Converse Consultants NW
HEALTH AND SAFETY PLAN

1.0 GENERAL INFORMATION

1.1 CLIENT: Snohomish County Department of Public Works
Solid Waste Management Division

1.2 JOB NO: 89-35228-10

1.3 PROJECT MANAGER: F. Patrick Seabeck
Site Managers: Erick Miller, John Strunk

1.4 SITE NAME: Lake Goodwin Landfill

1.5 SITE LOCATION: The Lake Goodwin Landfill is located on Frank Waters Road in northwestern Snohomish County about 1½ miles northwest of Lake Goodwin and about 5½ miles south of Stanwood, Washington.

1.6 PURPOSE OF FIELD VISIT(S): Five monitoring wells will be installed at the Lake Goodwin Landfill. Three deep wells and two shallow wells will be drilled to monitor groundwater quality. Figure 1-1 shows the approximate locations of the wells. Wells will be drilled with an air rotary drill rig; grab samples will be collected from the discharge hose and given to the County for analysis. The groundwater monitoring wells will be developed and hydrogeologic analyses will be performed upon completion of the drilling.

1.7 DATE OF VISIT(S): Work is to begin August 1990 and continue for about a month.

1.8 BACKGROUND INFORMATION: Complete _____ Preliminary __X__

1.9 INFORMATION AVAILABLE FROM: Erick Miller/Converse Consultants NW

1.10 OVERALL HAZARD SUMMARY: Serious _____ Moderate __X__
Low ____X____ Unknown _____

1/91

2.0 SITE CHARACTERISTICS

2.1 FACILITY DESCRIPTION:

Lake Goodwin Landfill is an 11.5-acre inactive landfill that accepted municipal waste including garbage, demolition wastes, and some industrial wastes. Operations at the landfill were terminated in September 1982 and a final cover placed during 1983. The landfill is sited within a former county gravel pit, which has an unlined bottom and sides. No gas or leachate collection systems were installed. No groundwater quality monitoring directly beneath or adjacent to the site borders has reportedly been accomplished.

The footprint of the existing waste mount covers about 11.5 acres and is fairly well covered in grass, clover, and weeds. A gravel access road crosses the fill area. The site is surrounded by second growth forest on all sides except on the north and the east side where the second growth forest has been clear-cut. Generally, the site is undeveloped with no potable or surface water on site.

Figure 1-1 shows the site location.

2.2 FEATURES OF THE SITE (powerlines, gaslines, watermains, terrain, etc.):

There are no potable water sources, telephone access or sanitary facilities at the Lake Goodwin Landfill. Arrangements will be made with the Seven Lakes Water District to obtain access to a fire hydrant for water used by the drill rig. The quality of water from the fire hydrant will be tested prior to the advancement of the borehole. A portable telephone will be available on-site.

Buried telephone lines are located on the west side of Frank Waters Road.

Static groundwater level elevations measured in wells producing from the lower advance outwash deposit vary from about 200 to 300 feet elevation east and northeast of the landfill, to about elevation 10 to 50 feet west of the landfill.

2.3 STATUS (active, inactive, or unknown):

The Lake Goodwin Landfill site is inactive.

2.4 HISTORY (worker or non-worker injury, complaints from public, previous agency action):

The landfill was closed in September 1982 and was covered by 1983. While staking approximate locations of proposed monitoring wells in August of 1989, probable leachate stains were noted on the ground surface in the drainage swale located on the northwest side of the landfill. No previous agency action or monitoring program has been completed.

It has been alleged that pesticides and crime laboratory wastes were disposed in the landfill.

3.0 WASTE CHARACTERISTICS

3.1 WASTE TYPE(S) (that could be encountered):
Liquid __X__ Solid __X__ Sludge _____ Gas __X__

3.2 CHARACTERISTICS
Corrosive _____ Ignitable __X__ Radioactive _____ Volatile __X__
Toxic __X__ Reactive _____ Other __X__ Potential carcinogens & pathogens

4.0 HAZARD EVALUATION

4.1 OVERALL HAZARD LEVEL:

The overall hazard level for drilling downgradient from the fill at the Lake Goodwin Landfill is moderate. The potential to encounter contamination is present. Compounds present in leachate present primarily an inhalation and dermal hazard. Drilling background wells is less hazardous from an exposure standpoint.

All drilling presents a physical hazard from injury due to trauma. Drilling background wells in the area where truck and heavy machine traffic is high presents a physical hazard as well.

4.2 CHEMICAL HAZARDS:

The presence of leachate in the area downgradient of the fill at the Lake Goodwin Landfill is possible. This section will describe the properties, health hazards and potential symptoms of exposure to compounds generally found in landfill leachate. This is not an exhaustive list of compounds, nor is it a detailed review of the hazards of each of the compounds. John Strunk will provide additional information upon request.

In general, symptoms of exposure to compounds that could be present at the site would produce headache, nausea, irritation of the eyes or respiratory tract, lassitude and a general ill feeling. If any worker feels ill after working on-site, notify the site manager immediately.

Table 4-1 lists the Occupational Safety and Health Administration's (OSHA) Permissible Exposure Limits (PEL's) and the American Conference of Governmental Industrial Hygienist's Threshold Limit Values (TLV's). These values are concentrations that will not produce harmful effects to workers (average workers) if exposure occurs 8 hours per day over a 40-year work life. Also listed on this table are ionization potentials for the "common" contaminants in leachate.

TABLE 4-1
LIST OF POTENTIAL COMPOUNDS ONSITE
OSHA PELs/ACGIH TVLs/IONIZATION POTENTIALS

Compound	OSHA PEL (ppm)	ACGIH TLV (ppm)	IP (eV)
Benzene	1	10	9.25
Carbon monoxide	50	50	above 13
Ethyl benzene	100	100	8.76
Hydrogen cyanide	10	10	13.91
Hydrogen sulfide	20	10	10.46
Methane			12.98
Tetrachloroethene	100	50	9.32
Trichloroethene	100	50	9.45
Vinyl chloride	1	5	10.00

Benzene is a clear, colorless non-corrosive, highly flammable liquid with a strong pleasant odor. The low boiling point and high vapor pressure of benzene causes rapid evaporation giving of vapors that are three times heavier than air.

Benzene is a common constituent of gasoline and is present in other products such as rubber cement, paint, varnish, stain remover, adhesive, in use as a solvent, in printing, and in lithography.

A known associate between benzene exposure and bone marrow poison, blood abnormalities (aplastic anemia, an often fatal blood disease) and leukemia exists in animal studies and in occupationally exposed workers. Benzene has also been associated with damage of genetic material.

Symptoms of overexposure to benzene through inhalation include irritation of the eyes, nose, and respiratory system. Continued exposure could result in headache, nausea, staggered gait, and fatigue. Benzene can usually be detected by the nose at 2 ppm, however, this is above the OSHA PEL of 1 ppm.

Carbon Monoxide is produced during the aerobic decay of organic wastes. It is odorless and colorless. Inhalation can result in oxygen deficiency as carbon monoxide has a greater affinity for oxygen carrying cells than oxygen does. Nausea and headache are symptoms of early exposure when blood contains about 10 percent CO. The OSHA PEL and the ACGIH TLV are both 50 ppm. An environment of 1500 ppm CO is considered immediately dangerous to life and health (IDLH).

Ethyl Benzene is a colorless, flammable liquid that has a pungent odor. The vapors are heavier than air which could produce an explosion hazard near the ground. It is a common component of gasoline and aviation fuels, and is primarily used in the production of styrene.

It is absorbed only slightly through the skin, but its vapors are readily absorbed through inhalation. At lower concentrations it is an irritant to the respiratory tract, and at higher concentrations (considerably above the TLV) it may cause central nervous system effects.

Hydrogen Cyanide can occur in landfill gas. The possibility of encountering this gas during drilling exists. The TLV is 10 ppm and it is absorbed through the skin. Overexposure is associated with headache, weakness, changes in taste and smell, irritation of the throat, vomiting, watering of the eyes, and nausea. Levels above 110 ppm may be fatal after 1/2 to 1 hour.

Hydrogen Sulfide is produced during the decay of organic wastes. Its rotten egg odor is detectable at levels as low as 0.0005 ppm, however, hydrogen sulfide quickly acts to deaden the olfactory nerves, making odor perception unreliable. Eye irritation has been reported for levels as low as 5 to 10 ppm, along with headache, sleep disturbance, and nausea. At higher concentrations, 10 to 300 ppm, respiratory irritation results and at concentrations greater than 300 ppm, death by respiratory paralysis can result. OSHA regards 300 ppm as the concentration that is immediately dangerous to life and health (IDLH). Cumulative effects are not seen with this compound. Return of an overexposure victim to fresh air will result in recovery from hydrogen sulfide effects. The ACGIH TLV for worker exposure is 10 ppm averaged over an 8-hour work day.

Methane is produced when decomposition of organic wastes depletes the oxygen supply and decomposition goes anaerobic. It is colorless and odorless. Methane is not highly toxic, but presents an extreme hazard because of its flammability. The lower explosive limit is 5.3 percent by volume in air (53,000 ppm). Common concentrations of methane in landfills range to 850,000 ppm (85 percent). Methane is capable of traveling large distances from the wastes where it is generated, through soil pore spaces and along utility lines. It will build up in enclosed spaces, creating hazardous atmospheres. The literature is filled with references to methane caused explosions resulting in death from incidents adjacent to landfills. High concentrations of methane result in asphyxiation, as it displaces the oxygen in air.

Tetrachloroethane (PERC) is used extensively in dry cleaning. It exhibits properties similar to TCE, although it is less toxic. It can be detected in air at 50 ppm as an aromatic odor. Exposure at concentrations of 200 ppm produces objectionable odor and eye irritation, and light headedness. At concentrations of 500 ppm, exposure results in salivation, metallic taste in the mouth, and eye irritation. Higher concentrations result in unconsciousness. At this time, PERC is not thought to present a cancer hazard to humans. The OSHA PEL is 100 ppm and the ACGIH TLV is 50 ppm.

Trichloroethene (TCE) is widely used as an industrial solvent, primarily in metal degreasing. It readily volatilizes in air. It will decompose to lower chlorinated compounds, some of which are more toxic to TCE. Its odor is barely perceptible to individuals not accustomed to it, but could be detected at 100 ppm as chloroform-like. This is not an effective warning sign.

Symptoms of acute exposure are visual disturbances, mental confusion, incoordination, fatigue and sometimes nausea. Flushing of the skin can occur if alcohol is consumed shortly before or after exposure to TCE. Current occupational exposures indicate no serious cancer hazard at low exposures over time. The OSHA PEL is 100 ppm and the ACGIH TLV is 50 ppm.

Vinyl Chloride is a gas at ambient temperatures that is slightly lighter than air. It has no detectable odor in concentrations found in ambient air. It is used as a chemical intermediate in plastic manufacture. It is explosive, with the limits of 4 to 22 percent in air. This compound is commonly found in landfill gas from the decomposition of higher chlorinated compounds.

Effects of exposures to high concentrations (8,000 to 10,000 ppm) causes depression of the central nervous system. Concentrations must reach 1 per- cent before anesthetic effects are noted in humans. Vinyl chloride is a known human carcinogen. Long-term exposures to vinyl chloride can cause angiosarcoma (cancer) of the liver, as has been documented in occupational situations. The OSHA PEL is 1 ppm and the ACGIH TLV is 5 ppm.

4.3 PHYSICAL HAZARDS:

Drilling presents numerous potential physical hazards. The potential exists for fire and/or explosion if pockets of concentrated methane are encountered. The drill rig should be equipped with a spark arrestor. The sudden release of high concentrations of other gasses could also occur.

Drilling on unstable slopes is a potential physical hazard. Efforts must be made to ensure the stability of the drill rig. Attention must be paid to the continued stability of the rig and escape routes planned prior to initiating work.

The use of protective clothing around drill rigs presents a physical hazard. Clothing must be large enough that it does not rip with movement, but not too large that it is loose, as loose clothing could become entangled in moving parts of the rig.

Noise around active drilling is a hazard. Hearing protection must be worn whenever a shouted conversation at a one-foot separation cannot be understood.

The use of heavy equipment presents many opportunities for traumatic injury. Remain aware of the events happening around you. Traffic presents a potential physical hazard as operators may not see or hear personnel. Make your presence known to all landfill workers prior to and during drilling of background wells.

4.4 HAZARDS POSED BY SITE ACTIVITIES:

Overall, the chemicals detected can cause serious threats to health and safety via exposure routes of inhalation, ingestion, and dermal contact. The primary routes of this site should be inhalation and dermal contact. Exposures will be controlled through strict work limitations on eating, drinking and smoking, rigorous application of decontamination and personal hygiene protocols, careful air quality monitoring, use of engineering controls and utilization of personal protective equipment.

4.5 HAZARDS POSED BY CHEMICAL SUBSTANCES PROVIDED BY CONVERSE CONSULTANTS NW:

In accordance with Washington State regulations for hazard communication, Material Safety Data Sheets (MSDS) are provided for the following chemicals:

- methanol

5.0 PROCEDURES

5.1 SITE ORGANIZATION:

Map/sketch attached __yes__ Site secure __limited__
Perimeter Identified __yes__
Zone(s) of Contamination Identified __no__

5.2 SITE PERSONNEL:

Team Organization:

Team Members	Responsibility
Erick Miller	Converse
John Strunk	Converse
David Yonemitsu	Converse
John Mathes & Associates	Subcontractors (drillers)

At least one team member must be currently certified by the American Red Cross, or equivalent, in both first aid and CPR.

5.3 LEVEL OF PROTECTION

A_____ B_____ C__X__ D__X__

Level D consists of:

- Steel toe neoprene boots (meets ANSI Z41-1983)
- Tyvek coveralls
- Splash protection if conditions warrant its use (muddy or wet)
- Rubber outer gloves
- Surgical inner gloves
- Hard hat to be worn around overhead hazards and near operating equipment
- Eye protection to be worn near operating equipment

Tape boots and gloves to coveralls if there is a potential for drill cuttings or groundwater to contact work clothing.

Level C add:

For Converse employees use American Optical full-face air purifying respirator (APR) or Survivair half-face APR with MSHA/NIOSH approved R53A cartridges for

organic vapor/acid gas/particulates. Drillers must use full-face APR that they have been fit-tested with and MSHA/NIOSH organic vapor/acid gas/particulate cartridges.

5.4 SAFETY EQUIPMENT AND MATERIALS:

First aid kit, eye wash, stretcher or blanket, clean water, paper cups, wind direction indicator (surveyors tape tied to the top of the rig), 20-pound ABC fire extinguisher.

5.5 MONITORING EQUIPMENT AND PROCEDURES:

Carefully inspect each piece of monitoring equipment prior to work startup. Failure of any of the equipment listed below to work properly must be reported to the Site Manger immediately. Failure of monitoring equipment is reason to shut down work until functional equipment is obtained.

5.5.1 Gastec Explosimeter/O2 meter (model 1314) or Gas-Point (model H) Combustible Gas Indicator

Calibrate prior to each day's activities, according to manufacturer's instructions. Record calibration in the field log book. Set O2 level in a "clean" area. Recharge at the end of each day. Monitor continuously during drilling and record measured levels in the log book every 30 minutes.

Action Levels:

- At 20 percent of the LEL, measures must be taken to reduce the flammability of the work zone or work must cease until the LEL has dropped below this level.
- At least 19.5 percent O2 must be present to work without the use of supplied air (SCBA).
- At greater than 21 percent O2 work must cease as you are in the flammable range for O2.

5.5.2 HNU with 10.2 eV lamp or OVM with 10.6 eV lamp

Calibrate prior to each day's activities, according to manufacturer's instructions. Record calibration in the log book. Recalibrate after cleaning the lamp or when background levels drift. Background readings must be taken in a "clean" area and recorded in the log book. These instruments are sensitive to humidity and may require periodic lamp cleaning if they are humid or wet. In the rain or on cold misty mornings, the instruments should be placed in a warm car to dry out the lamp if drifting occurs. Monitor continuously in the breathing zone and record measured levels in the log book every 30 minutes.

Action Levels:

- Continuous reading of 3 ppm above background in the breathing zone require an upgrade to Level C or moving to an upwind position and mechanical ventilation to reduce the concentrations.

- If readings rise above 10 ppm consistently in the breathing zone, evacuate the area. Level B would be required.

5.5.3 H_2S Meter (if necessary)

Will come factory calibrated when rented. Record manufacturer of unit, calibration date, etc. in the log book. Monitor in the breathing zone continuously during drilling. Record levels every 30 minutes.

Action Levels:

- 0 to 10 ppm continue in Level D

- At or above 10 ppm, evacuate the area. Mechanical ventilation or supplied air must be used to reduce the concentration in the breathing zone.

5.5.4 Drager Tubes for CO and HCN (if readily available)

Carbon monoxide will be monitored with tube 1LL. This tube requires 5 strokes for a scale of 5 to 50 ppm CO. High organic readings will discolor the precleaning layer and cause a false indication of CO. Take readings when drilling begins and every hour thereafter when the hole is open. Record in log book.

Action Levels:

- to 50 ppm CO - Level D

- above 50 ppm, evacuate the area. Mechanical ventilation or supplied air must be used to reduce the concentration in the breathing zone.

Hydrogen cyanide will be monitored with Sensidyne number 12L. The odor threshold for hydrogen cyanide is 0.1 to 5 ppm less than the TLV of 10 ppm. Hydrogen cyanide has the distinct odor of bitter almonds. If the odor of hydrogen cyanide is detected, monitoring with the Sensidyne tube 12L will be performed hourly. This tube requires 5 strokes for a scale of 0.5 to 120 ppm.

Action Levels:

- 0 to 10 ppm - Level D

- above 10 ppm - evacuate area. Mechanical ventilation or supplied air must be used to reduce the concentration in the breathing zone.

5.6 SITE ENTRY PROCEDURES:

- Locate nearest available telephone. A portable telephone will be on-site and the phone numbers are 972-5149 or 953-5815.
- Post emergency telephone numbers and route to hospital in the vehicle.
- Designate at least one vehicle for emergency use and park it in a "get-away" position.
- Conduct a safety briefing with the drillers. Go over the hazards involved in site activities. Have them read the safety plan and record their names in the log book as having been given the plan to read.
- Determine wind direction by tying surveyors tape on the drill rig before the rig is set up. Position personnel upwind. Try to position the drill rig upwind, as personnel that need tools, etc., should not have to go downwind of the hole.
- Watch overhead electrical lines when setting up the drill rig.
- Establish the area to be considered "contaminated" and set up decontamination facilities upwind of it.
- Set up a beverage break area and a decon station for beverages.
- Use a spark arrestor for the exhaust of the drill rig.

5.7 WORK LIMITATIONS (time of day, etc.)

- No eating, drinking, or smoking onsite.
- No facial hair that would interfere with respirator fit (if respirators are to be worn).
- Buddy system at all times when drilling is taking place.
- Drill cuttings are to be placed in drums and covered nightly to reduce potential emissions from the materials. When opening the drum to add more or empty the contents, position yourself upwind.
- Do not work in electrical storms.

5.8 DECONTAMINATION PROCEDURES

5.8.1 Personnel

At a minimum personnel decontamination for BREAKS on the site consist of:

- Wash outer gloves in trisodium nonphosphate detergent (Alconox) and water, rinse in clean water.
- Unzip the front of tyveks if cooling is necessary.
- Remove outer gloves.
- Remove inner gloves and place in plastic bag for disposal.
- Wash hands and face in clean water and hand soap prior to drinking.
- When the rest break is finished, put on a new pair of inner latex gloves, put on outer gloves, zip up tyvek and retape if required.
- If a RESPIRATOR is being worn, remove it after removing outer gloves and prior to removing inner gloves. Place it on a clean (plastic covered area) surface with the lens up. When the break is over, put on respirator after replacing inner gloves, but prior to replacing outer gloves.

At a minimum personnel decontamination for LUNCH, ENTERING THE OFFICE OR LEAVING THE SITE consists of:

- Wash boots in Alconox and water, using the boot brush. Make sure all material is removed from the soles.
- While standing in the boot wash area, wash off splash protection with brush and Alconox water, if worn.
- Rinse boots in clean water, rinse down splash protection, if worn.
- Wash outer gloves in Alconox and water, rinse in clean water.
- Remove splash protection, boots then gloves.
- Put on street shoes.
- Wash hands and face in clean water and hand soap prior to lunch.
- If a RESPIRATOR is being worn, remove it after removing outer gloves and prior to removing inner gloves. Place it on a clean (plastic covered area) surface with the lens up. After lunch is over, put on respirator after replacing inner gloves, but prior to replacing outer gloves.

5.8.2 Sampling Equipment

All equipment is to be decontaminated prior to entering each hole as follows:

- Wash in Alconox and water
- Steam clean (drilling tools, casing, and drill bit)

Sampling equipment is to be decontaminated between samples as follows:

- Wash and scrub in Alconox and water.
- Rinse in water.
- Rinse in methanol (carry methanol in a safety can as it is flammable, unless it has been diluted).
- Rinse again in DI water.

5.8.3 Samples

Samples are to be containerized and delivered to an analytical laboratory. Prior to turning over samples, decon outer container in the following manner:

- Tighten lid on container.
- Wash with Alconox and water.
- Rinse several times with water.

5.8.4 Heavy Equipment

The drill rig is to be steam cleaned prior to leaving the site. Tires and the underside of the rig are to be washed and rinsed.

5.9 DISPOSAL OF MATERIALS GENERATED ON SITE

All wash water will be allowed to infiltrate on-site. Drilling cuttings from the Lake Goodwin Landfill will be placed on plastic sheeting next to the well head pending receipt of analytical results. A small berm will be placed around the cuttings to prevent runoff.

6.0 CONTINGENCY PLAN

6.1 PERSONAL TRAUMA INJURY:

If a personal trauma injury (NOT CHEMICAL EXPOSURE) occurs in a non-life threatening situation (neither the victim's life or the rescuer's life is in jeopardy), take the following steps:

6.1.1 If the victim is CONSCIOUS:

- Prevent further injury and initiate first aid.
- If the injury is not suspected to be serious (you must use judgment) and the victim is able to move, relocate the victim to the field vehicle, and continue administering first aid until injury is tended to.

  If the injury cannot be taken care of on-site, get medical attention for the injured by either transporting to a hospital or calling 911 and requesting an ambulance.

  Provide the following information:

  1. Give them your location:
     Lake Goodwin Landfill
     1½ miles northwest of Lake Goodwin on Frank Waters Road

- If the injury IS SERIOUS, do not move the victim. Try to stabilize the victim. Have someone call 911 for an ambulance ASAP. Provide the information given above. Tell them you suspect the injury is serious.

6.1.2 If the victim is UNCONSCIOUS:

- Do not attempt to move the victim. Check for breathing and heart beat. Render appropriate first aid (CPR or mouth-to-mouth) if victim is not breathing or heart beat cannot be detected.
- Have someone go call 911, and do not stop rendering aid until medical help arrives.

  Provide the following information:

  1. Give them your location:
     Lake Goodwin Landfill
     1½ miles northwest of Lake Goodwin on Frank Waters Road

  2. Tell them the victim is unconscious, not breathing, etc.

After the medical needs of the victim are taken care of, notify John Strunk (see section 6.6 for numbers) of the situation. Prepare an incident report by answering the questions listed on the attached form, INCIDENT REPORT. Whoever witnessed the accident is responsible for its completion. This should become part of the project file. Workman's Compensation requires submittal of claims within 48 hours of an accident.

6.2 CHEMICAL RELEASE OR POTENTIAL EXPOSURE

If an accident involves a chemical release or potential exposure it should be treated as a potentially life-threatening situation and the following steps should be taken:

- Immediately obtain help by calling 911 and asking for the fire department and a medical rescue. Never attempt to rescue an individual or stop a chemical release by yourself in a potentially life-threatening situation.

  Provide the following information:

  1. Give them your location:
     Lake Goodwin Landfill
     1½ miles northwest of Lake Goodwin on Frank Waters Road

  2. Tell them the result of the accident, for example, a person is down from chemical exposure, drilling has released a pocket of gas, etc.

- Direct the emergency crews to the scene of the accident and inform them of the chemicals that may be present on the victim.

After arranging for emergency help, notify John Strunk. Prepare an incident report by answering the questions listed on the attached form, INCIDENT REPORT. Whoever witnessed the accident is responsible for its completion and submittal to John.

6.3 EXPLOSION OR FIRE:

6.3.1 If an EXPLOSION occurs take the following steps:

- EVACUATE the area immediately.
- Take a head count of all personnel upon relocation. Do not attempt to go back and look for missing personnel yourself. Inform the emergency group (fire department, etc.) of the situation and any personnel that cannot be located.
- Notify John Strunk.
- Do not return to work. An evaluation of the conditions that led up to the explosion must occur. At no time should anyone return to the site until it can be determined what caused the explosion to occur, why monitoring equipment did not warn of an impending explosion and what can be done about the safety of future work in the area of the explosion.

6.3.2 If a SURFACE FIRE occurs:

- Have a team member inform fire department personnel immediately. If the fire is small and can be contained with the use of the fire extinguisher, do so. If not, evacuate the area and let the fire department take care of the situation.

6.4 LOCAL EMERGENCY INFORMATION

Ambulance: 911

Hospital: Cascade Valley Hospital
330 South Stillaquamish
Arlington, Washington
435-2133

Poison Control Center: 1-800-732-6985

Sheriff/Police: 911

Fire: 911

6.5 EMERGENCY ROUTES:

See Figure 6-1, attached.

Cascade Valley Hospital in Arlington, Washington. From site go east on Lakewood Road to 172nd Street N.E. Continue east of 172nd Street N.E. to Stillaquamish Highway (67th Avenue). Go north on 67th Avenue to Olympic Avenue. Go south to Highland Drive and go north on South Stillaquamish Street. Hospital is approximately two blocks north of intersection of South Stillaquamish Street and Highland Drive.

6.6 EMERGENCY CONTACTS:

- Converse Project Manager
  Name: F. Patrick Seabeck / John Strunk / Erick Miller
  Phone: 285-5200 (office)

- Occupational Physician
  Name: Virginia Mason Occupational Medicine
  Phone: 223-6949

  Team members under above physicians care:
  Erick Miller
  John Strunk
  David Yonemitsu

- Occupational Physician (drillers/SWMD)
  Name:
  Phone:

  Team members under above physicians care:

- Client Contact
  Name: Dawn Shroy-Marshall (SWMD)
  Phone: 668-6133

7.0 PLAN APPROVAL

This site safety plan has been written for the use of Converse Consultants NW and its subcontractors. Converse Consultants NW claims no responsibility for its use by others. The plan is written for the specific site conditions, purposes, dates and personnel specified and must be amended if these conditions change.

This plan has been prepared by HEALTH/SCIENCES Consulting from information provided by Converse Consultants NW. The plan was amended by Converse Consultants NW for the current phase of work. Use of this plan does not ensure the safety of personnel onsite. Its purpose is to provide safety guidance only. No claims can be made as a result of injuries from unsafe acts or unplanned events.

PLAN PREPARED BY: Donna LaBar
HEALTH/SCIENCES

DATE: February 27, 1988

PLAN AMENDED BY: David A. Yonemitsu
CONVERSE CONSULTANTS NW
July 10, 1990

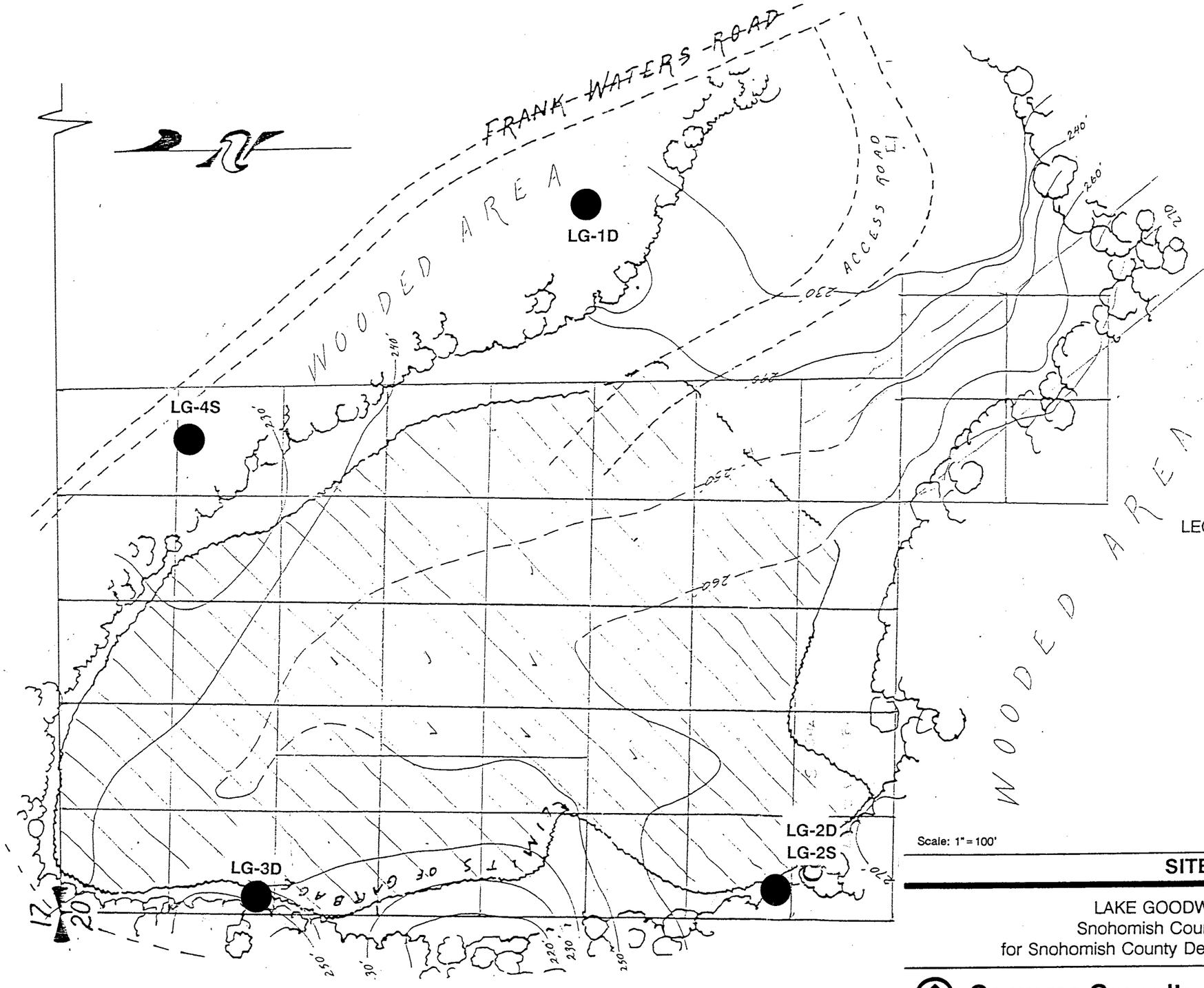
PLAN APPROVAL: Erick Miller EM
CONVERSE CONSULTANTS
August 7, 1990

Attachments:

- Figures 1-1
- Figure 6-1
- MSDS for methanol
- Incident Report

Distribution of approved plan:

- Project Manager (responsible for distribution to team members and client)



Scale: 1" = 100'

SITE LAYOUT

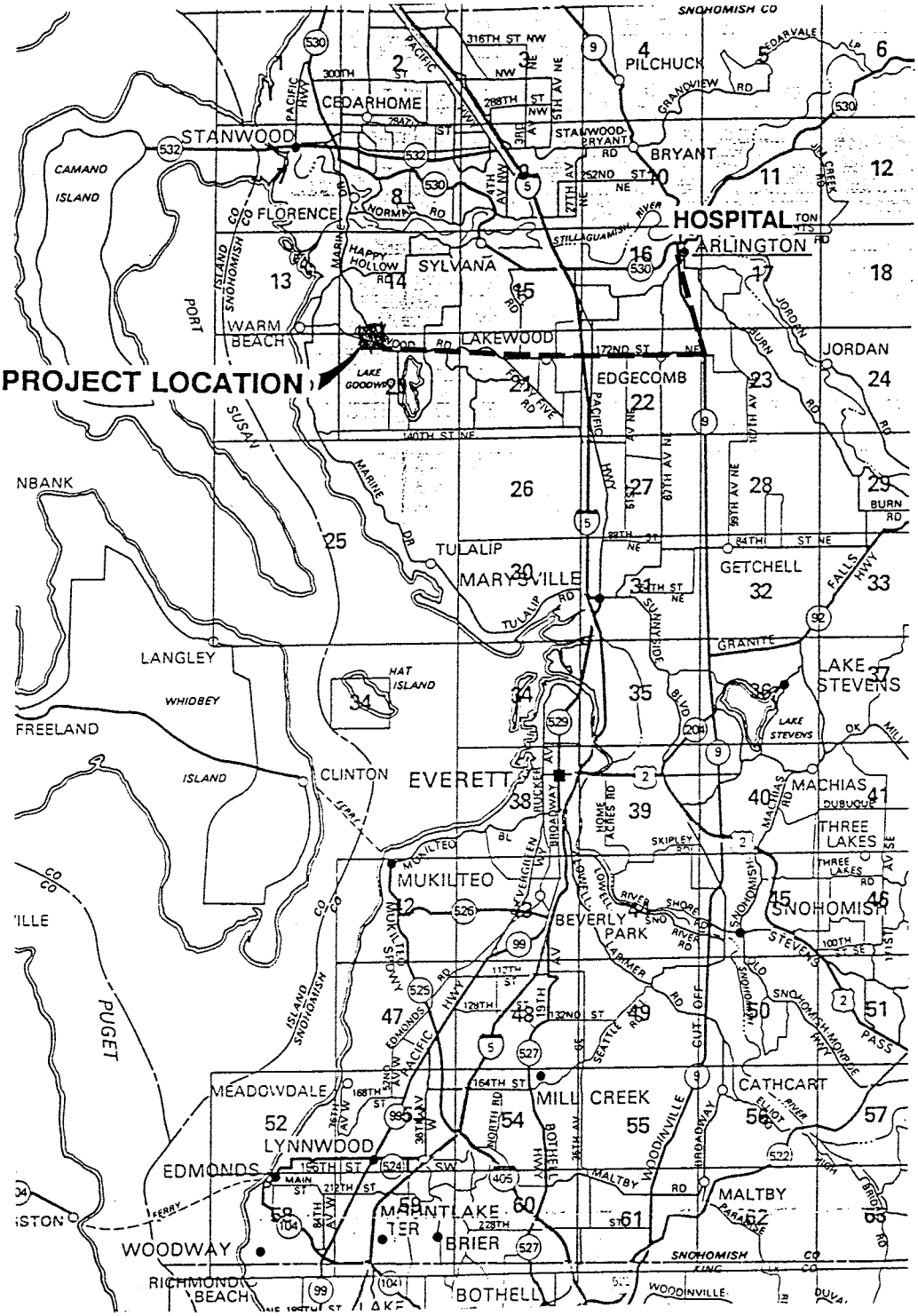
LAKE GOODWIN LANDFILL
Snohomish County, Washington
for Snohomish County Department of Public Works

Project No.
89-35228-10

Figure No.
1-1

Converse Consultants NW Geotechnical Engineering and Applied Earth Sciences

BRUNING 40 107



LOCATION OF EMERGENCY MEDICAL SERVICES

LAKE GOODWIN LANDFILL
Snohomish County, Washington
for Snohomish County Department of Public Works

Project No.
89-35228-10

Figure No.
6-1

Converse Consultants NW Geotechnical Engineering and Applied Earth Sciences