FLAC2D™ VERSION 9.0
Continuum Modeling for
Geomechanics in 2D

2D Homogeneous Embankment Dam Analysis

# — Part 2 —
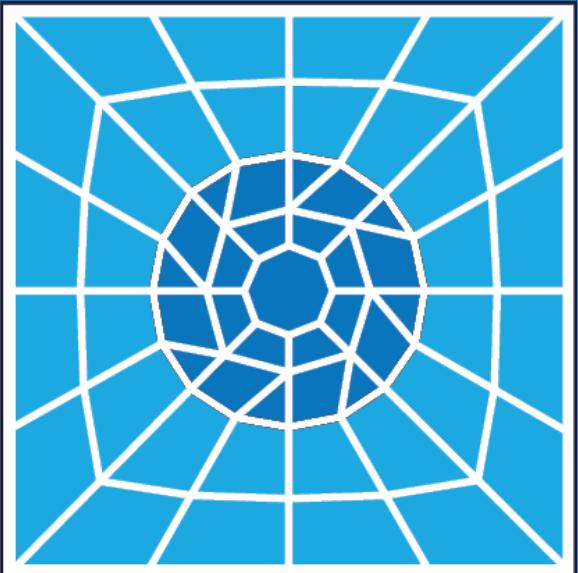
Homogeneous Embankment Dam

Parameter	Value
V_s	1000 ft/s
υ	0.30
γ_t	120 lb/ft^3
γ_{sat}	125 lb/ft^3
k_x	4.5x10^{-8} ft/s
k_y	1.6x10^{-8} ft/s

50 ft

2.5

1

60 ft

2.5

1

A

10 ft

65 ft

q

140 ft

50 ft
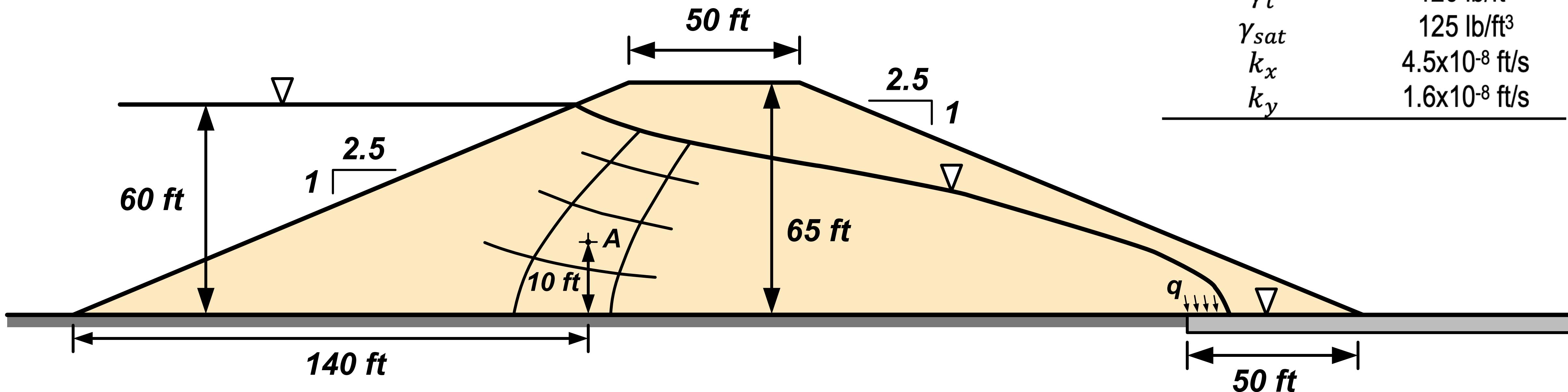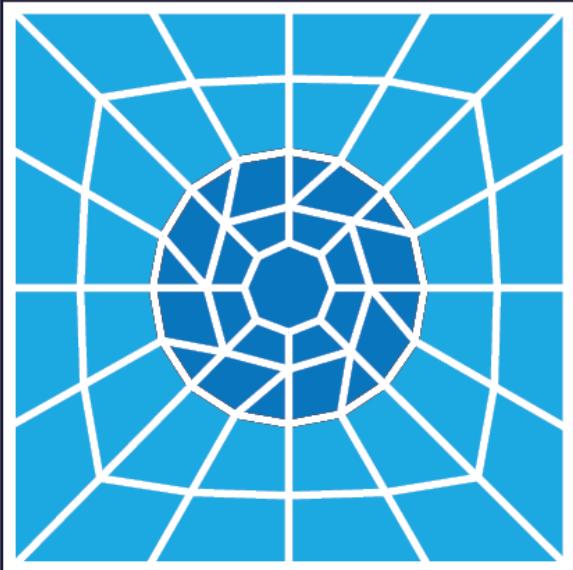
Model and Zone Commands | `2_SeepageAnalysis.dat`

```
model restore '1_StaticAnalysis.sav'
zone fluid cmodel anisotropic range group 'Embankment'
zone fluid property permeability-xx 7.21E-10 permeability-yy 2.56E-10 range group 'Embankment'
zone water density 1.94 range group 'Embankment'
...
```
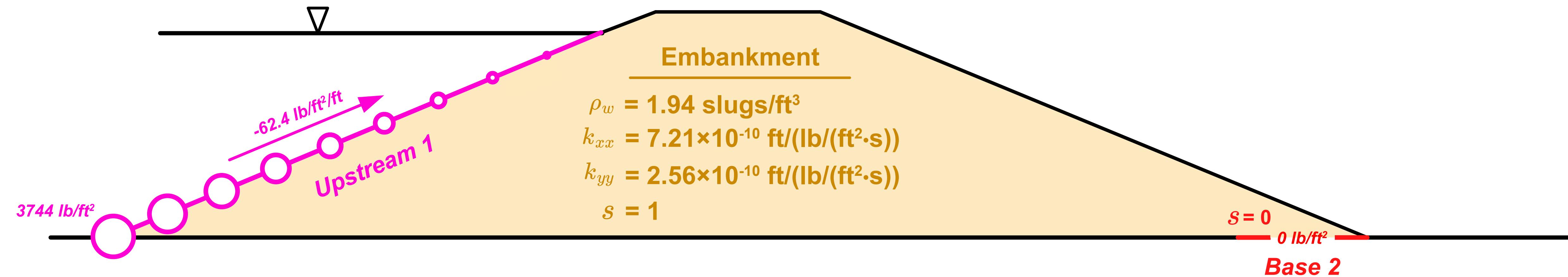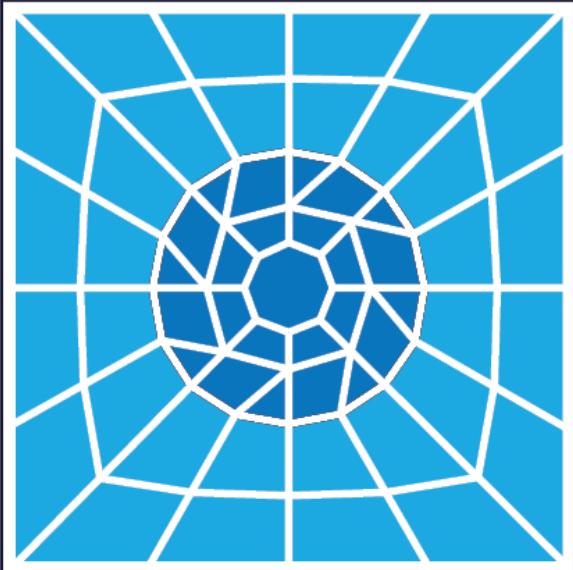

Embankment

ρ_w = 1.94 slugs/ft³

k_{xx} = 7.21×10⁻¹⁰ ft/(lb/(ft²·s))

k_{yy} = 2.56×10⁻¹⁰ ft/(lb/(ft²·s))

s = 1

-62.4 lb/ft²/ft

Upstream 1

3744 lb/ft²

s = 0

0 lb/ft²

Base 2

FLAC2D™ VERSION 9.0
Continuum Modeling for Geomechanics in 2D

Model and Zone Commands | `2_SeepageAnalysis.dat`

```
...
zone face apply pore-pressure 0.0 range group 'Base 2'
zone face apply pore-pressure 3744 gradient (0,-62.4) range group 'Upstream 1'
zone gridpoint initialize saturation 1.0 range group 'Embankment'
zone gridpoint initialize saturation 0.0 range group 'Base 2'
...
```
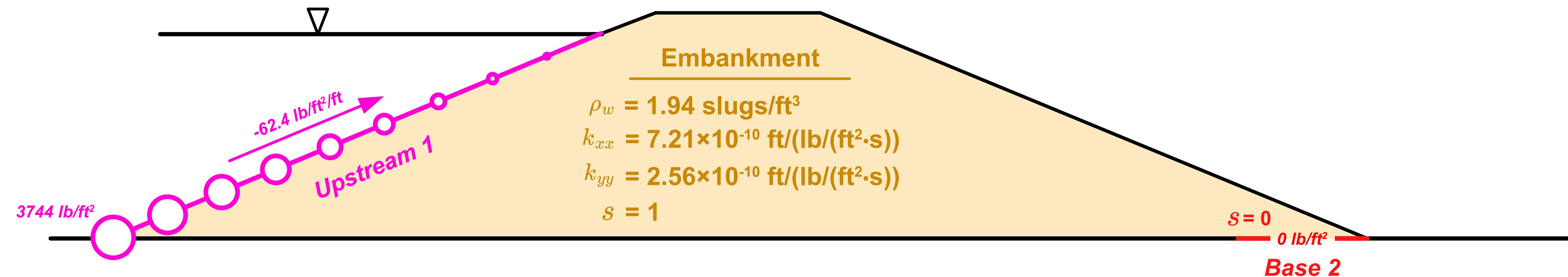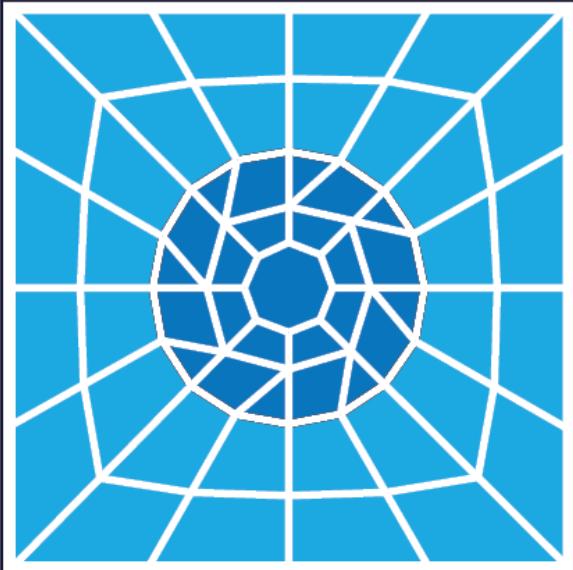

Embankment

ρ_w = 1.94 slugs/ft^3

k_{xx} = 7.21×10^{-10} ft/(lb/(ft^2·s))

k_{yy} = 2.56×10^{-10} ft/(lb/(ft^2·s))

s = 1

-62.4 lb/ft^2/ft

Upstream 1

3744 lb/ft^2

s = 0

0 lb/ft^2

Base 2

FLAC2D™ VERSION 9.0

Continuum Modeling for Geomechanics in 2D

Model and Zone Commands | `2_SeepageAnalysis.dat`

```
...
zone gridpoint initialize fluid-modulus 100 range group 'Embankment'
zone gridpoint initialize fluid-tension 0.0 range group 'Embankment'
...
```
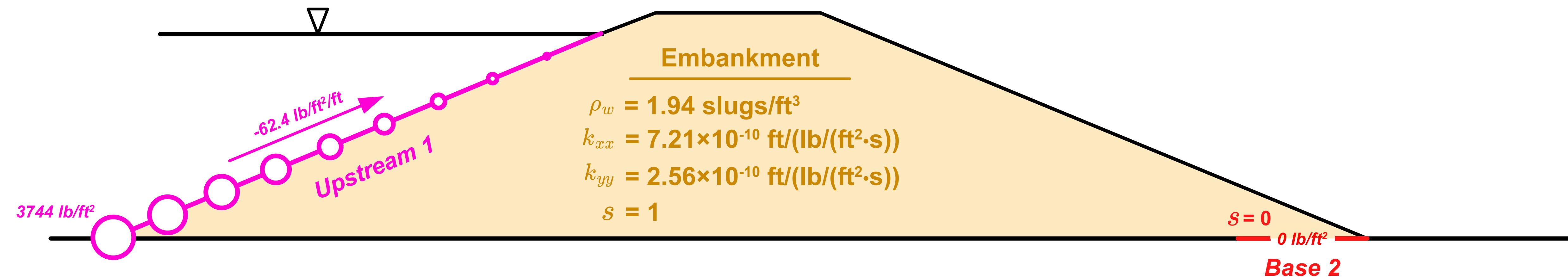
Embankment

ρ_w = 1.94 slugs/ft³

k_{xx} = 7.21×10⁻¹⁰ ft/(lb/(ft²·s))

k_{yy} = 2.56×10⁻¹⁰ ft/(lb/(ft²·s))

s = 1

-62.4 lb/ft²/ft

Upstream 1

3744 lb/ft²

s = 0

0 lb/ft²

Base 2

Model and Zone Commands | `2_SeepageAnalysis.dat`

```
...
model mech active off
model fluid active on
model solve ratio-flow 1.0e-3
model save '2_SeepageAnalysis.sav'
```

Embankment

ρ_w = 1.94 slugs/ft³

k_{xx} = 7.21×10⁻¹⁰ ft/(lb/(ft²·s))

k_{yy} = 2.56×10⁻¹⁰ ft/(lb/(ft²·s))

s = 1

-62.4 lb/ft²/ft

Upstream 1

3744 lb/ft²

s = 0

0 lb/ft²
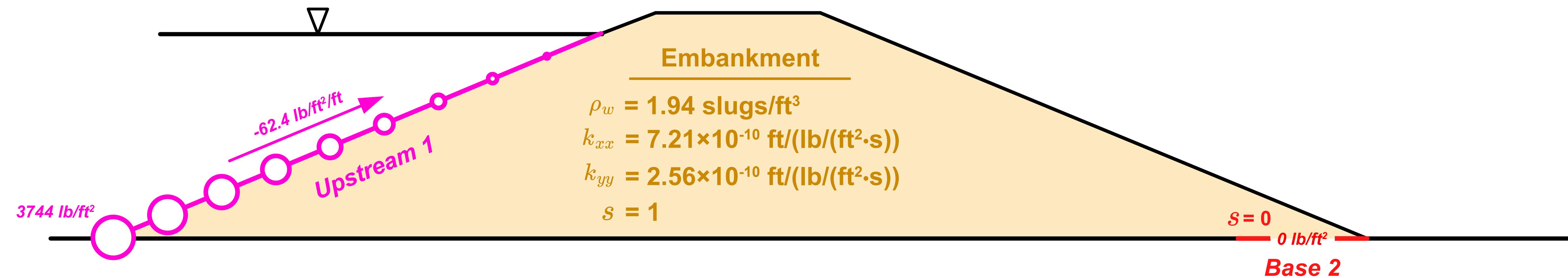
Base 2

Model and Zone Commands | `3_FlowCalculations.dat`

```
model restore '2_SeepageAnalysis.sav'

fish define findflow
    local gps = gp.list(gp.isgroup(::gp.list, 'Base 2'))
    global flow_value = list.sum(gp.flow(::gps))
end
[findflow]
model save '3_FlowCalculation.sav'
```

Base 2

q