Emergency Procedures

There basically are two systems which can be used for the protection of the environment in case of an unusual discharge into the ground-water flowing beneath the Hanford Site:

- The construction of intercept wells. After determining the flow direction and speed of flow, one or more intercept wells can be constructed. Since ground water moves at a very slow rate as compared to stream flow, time is not as critical. Therefore, planning can be done in a more rational manner. The intercept well(s) can then be used in two different ways.

  1. By pumping - As the contaminant moves into the area of the well(s), the pumps can be started and the contaminated ground water transported to holding ponds. The problem with this system is the large quantities of water which must be disposed of.

  2. By injecting - Instead of waiting for the contaminant to arrive, uncontaminated fluid is pumped into the ground causing a mound of water to develop. By placing wells in strategic locations, an effective "ground water dam" can be obtained holding the contaminated fluid behind it. The problem with this system is that extensive injections must be made to maintain the "dam".

- The second system works on the premise that the ground water surface is relatively flat (which is generally the case) and that wells can create mounds of water and valleys (drawdown) on this surface. If this is the case, a series of wells can be constructed to direct the flow of ground water in any direction simply by pumping and injecting water at various locations. Wells would be pumped to draw the contaminated fluid toward them and other wells would inject creating the damming effect. By this means, the contaminated ground water can be directed away from discharge points until a process can be devised to handle the contaminant or the water can be directed under the site until the contaminant reaches a level of concentration that can be discharged to outside sources. If this system is used, there would be no contaminated equipment to contend with since only "clean" ground water would be pumped and only "clean" water used for injection.

In both of the above cases funds must be made readily available for the construction of the intercept or injection wells, along with the pumps and a distribution system.