

FOR EXPLANATION SEE TABLE 1 AT RIGHT.  
NOTE: All units are Quaternary except bedrock, which is Late Jurassic and (or) Cretaceous in age.

**GEOLOGIC MAP**  
A generalized geologic map of the Potter Creek area (Scholl and Emanuel, 1981) is given in figure 6. The map is based on aerial photography, supplemented by ground observation. The contacts between some of the geologic units are gradational. In particular, the morainal, glaciomarine, and marine-glacial deposits tend to grade into one another. In the areas mapped as bedrock, a thin mantle of colluvial, morainal, or other deposits may locally cover the bedrock.

The hydrogeologic characteristics and significance to land-use planning of the geologic units shown on the map are discussed in table 1.

**GEOLOGIC SECTIONS**  
Geologic sections A-A' and B-B' (fig. 7) illustrate the spatial relations of geologic units in the Potter Creek area. The locations of the section lines are shown on the geologic map (fig. 6). The positions of subsurface contacts between units are inferred from drillers' logs; surface contact locations are taken from the geologic map. Morainal, glaciomarine, and marine-glacial units are combined in the sections as an undifferentiated glacial unit; they are similar in geologic and hydrologic character and difficult to distinguish in well logs.

Wells whose logs were used to determine subsurface contacts are shown on the sections and identified by a numerical code. The code corresponds to that used to describe well locations in figure 12 (sheet 4); the text accompanying that figure describes the numerical code in detail.

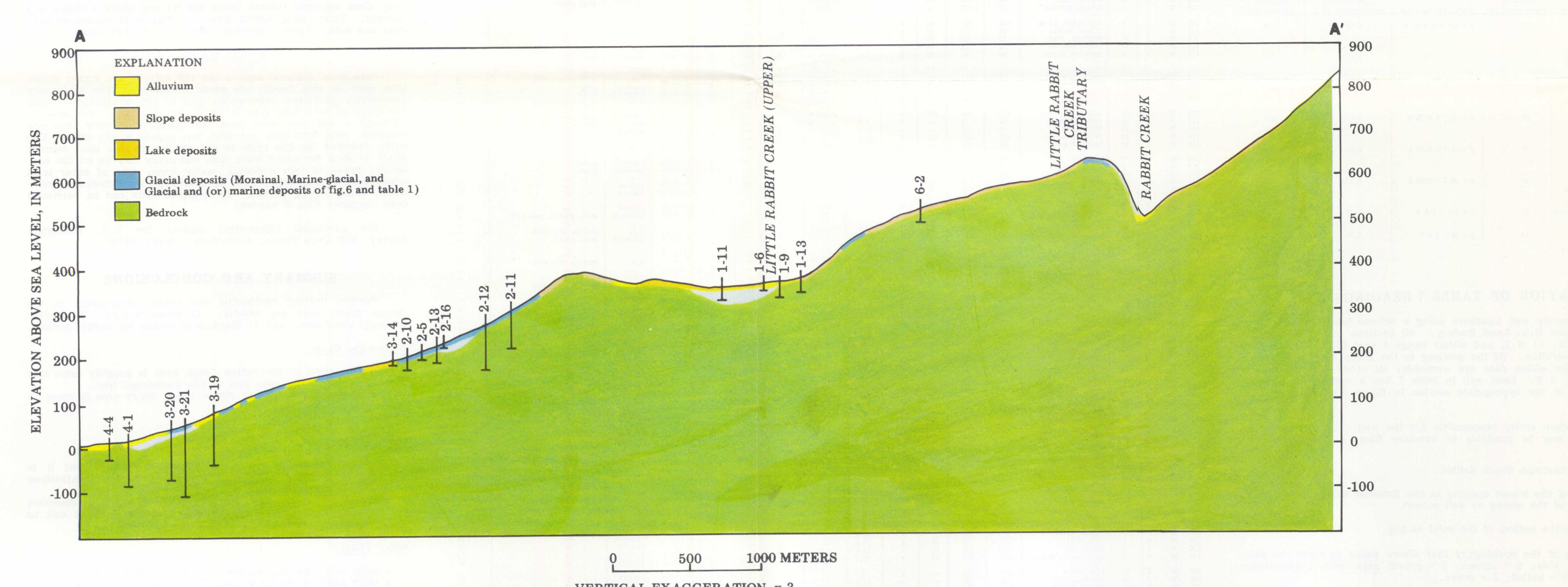


FIGURE 7.-- GENERALIZED GEOLOGIC SECTIONS.

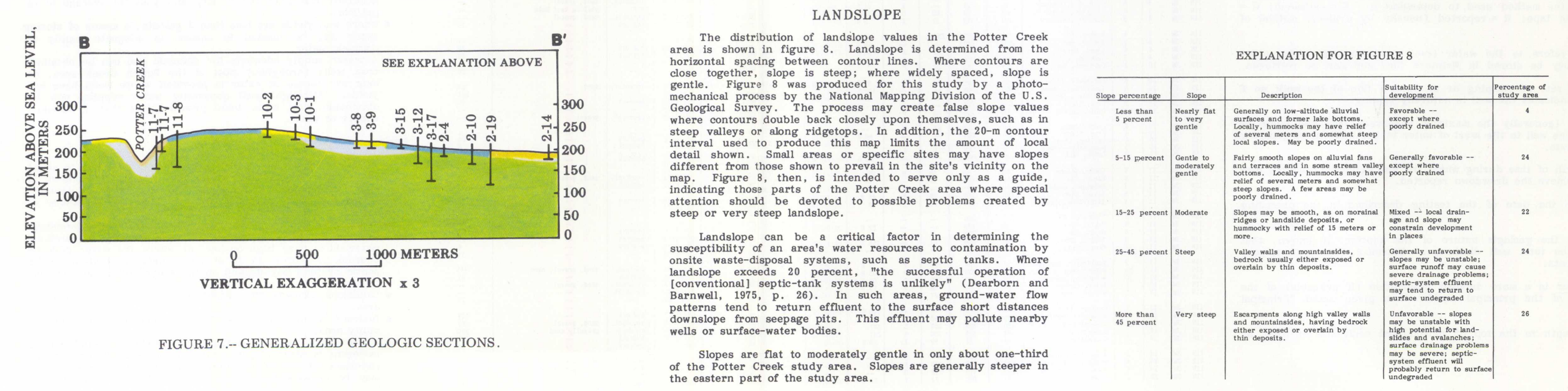


FIGURE 8.-- GENERALIZED LANDSLOPE.

TABLE 1.-- HYDROGEOLOGIC CHARACTERISTICS OF GEOLOGIC MATERIALS.

| MAP UNIT                      | MANMADE FILL                                                                                                                                                                                                                                                                                                                   | TIDAL DEPOSITS                                                                                                                                                                           | ALLUVIUM                                                                                                                                                                                                                                                                                                    | SLOPE DEPOSITS                                                                                                                                                                                                                   | LAKE DEPOSITS                                                                                                                                                                             | MORAINAL DEPOSITS                                                                                                                                                                                                                                                                                     | MARINE-GLACIAL DEPOSITS                                                                                                                                                                                                                                                                      | GLACIAL AND (OR) MARINE DEPOSITS                                                                                                                                                                                                                                                                | BEDROCK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LITHOLOGY                     | Chiefly gravel and sand, but may include considerable silt and clay, primarily fill for roadbeds and suggested only where unusually compact. Fine fill here unplaced.                                                                                                                                                          | Silt and very fine sand deposited by tidal waters; may contain clay, silt, and gravel in the tidal zone and in adjacent areas more boggy or only partly covered by tidal water.          | Chiefly sand and gravel, mostly well sorted and bedded; may contain silt and clay, as well as pebbles of more heterogeneous sediment. Unit includes glaciomarine deposits, altered for some deposits, emerged delta deposits, and unconsolidated glacial deposits such as kames, eskers, and some terraces. | Colluvium or slope deposits. Most deposits of bedrock fragments and rounded glacial drift, including sand and gravel deposits that are derived from local sources. These deposits are locally present throughout the study area. | Silt and clay deposits with some beds of fine sand or sand and gravel, deposited in lakes that are dammed by glacial, deposit thicknesses range from less than 1 to several 10's of feet. | Primarily glacial till, consisting of interbedded gravel, sand, silt, and clay deposited directly by glacial processes. Interbedded fine sand and clay, with some beds of gravel, are locally present. These deposits may be locally unconsolidated. Some glacial till may be locally unconsolidated. | Morainal deposits that have been extensively reworked by marine processes. Most deposits are composed of moderately sorted sand, silt, and clay, with some beds of gravel, and some beds of fine sand and silt. These beds are generally unconsolidated. They may be locally unconsolidated. | Chiefly morainal deposits that have been partly reworked by marine processes. Most deposits are composed of moderately sorted sand, silt, and clay, with some beds of gravel, and some beds of fine sand and silt. These beds are generally unconsolidated. They may be locally unconsolidated. | Stenohaline rocks, primarily of the Cretaceous-Miocene Complex, composed of metamorphosed siltstone, graywacke, arkose, and conglomeratic sandstone, and of granitoid gneiss associated with chert and quartzite. Near the mouth of Little Rabbit Creek, rocks of another complex include marble, gneiss, and quartzite (Clark, 1972, 1973). A local mantle of colluvium or other deposits may cover bedrock. The boundary between bedrock and adjacent deposits is commonly a broad area of transition only approximated by the contact of the map. |
| TOPOGRAPHIC EXPRESSION        | Linear banks, often steep and up to 30 ft high.                                                                                                                                                                                                                                                                                | Flat plains, tidal flats, or marshes.                                                                                                                                                    | Stream deposits form low terraces parallel to the modern streams. Alluvial fans and cones have moderately steep slopes. Kames and eskers are hills and mounds of low relief.                                                                                                                                | Smoothly sloping lake fans and cones near steep bedrock exposures, may be locally unconsolidated. Valley deposits that may be extensive. Steeply sloping deposits along major stream valleys.                                    | Smooth, gentle slopes of former lake bottoms; locally cut by modern streams.                                                                                                              | Generally elongated hills or ridges, mostly smooth; some rounded mounds.                                                                                                                                                                                                                              | Broad plains having nearly uniform slope, smooth to slightly hummocky.                                                                                                                                                                                                                       | Narrow, parallel ridges having low relief, mostly trending north-south.                                                                                                                                                                                                                         | Step-sided ridges and knobs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| DISTRIBUTION                  | Some fill underlies virtually all roadbeds and railroad tracks; deposits are extensive only along major roadways and railway embankments where they cross streambeds of incised valleys.                                                                                                                                       | Adjacent to Cook Inlet, primarily Potter Marsh area.                                                                                                                                     | Scattered, but generally more common near the lower reaches of the streams.                                                                                                                                                                                                                                 | Common on steep hillsides and in valleys above 400 m in altitude, and along steep valley walls. This deposits of colluvium are common downslope from bedrock outcrops.                                                           | Primarily at altitudes greater than 200 m, normally along stream valleys or at the heads of minor drainages.                                                                              | Mostly in a wide belt parallel to the moraine front at altitudes of 200-300 m. Scattered remnants of older moraine at higher altitudes.                                                                                                                                                               | Generally restricted to altitudes of less than 200 m near lower Rabbit Creek.                                                                                                                                                                                                                | Generally restricted to altitudes less than 200 m near lower Rabbit Creek.                                                                                                                                                                                                                      | Exposed on steep slopes and ridge crests over large areas in the eastern and western parts of the study area, particularly above 400 m in altitude, and in smaller outcrops along steep slopes and ridges at lower altitudes throughout the study area.                                                                                                                                                                                                                                                                                              |
| SURFICIAL DRAINAGE            | Implications are too small to have significant impact on drainage or recharge except locally; silt ponding of water. Frost action and erosion, especially those with high clay or silt content, may aid in water infiltration to water downflow from a large embankment. Permeability of the fill is high, as is infiltration. | Runoff is high and primarily directly into Cook Inlet; deposits are dissected by shallow drainage channels that tend to silt with time. Infiltration and permeability are extremely low. | Low runoff, high permeability, and rapid infiltration except where silt content is high.                                                                                                                                                                                                                    | Low runoff, except where compacted. Infiltration and permeability are high, allowing rapid downward flow. At high altitudes, these deposits are important in providing moisture to aquifers throughout the study area.           | Generally high runoff and low infiltration due to low permeability. Springs may occur along contacts with alluvium or slope deposits.                                                     | Runoff is low to moderate, even where slopes are steep; permeability and infiltration rates are moderate. Where deposits are thin, infiltration rates may be locally high in sandy material.                                                                                                          | Runoff is moderate, although drainage patterns are generally poorly developed. Infiltration rates and permeability range from low to moderate. Permeability may be locally high in sandy material.                                                                                           | Commonly low runoff and moderate infiltration rates and permeability, except where high silt content or compaction reduce permeability and infiltration.                                                                                                                                        | Runoff is high where bedrock is exposed. Permeability and infiltration are very low, except where bedrock is extensively fractured or weathered.                                                                                                                                                                                                                                                                                                                                                                                                     |
| WATER CONTENT                 | Usually unconsaturated.                                                                                                                                                                                                                                                                                                        | Generally saturated, at least near the surface; perhaps periodically saturated. May be modern tidal flat or marsh.                                                                       | Commonly saturated at depths below 10-20 ft, especially along modern stream channels.                                                                                                                                                                                                                       | Typically unsaturated, except briefly after heavy rains, due to rapid drainage and downward movement of infiltrating water.                                                                                                      | May be saturated at or near the surface; water may collect at the surface due to low infiltration and permeability.                                                                       | Mostly unsaturated, except at depth in deposits thicker than 50 feet. During wet seasons, perched water may exist at shallower depths.                                                                                                                                                                | Generally saturated along drainage ages; mostly unsaturated elsewhere.                                                                                                                                                                                                                       | Generally unsaturated, except where high silt content or compaction reduce permeability and infiltration.                                                                                                                                                                                       | Fresh bedrock has low porosity and low water content even when saturated. Fractured bedrock is extensively fractured or weathered. Water content is higher.                                                                                                                                                                                                                                                                                                                                                                                          |
| WATER-YIELDING CAPABILITY     | Not applicable -- not suitable for general construction.                                                                                                                                                                                                                                                                       | Not applicable -- not suitable for general construction.                                                                                                                                 | Fair to good. Yields may be 10-30 gal/min or more, where saturated thickness exceeds 10 ft. The important aquifers are alluvial.                                                                                                                                                                            | Poor. Generally too thin and spatially saturated to provide a reliable supply of water.                                                                                                                                          | Poor, although excavations in lake deposits usually fill with water owing to slow seepage of water from near-surface sediments.                                                           | Usually poor to fair due to low or moderate permeability; may be good, however, if saturated clay. Primarily due to low and moderate permeability.                                                                                                                                                    | Generally poor. Permeability is low to moderate and units are generally thin.                                                                                                                                                                                                                | Generally poor. Deposits are either unsaturated or too thin to yield significant quantities of water.                                                                                                                                                                                           | Generally poor. Yields of 1-5 gal/min are obtainable from some weathered or fractured zones. Limited quantities of ground water may be available at the bedrock-water interface. Rare extensively fractured zones may yield 5 gal/min or more.                                                                                                                                                                                                                                                                                                       |
| HYDROGEOLOGIC CHARACTERISTICS | Not applicable -- not suitable for general construction.                                                                                                                                                                                                                                                                       | Not applicable -- not suitable for general construction.                                                                                                                                 | Percolation rates are moderate to high and likely may be too rapid to permit adequate attenuation of contaminants before they reach ground water.                                                                                                                                                           | Generally unfavorable for onsite disposal of waste. Percolation rates are rapid and may not permit adequate attenuation of water before it reaches ground water.                                                                 | Unfavorable. Percolation rates are very low. Unless these deposits are penetrated, liquid waste will tend to collect at the surface.                                                      | Percolation rates generally result in adequate attenuation of contaminants, although silty or clayey horizons may cause percolation liquids to perch at shallow depths, possibly contaminating local water supply.                                                                                    | Generally unfavorable for onsite disposal of waste. Percolation rates are fair to poor, being poor where high silt content or compaction reduce permeability and cause hydrologic infiltration of effluent.                                                                                  | Unfavorable for onsite disposal of waste. Percolation rates are very low, except where bedrock is extensively fractured or weathered. Water content is higher.                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

CONVERSION TABLE

|                              |        |                         |
|------------------------------|--------|-------------------------|
| Multiply                     | by     | To obtain               |
| foot (ft)                    | 0.3048 | meter (m)               |
| gallons per minute (gal/min) | 0.063  | liters per second (L/s) |

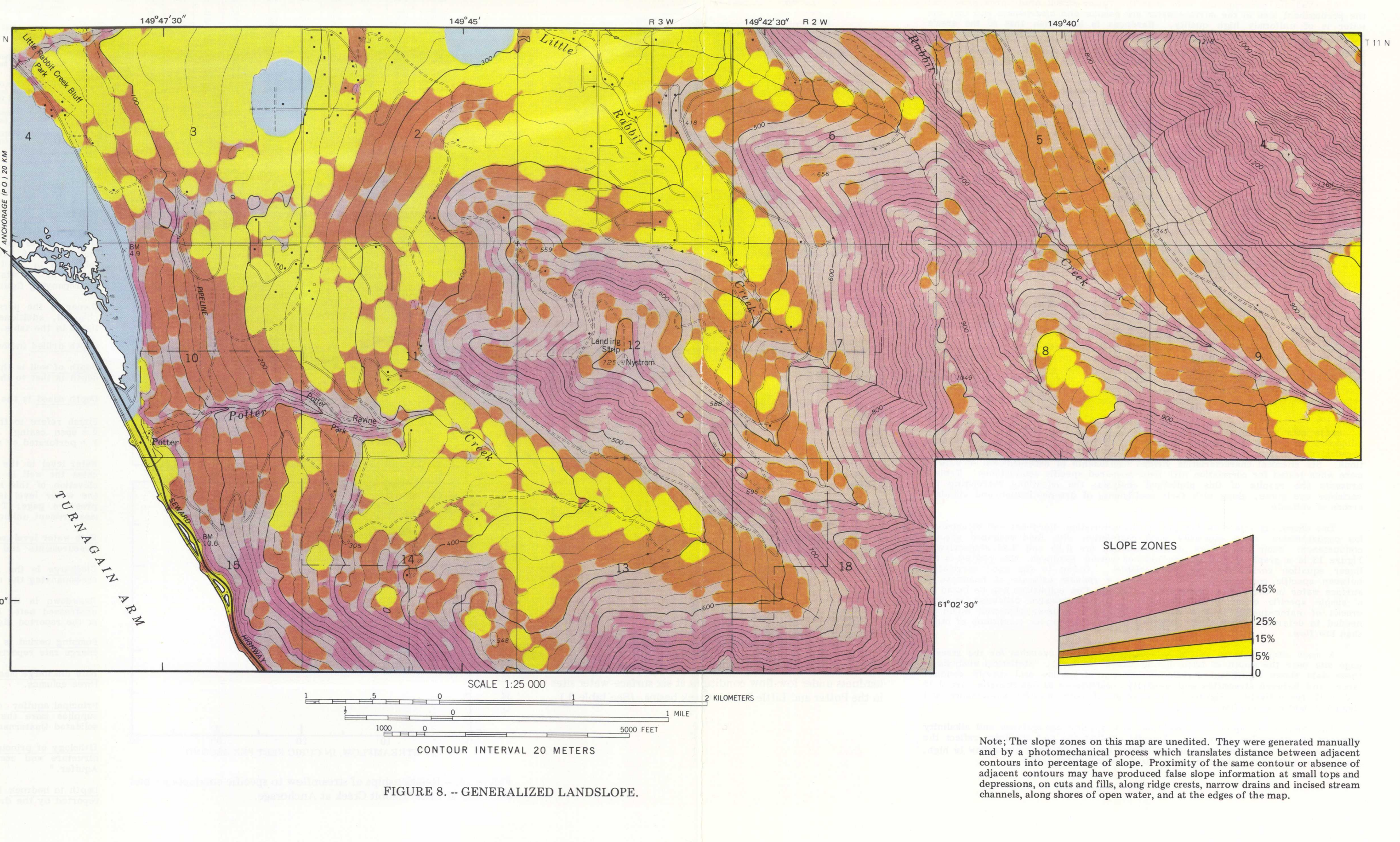


FIGURE 8.-- GENERALIZED LANDSLOPE.