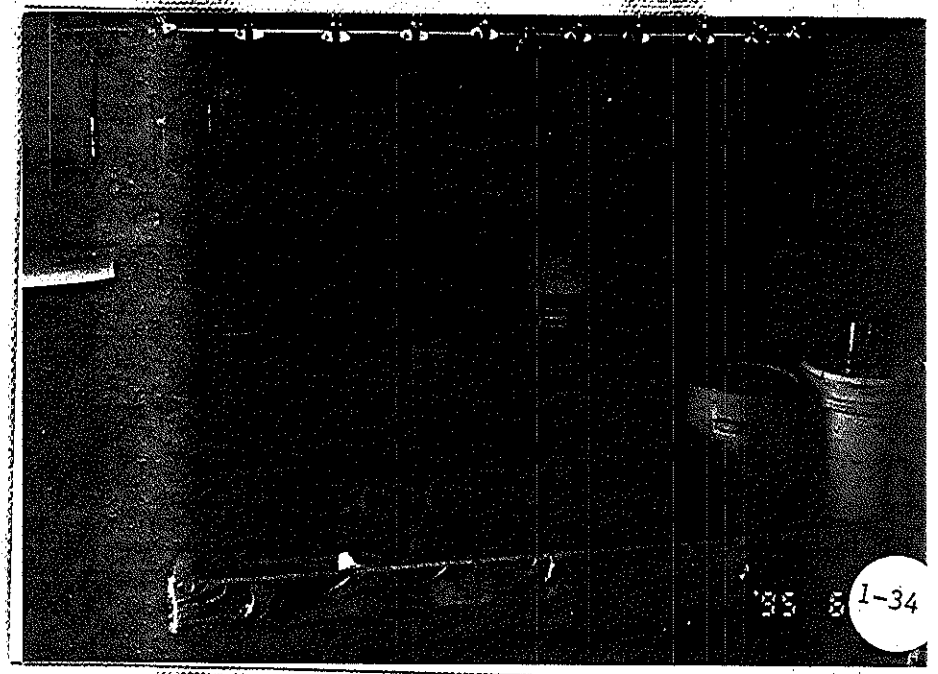

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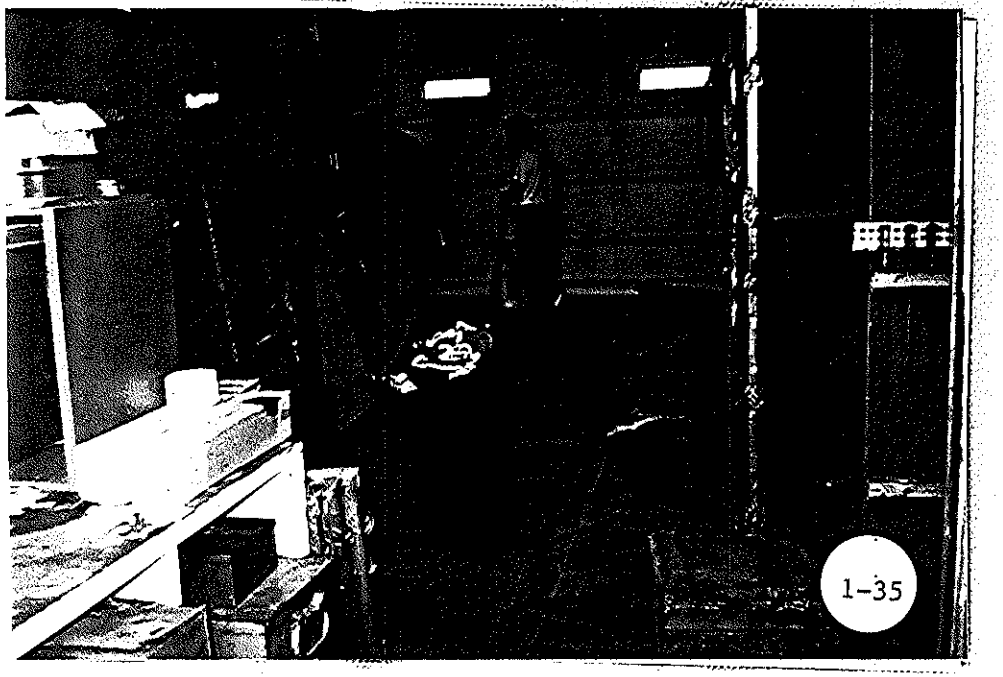

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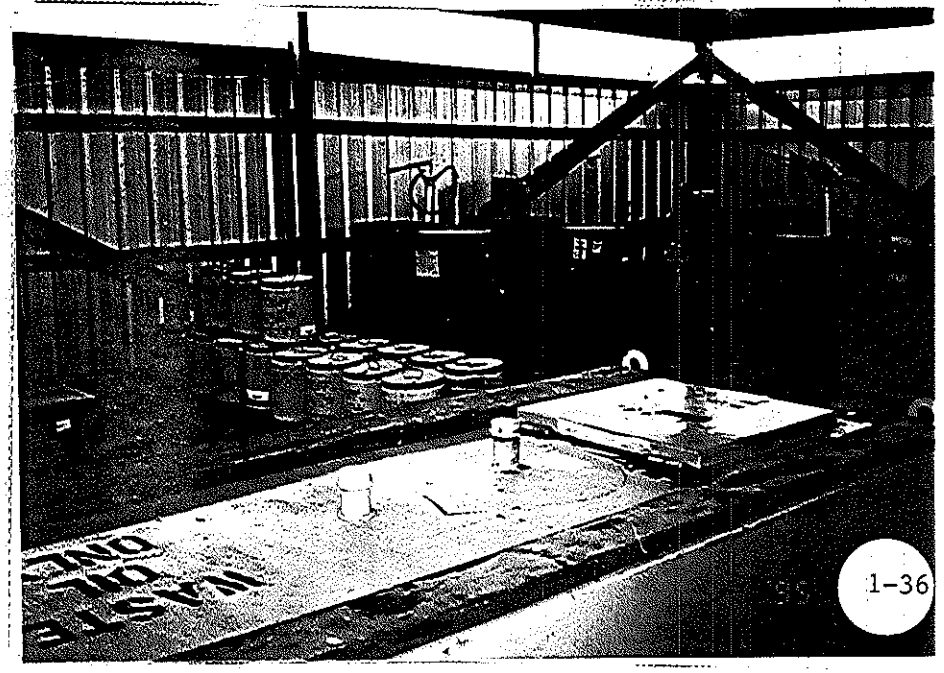

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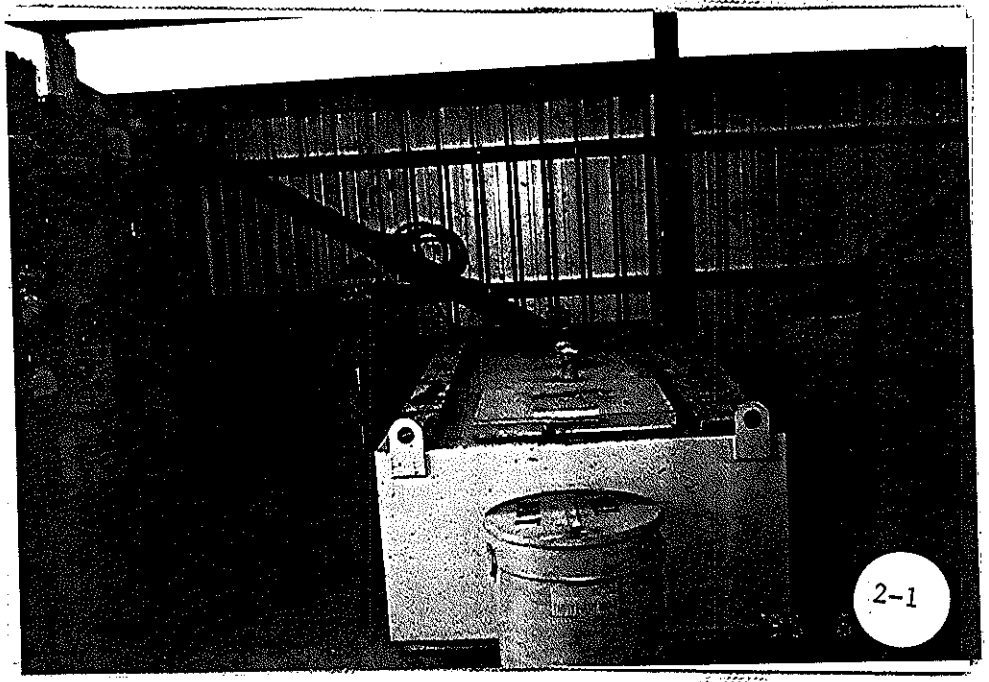

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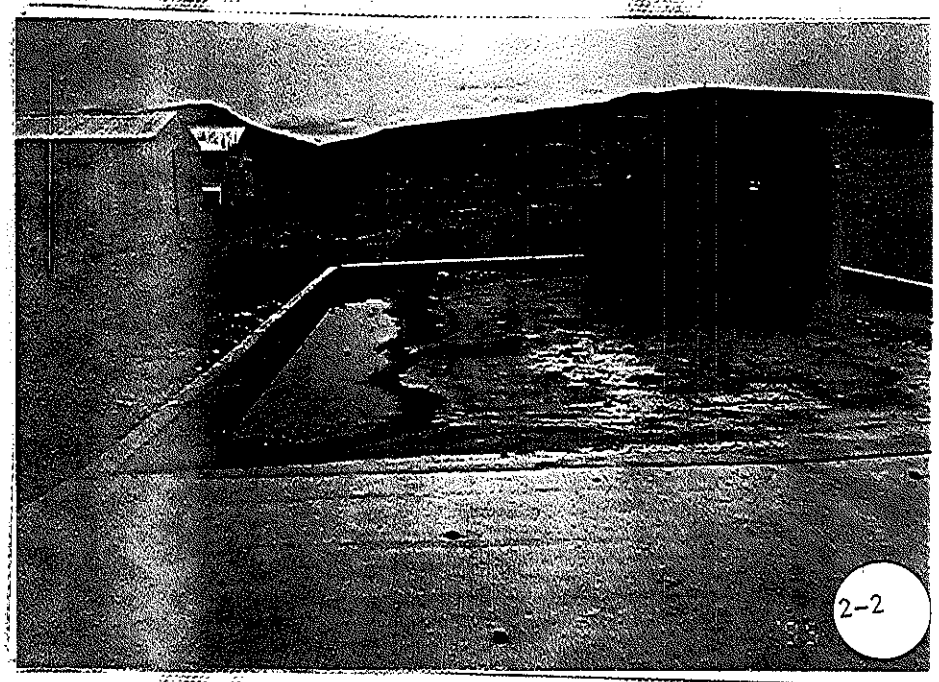

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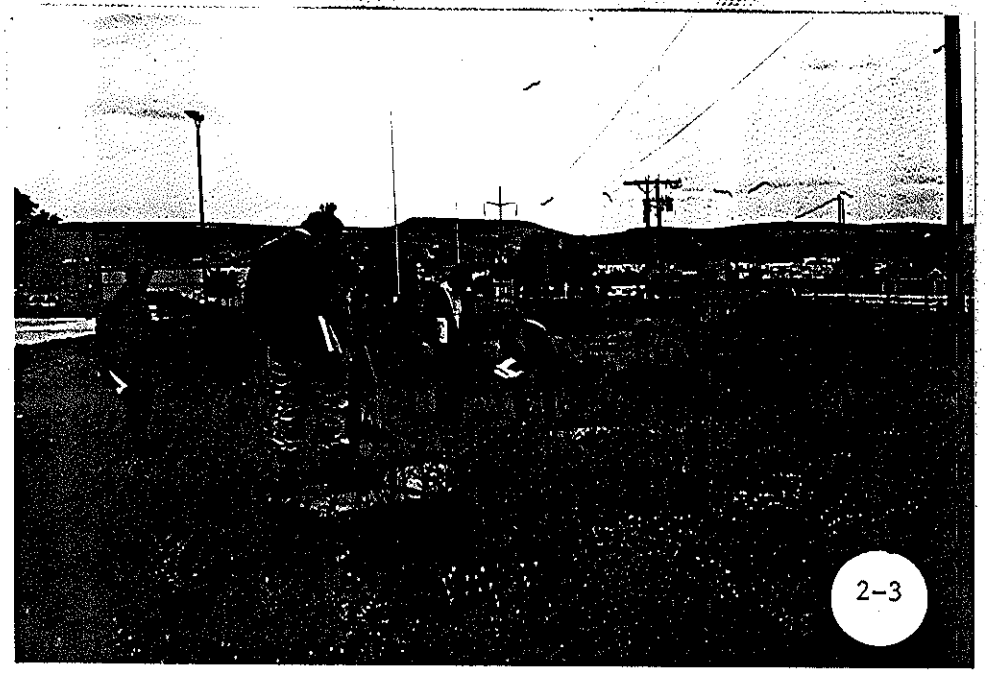

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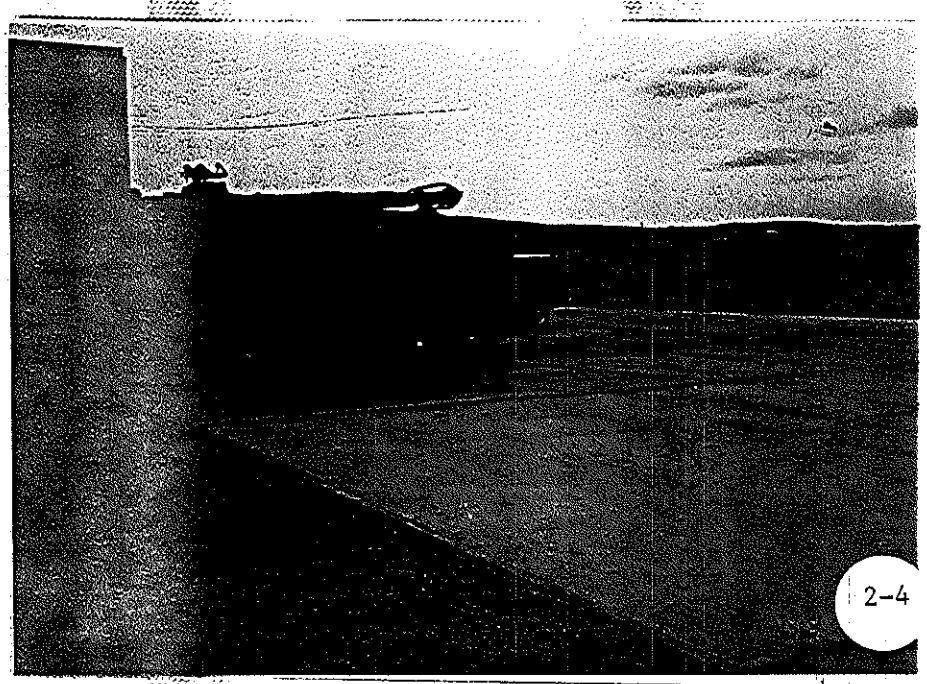

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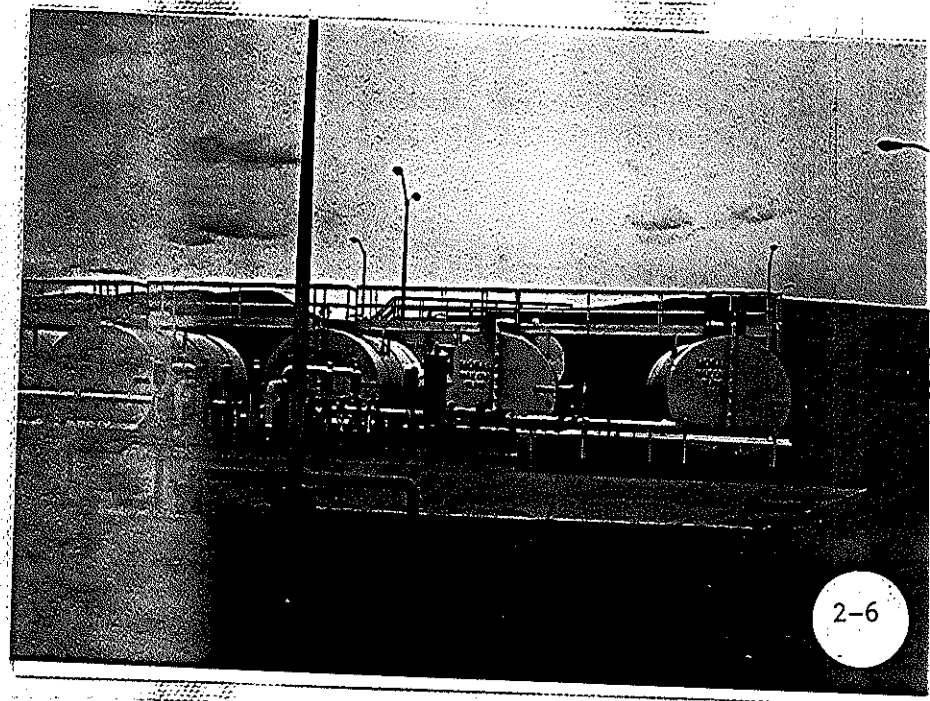

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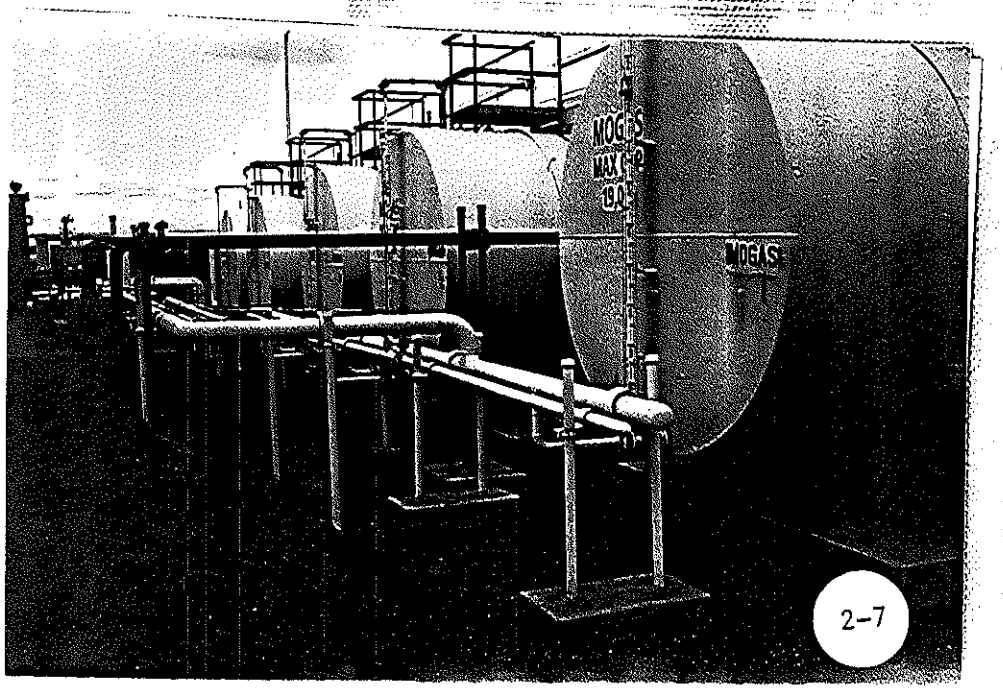

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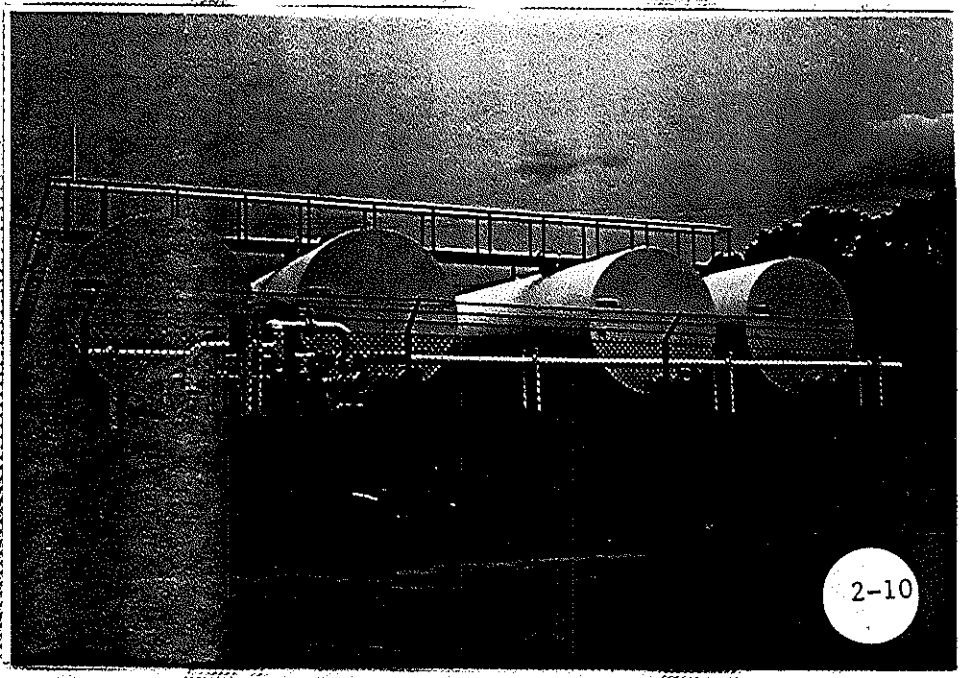

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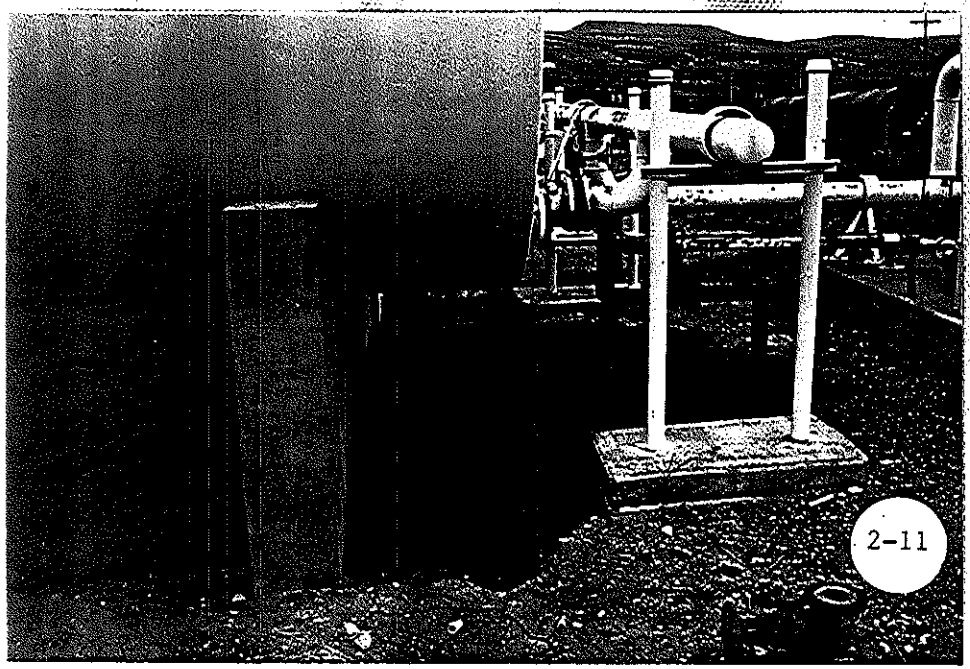

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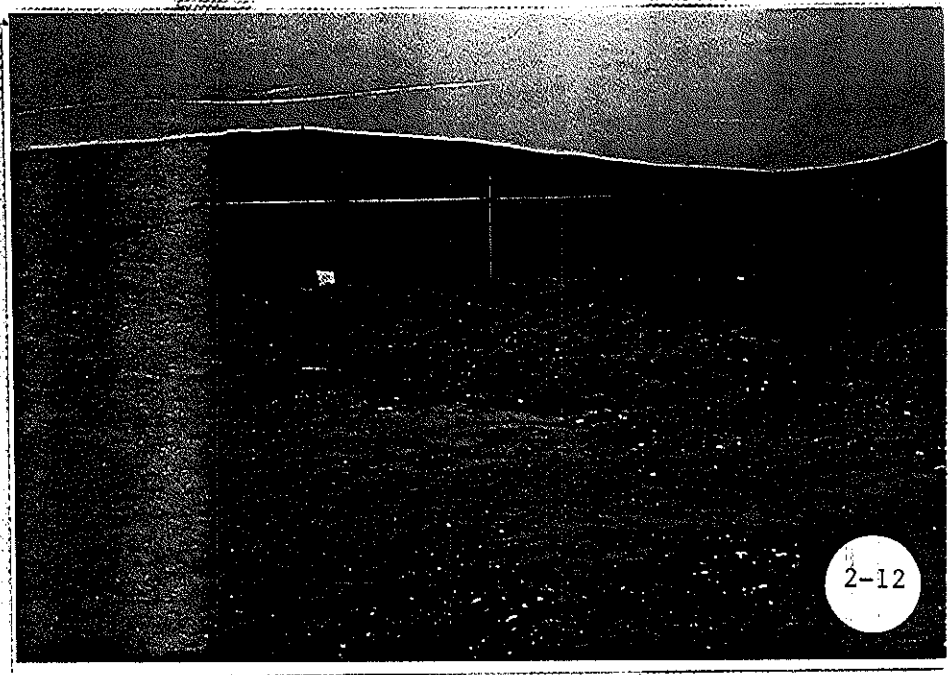

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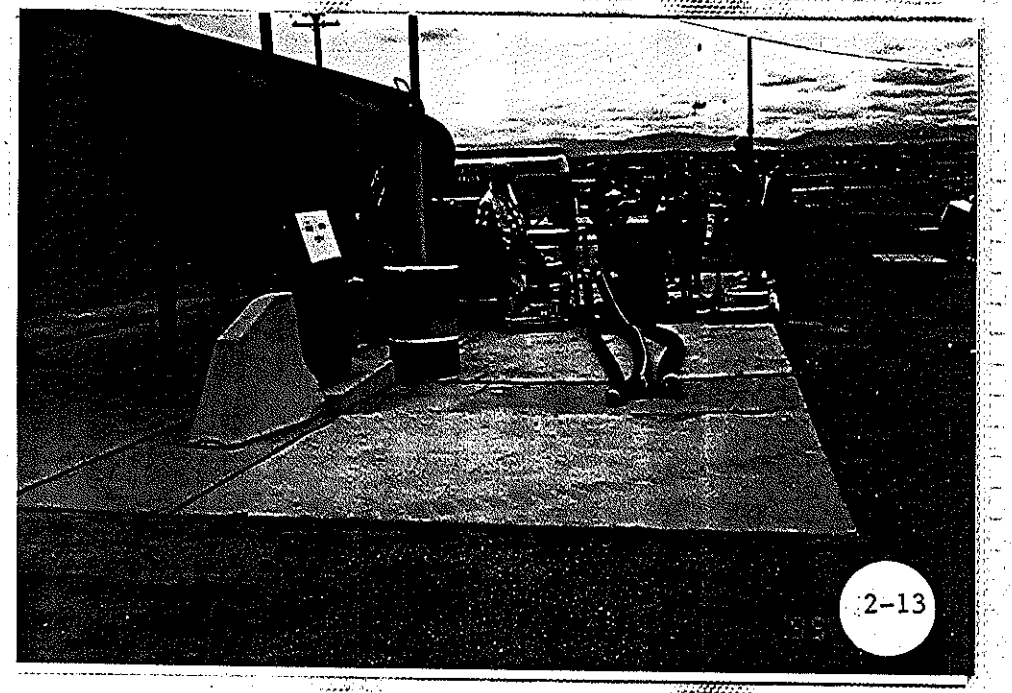
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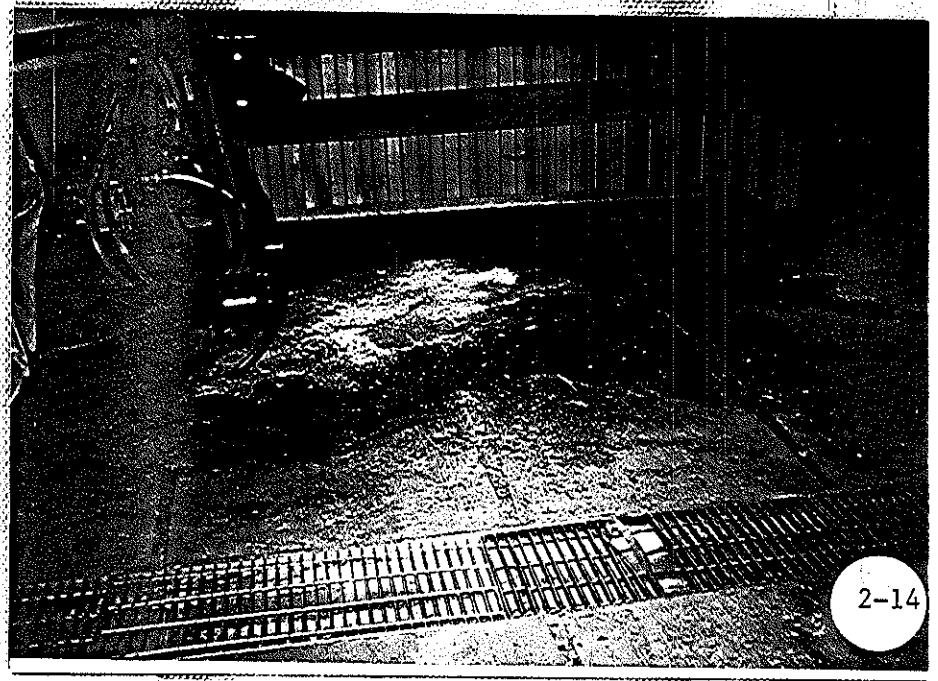
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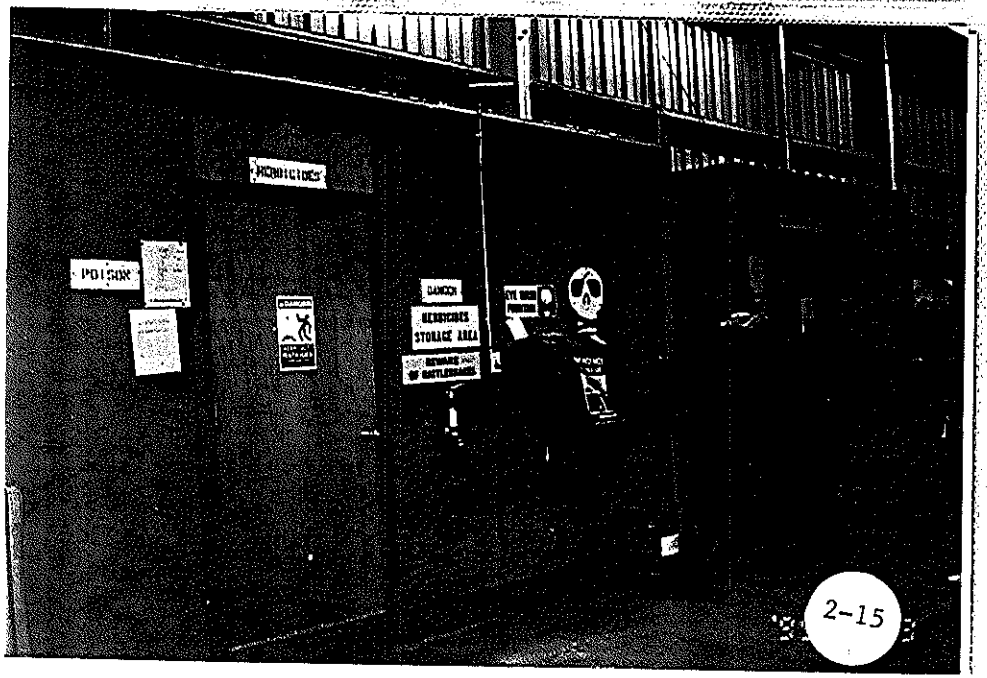

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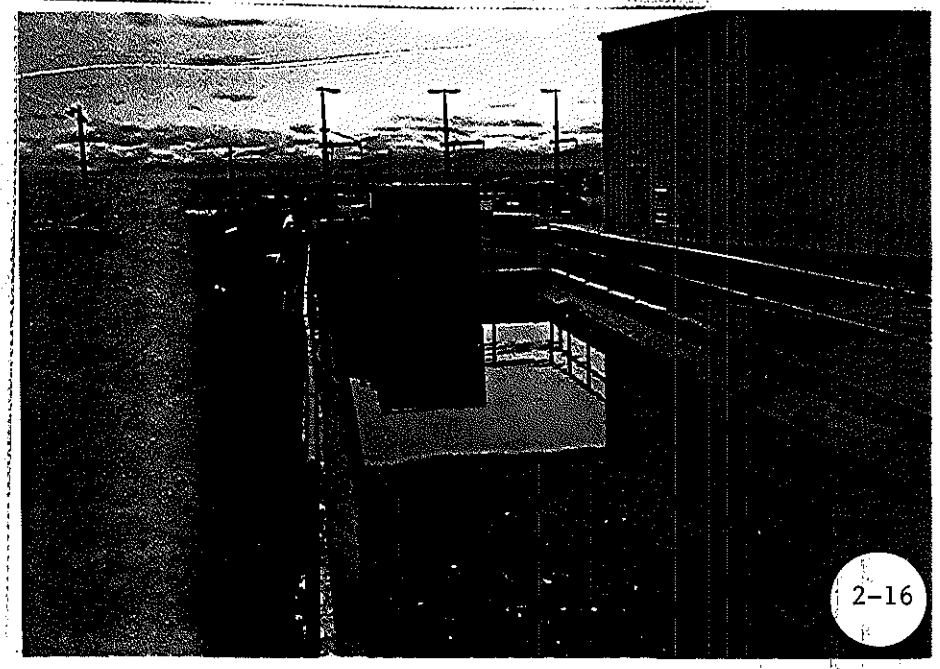
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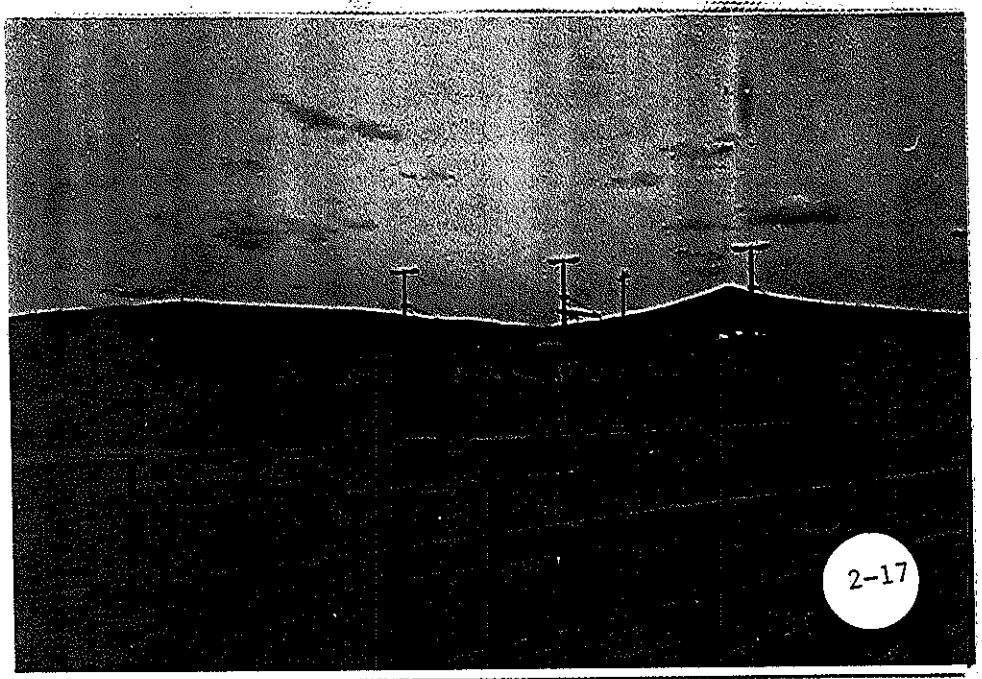
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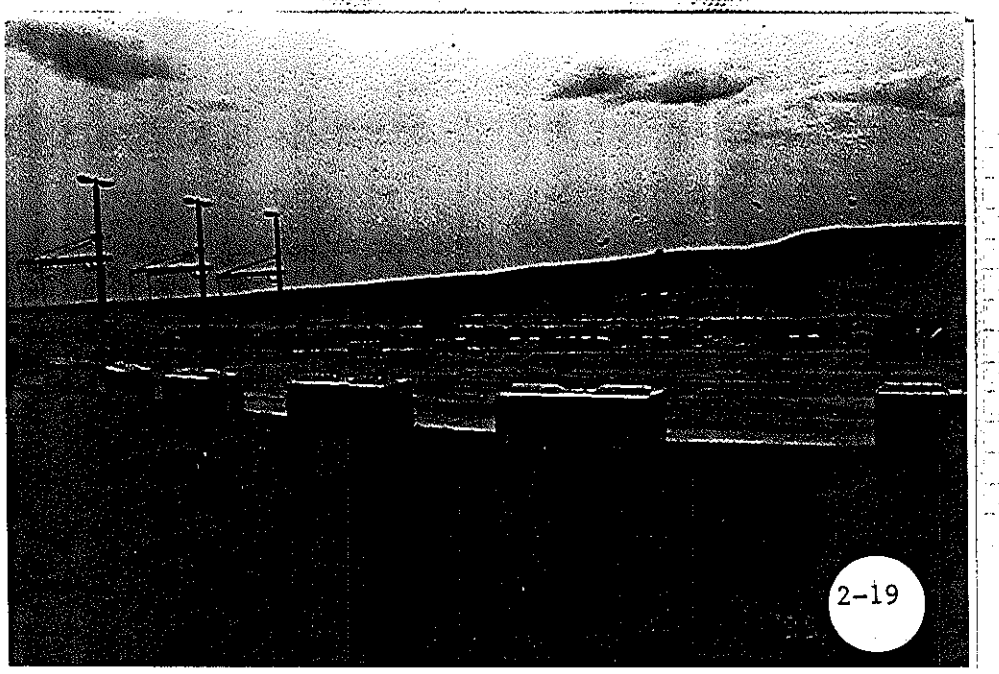
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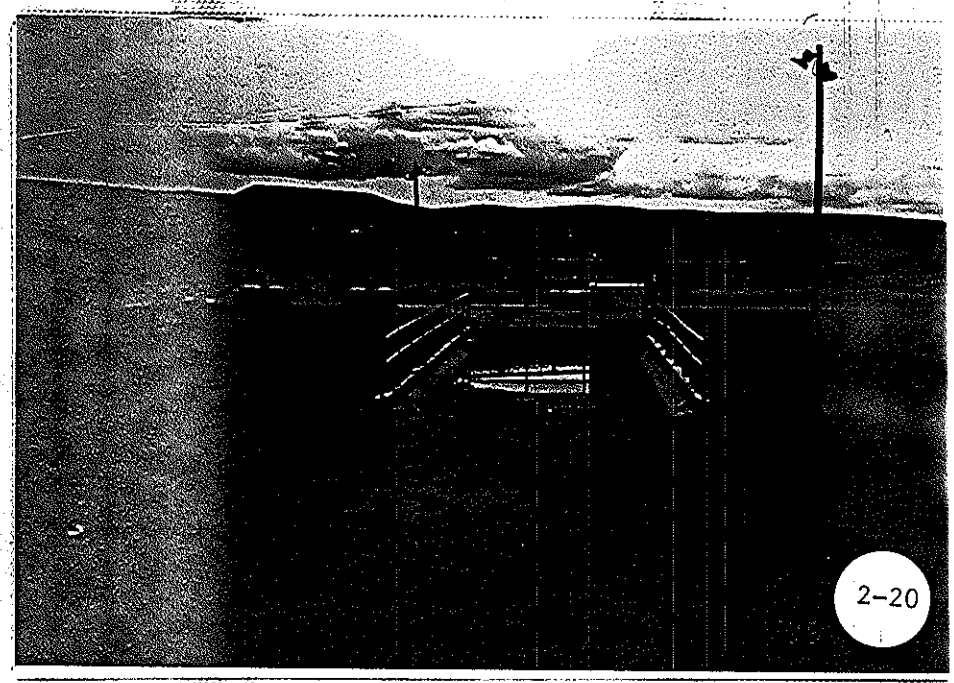
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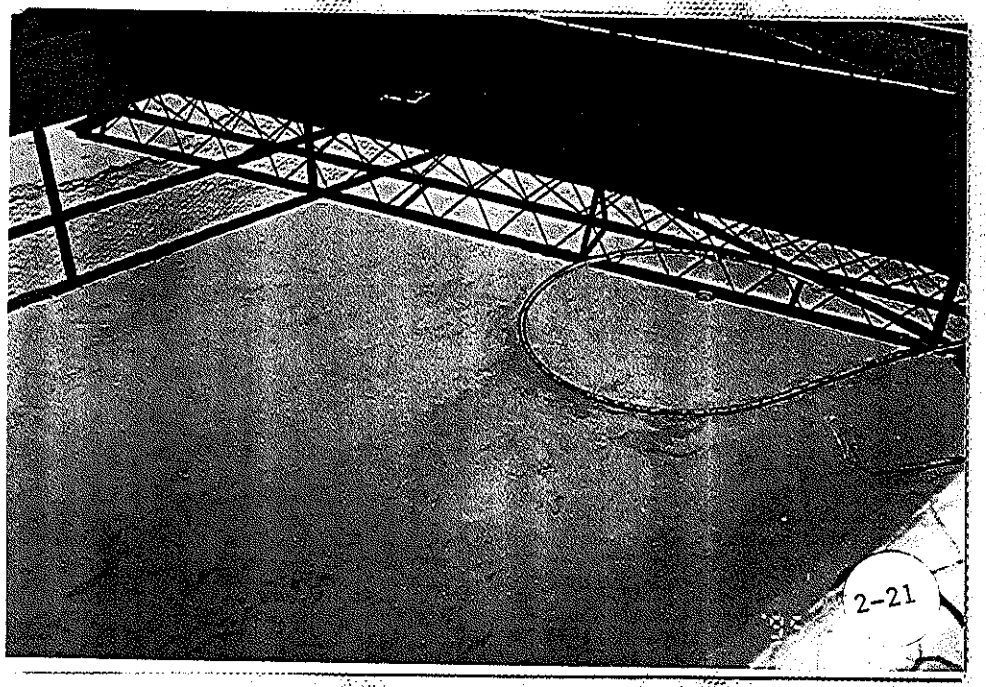

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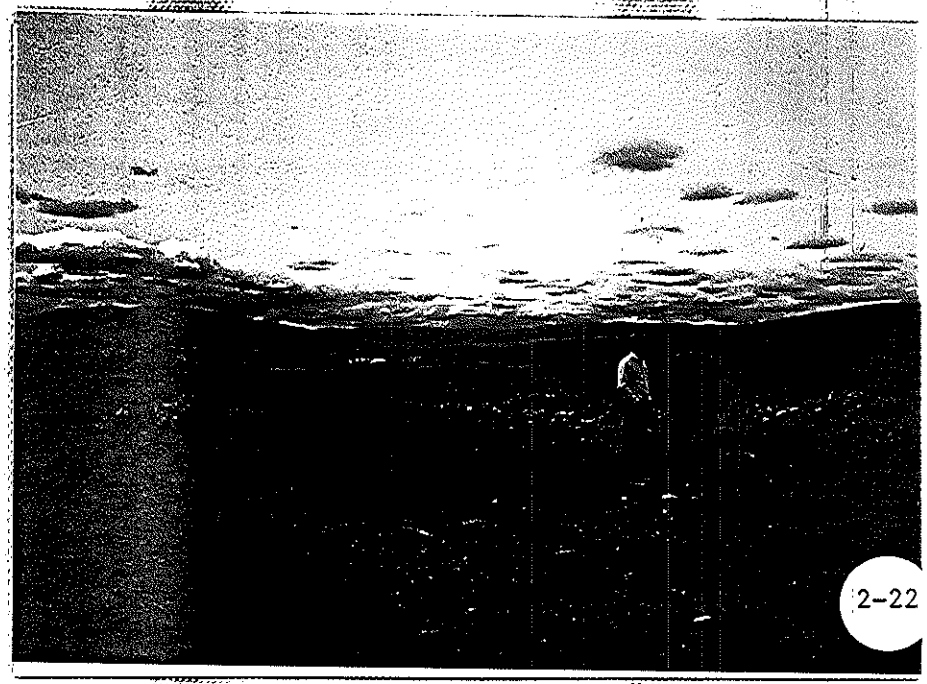

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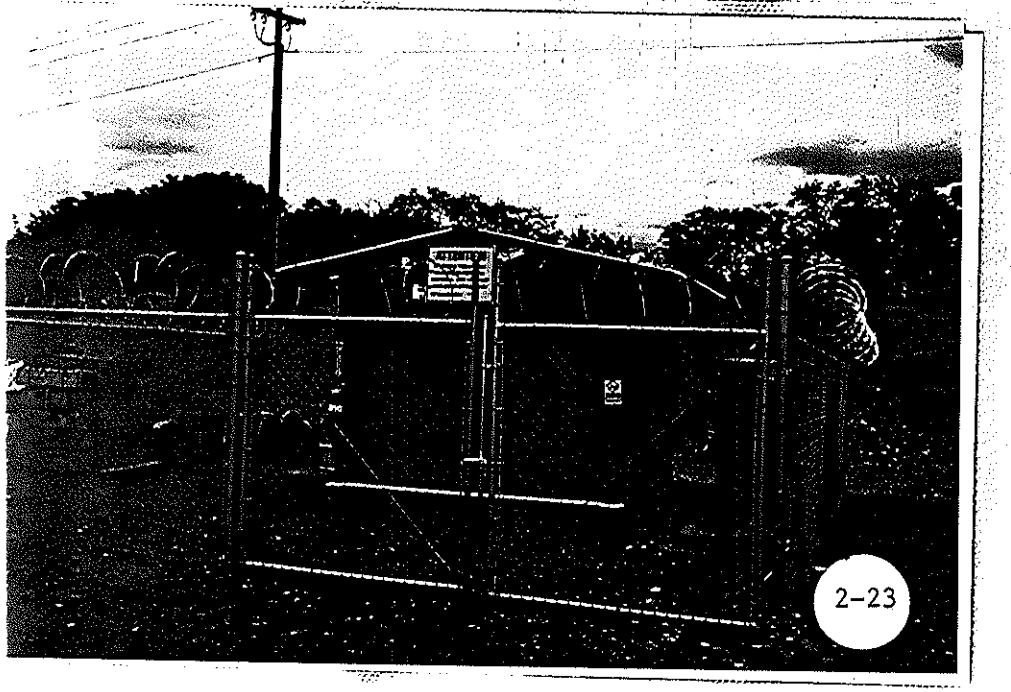

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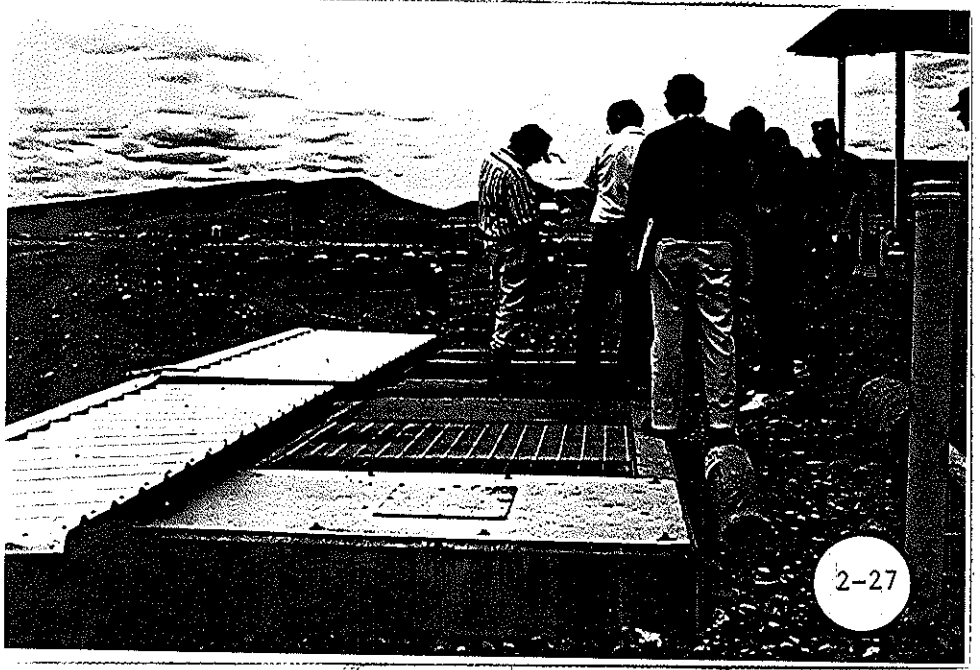

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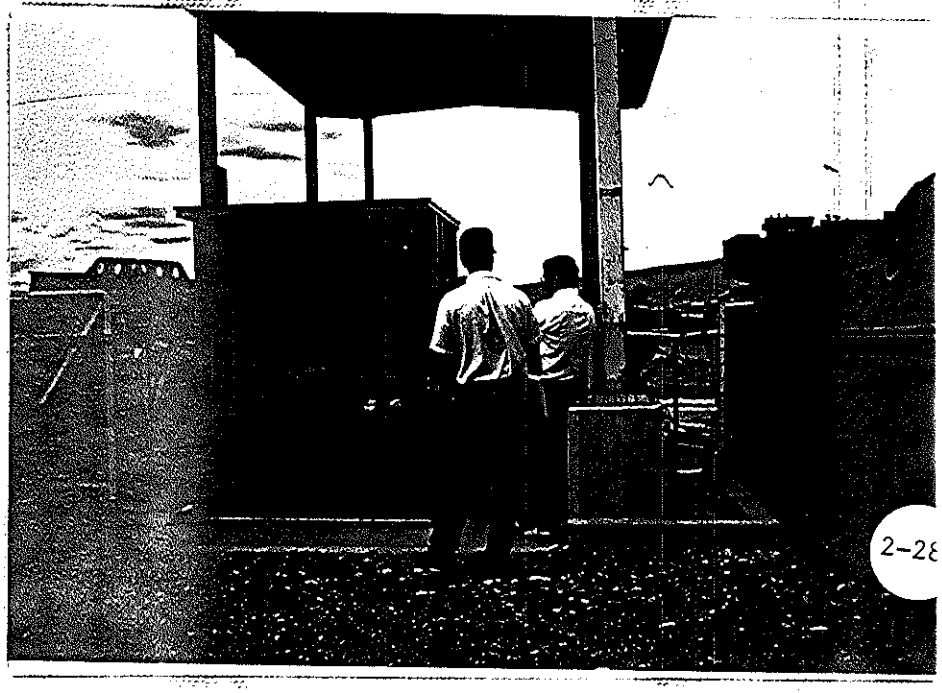

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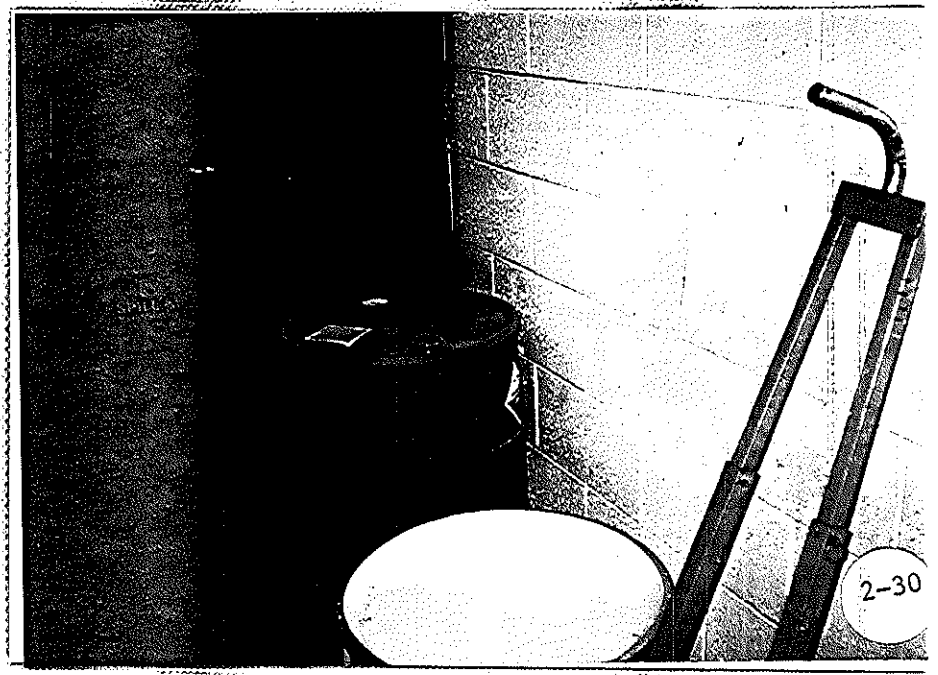
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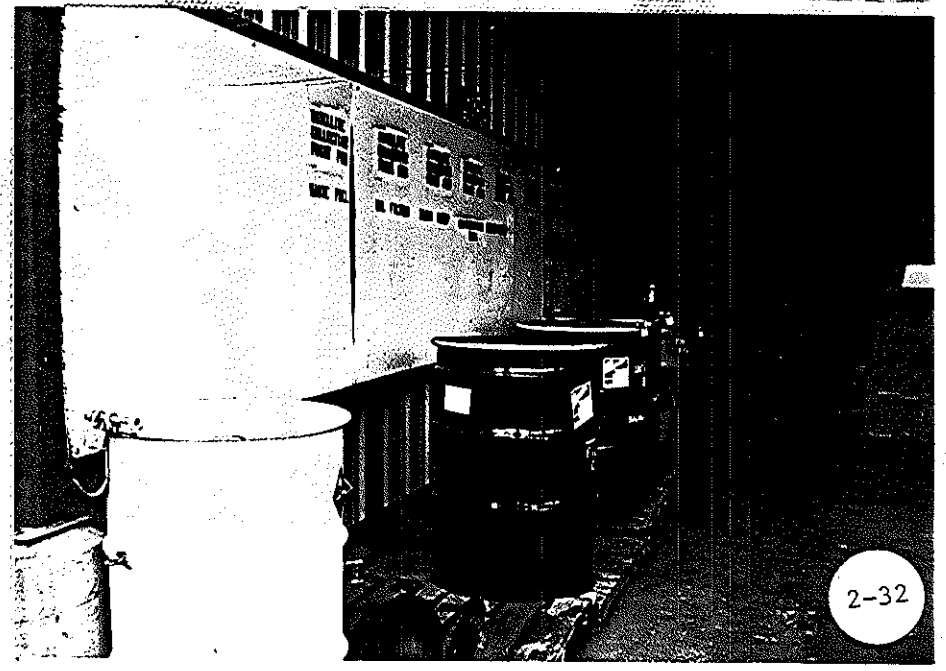
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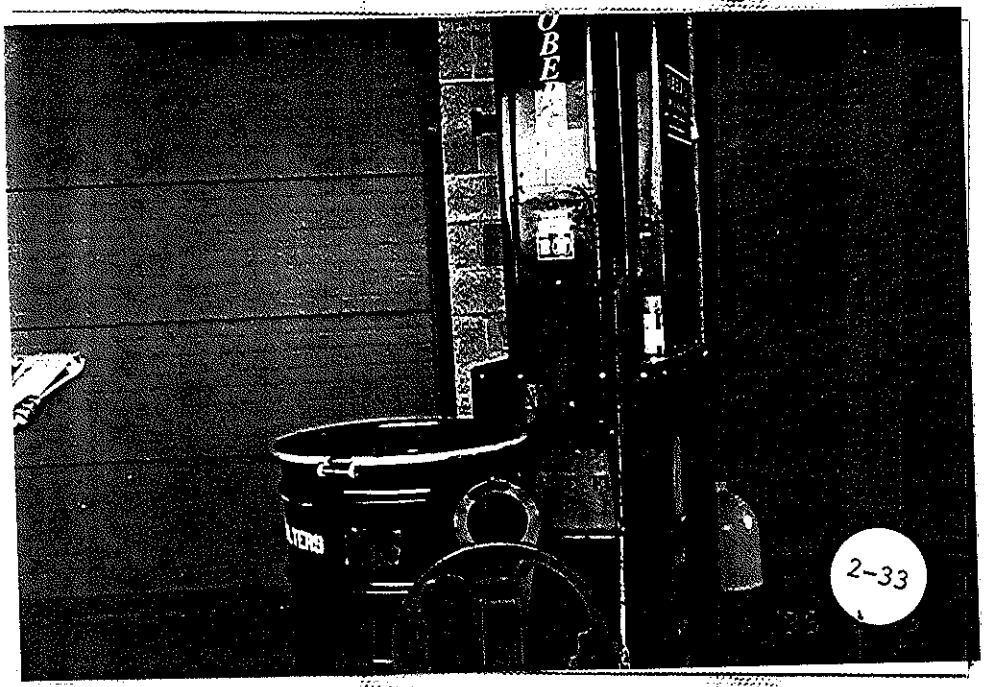

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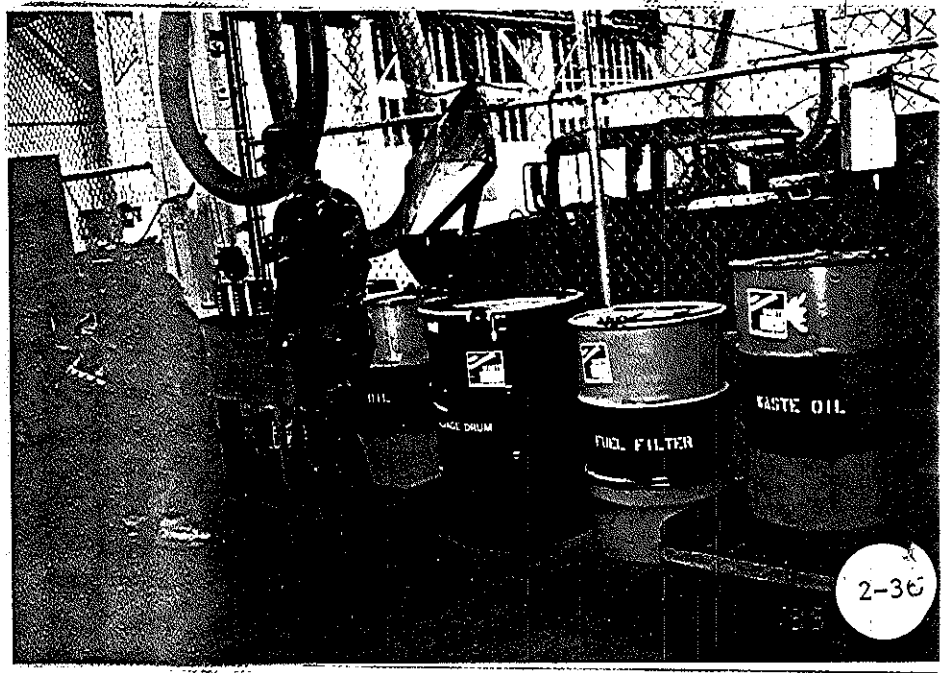

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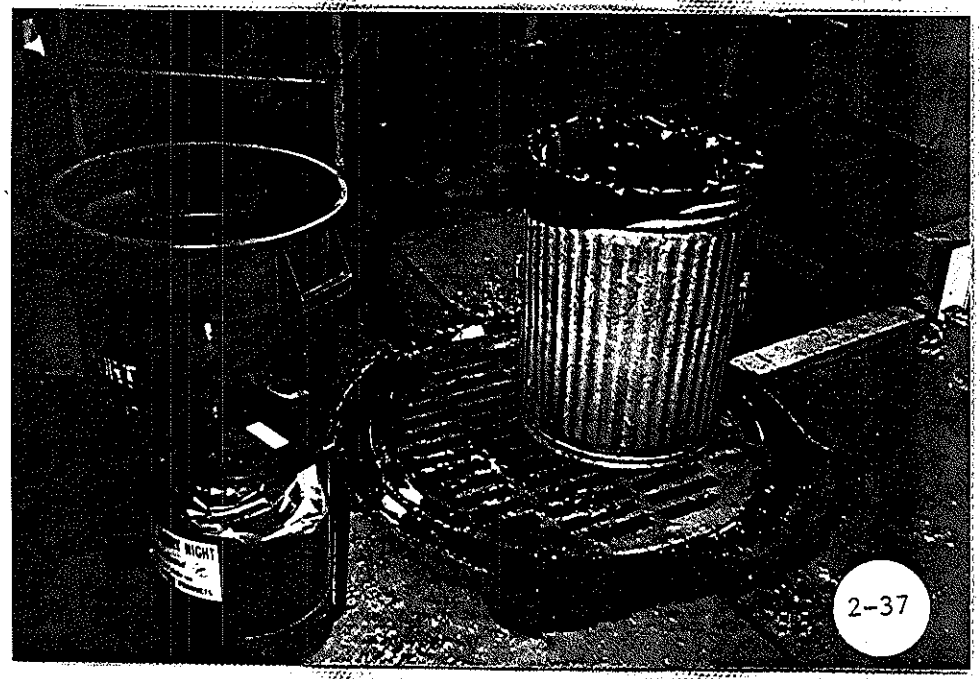
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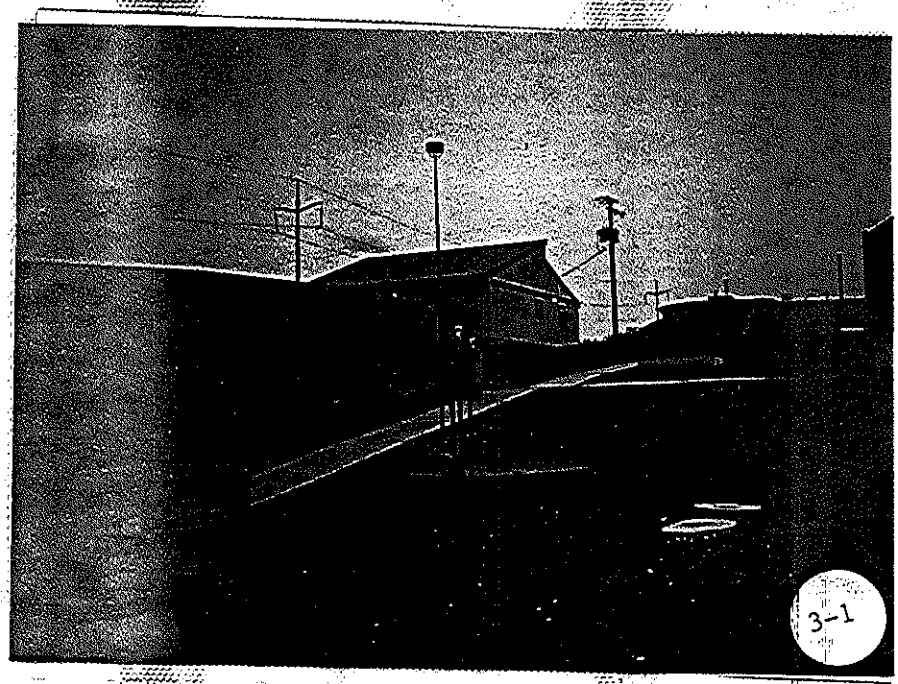
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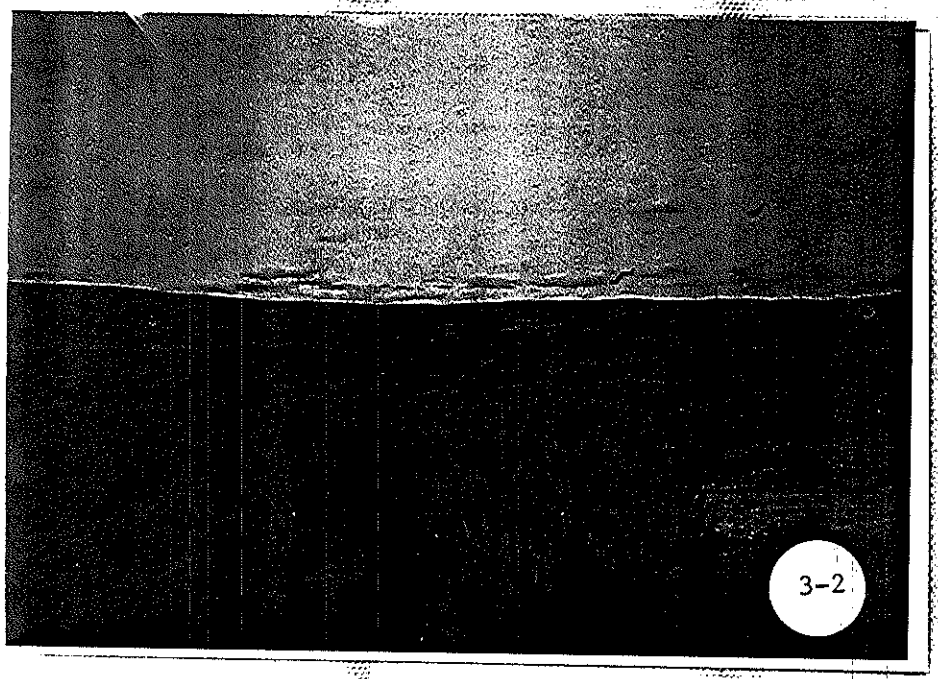
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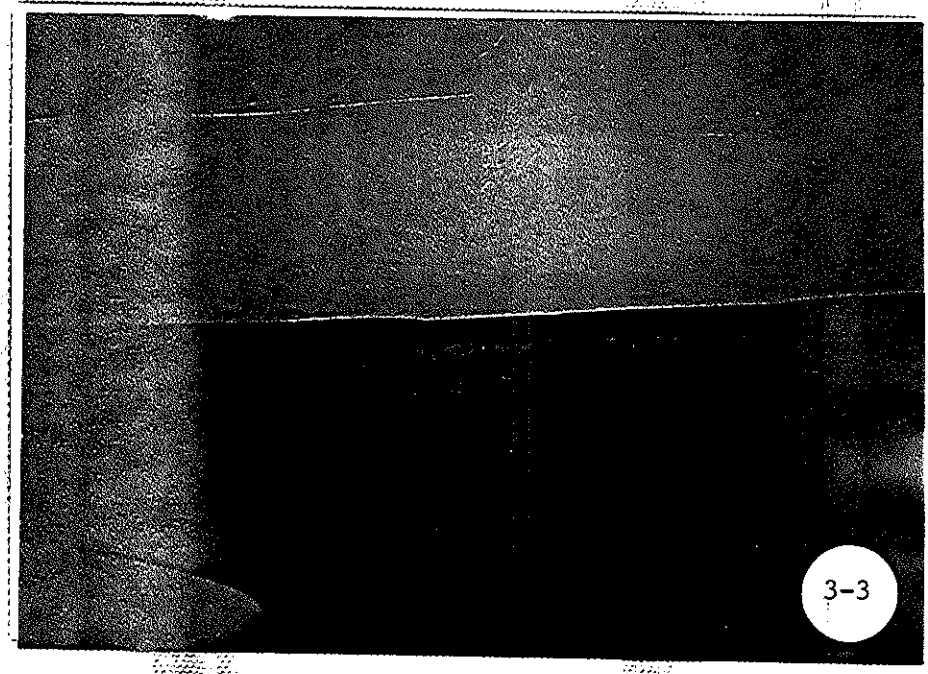
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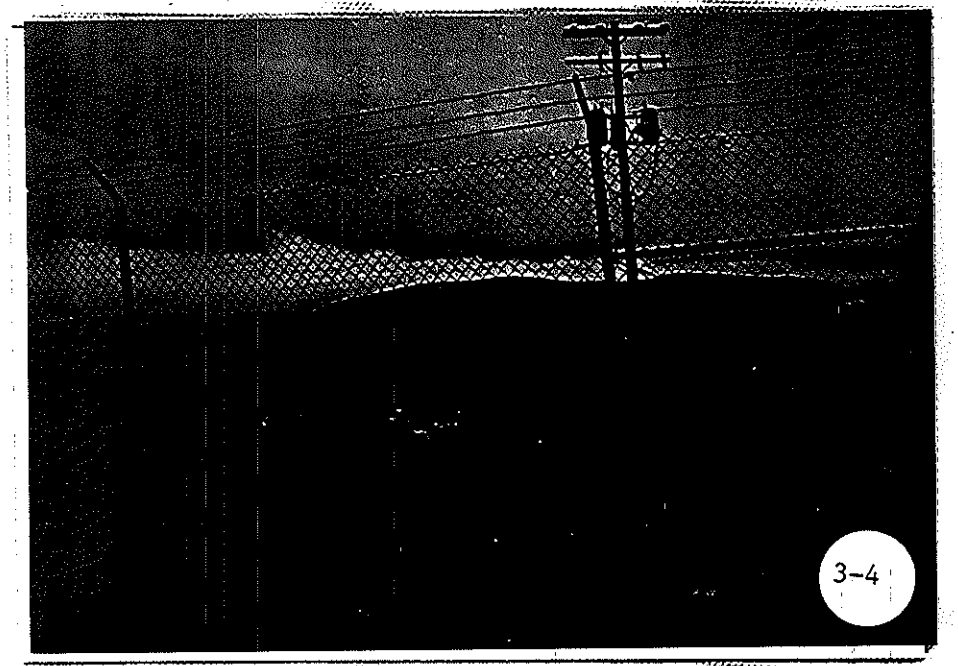
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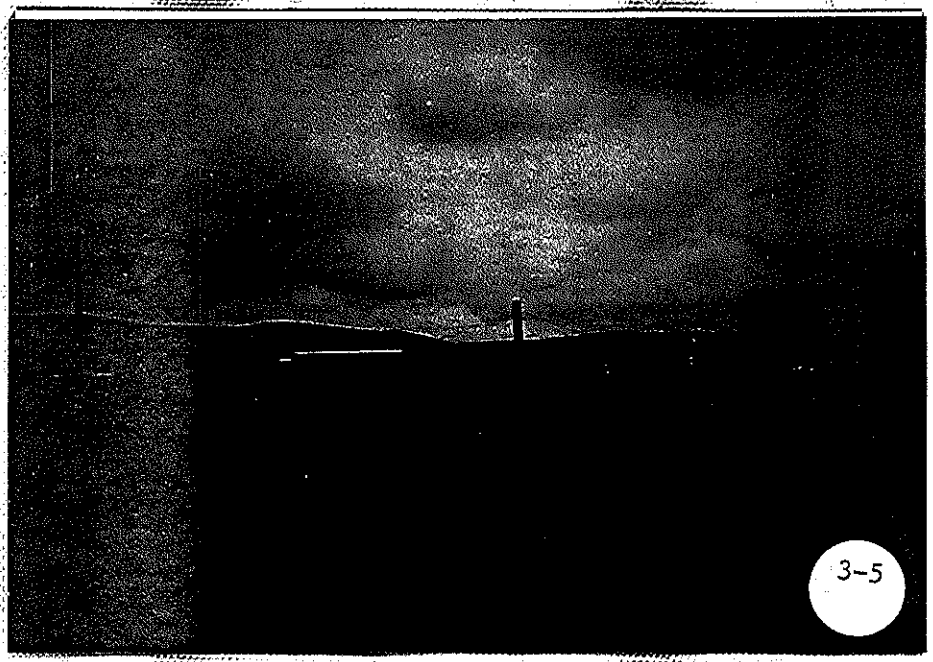
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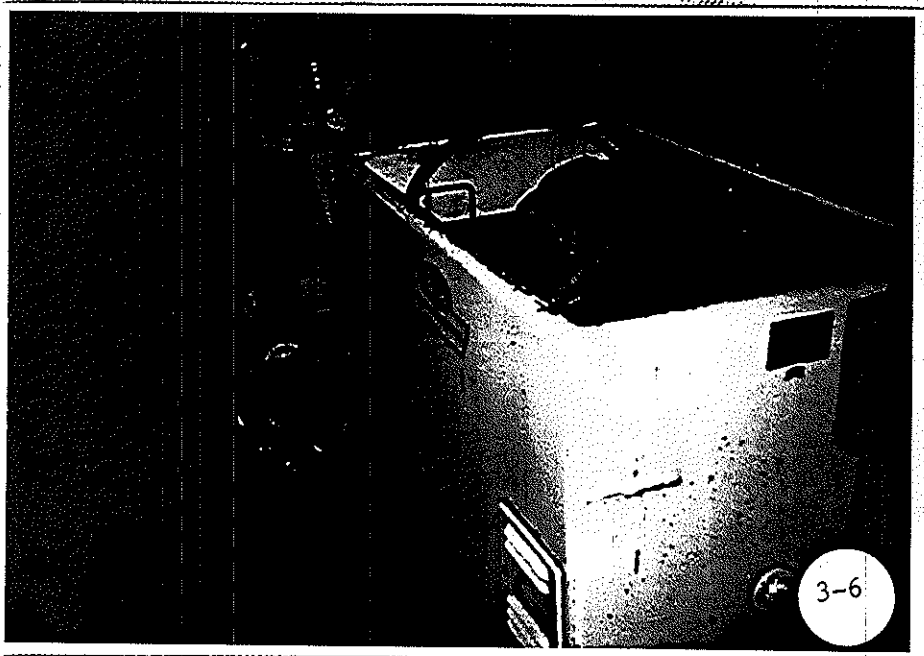
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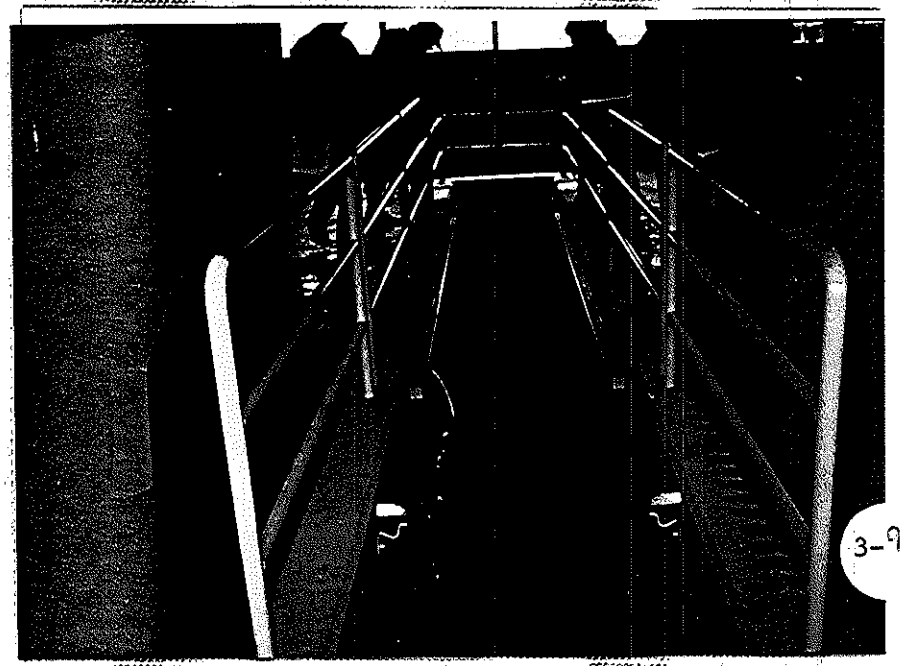

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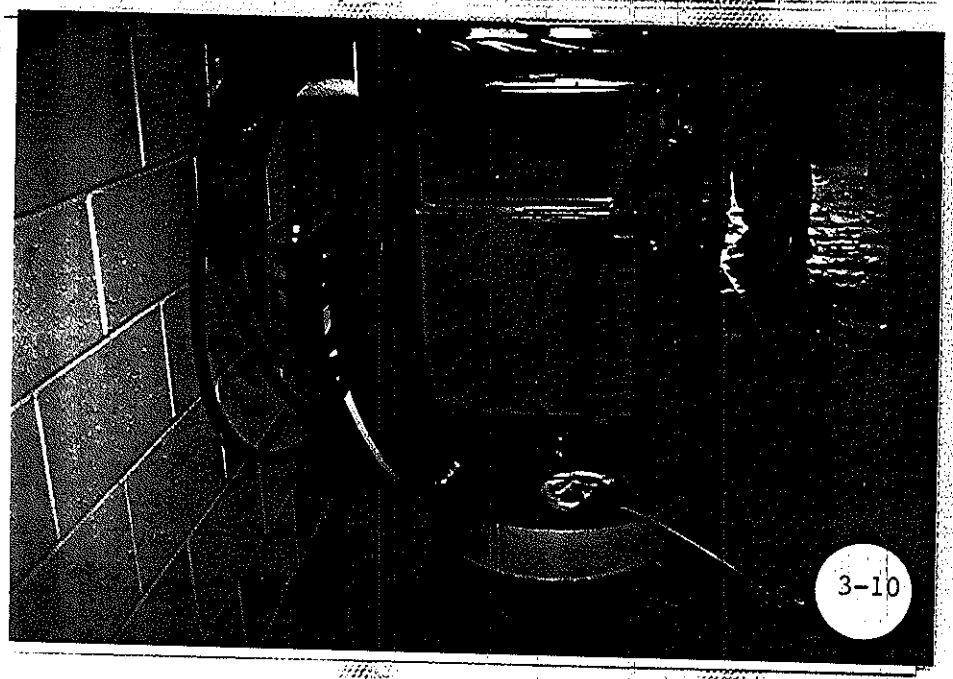

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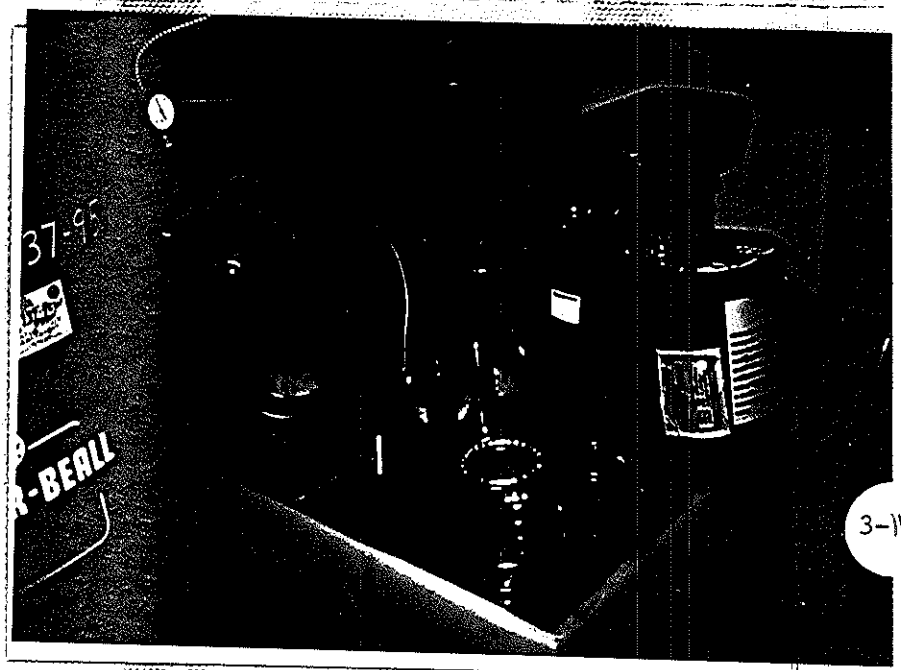

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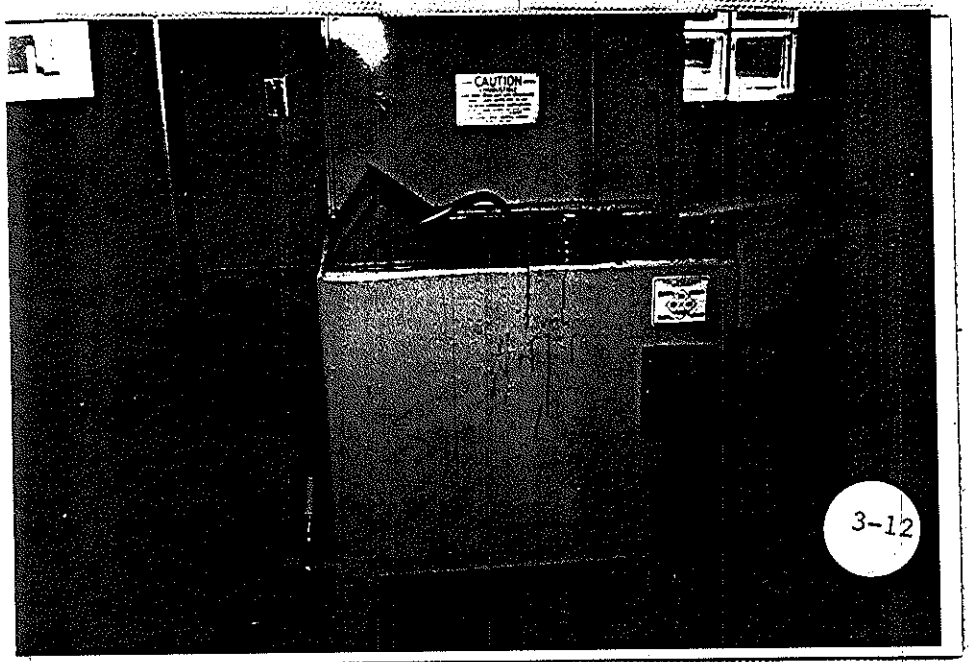

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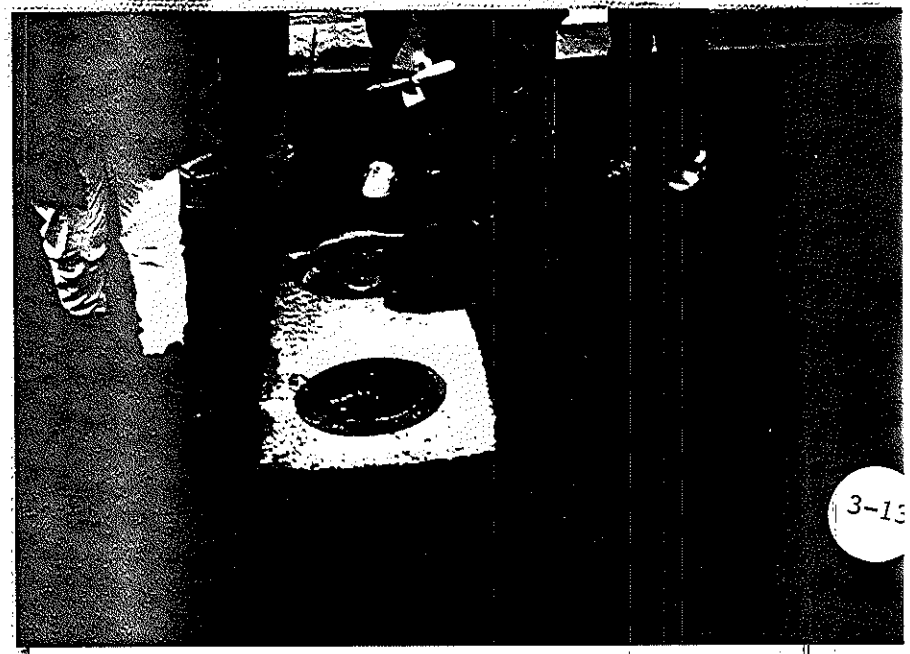

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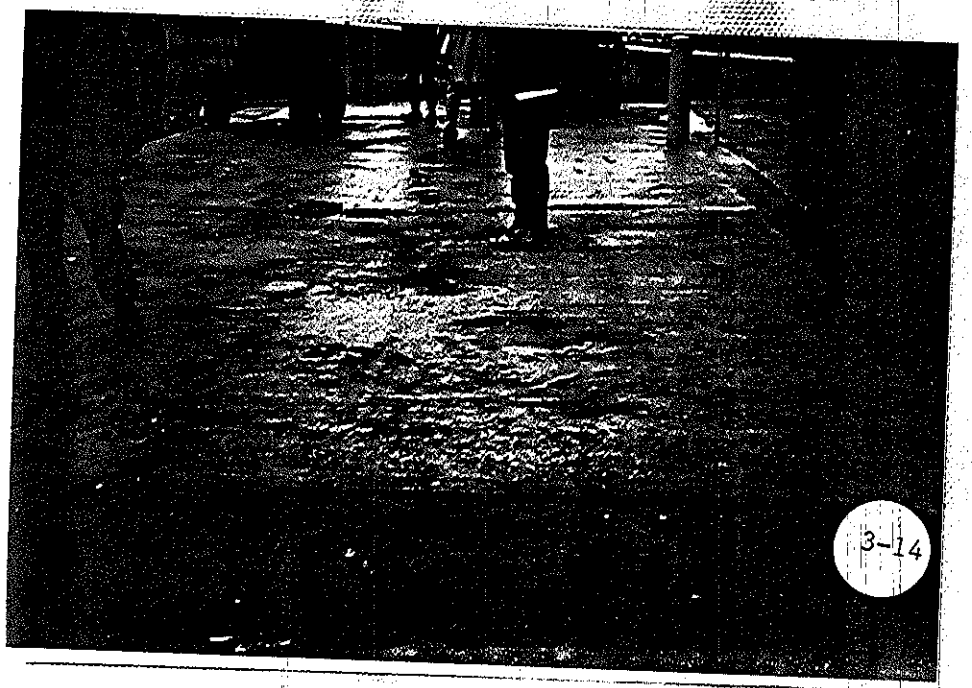

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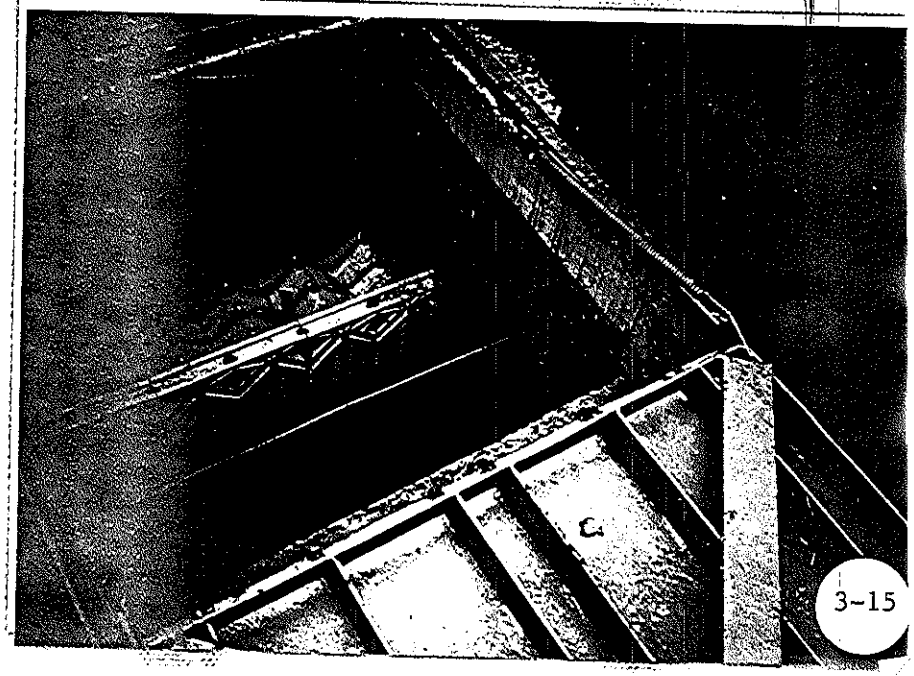

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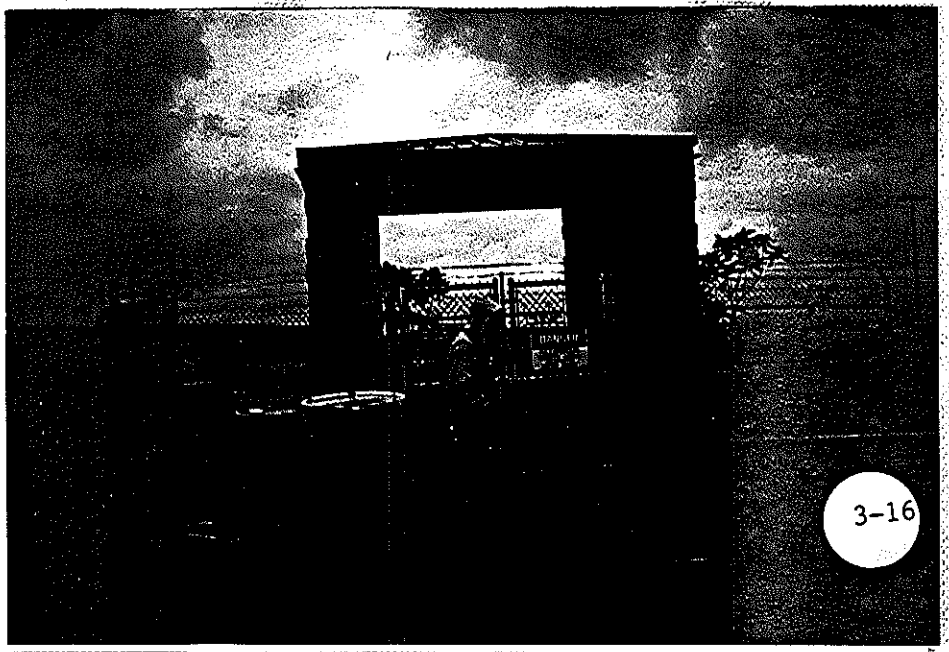

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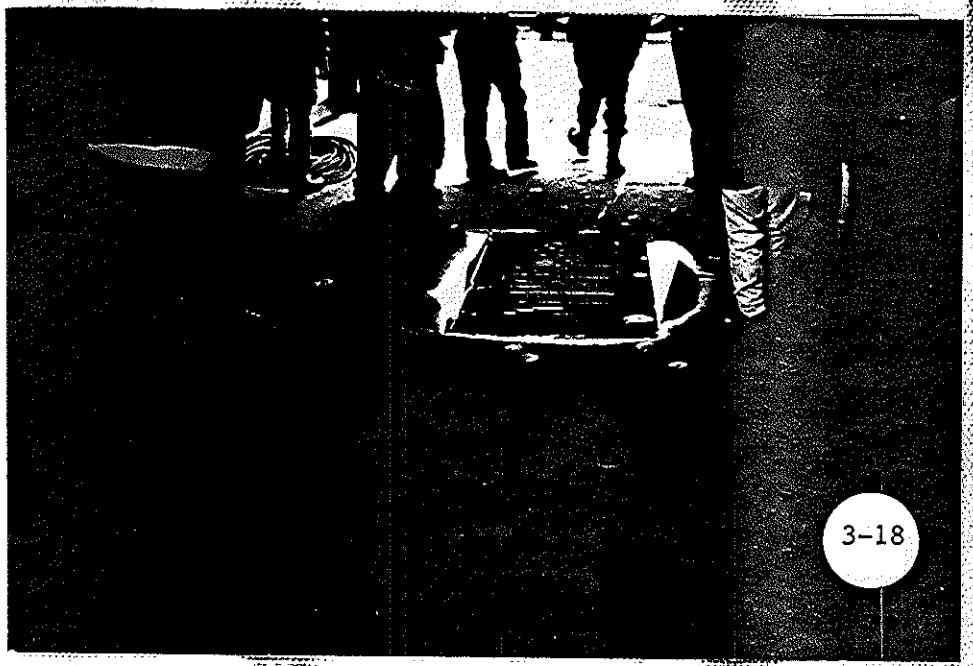

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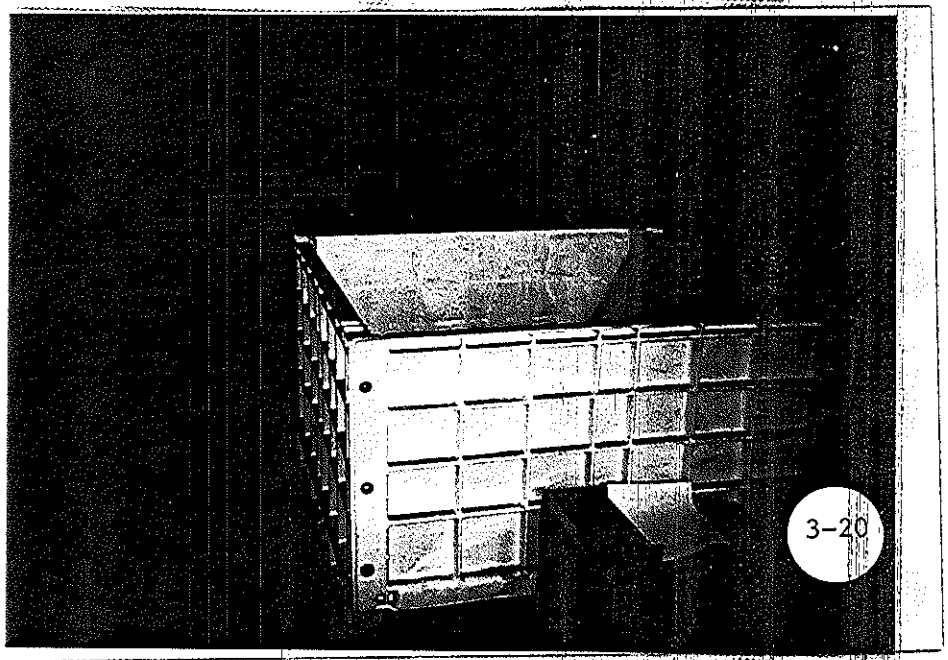
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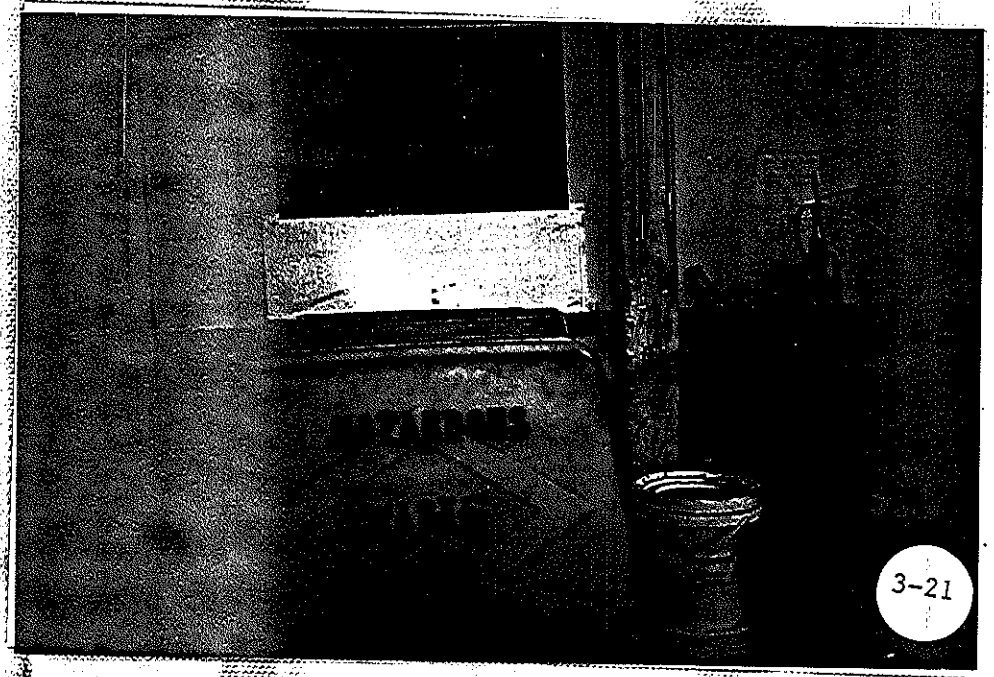
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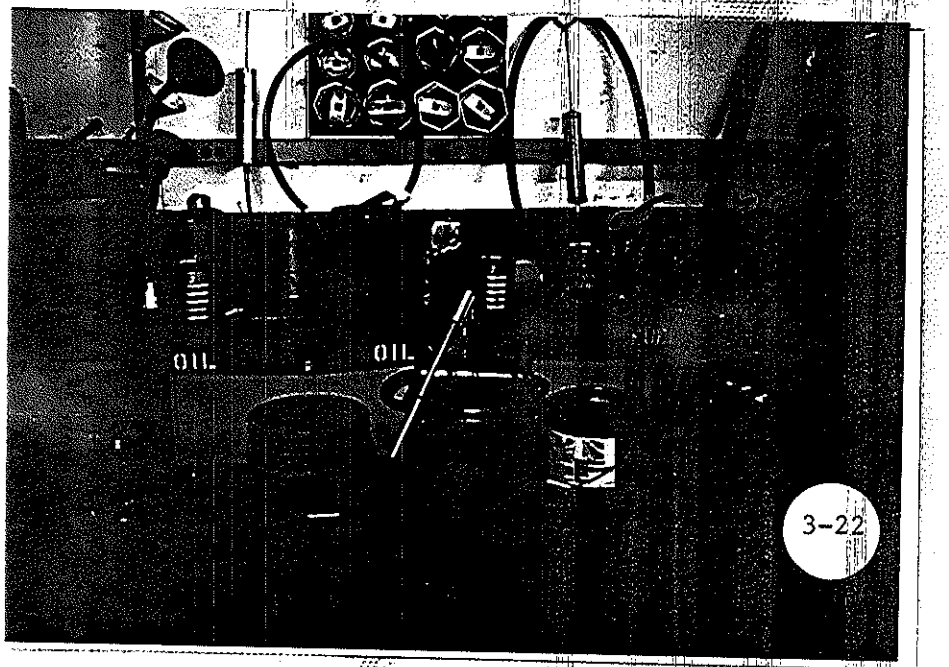

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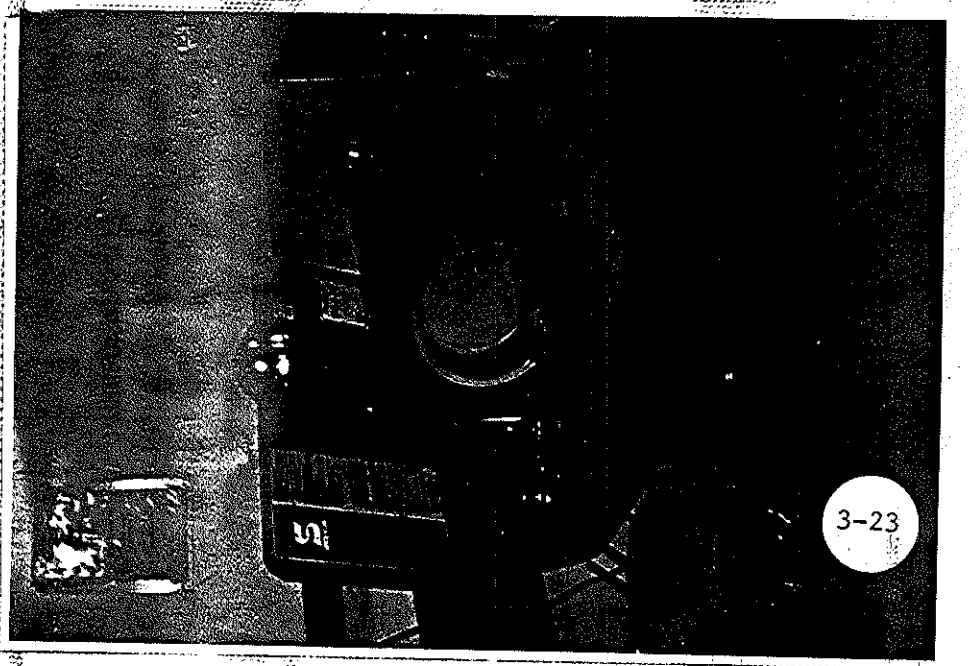
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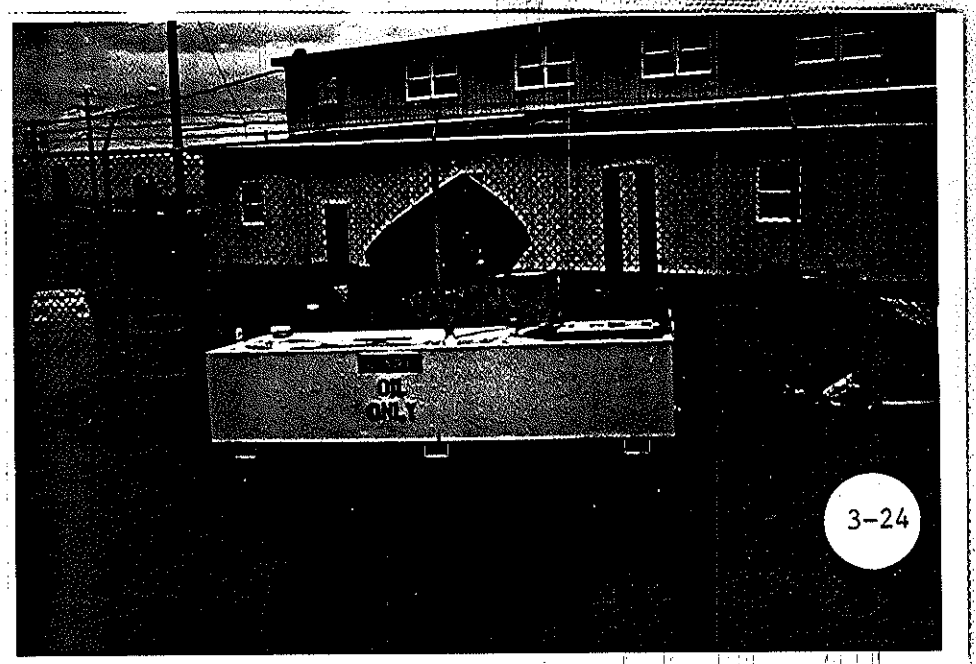

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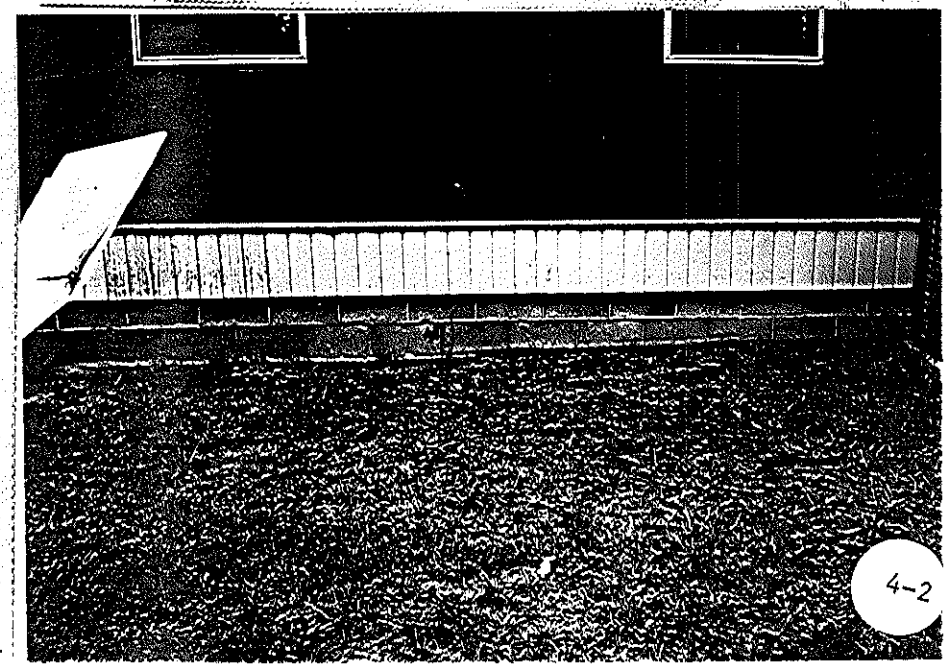

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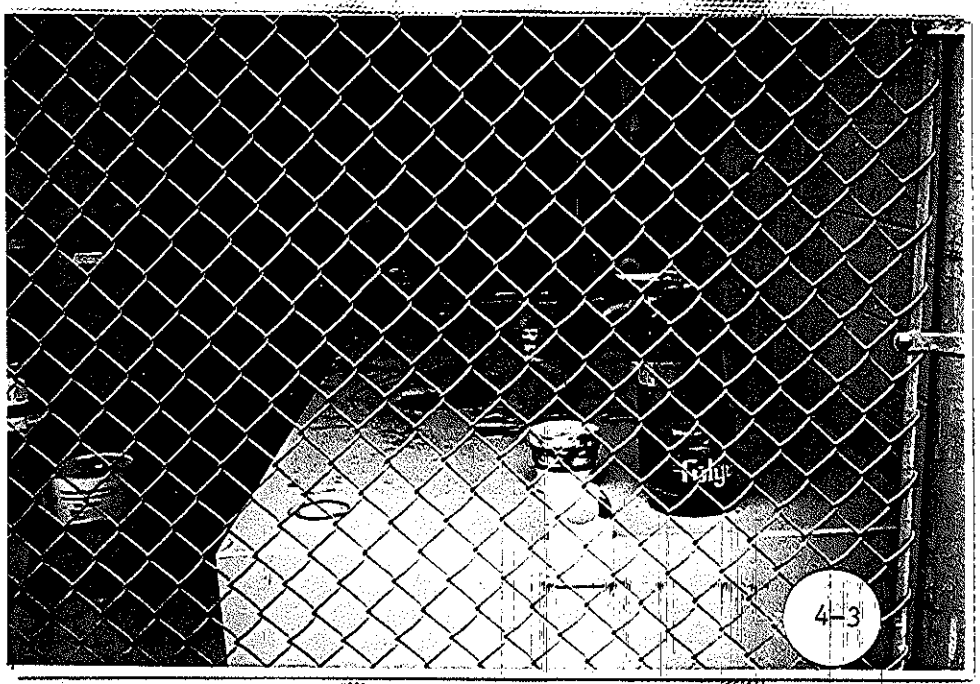

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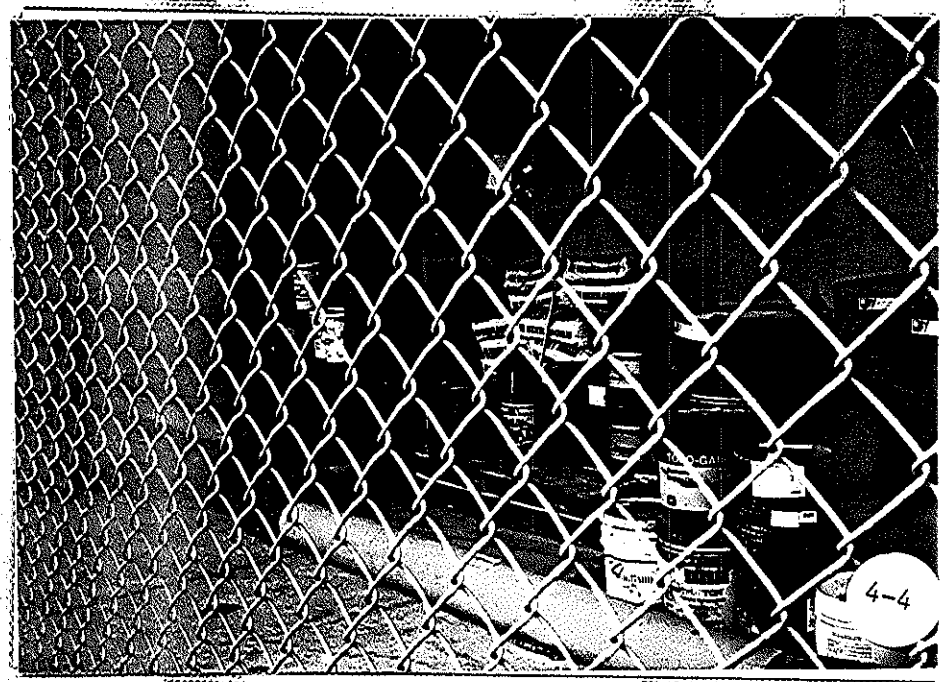

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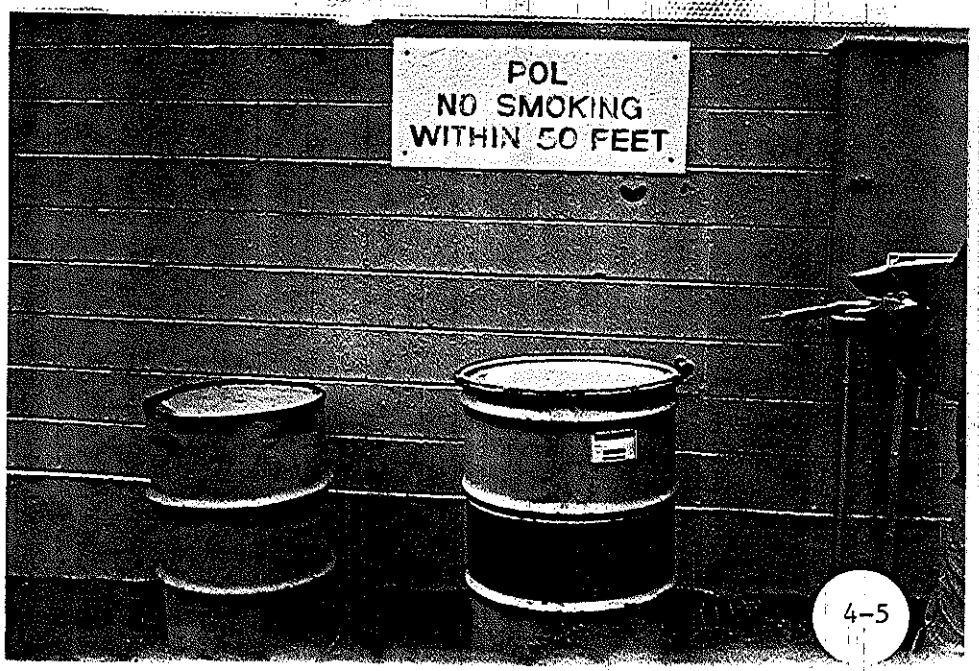

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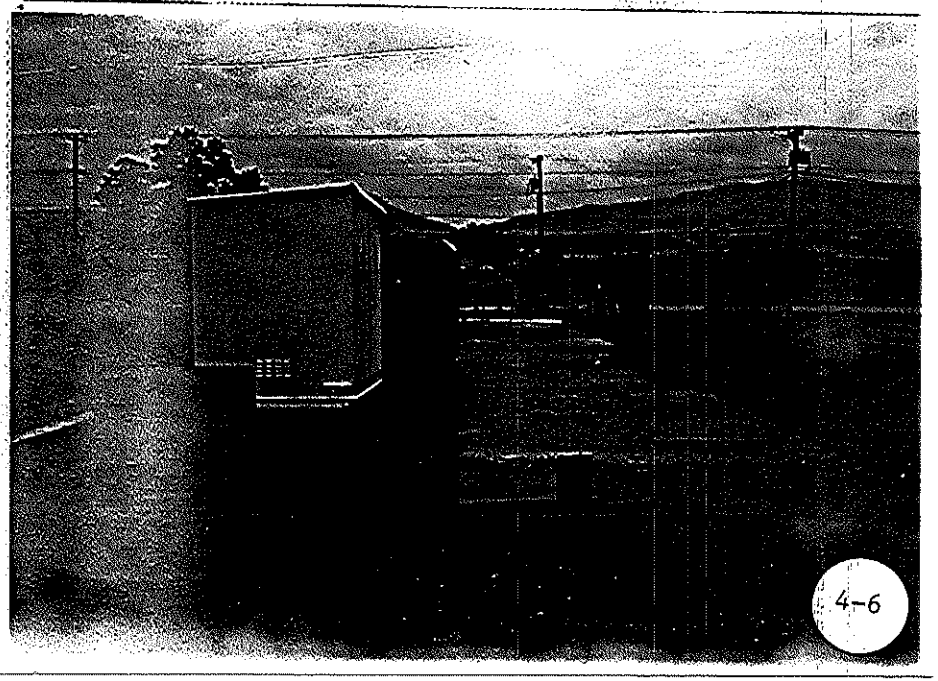

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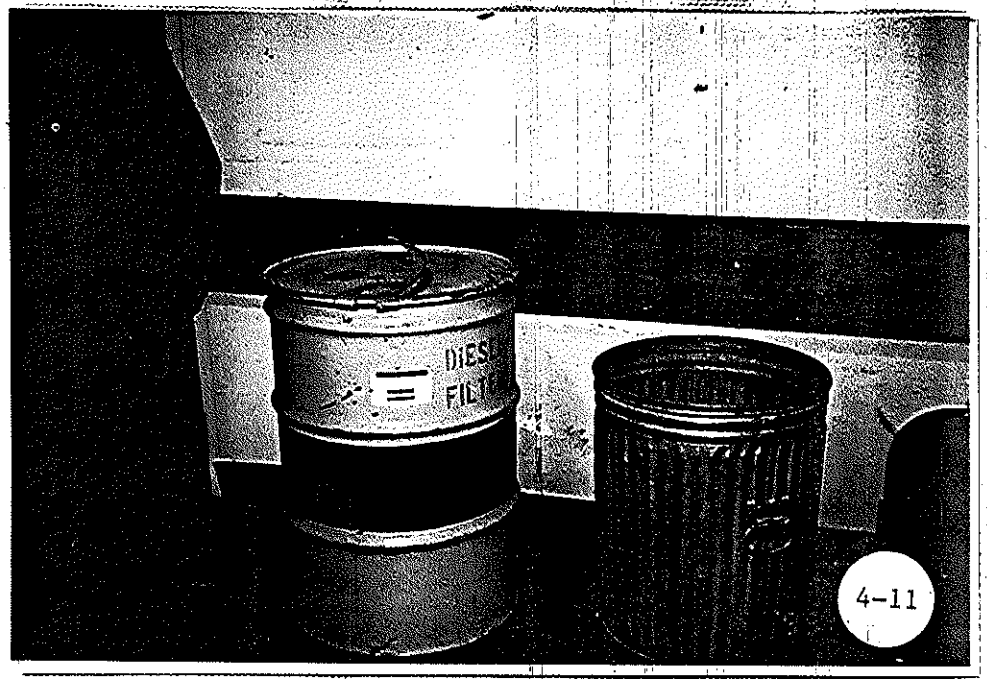

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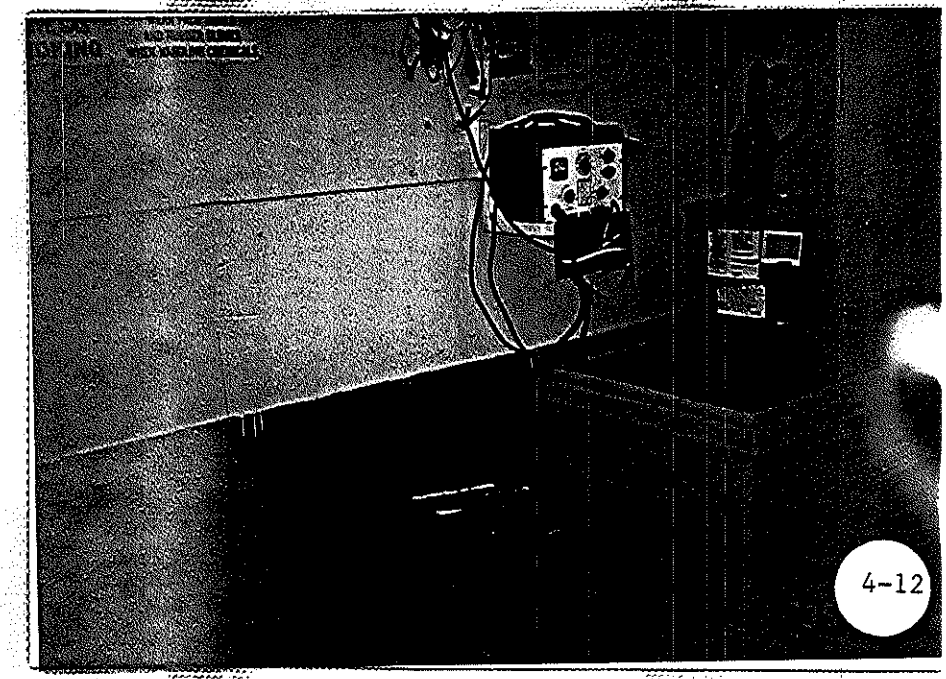
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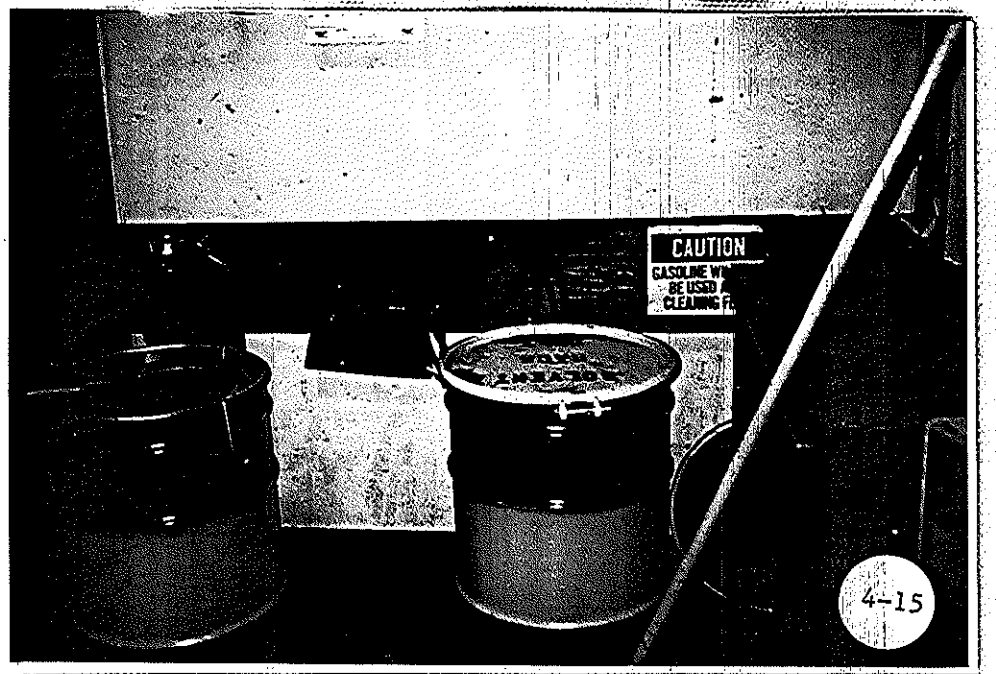

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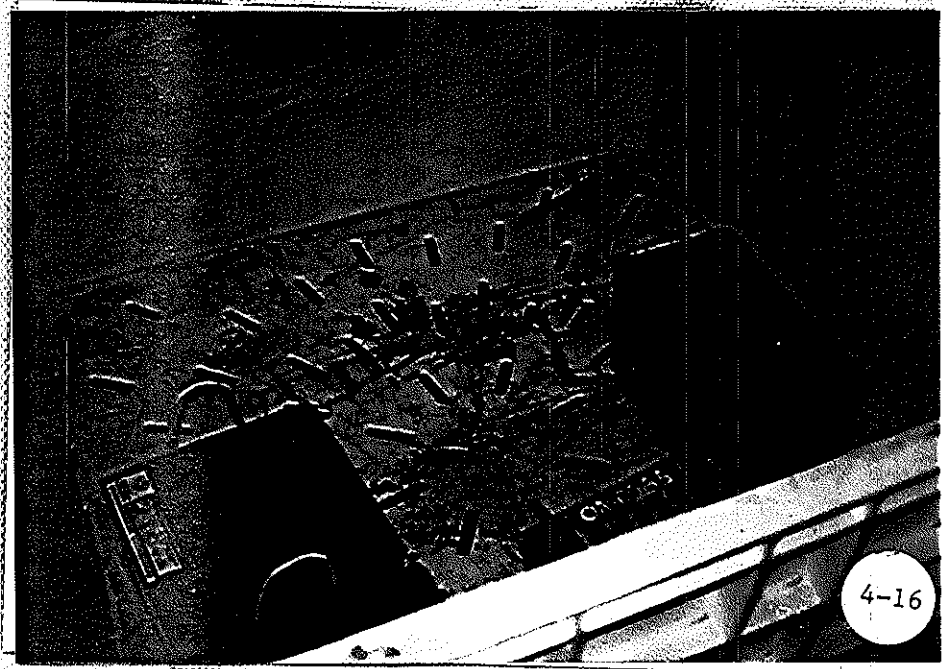
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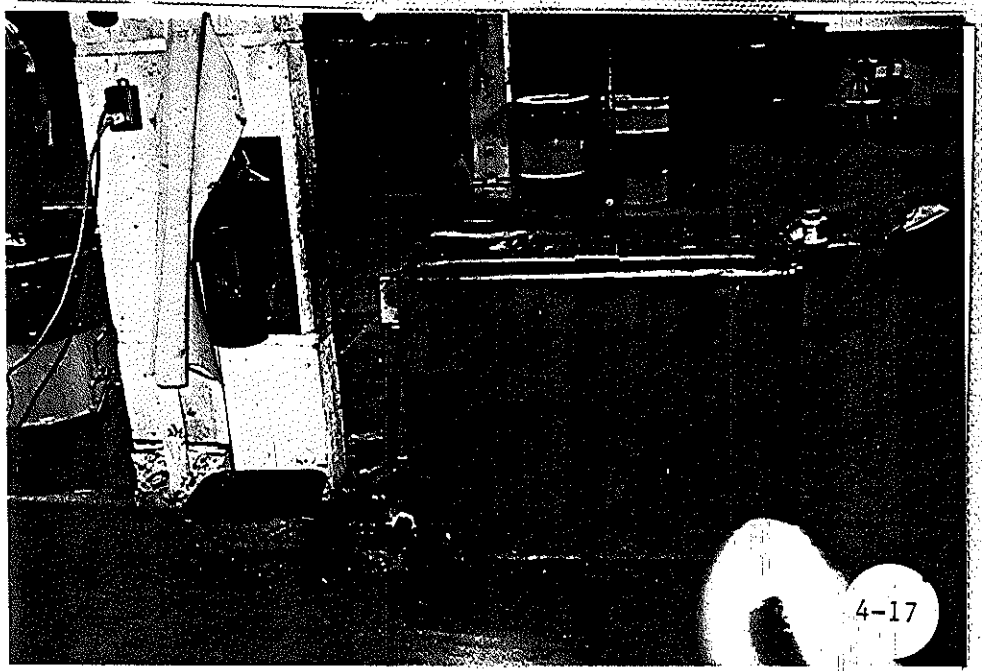
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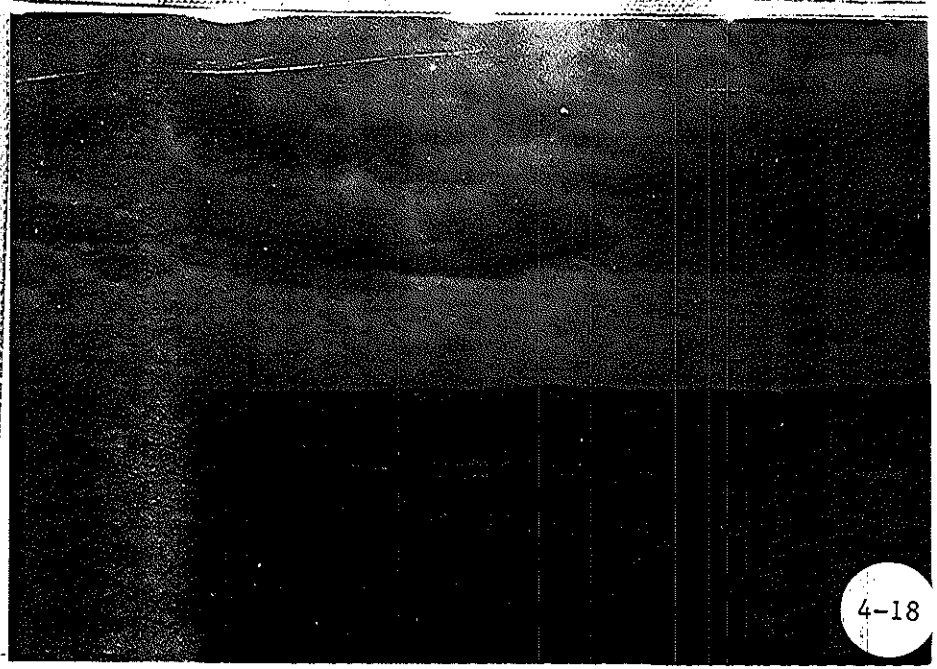
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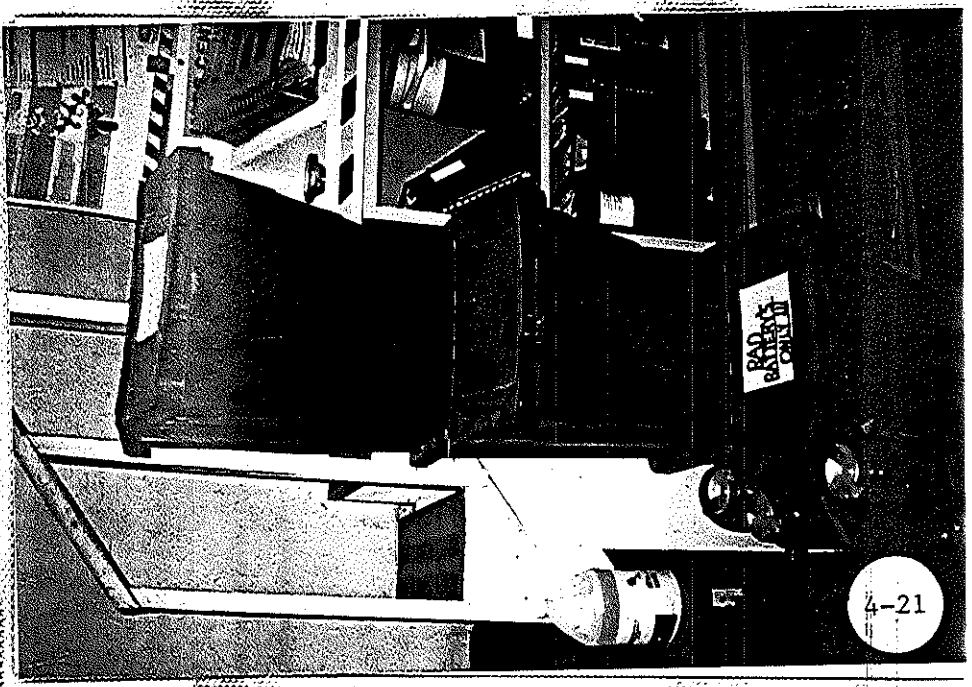

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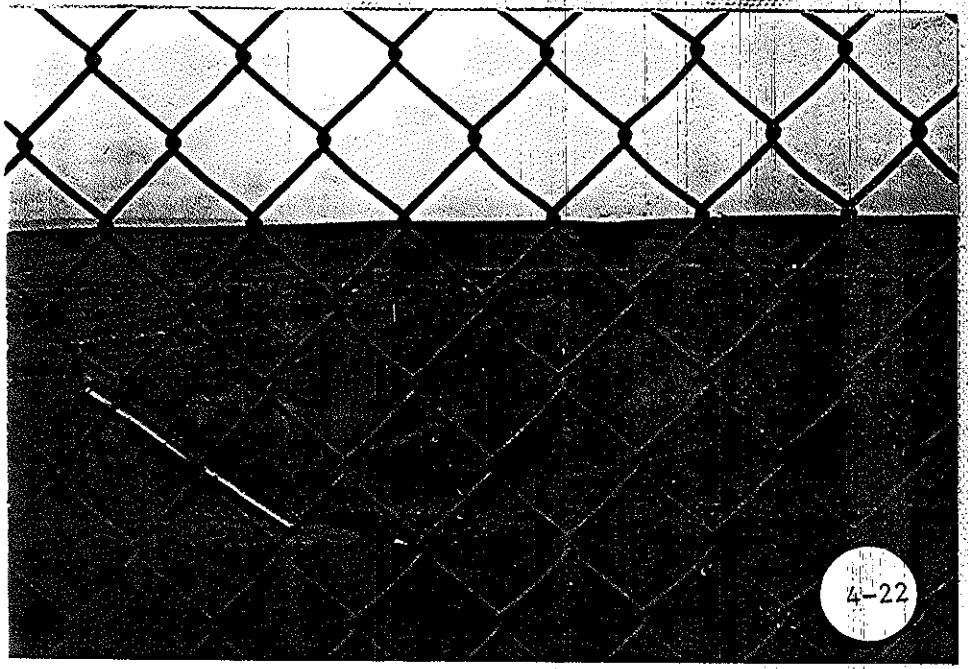

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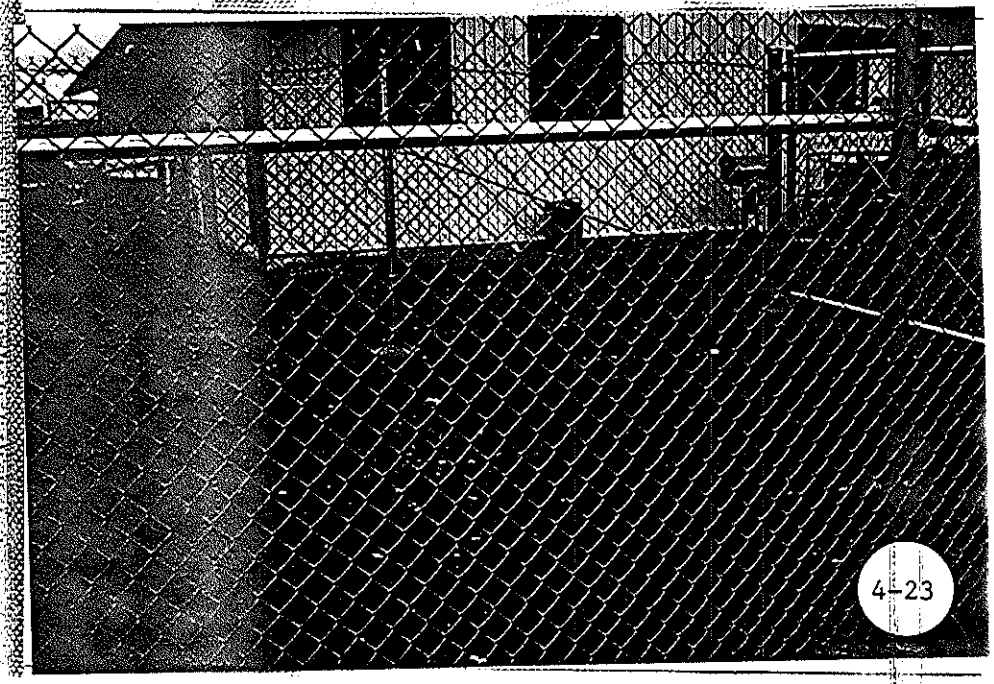

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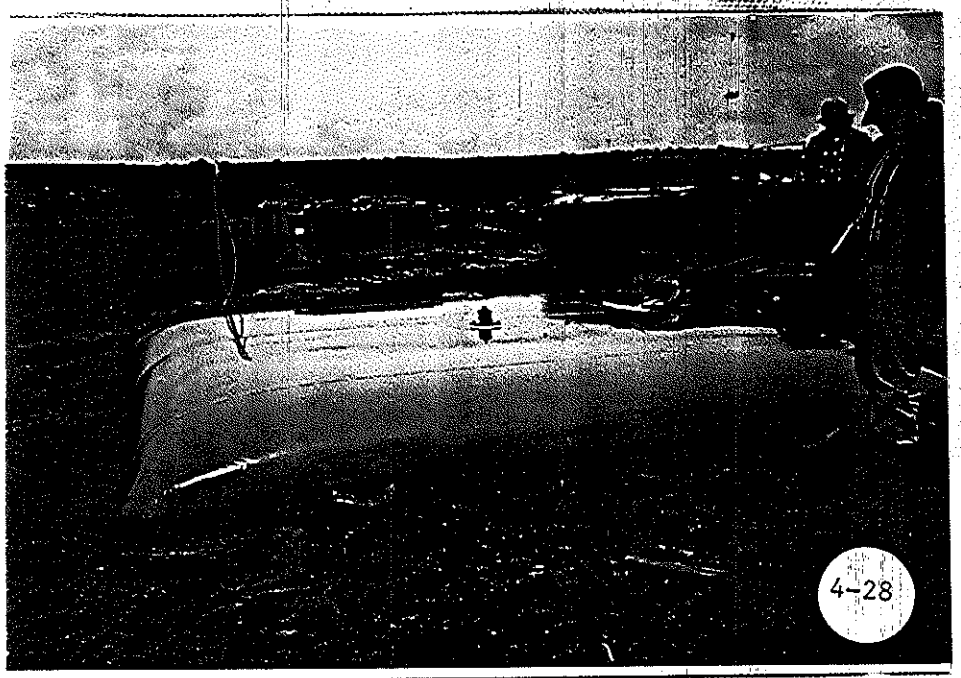

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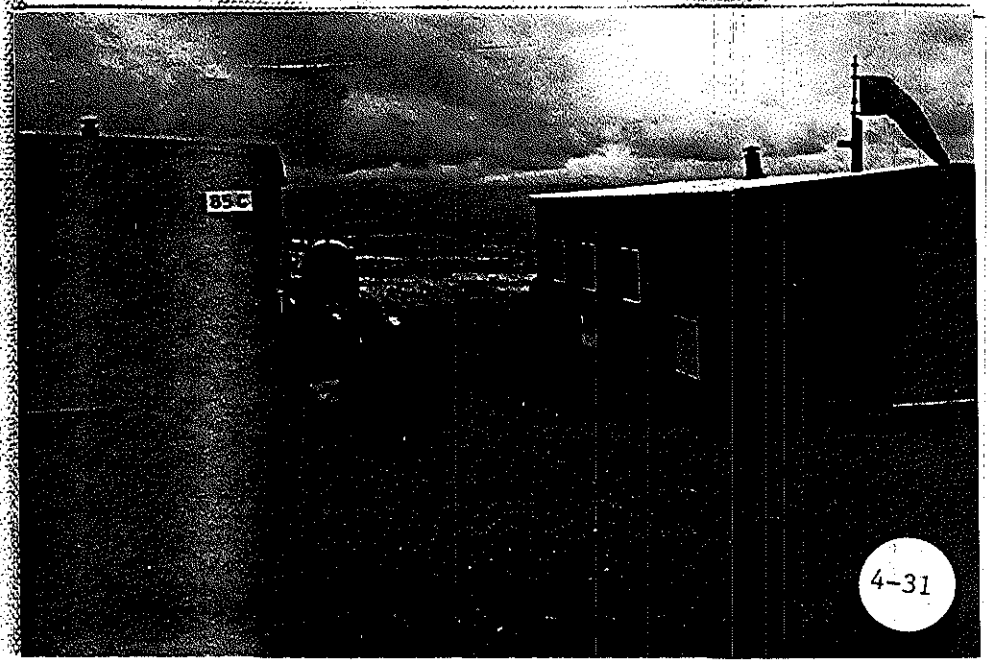

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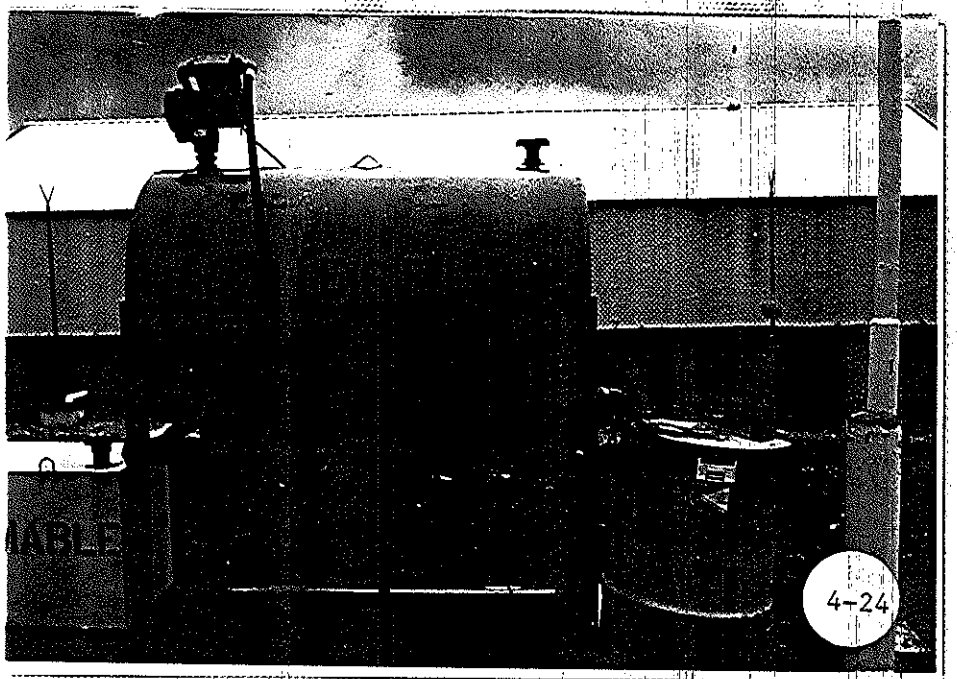
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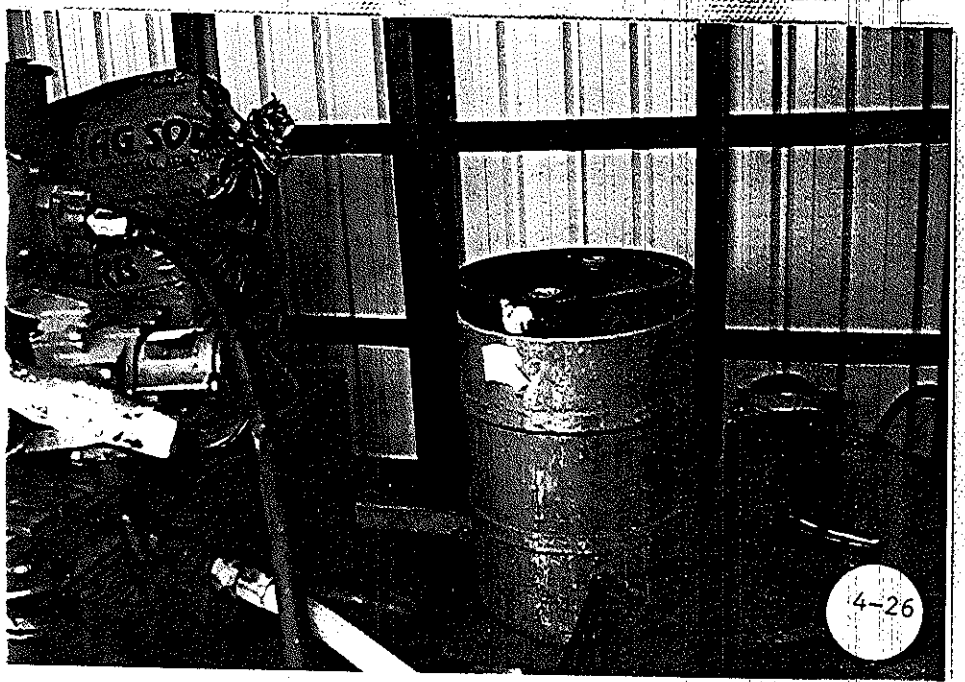
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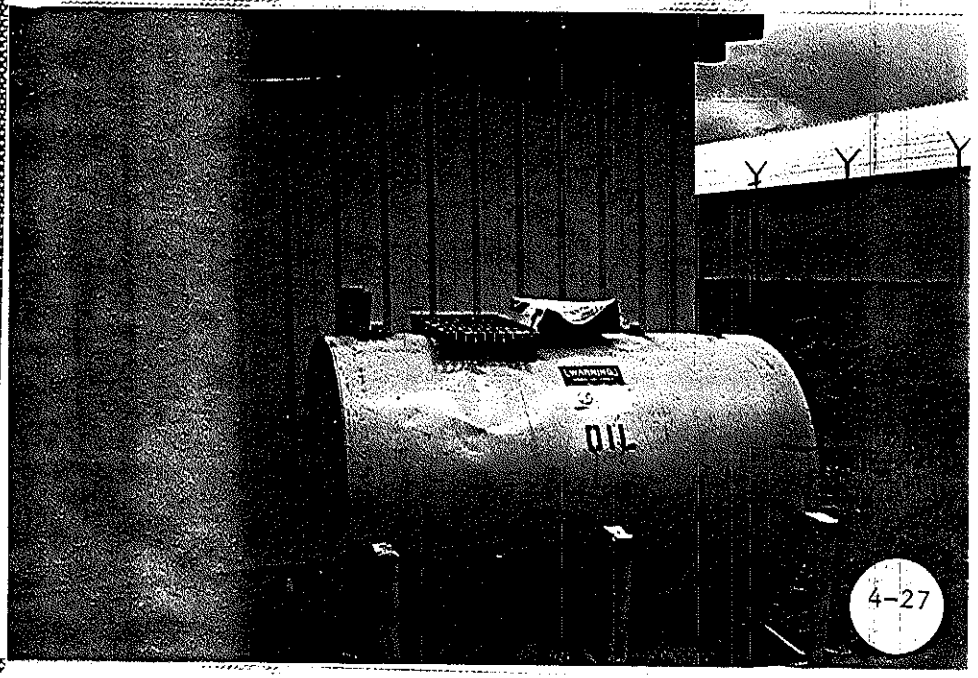
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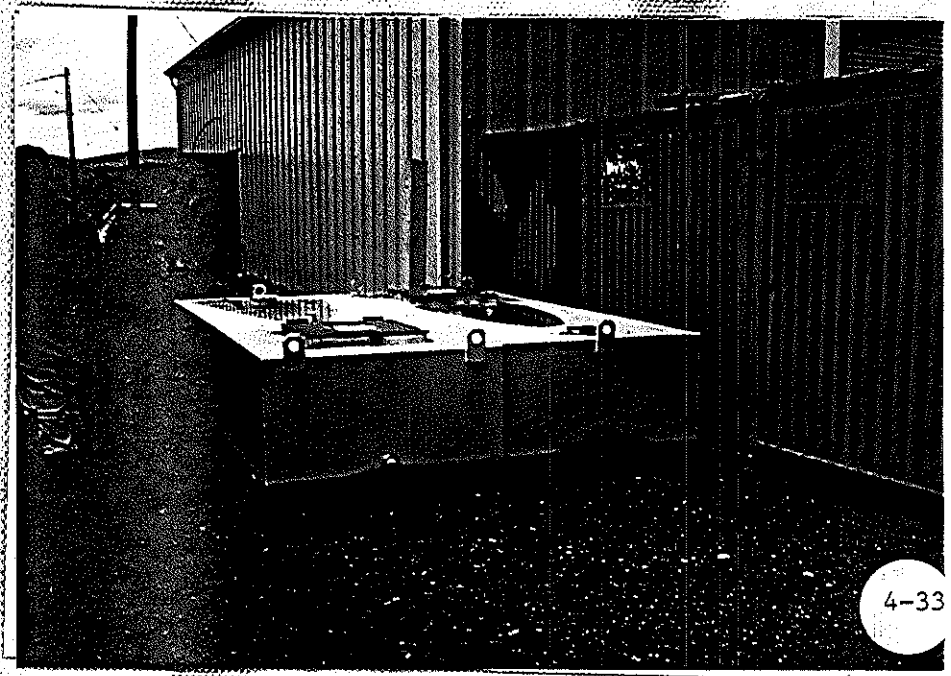

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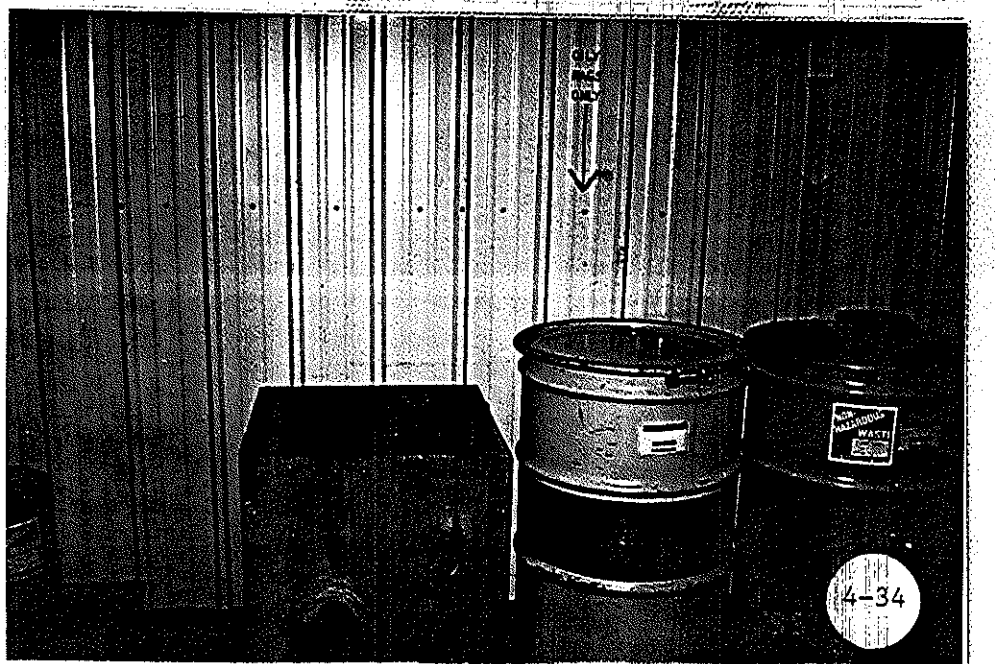

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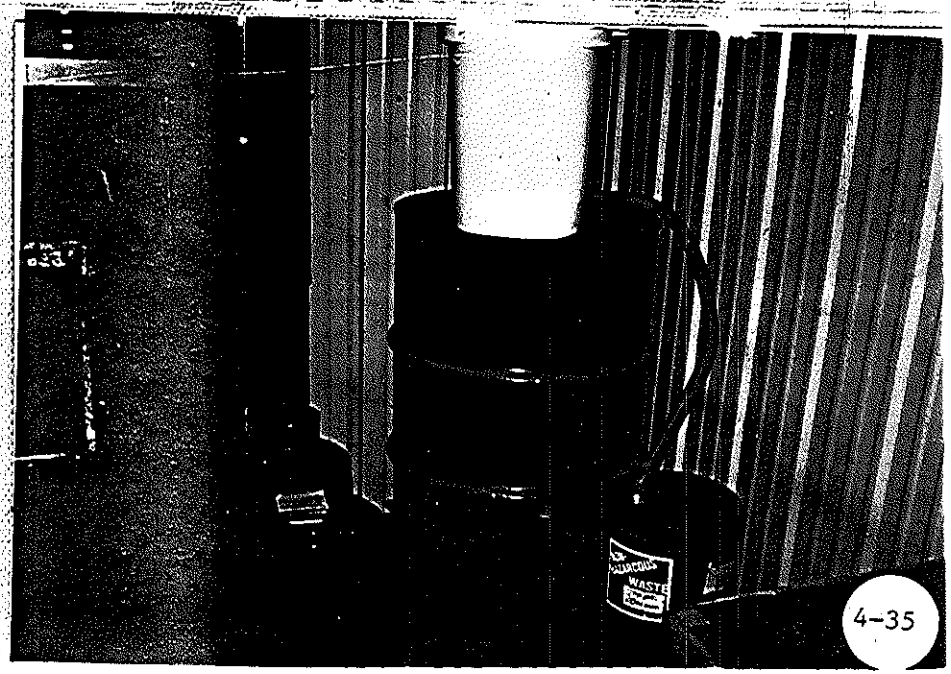

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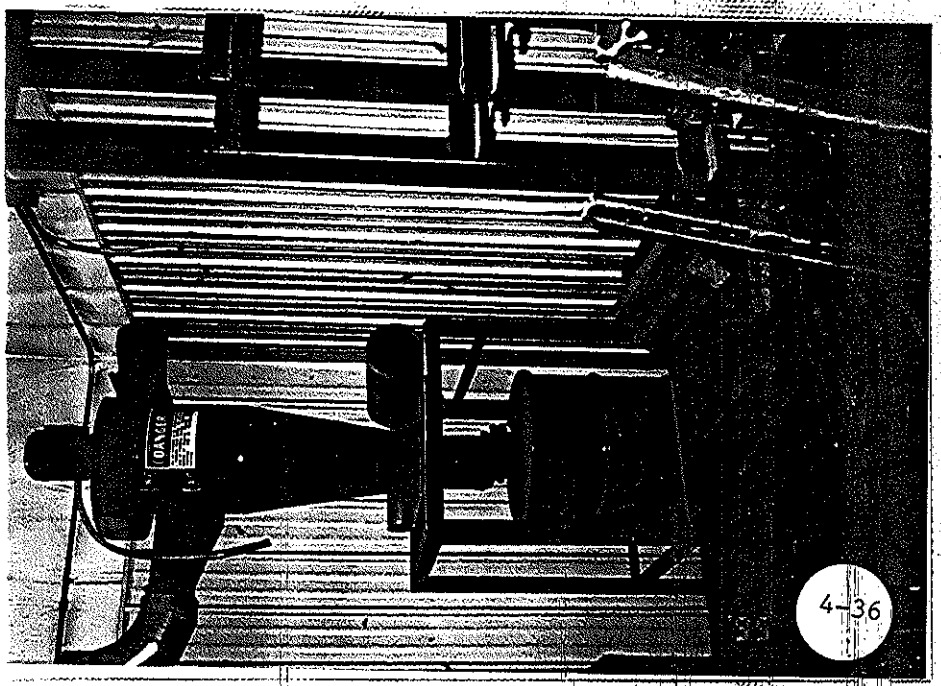

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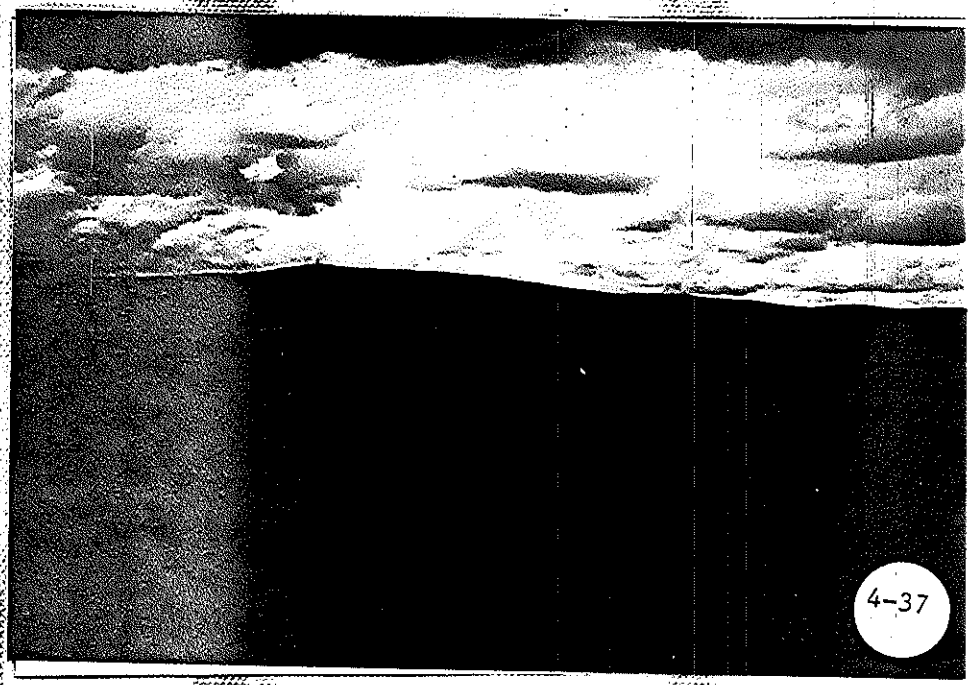

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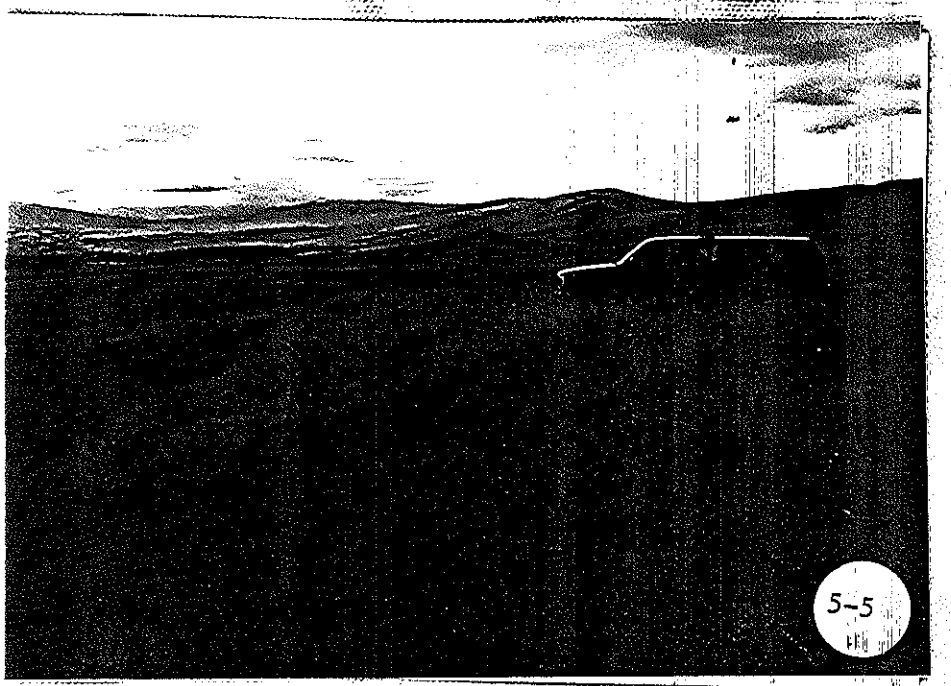
YAKIMA TRAINING CENTER
WAD 821405 3995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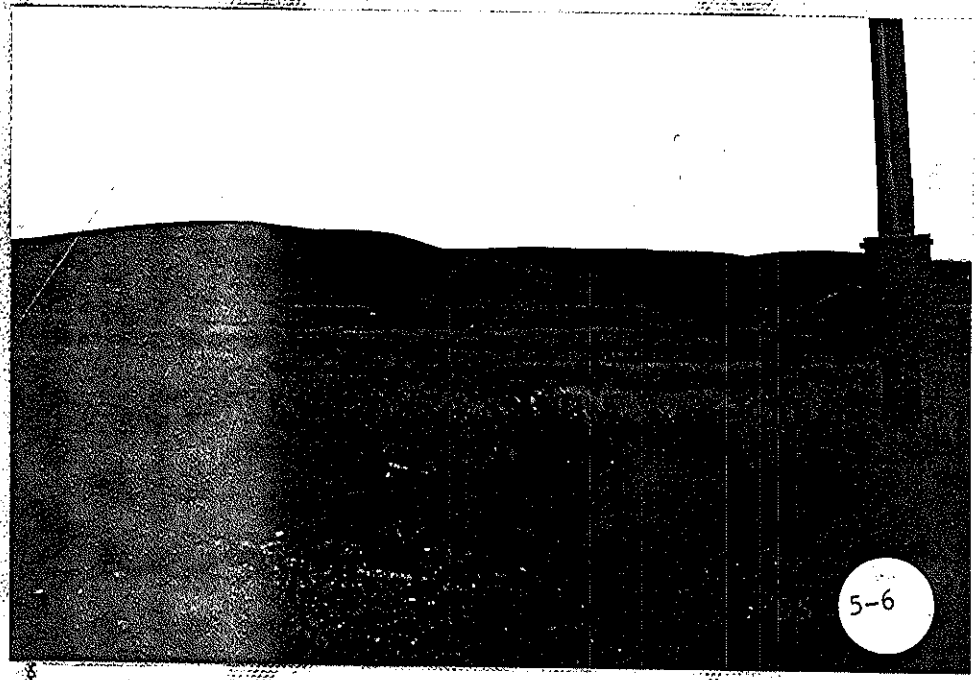
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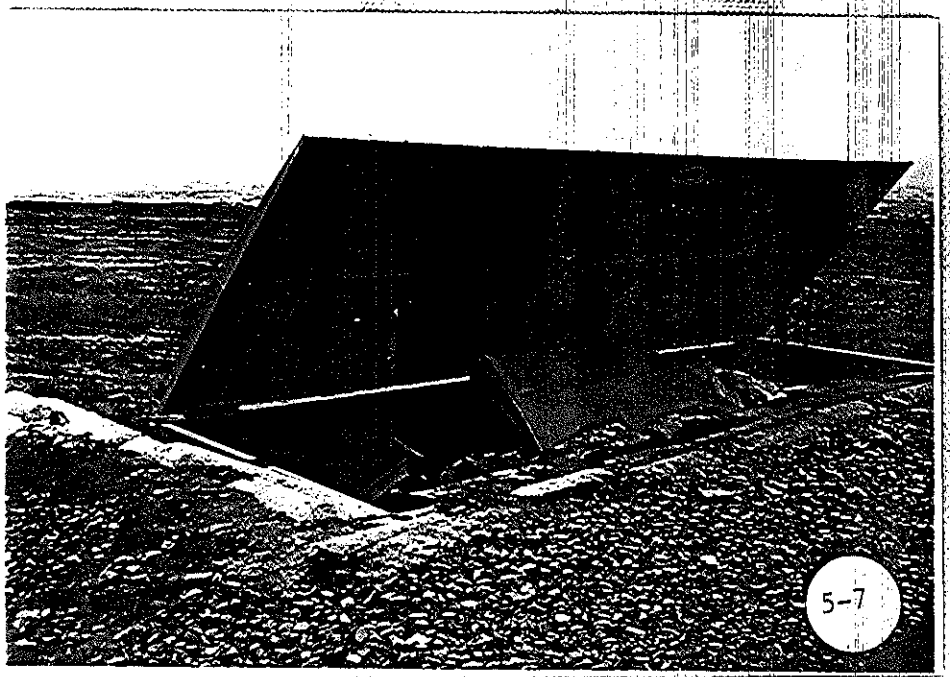
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APPENDIX B
VSI LOGBOOK

Yakima ~~Firing~~ Training Center RFA

R100 14

EPA WAM: Jack Boller
(206) 753-9428

SAIC WAM: Lynn Brimmer

6/13/95

USI

The weather is overcast but dry.

Participants include

Lynn Brimmer SAIC
Hiep Mai SAIC
Jack Boller EPA
Brian Dicks Ecology
Rob Kirkwood Ecology
Tom Mackey Ecology
Michael Kelly
Steve Kruger
Richard Wilson
Debbie Bergman
Mike Kas
Larry Fain

Starting behind Bld 810
SWMU 43 in 1994 drums were sampled by EO&E & removed
drums contained soil & purgewater generated in spring of 1993
clean materials were in the drums

AOCs 46 & 47 removed but no data or closure report located on N West old 810 not in use since at least 1979 removed about 1987

Saw bag house to collect sawdust from carpentry shop on side bld 810

[signature]

6/13/95

* 90 day accumulation area
13 sheds for waste accumulation
separated by class
Area opened spring 1994
TCA Sodium azide Potassium
Dimethane
Hydrochloric acid
Ferrous Ammonium
Combustable liquid
Waste water with trisodium phosphate
PF-55 Solvent degreaser
all <90 days
Sheds have trays with ~~tess~~ grates to contain spills
SOC 9 Former Pesticide area
1970 107 pest controller grates
moved 1979. The room that contained pesticides had asbestos wallboard removed it later building was burnt down only product was stored
However pesticides were mixed on pavement outside the building no additional containment or berming
quantities of pesticides requested
all pesticides anticipate quantities similar to today. Applicator equip rinsed here also. Floor stained cracks areas in asphalt missing

Drums near area Empty

[signature]

6/13/95

* SWMU used oil tanks 5 these are strictly motor oil 55 465 gal tanks empty next to those for disposal tanks arrived in ~93 when UST's removed on asphalt no additional containment

* former Haz waste accumulation area there were portable berms + 39 gal bags no cover lines to delineate area previously gravel stored material after 89 when paved 90 pile materials as good as area unknown if gaines collected downgradient of the edge of pavement this is just above natural drainage fence buried since at least 1979

SWMU 42 Trans former storage area transformers to be used historically stored waste transformers lot 2 left in January 1993 all PCB transformers removed in 1987 this was not where they are currently stored this were originally area just a little to the south near area where hill is eroding next to white building no containment

gil Battery storage area was within former Haz waste storage area yellow lines batteries stored later as smuggling gun

[signature]

6/13/95

* soil contaminated drums from spills

* one drum open valid soil sta- are put in drop boxes then ott- to Ron Anderson's drop site then sampled & permitted through health district working through Yakima mapt 3-10 yd drop boxes some drums open & have been for awhile i.e. water soaked dirt that's soil c/w diesel most stored directly on ground some on pallets
previously a vehicle shed, 3 sides road on NW corner started storing drums Nov 94 started using area

3 large drop boxes 1 for wood hauled out for mulching other have space for trash
left engineers area now in warehouse area

3 UG Tks next to boiler plant AOCS 93-5
smaller tank scheduled for removal
plant currently runs on natural gas
tanks hold backup fuel want to decommission boiler plant in next two years No testing on tanks
heating fuel tanks

[signature]

6/13/95

A5 wash rack used to remove dirt + weeds will be removed when construction on new pesticide management bld begins.

drain is a pipe that drains into field behind concrete toolroom ~~[illegible]~~ in use prior to 1979 guess built in the 50's most o.k. the containment facilities built in 52 wash rack only used by personel in this yard

A3 wash rack feed by water tank used until 1980 in 1979 NPDES permitted facility that drained into then into pond which had a boom called Barry's pond currently area is for potable water some water + damp areas visible troops would come in from field + wash off mud etc currently pond is a storm water retention pond but has been modified since then

Done with area A now onto area B AOCs 35-39 next to boiler plant guard bar are scheduled for removal closer to bld no leaking [illegible]

* Paint spray booth in bld 910 removed 88 or 89 minimum 30 [illegible] 10 [illegible]

AOC 40 x-rays developer + fixer then to silver recovery taken to Ft Lewis then to precious metal recovery water into sewage system testing now water from silver recovery previously to treatment plant contamination photo developer/fixer

6/13/95

plastic container on pavement with cover but open on 2 sides, silver recovery sent to Ft Lewis ~1/yr generate 5% c/ xray & take ~ 20 xrays/week dental (clinic) using hand dip for dental x ray's own n (check) panograms ~ // quarter contract in machine sold dispose maybe 1/year no on post dentist machine previously used not functional probably for 1 year it had a silver recovery unit attached new 9y 9 lyn, ~ 1½ year ago other machine for 3 month high volume time all waste going to Ft Lewis manifested my [illegible]

Only pentogram exams here for teeth Med Center sends serious injuries down town

2

Capt Holly Carris commander of EOD we are picking him up going to A to where there are buried munitions torpedos & bazookas

Gleam lines on on concrete blocks above ground where buried munitions are located. Pulled out old concrete & wood pillars munition within 3 feet of the surface. This area built in 1951 for Korean War mission temporary 5 yr buildings. Probably [illegible]

6/13/95

buried in 41 or 46 Munitions scattered throughout the area previously did not have a central impact area they would go down road + shoot guns etc duds are all over since they didn't touch the duds this was only reported incident while putting in steam lines there may be some kill units but not much because it is very difficult to dig.

Finish lunch at plant C Army Reserve center just removed two USTs Swmu 47, 64 65 two different feeds from drains into 1st oil water separator then 2nd oil water separator water straight through 3rd drop point then to drainfield or outflow unknown at this time 2 monitoring wells trench drain added at in 1974 Construction near drain field area 1 monitoring well on other side SOLs 72 + 73 USTs that were just removed

944 safety clean dip tank all fuel tanks about 1½ years ago start digging in Hawaii Rooms in the mixing area where previously permitted has damp area from rinsing [illegible]

6/13/95

to dilatazy
wash area for machinery as needed
next to drains asphalt with conc
Sect I Sump pits main east west only
indication is disrupted soil with pipes
behind Army Reserve Center
Fresh gravel ~ 3 years ago some
small stains no know major
spills over 50 gallons

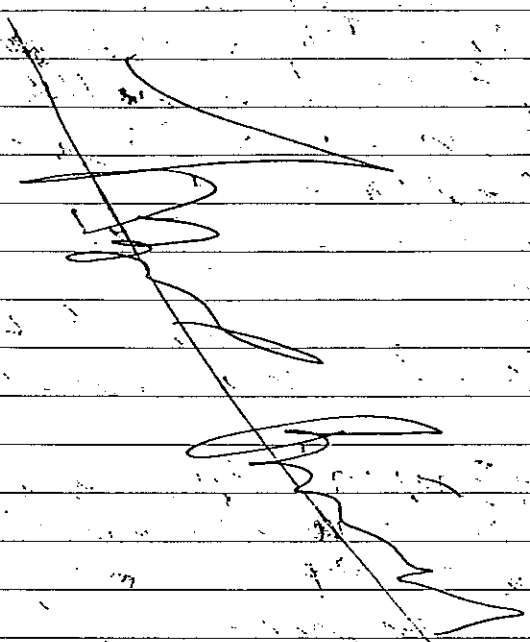
Haz materials in buildings oil in
one haz materials shed flamables
in another. Sump in clean up
materials shed that would ~~clean~~
contain any spills now has
rain water never had to pump
it out since rain water evaporates
blind sump
talking to Duzan

* Used oil tank similar to others
dirty grease exhaust & oily rag containers
have screens for oil filters

* former wash rack connected to
oil/water seperators
At Marine Corps
Figure
quonset enclosed building con crete floor
with seams but otherwise good condition
concrete berm, stored in a metal cabinet inches
haz waste oil tank + drums storage [illegible]

6/13/95

SWMU 43 9 is oil tank in SWMU 58
* fuel pod, no drain concrete containment
stopped
* Round yellow + black lab drum with
no label contained soil
* SWMU 46 fenced area is drain field
concrete boxes may be part of it will
get drawings
SWMU 47 probably concrete box
A-7 general slopes to drain cracks in concrete
hose across dirt small hole
next to drain which is connected
to oil water separator
Saw a small single rattle rattlesnake
in wash rack
D POL Fuel Point + Bld 950
2 JP8 Tanks not included
project
D POL Haz waste storage dry sweep,
waste oil, gasoline with water + oil
* 3 55 gal drums in plastic drum
storage containers
* Tanks bermed an oil water
separator for berm, back bermed
area goes to dead sump
2nd oil water separator drains
gas pump area into storm
water sewer system
2 o/w separators
some staining visible
diesel tanks in POL lot are connected
by pipes under road
POL 10,000 gal UST removed in fenced areas
pulled in 88 looking for records



6/13/95

Loil water separator for this POL 7 put in in 88

[illegible] 31-34 installed in 83

Staining visible near valves - 4 diesel

No liner under tanks spill in 92 ~1600 gal

5a Former soil stockpile in POL 2

Bld 953 removed in 92

was warehouse type bld

empty waste oil tank pumped out year ago & will be removed.

* 30 drums 2 55 gal non hazardous debris 1-35 gal flammable hazardous from spill

Summ 61 Wash rack

Pesticide storage inside bld & mixing area large stains near stained sump that used to go to oil water separator

use all 4 sets of wash racks two pits with oil water separators with to AST used oil tanks visible oil stains by 1st AST water goes to sand then pond then recycled 2nd oil water separator has green on both sides of barrier also sediment visible area near AST clean Not in service early 4 wash [illegible]

6/13/95

SWMU #1 Fire training pit
was used 2-3 times/year
then stored sediments from
wash rack to 91 dump sand
from filters & other clean material
last liquid fires in 1980's
in drums & pits, heavy [illegible]
aware of [illegible] having dumped
on ground

AT WATERS area F

JENKINSON & Henderson

SWMU 54 has 2 boxes of
batteries in 3" [illegible] covered
put in ~1986 fence ~1yr ago
SWMU 55 area existed but
location unknown
S15 stock pile area designated
but never used

sodium [illegible] on soil
for dust suppression
#60 & 61 [illegible]
double walled about 2 yrs old
1-55 gal contaminated dirt
drum under cover on asphalt

SWMU 33 wasted 1 don't remove
SWMU 70 [illegible] wash rack [illegible]
[illegible] compressor pump oil [illegible]
[illegible] sampled 1/month [illegible]

6/13/95

* AST waste oil collection tank with drain to o/w sep. for over flow or leaks diesel & ERH with oil 7 drums of waste fuel waiting to replaced in AST

At wash rack 2 drains on concrete with some cracks to o/w separator water on adjacent soil

Waste acid stored in battery room looking into where drain in this room discharges waste acid didn't have date corroded floor from battery acid SWMU 34 is floor drain

AGE records at Camp Murray tank was removed

* Build-All Parts Cleaning equipment got distiller from stall for Mineral spirits have to dip parts distillation is done in area where waste 35-gal chemicals drums & parts were

Have cans for paint cans for floor sweep rags are incinerated by Basin Floor sweep handled the same

* satellite accumulation area has oil filters, contaminated rags, floorsweep, turboshaft oil Flammable, ERH filters & paint related waste No date on pallets on concrete some cracks paint to accum area

6/13/95

* Former paint booth ~~years~~ ago, shut down used furnace filters & Air Room

* Oil filter press with crusher filters concrete with cracks

* Noted waste anti freeze containing 99, removal will get report later

Motor Repair

924966 + Above ground waste oil storage tank part of wash rack 924729 was 1 tank it was removed New AST replace split equipment is washed prior to being taken in shop

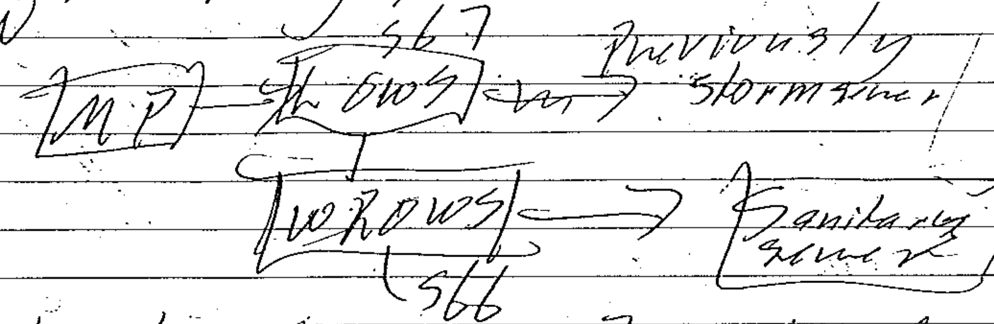
* Observed another waste oil AST & waste antifreeze tank on gravel

observed oil tanks that are part of the 18 in the motor pool area

* Noted racks to drain oil observed satellite accum. area trucks, oil, contaminated rags, fuel filters, waste oil, floor sweep, waste petro, dry cell batteries, solvent tank filters, paint waste, petro filters, waste petro ia. 7 gal, 54 gal, 35 gal

6/13/95

Noted drain in shop it used to drain out through another oil water separator then changed to storm water drainage this is rerouted through large oil water separator also then to sanitary sewer near MW



PA56 closed in 93? outside fence near "No smoking within 50 ft"
329 is duplicate of # 528
329

* Another satellite accum area 3rd brigade [illegible]'s floor sweep (3) oil/wint water (2) ethylene glycol, turbine oil transmission fluid, hydraulic fluid most drums are empty

→ near [illegible] box pulled during Ft Lewis was used by national guard thought removed at same time as Pegasus

[illegible signature]

6/13/95

SWMU 50 Built in 51
1997 changes after 88 sit changes
aforementioned Clarifier Sludge dried & other clarifiers
spread across only training center

Water is so low it is recycled to get system to work. Normally treated with chlorine. Never had any problems with the treatment plant. Pollutants to treatment plant on occasion but it has been minimal never violated NPDES permit

Sludge is digested & methane reburnt

SWMU 2 exact location unknown somewhere on side of hill

SWMU 58 residue was dumped at bottom of slope below doorway can't take any photos
AOC 23 removed, foam remains in place no visible stains photos can't be taken

SWMUs 9 & 10 Ammunition burn pits area where pits were dug & material was burnt pallets with contamination PCP treated to prevent rotting stopped in ~86 metal strapping wood & hard board visible

[signature]

6/13/95

this was used since they didn't
want to put PCP contaminated
pallets in the landfill & ammo
boxes burnt so no one would
take them
Berms next to 9 & 10 were used by
stone MORs currently use another pad
motor operated rockets

6/14/95

700 at site it is overcast and gray, but will probably rain today.

old tank range was active from 1941-46

MPRC operative since 88 or 89. There are trails where tanks go along trails with targets. This is used to score the tanks for ability to maneuver. There are about ½ dozen gravel pits.

Vineyards

SWMU 60 near vineyard Larry ~~has~~ is not aware of any drums found here. There was one drum of kerosene present during VSI. There was no aboveground storage tank here. In 1992 the adjacent Metro Circle Building ~~[illegible]~~ ~~[illegible]~~ was removed along with the AST AOC 22

SWMU 59 Bayw... wine pallets etc. Also 5 empty drums welded together to form a marker. Larry said there might have been drums out here for making these type of markers

we are now going to YRC

Meet Dan Skipper from YRC

USTs 20 & 21 removed in 93 by COE need to get report no pictures allowed for...

6/14/95

Diesel tanks adjacent to YRS building & one ground corner adjacent to out bld. The one adjacent to out bld was 55 gal diesel. There was some contamination but it was removed.

Now have one AST in lined enclosed berm concrete kym makings on berm. Both berm & tank installed in ~1982. The concrete was added in ~93

* There was one waste oil drum under cover on concrete no sides or berm.

& One waste oil AST just outside fence on concrete

SWMU 51 YRS Sewage lagoon 3 lagoons four holes 1 is routinely used had an air blow these are in ½ the size of the other lagoon which is ½ the size of the hole. The shallow lagoons were originally 1 large lagoon area ~5 acres constructed in 72

Next stop is a pistol range that is used for training. Has a small AST used by all law enforcement in area [signature]

6/14/95

a large number of lead slugs were observed. There is also a military firing range with a similar [illegible]

Sanitary landfill closed March or April of 93 applied for permit for construction of [illegible] for [illegible] heights landfill had one open cell that is permitted as a demolition debris landfill

New National Guard Facility
Murr 1995 cont. Marty Engle
Open shop [illegible] 680 type 2
[illegible] with distillation unit
battery room enclosed & blind sump used. batteries and waste acid container on spill containment floor will be sealed. shelves will be constructed to store batteries
Interstate contract
Drain in corner that drains out

Oil water separator for drainage discharges to field. Floor drains to oil water separator

Floor drains in each bay

[illegible]

6/14/95

* Has lube pit with 300 gal oil UST that it drains to also pan that drains to UST
* Oil filter crusher oil goes to oil UST

Hydro plant a wash cabinet using water + soap

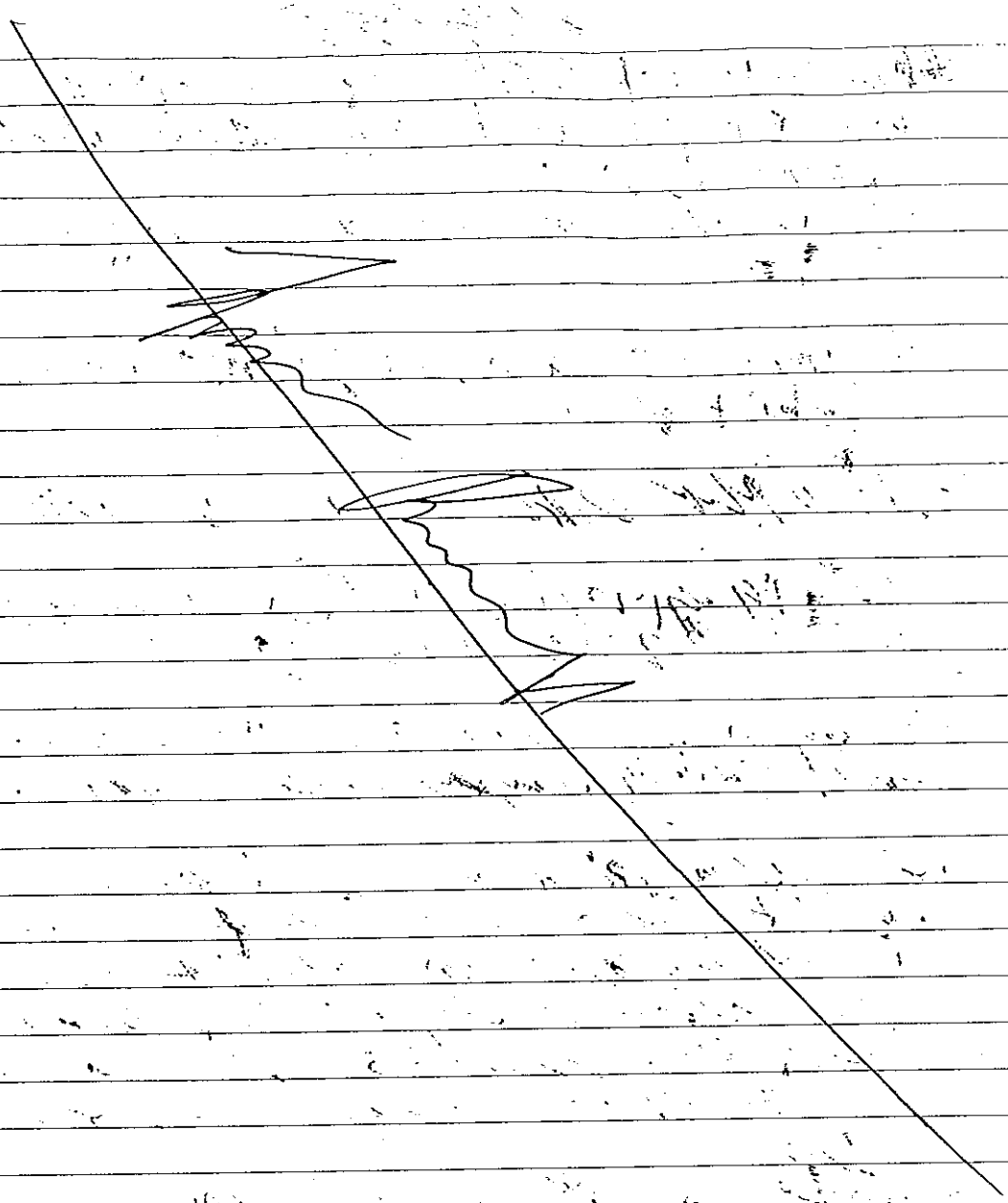
* Another open dip tank

UST is single walled 10 gage steel with 3 zinc anodes

* wash rack with oil/water separator that disch [illegible] into grease

* an open drum with oily dirt that was not [illegible] was listed as nonregulated & would be treated as hazardous if the test results indicate it is hazardous 5-gal used grease can
* waste anti freeze carb cleaner used solvent spent solvent solvent drums solvent / hazardous no description used [illegible]
All in waste accumulation area concrete paved with roof no berm or sides gravel nearby

[signature]



6/14/95

A36 Former gladiator site removed
in 97 six cells 44000 gal/
1-90000 gal inspected weekly
5-small pits 1 large pit
sand in bottom of pits

In Bld 323
Bldg 83 wash rack floor cracked
drains to OW separator swamp?
which is locked skim in shop
flaked, & had not been cleaned
since he has been here 2 yrs

& used batteries placed in plastic cradle
with holes in bottom on wood platform
when more accumulate taken downtown
up for battery room

hazard area 1-55 gal antifreeze gas 1-55 gal diesel used grease
& dip tank safety kleen
used oil filters drained oil to
& outside AST portable
drums in poly safety pack greases in 5 gal
used flashlight batteries 5 gal plastic

lights pulled prior to 02

6/14/95

174 RN B??

* used oil AST 1 poly safety pack
used diesel tank to breezeline pack
2-55 gal. drums

* yards with 2 poly packs
for diesel & antifreeze

* Rec area had visible poly pack

* Area still contaminated
near house w/ 5.0 heating fuel
fuel tank on list by ... C
Corp project in the works to remove
contamination

17 used oil tank, 3 sided shed
with product no berm

* Non haz petroleum contaminated
soil outside on side of building
from cleaning up drain
At former wash rack not
used since prior to 1980

Solvent AST was previously
located adjacent to Hazmat tank
AST ... reported it leak
at that time

Box near red ... near an OWS
drain around I M A Building 319
to GWMU 68 down gradient

6/14/95

Spill Reports

5/6/94 20-40 gal diesel Cantonment area outside MATES soil removal then land farming

6/12/94 Exit at Range 12 10 gal Diesel stop leak & soil removal

7/10/94 75-100 gal diesel Range 45 staging area tank trail. Fuel collected in bottom of M-88 then spilled over tearing Skyline Vehicle moved. ~20 gal engine oil was spilled in the soil was removed from the one spot

8/6/94 1 gal oil & ~5-7 gal spilled in the staging area

7/8/94 Diesel fuel #1, 20 gal a fuel tank Rupture at the weld exact material entered oil/water separator. Spill was cleaned up with absorbent material

8/21/94 ~20 gal spill DL-1 when ruptures at training area 5 removed 5 x 2 x 6 ft soil

8/22/94 1,000 gal of JP-8 at Bldg 952 POL was a tank overfill while another was being recirculated

10/18/94 20-25 gal diesel spilled soil removed adjacent to GSA

10/24/94 40 gal diesel fuel & painting of ground at Bldg 800 valve failure

11/5/94 25-45 gal JP-8 south of Area 500 Authorized fuel point hose spilled out of top of fuel trailer

11/11/94 15-30 gal JP-8 from fuel line pump MPRC soil removed

11/16/94 45-50 gal Range 26 FRA Diesel, 1 inch line was spilled while removing pants from 113's soil was removed

6/14/95

11/30/94 BDE TDC 3/77 AR 35-40 gal
JP-8 spilled when truck overturned soil
shipped to Ron Anderson's

1995 1/21/95 1 gal oil + 3 gal antifreeze spilled
from engine to floor drain + sanitary
sewer in Bld 845

12/13/95 Bld 21 + storm drain < 1 gal diesel
from [illegible] valve

2/20/95 Bld 845 [illegible] 10-15 gal JP8
from leaking fuel tank access plate

3/14/95 15-20 gal JP8 at TDC 2 [illegible]
over killed [illegible]

4/11/95 10-11 gal JP-8 at training area A
M60 Tank [illegible] soil removed

4/18/95 20 gal diesel (from fuel filler leak
at 1-161 In motor pool soil removed

4/12/95 Down Range [illegible] 20 gal JP-8
4 [illegible] slide off [illegible] absorbent Pads + soil [illegible]

4/24/95 30-40 gal JP8 from broken fuel line
[illegible] D37688 soil removed

4/24/95 Range 5 Parking area behind range
30-40 gal JP-8 fuel line leak 1x1x15 gal soil [illegible]

5/1/95 Bld 845 Truck Park JP8 oil 5 gal [illegible]
leak from M[illegible] soil removed

5/16/95 Bld 951 [illegible] lot 10-15 gal Hyd fluid
soil removed

6/11/95 20 gal DF 2 hand B clearing point [illegible]
soil removed

[signature]

INTMP 6/14/95

SWMU 68 is large used oil storage area
SWMU 67 outside shop floor
for wash rack
Wash rack is active has cracks in floor. Drain flows is inside new SWMU 67 to sewer system
Drainage for SWMU 68 is unknown

used oil drum for draining filters only

55 gals 2 grease rags
1 diesel fuel filters only
1 dry sweep + oil

battery room had stored batteries + no longer used for batteries have taken w/ pest SWM 53

Accumulate diesel + antifreeze in poly pack 55 gal diesel, 55 gal antifreeze

55 gal diesel fuel rags 55 gal
55 gal grease rags
55 gal dry sweep 1 each gm
55 gal solvent rags only

used batteries in white plastic tote with holes then shipped when full or load goes out

solvent dip PD680 is cleaned out by personnel in shop it is shipped to [illegible] for disposal every 2 years [signature]

6/14/95

10c80 large area where grass has been replanted this area is used staging & refueling

MRPC

* waste floor sweep 1 55 gal
* waste Hyd fluid 1-55 gal in tub
* spray Paint cans & small batteries placed in green totes
* 60 batteries 55 gal drum on wheeled platform
* used batteries in blue plastic container Alkaline

448 Drain field for buildings 5 includes sinks in shop

* 2 diesel AST small, 1 gasoline AST at pumps 1 drum for waste diesel
* waste drums 3-55-gal soil / debris
* small area stained from fuel ? in back of storage shed 3 sides no berms 1 small AST product
* used oil AST being phased out round small

fuel bladder with liquid potassium chloride ~3000 gal sitting on ground no berm or pit

* fuel shop had used oil drum with rack for filters [signature]

6/14/95

Floor plan in noted in 2nd shop

MFR & shops built in 88

Cibre Range Facilities built in 84

Saint fuel bladder location at cabin site

* 1 AST for fuel oil small at 85 C

AOC 2410 25

At Range Control

SWMU Battery room all gel cells in this facility

No lead acid batteries historically had

lead acid batteries Waste batteries are placed

in 99-gal drums Used gel cell for 5 years

non liquid

* Used Oil AST 3 portable

Bld 1807

3 containers 1-55 gal floor sweep

1-55 gal Oily rags

1-5 gal hydraulic fluid

Spray cans double bagged and

disposed sometimes packed lalled

& turned in concrete in good shape

There is a cyclone that is not used

but will be hooked up when this

becomes the carpentry shop

eliminated all hazardous paint

except aerosol cans

[signature]

6/14/95

SWMU 12 white phosphorous pit
Ind Aphil removed scrap metal
and munitions this were
sitting in piles. The area
had string marking area for
mag not on the survey. The survey
indicated something was buried

SWMU 5 former landfill probably
on edge of fill pieces of plastic &
of bread wrapper were observed in
soil from animal hole

SWMU 1 Closed April 94 to trash
covered and completed by Oct 94
Soil from UST removals was stockpiled
next to landfill Currently only
debris cell
* Transfer station for current
wastes - Drop box facility

x At GSA Yard drum unlabled
with greasy waste on gravel

Former tank location 1951 vintage
tanks A48, A49 FA4D closed in 88
Report with COE

SWMU 10 Old POL Yard: Not a yard as
such, dug in pit with drums
of oil & lubricant not used much
in 92 Drums were stacked along
current fence line East fence added later

6/14/95

3 empty 1 labeled Boiler water treating sediment sulfide contains 90 gal liquid contents unknown. 9 th drum empty

Note: Small oil/water separator next to bld 323 was opened after we left and is reported to only have a sheen with minimal sediments. It was also cleaned with the other oil/water separators when workers were there