CHAPTER 7

CONTAMINATION CONTROL

7-1 CONTAMINATION CONTROL

a. General. Contamination control minimizes the spread of contamination; therefore, rigid, established operating procedures must be followed to achieve the objective of contamination control. It consists of

(1) Initial monitoring upon arrival to determine the preliminary site characterization and personnel contamination.

(2) Anti-contamination procedures to minimize the spread of contamination.

(3) Strict contamination control line procedures to control contamination spread during response/ recovery/ restoration operations.

b. Personnel Monitoring and Decontamination. Personnel who were potentially exposed during the accident, subsequent cloud passage, or post-accident entry into the contaminated area should be given a high priority in response actions. People to be considered include casualties; bystanders and sightseers; military and civilian response personnel; and residents, business employees and customers in the contaminated area. Initial definition of the perimeter of the contaminated area was discussed previously. Early definition of the perimeter is important so potentially contaminated people may be identified, and measures taken to prevent the contamination of additional people. Initially, the military may have the only effective radiation detection instruments at the scene and may monitor potentially contaminated civilians. Responsibility for monitoring civilians will shift to the DoE, state radiation control personnel or civilian authorities/ representatives as they arrive on-scene with appropriate instruments. Monitoring of personnel is normally done at a Contamination Control Station (CCS), however during the initial response when the number of radiation detection instruments and monitoring personnel is limited, alternative procedures must be devised if large numbers of people are involved. Depending on resources and requirements, the OSC may decide to establish more than one CCS. If sufficient resources exist to support multiple stations, processing contaminated or potentially contaminated civilian residents may be desirable through a station separate from that used for response force personnel.

(1) Monitoring and Decontaminating Potentially Exposed Medical Treatment Facilities. Immediately following an accident, injured personnel maybe removed for medical treatment, or fatalities may be moved to a hospital or morgue without being monitored for contamination. The potential contamination of a medical treatment facility or ambulance could present a health problem for the staff and other patients. Therefore, judgments must be made as to whether casualties have been removed from the contaminated area and, if so, what facilities are involved. Those facilities and the transportation resources used should be notified of the potential problem. Paragraph 14-5 describes procedures a medical facility may use to control the spread of contamination. Dispatch of a radiological monitoring team to check the vehicles and facilities involved for contamination, and to assist in decontamination or other measures, as appropriate, to prevent the spread of contamination should be given the highest priority.

(2) Contamination Control Station (CCS).

(a) The CCS employs a contamination reduction area (CRA) concept. The CRA is used to eliminate (or reduce to an acceptable level) contamination of personnel operating in the contaminated area. With the processing of personnel through the CCS, there is the possibility of a movement of contamination upwind through the CCS. Therefore, the CCS should be set up in a facility or tent to minimize dispersing by the wind of contaminants on boots, gloves, or anti-contamination suits. The CCS employs kraft paper, plastic, or drop cloths to collect contamination that may fall from anti-contamination clothing. Also, the CCS uses supervised, structured, and meticulous anti-contamination suits and /or clothing removal procedures to preclude a mechanical transfer of contamination outside the CCS.

(b) Persons present at the accident site or in known contaminated areas must be identified and screened to determine whether decontamination or other Corrective action is required. Normally this action is done at a CCS. Casualties should be monitored and

decontaminated to the extent injuries permit, however, urgent medical treatment has priority and exceptions may be necessary. Procedures for handling contaminated casualties are in paragraph 14-5. An example of a CCS is shown in Figure 7-1. When processing a large group of people, this type station will process a person about every four minutes if no contamination is found. If equipment and monitors are available, additional lines should be established in the station to process large numbers of people. When processing people whose personal clothing is contaminated, the clothing should be bagged separately and a receipt issued for those articles retained. A priority system should be established to permit immediate processing of EOD personnel, monitor team leaders, and others whose presence or information is needed to facilitate other response operations. The location of the contamination control station should be governed by the following constraints:

1. It must be located in an area free of contamination.

2. It ideally will be located directly upwind of the accident, but terrain or other considerations may dictate another location. If not upwind, it must be far enough away to prevent airborne or resuspended contamination from entering the CCS.

3. Initially, it should be located outside the fragmentation zone as well as beyond the perimeter of the contaminated area. After all explosives have been rendered safe, the CCS may be moved closer to the accident site if appropriate.

4. It should be in an area relatively free of weeds, bushes, and rocks. A paved or flat, compacted surface is recommended.

(3) Alternative Procedures. If an accident occurs near a populated area and several hundred people are potentially contaminated, available radiation detection instruments and monitoring personnel may be inadequate to process the people fully and quickly. The assumption is that the potentially contaminated people are not response personnel. [f only a few radiation detection instruments are available, use of an abbreviated monitoring procedure may be considered to expedite processing. Contamination of the hands, seat, and shoes or lower legs may be caused by handling contaminated objects or moving and sitting in contaminated areas. Contamination of the upper chest or neck and head area is indicative of exposure to airborne contamination. If radiation detection instruments are unavailable to monitor the people involved, procedures to decontaminate all people coming from the contaminated area should be used immediately. Provisions should be made to monitor them later when instruments are available. Such a procedure would require provisions to collect and receipt for clothing, shower and shampoo the people, and issue replacement clothing. Each article of clothing should be bagged separately, if feasible, and all clothing placed in a single large bag and a receipt issued. Watches, jewelry, and the contents of pockets and pocketbooks should not be highly contaminated, if at all, and should be retained by the individual. Although the contamination may be retained with the clothing, an over-riding need exists to assure the people that they are being cared for. Therefore, a gym or other facility with dressing rooms and high capacity showers may be appropriate for processing people. Soap, shampoo, towels, and stocks of replacement clothing must be obtained. People processed in this manner, and their collected clothing, should be monitored as soon as possible. Uncontaminated clothing should be returned at the earliest possible time.

c. Vehicle Monitoring. Vehicles used by the response force in the contaminated area will remain there for future use and not require immediate monitoring or decontamination. If members of the public in the contaminated area are sent, or go, to the CCS or other processing points using their own vehicles, the vehicle should be monitored before being moved away from the area. An example of a vehicle CCS is shown in Figure 7-2. All outer surfaces and the air filter may have been contaminated by airborne contamination, while wheel wells, tires, and the rear end may be contaminated from driving across contaminated areas. Unless the windows were down, or ventilators open, detectable contamination of the interior is most likely on those surfaces in contact with the vehicle occupants, for example, floorboards and seats. If only external surfaces of a vehicle are contaminated, decontamination should be relatively easy to perform, if done before bonding between the contaminant and the vehicles paint occurs. Also, rapid decontamination and return of private vehicles may reassure the public “that consideration is being given to their interests and property.

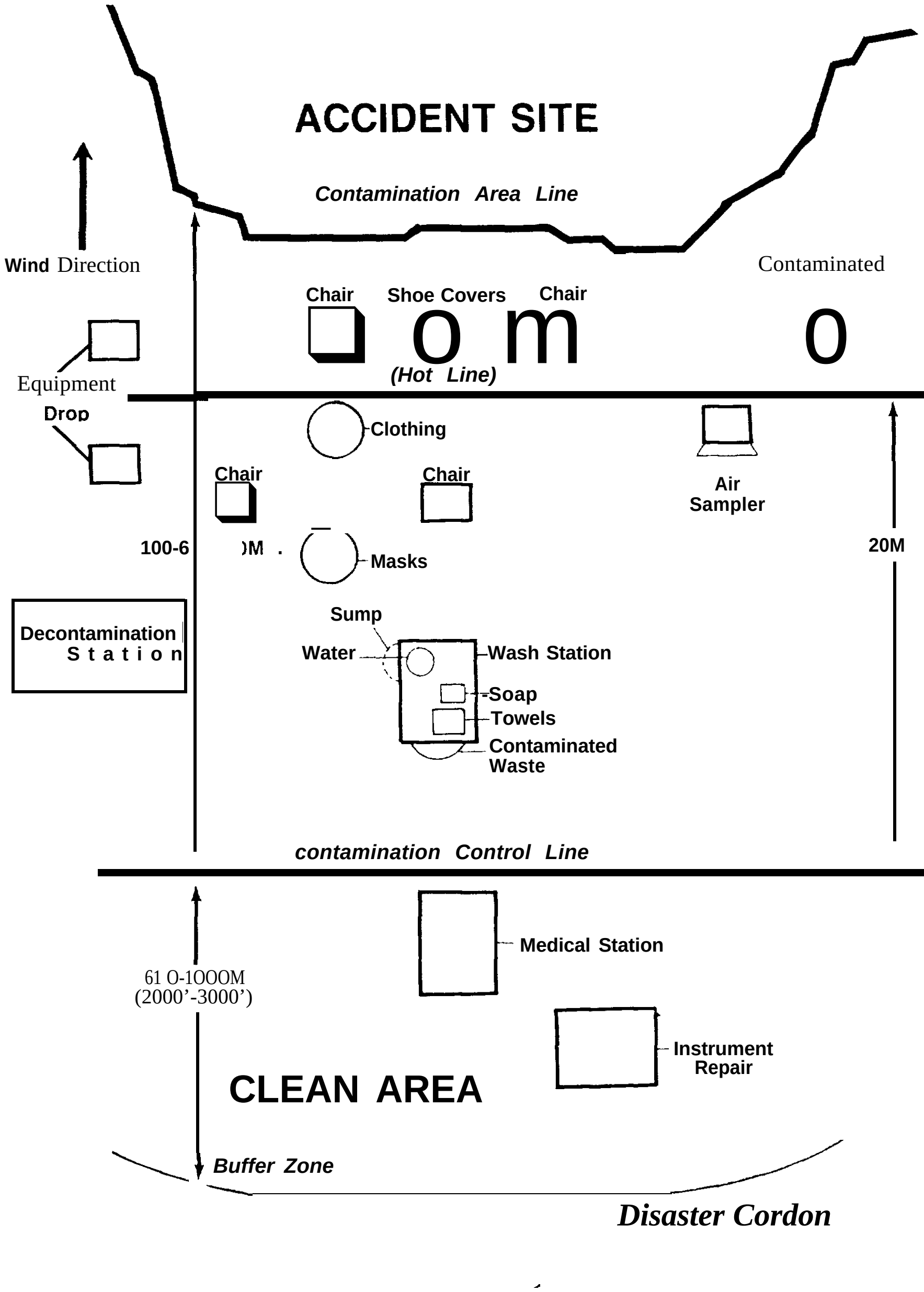

Figure 7-1. Contamination Control Station (Example).

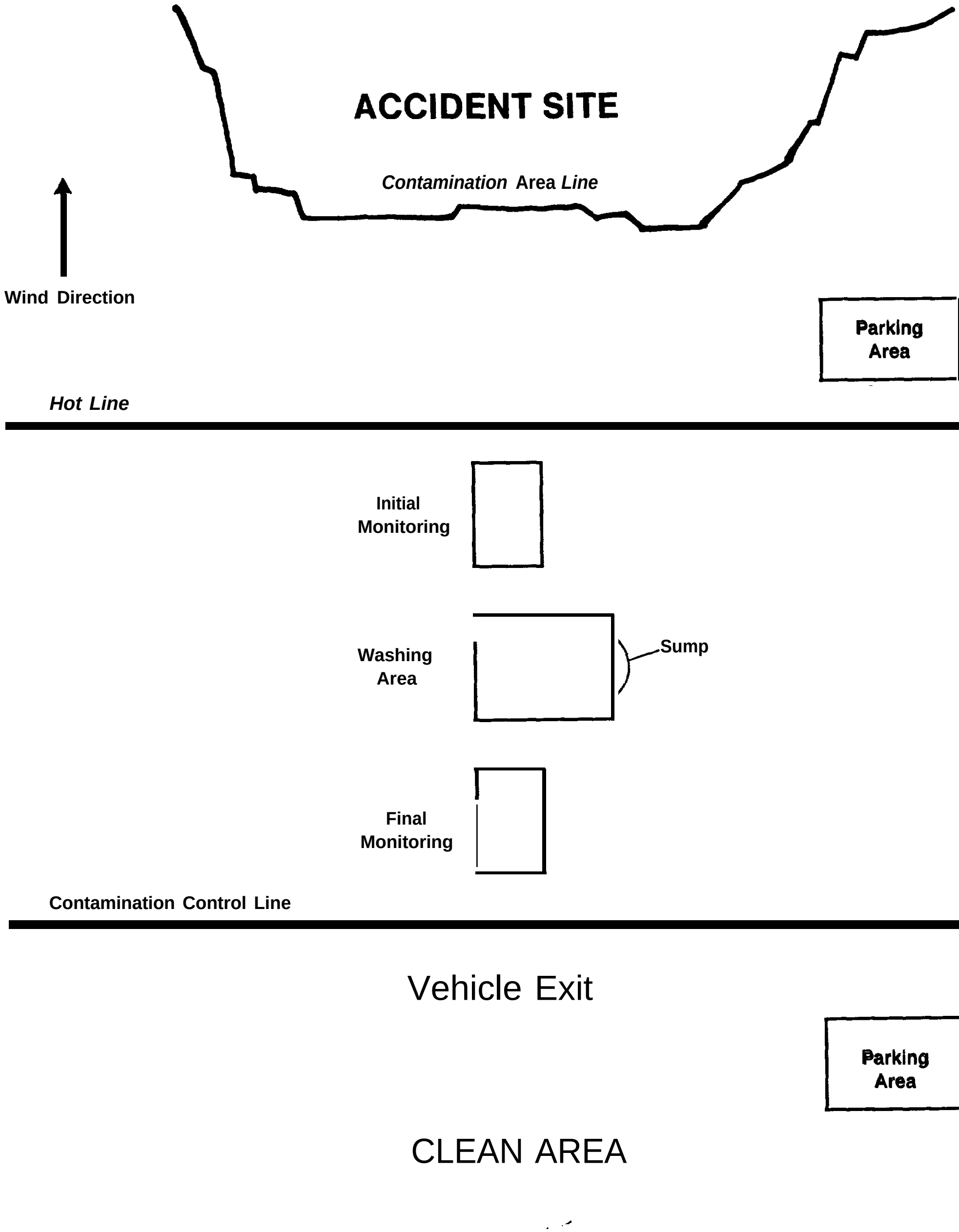

Figure 7-2. Vehicle Contamination Control Station Example.