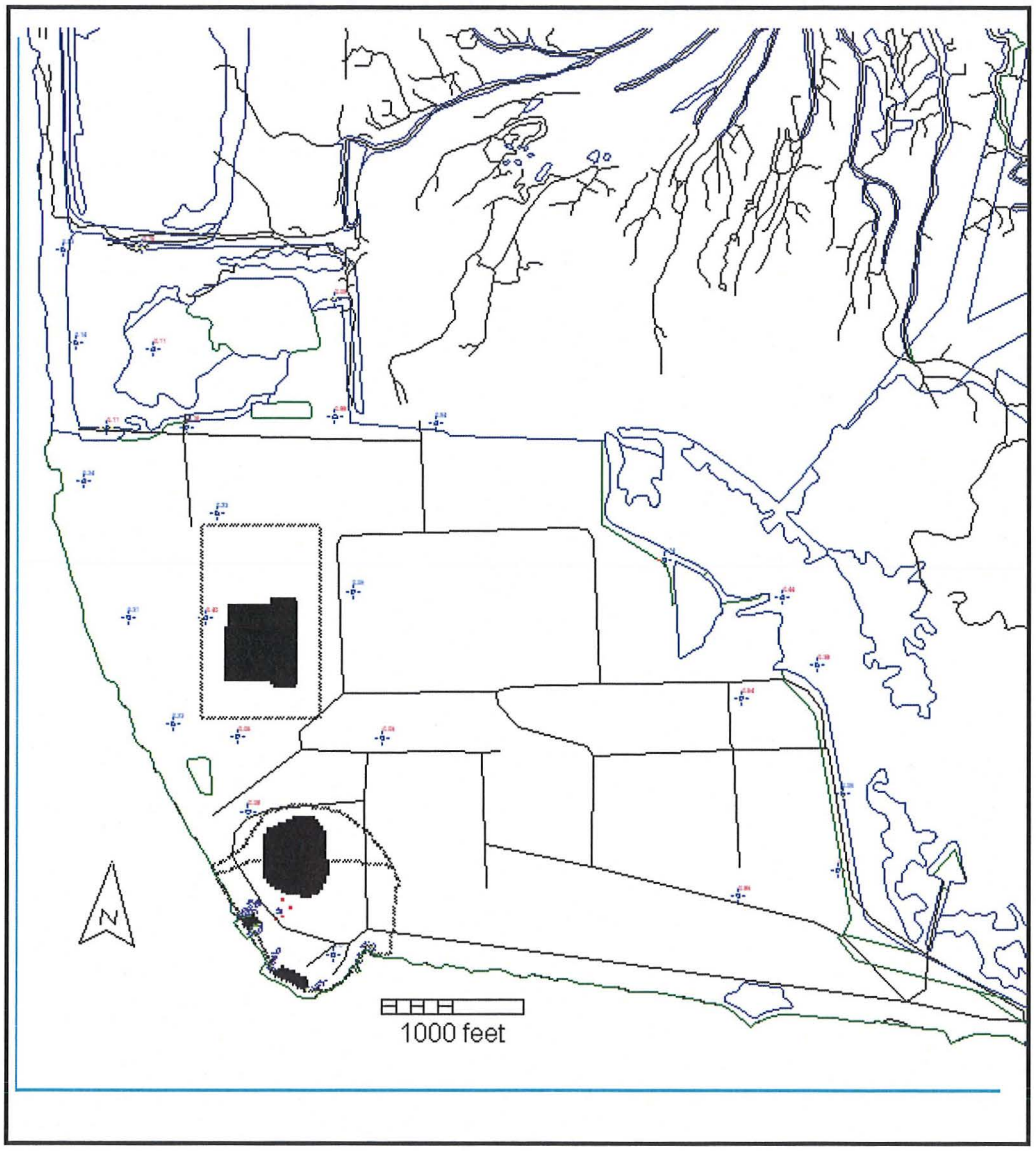


Figure B-11: Boundary conditions in model layer 2 (Alluvium). The light blue lines to the west and south are general head boundaries. The crosses represent locations where water level data was collected in the alluvium for model calibration purposes.

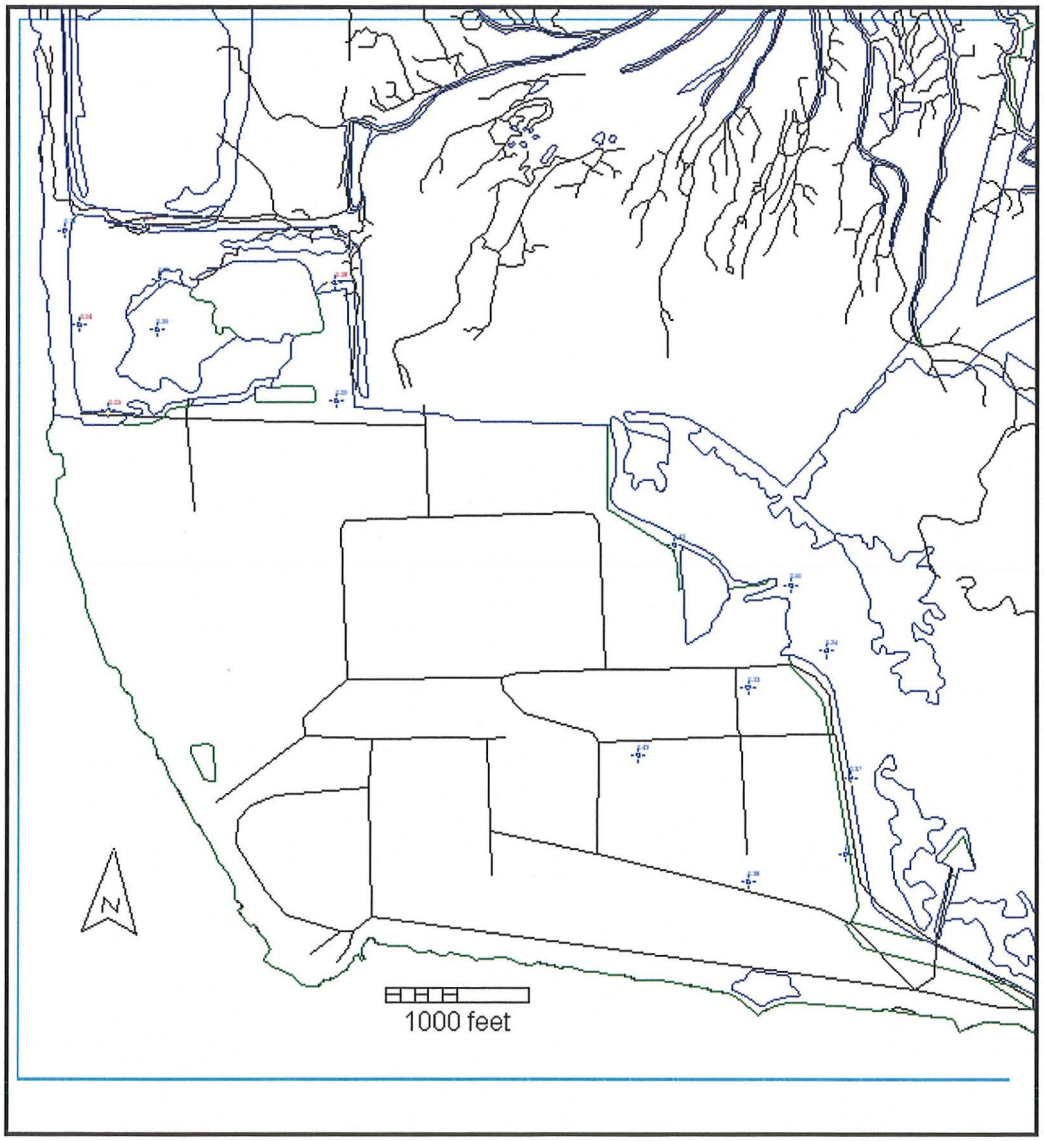


Figure B-12: Boundary conditions in model layers 4 (Vincentown) and 5 (Hornerstown). The light blue lines to the north, west and south represent general head boundaries. The crosses represent locations where data was taken in the Vincentown to aid in model calibration.

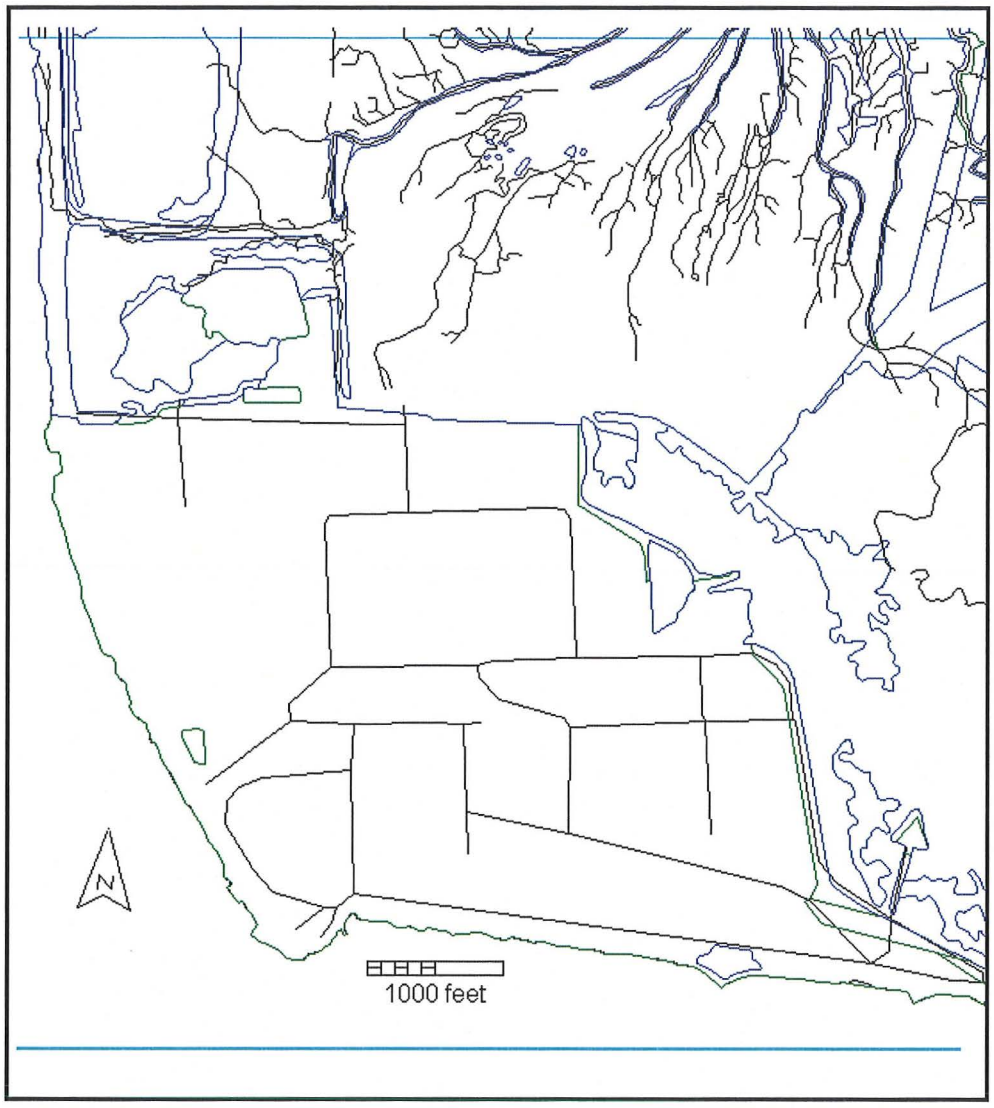


Figure B-13: Boundary conditions in model layer 7 (Mount Laurel-Wenonah). The light blue lines to the north and south create a slight overall gradient to the south.

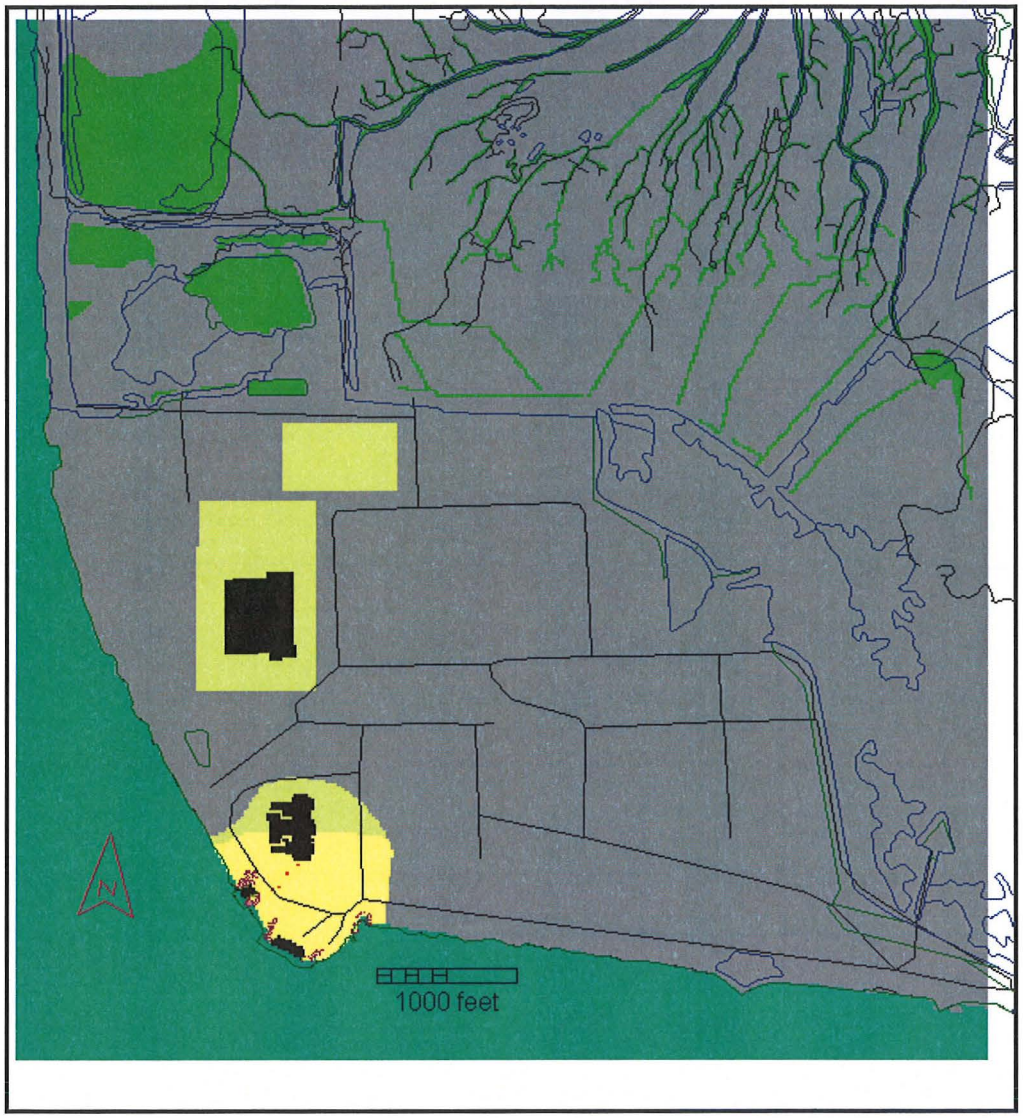


Figure B-14: Zones of hydraulic conductivity in model layer 1 (fills). The grey area represents the lower permeable hydraulic fill and the light yellowish areas estimated or assumed extents of structural fill associated with the Salem and Hope Creek units and probable disturbed areas of hydraulic fill associated with piles driven to support the Hope Creek Cooling Tower. The black areas are no-flow nodes representing impermeable structures extending below the water table. In the model, the hydraulic fill has a relatively low horizontal hydraulic conductivity of about 0.1 ft/d, while the structural fill has one of 6.5 ft/d.

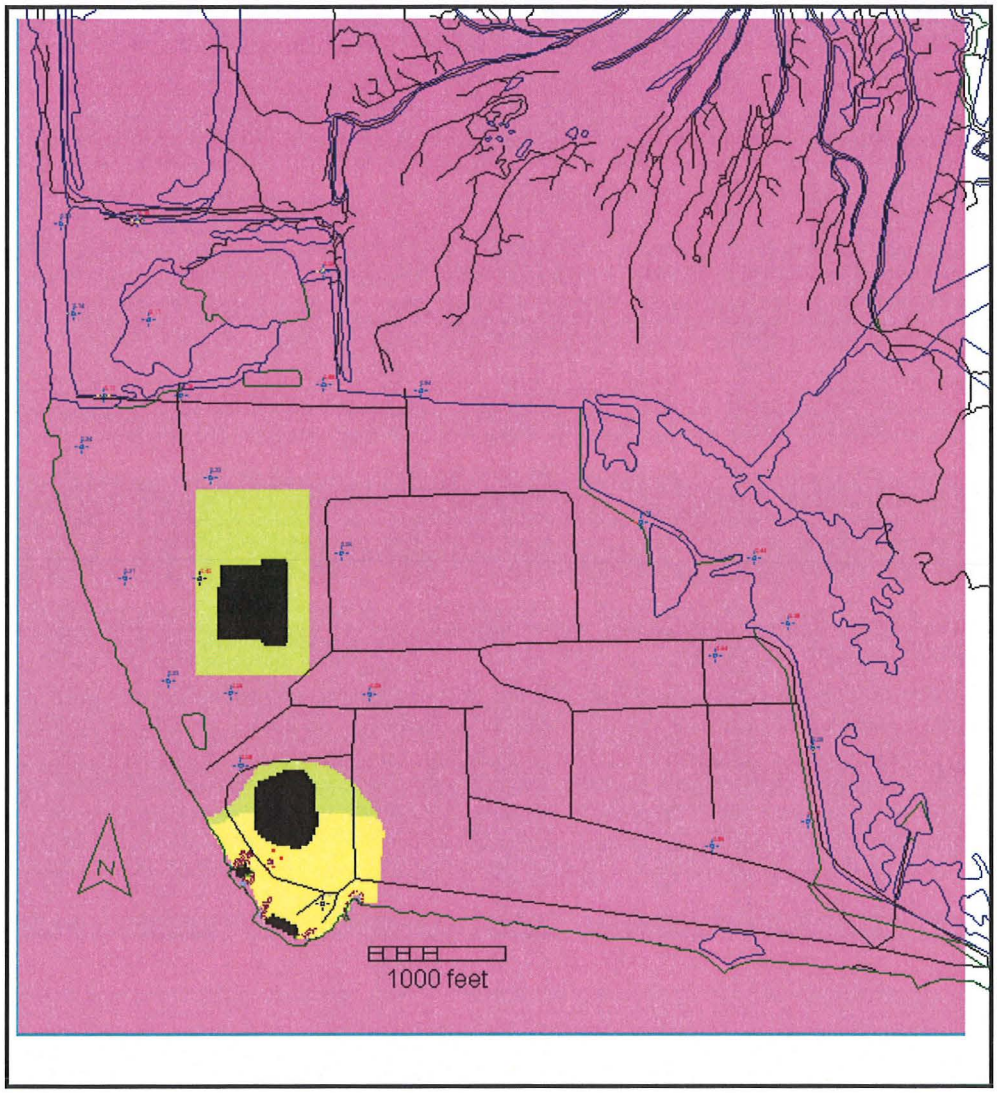


Figure B-15: Zones of hydraulic conductivity in model layer 2 (alluvium). The light yellowish areas indicate estimated or assumed presence of structural fill within this layer (Kh = 6.5 ft/d). The pink areas are alluvium with a specified Kh of 3.89 ft/d.

Figure B-16: Zones of hydraulic conductivity in model layer 3 (Kirkwood aquitard). The two light squares in the northern parcel for expansion indicate locations where the Kirkwood was noted to be absent. The extents of these areas are not known, and may allow some communication between the alluvium and the Vincentown. This may not be very significant as the mean head differential between these units is not great. The hydraulic conductivity of the alluvium was assigned to these areas. It is also likely that some gaps in the Kirkwood may exist around the nuclear islands as a result of excavations there; however, these gaps may be small and insignificant when compared to the domain of the model. Further, backfill material in excavated areas contained fines that may have effectively sealed these small gaps in the Kirkwood aquitard where breached.

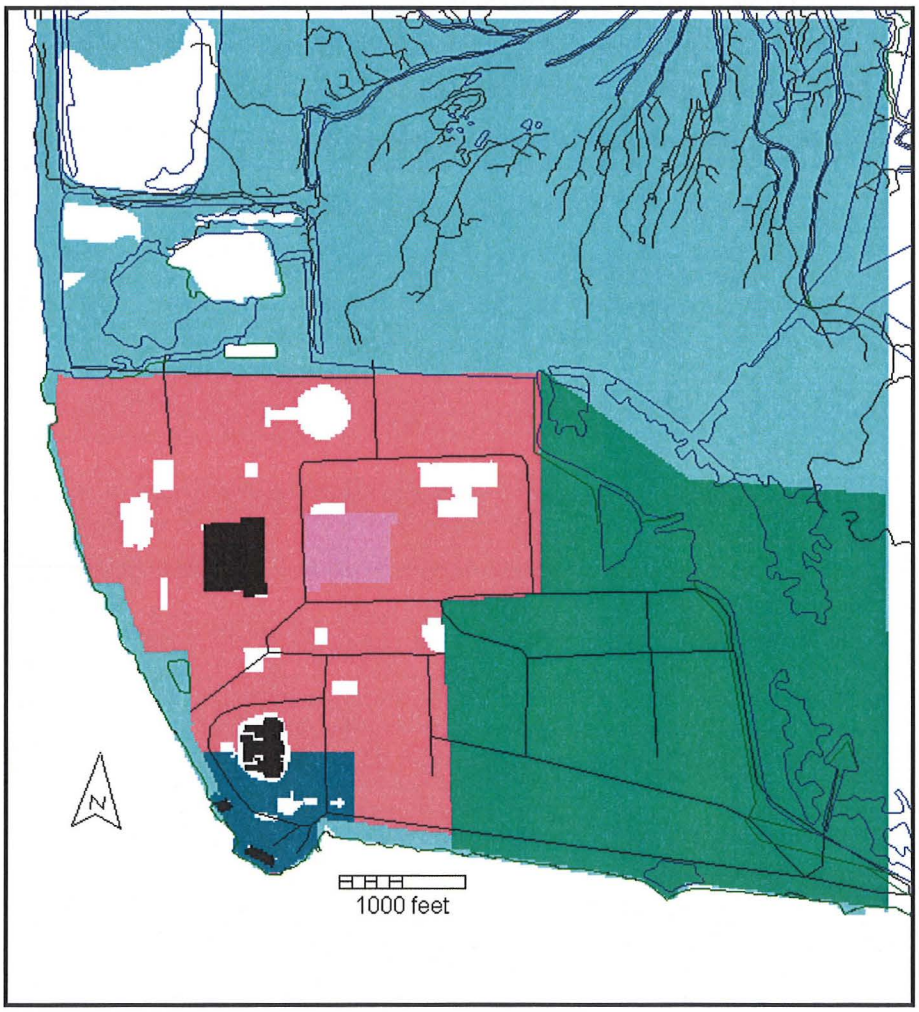


Figure B-17: Zones of net recharge in the calibrated model – layer 1. The light blue area (Zone 1) is 0.15 inches per year (in/yr) and the light green area (Zone 4) is also of low net recharge at 0.61 in/yr due to the low permeability of the hydraulic fill and evapotranspiration potential of the vegetation in the undeveloped areas. The red colored area (Zone 3) in the central portion of the facility is assigned a rate of 1.27 in/yr based on calibration results. The dark area (Zone 6) south of Salem units is assigned a rate of 8 inches per year based on ARCADIS modeling and that the structural fill presents a pathway directly to the river (except where sheet piling was left in place). The light purple area (Zone 5) at the switchyards is considered relatively impermeable, but autocalibration suggested a higher than expected rate (1.83 in/yr) and may represent runoff which recharges at the perimeter of the area. White open areas (Zone 2) are zero net recharge, essentially at surface water bodies (which are discharge locations or allow seepage through the MODFLOW river package) and large buildings.

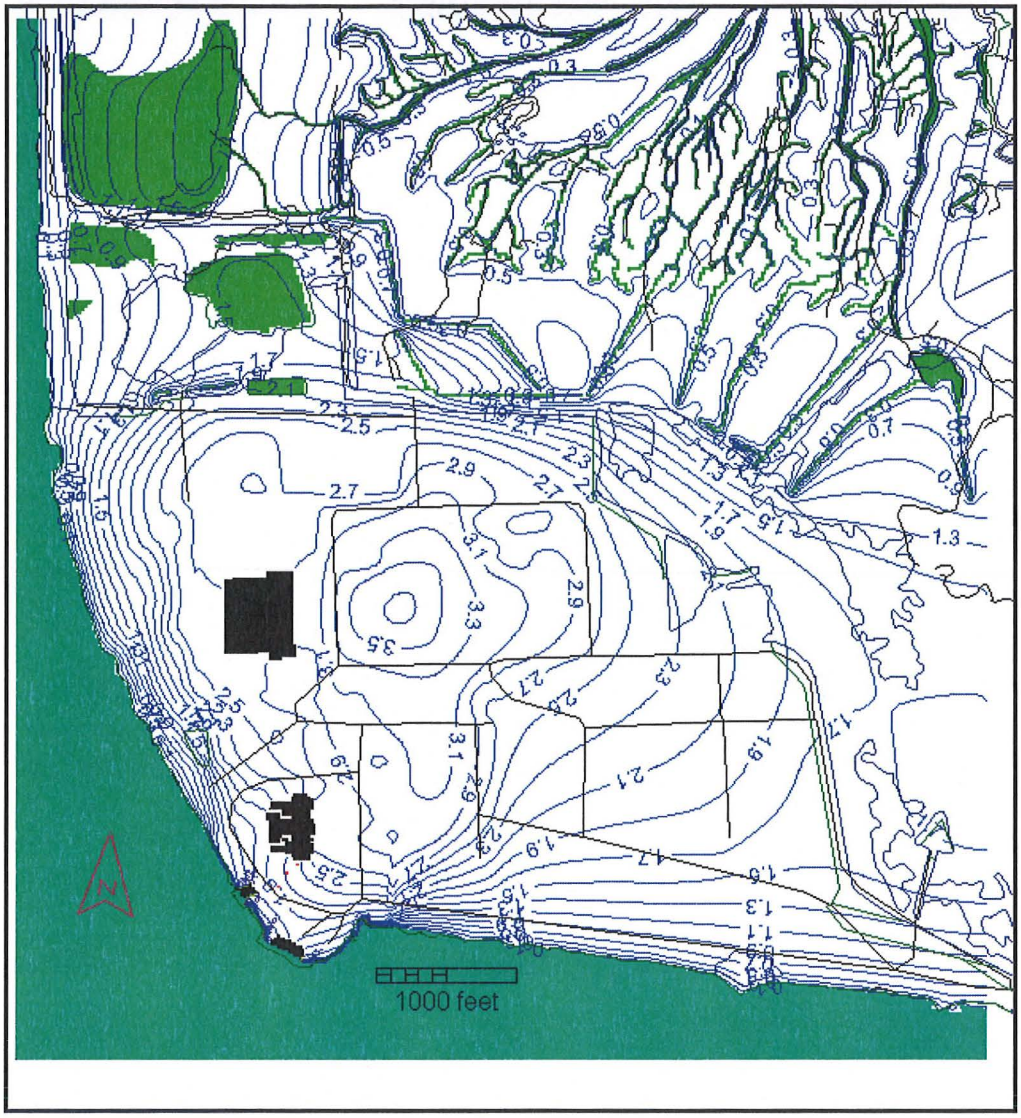


Figure B-18: Calibrated model piezometric contours (ft NAVD88) in model layer 1 –fills. The contours show a general pattern of higher heads near the middle of the model domain with flow radially to sinks, i.e., the Delaware River, wetland areas, and vertically downward. Highs within the layer reach a high of about 3.9 feet NAVD88.

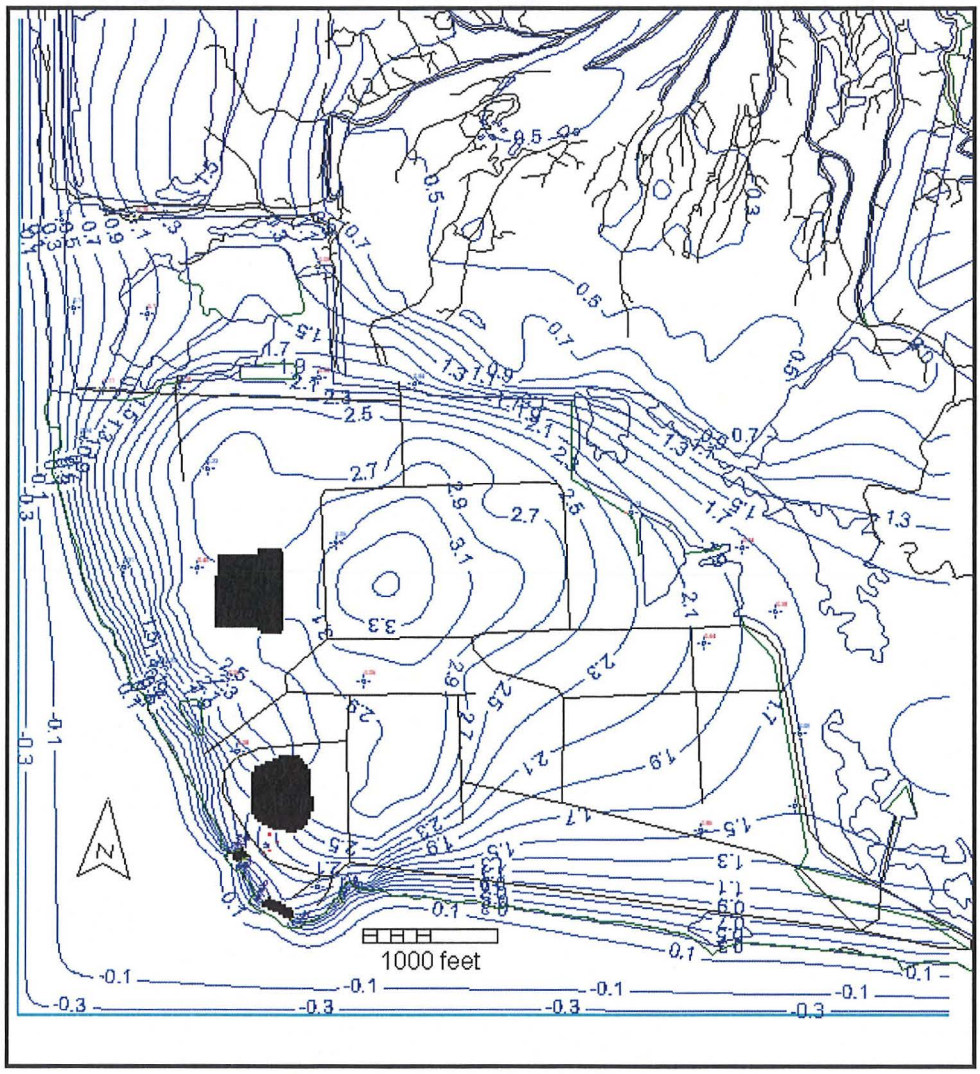


Figure B-19: Calibrated model piezometric contours (ft NAVD88) in model layer 2 – alluvium. These are very similar to those in the fill layer, but slightly lower, with a maximum head in the layer of about 3.5 ft NAVD88.

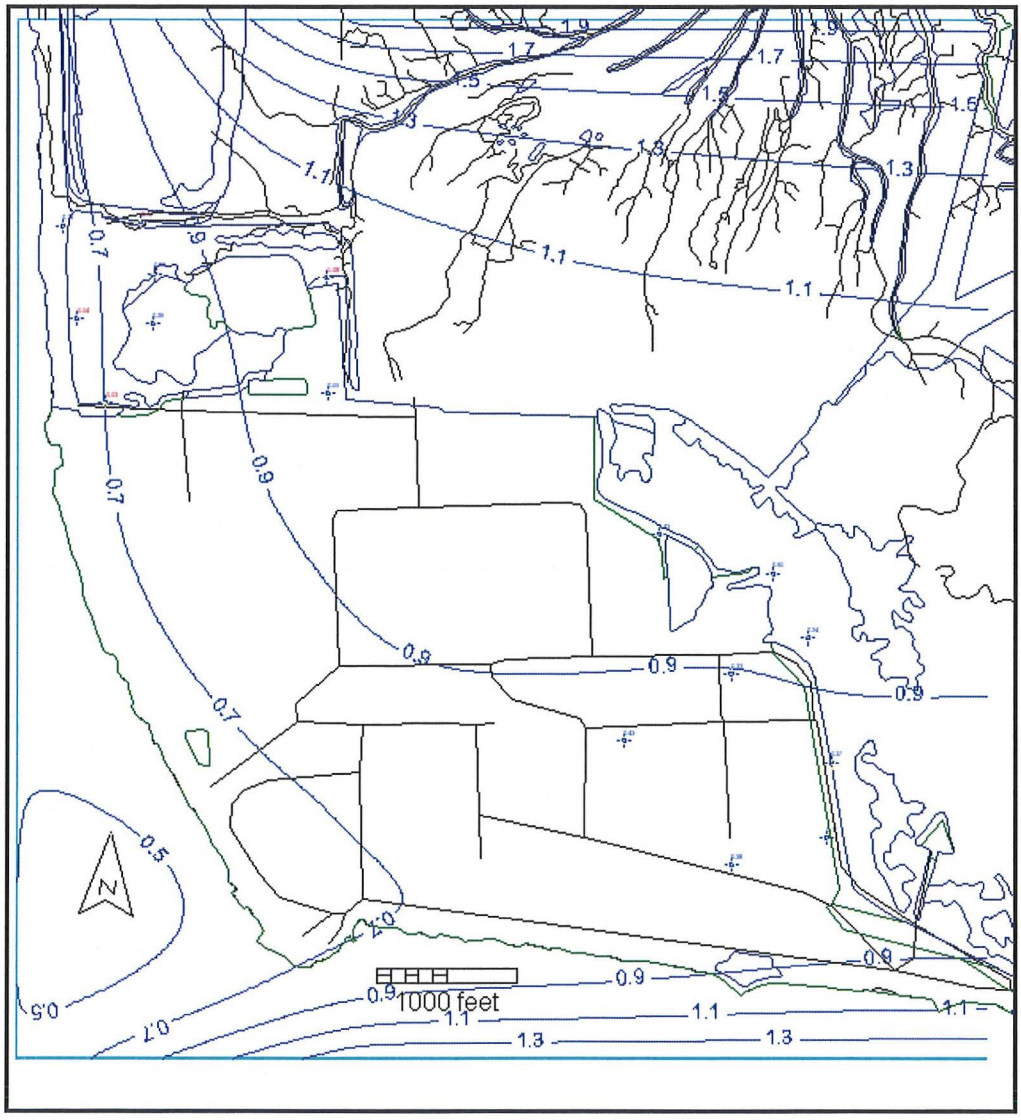


Figure B-20: Calibrated model piezometric contours (ft NAVD88) in model layer 4 – Vincentown. Flow is in from the north and out to the west and south towards the Delaware River.

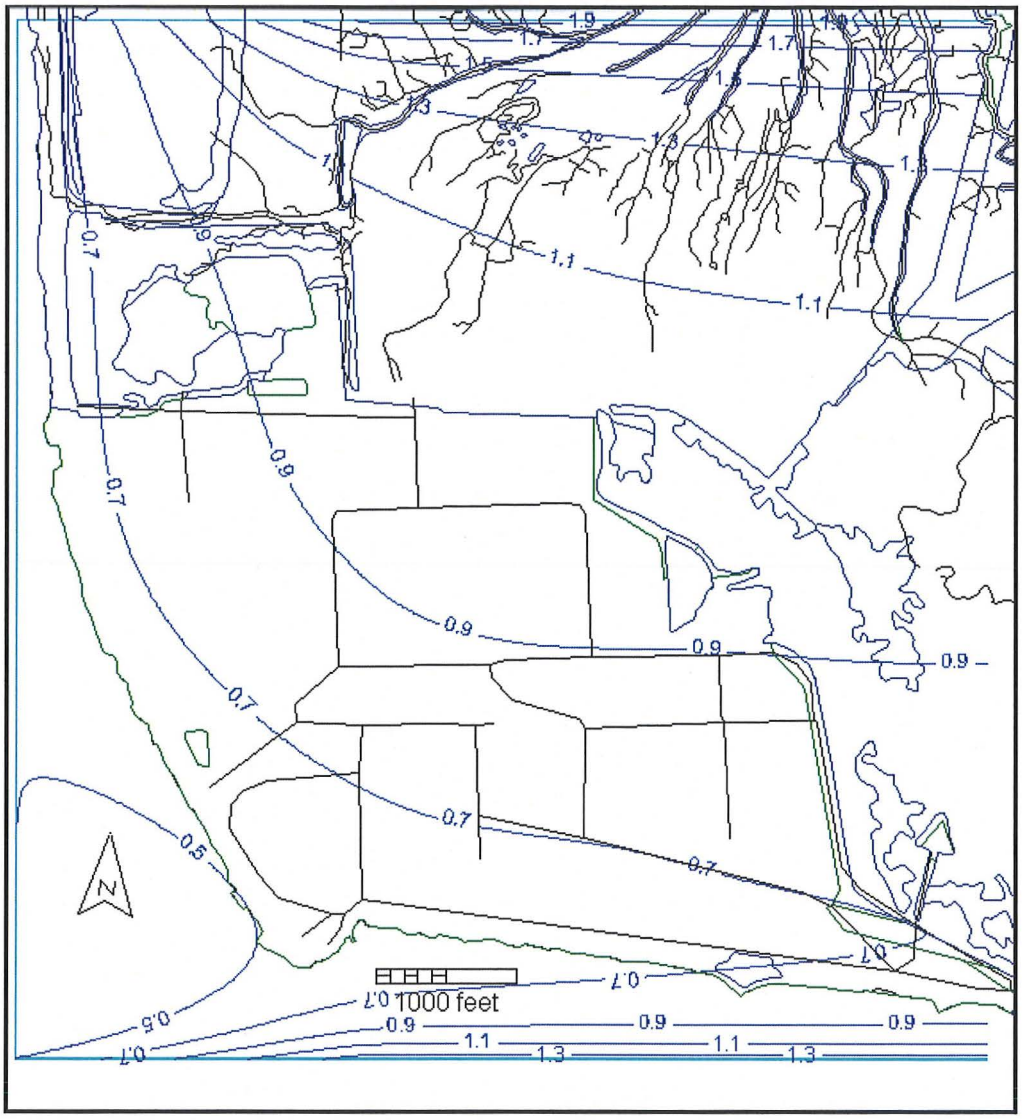


Figure B-21: Calibrated model piezometric contours (ft NAVD88) in model layer 5 – Hornerstown unit. These are very similar to those for the Vincentown as the boundary conditions in the two layers are alike. There is some slight difference as this layer is closer to the leaky Navesink aquitard and the underlying Mount Laurel-Wenonah.

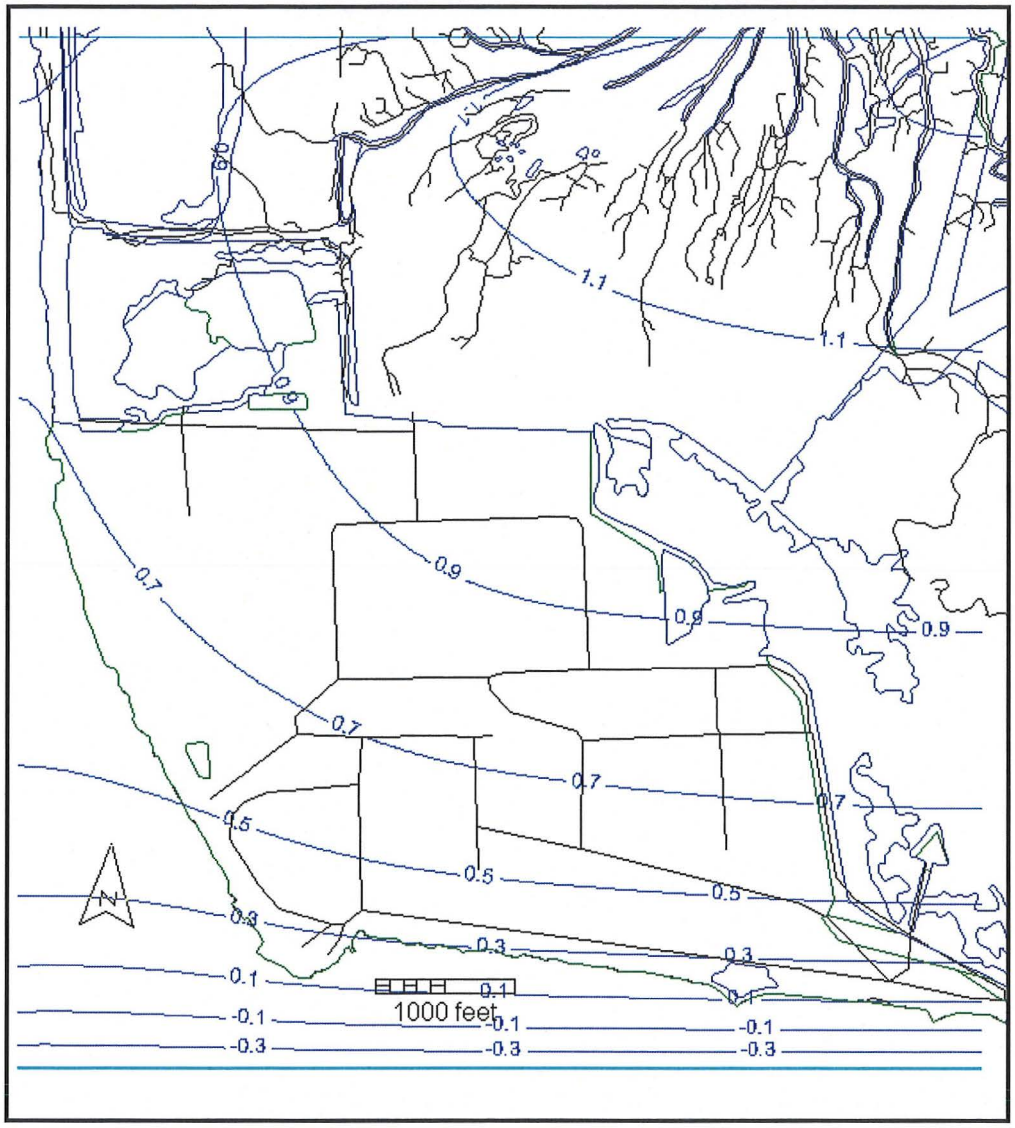


Figure B-22: Calibrated model piezometric heads (ft NAVD88) in model layer 7 – Mount Laurel-Wenonah aquifer. The influence of the leaky aquitard with seepage from the overlying aquifers is apparent in the mounding as opposed to a simple linear monotonic gradient across the layer that would be expected if the layers were isolated.

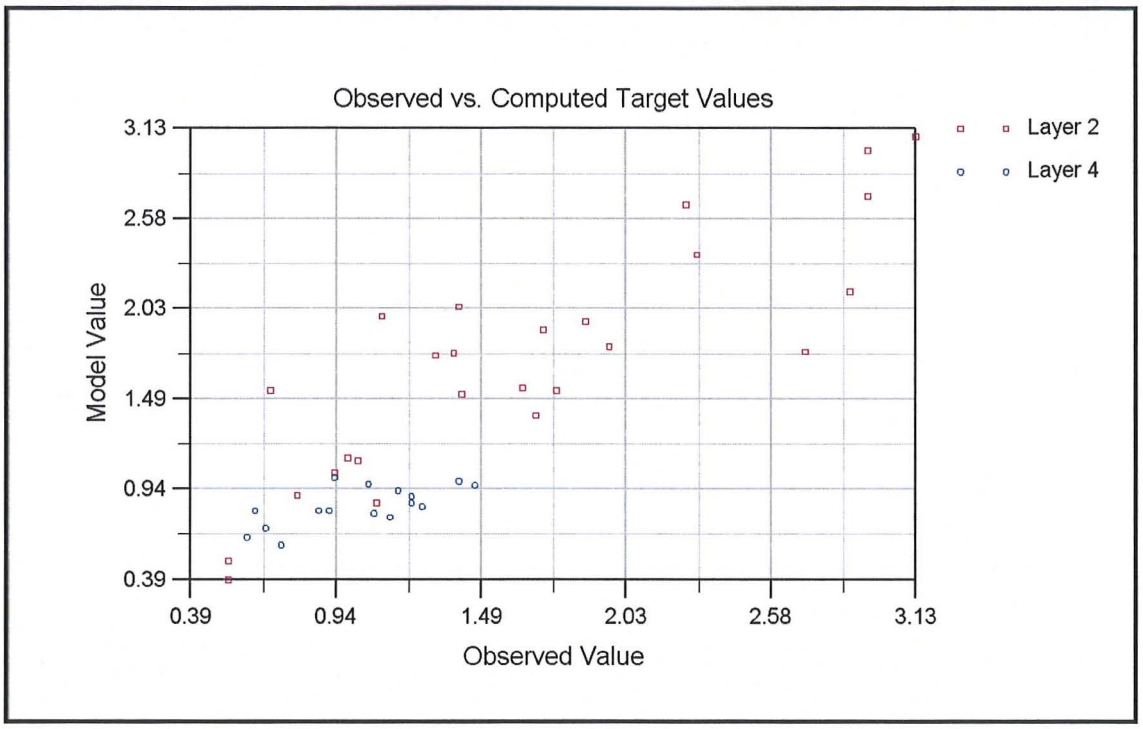


Figure B-23: Plot of Model-Computed Heads (feet NAVD88) versus Observed Water Levels

Figure B-24: Location of soil retention barrier and simulated dewatering wells in alluvium – modified model layer 3. The purple line is the barrier, represented in MODFLOW with the horizontal flow barrier package as an equivalent 1-foot thick barrier with effective hydraulic conductivity of $1x10^{-5}$ centimeters per second. The small red squares represent the dewatering wells in this model layer, and are approximately 100 feet apart. Wells are represented in this model using the drain package with high conductance and reference elevation set just above the bottom of the layer or to a depth that achieves the target dewatering levels. This configuration is not meant to define any design components but is intended only to simulate potential dewatering of the area in the shallow zone to estimate a dewatering rate. The dewatering simulation is to some degree hypothetical as the final extent of the areas to be dewatered will not be determined until the COLA stage when the final unit technology and layout are fixed. The extent of the area shown above is about 1950 feet in a north-south direction and 1650 feet in an east-west direction. This outer barrier also extends from elevation 5 ft NAVD88 down to -90 ft NAVD88 (from surface fill down through the Kirkwood into the upper portion of the Vincentown) (see figure B-25).

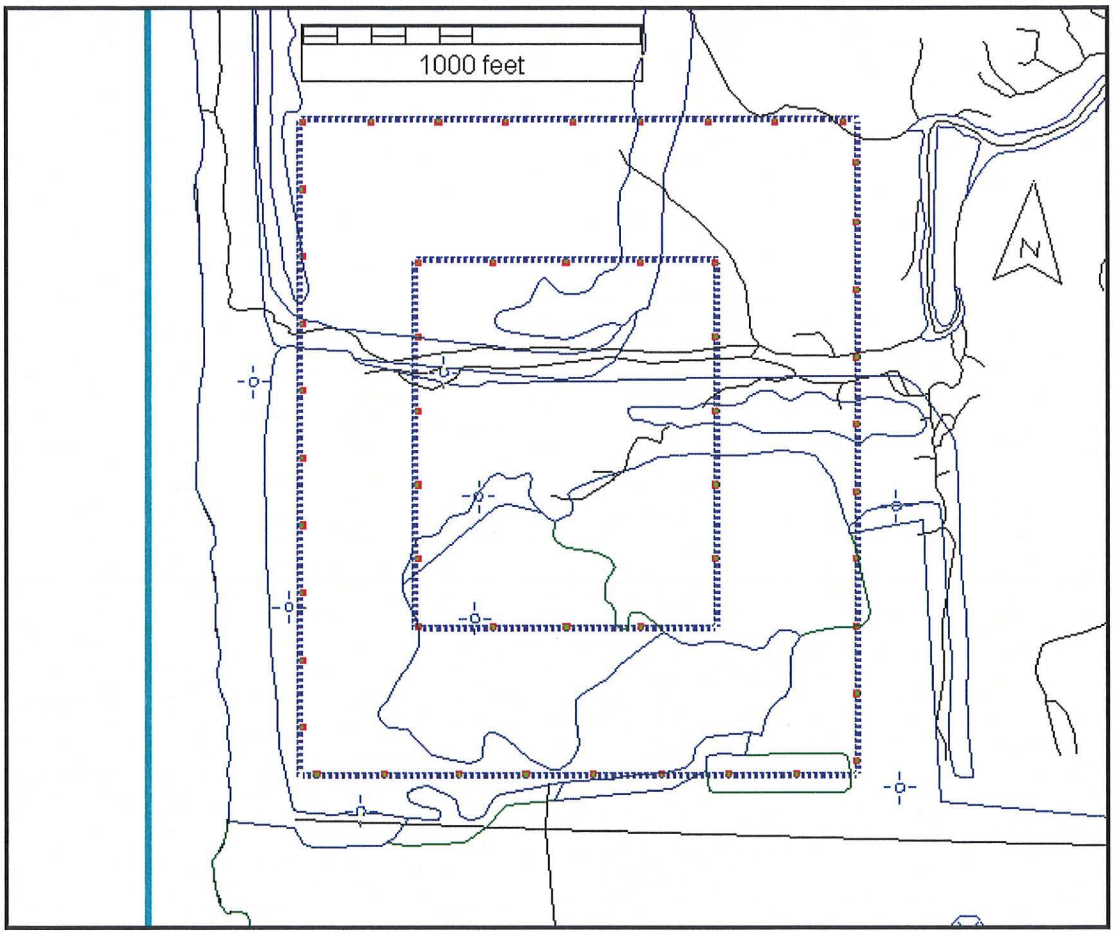


Figure B-25: Locations of soil retention barriers in upper Vincentown - model layer 5. Both inner and outer barriers penetrate the Kirkwood aquitard and extend down into the Vincentown to approximate elevation -90 ft NAVD88. The dimensions of the inner ring are 1095 ft in a north-south direction and 900 ft in the east-west direction. Well locations, as represented in the model with drain nodes, are shown as the small red squares.

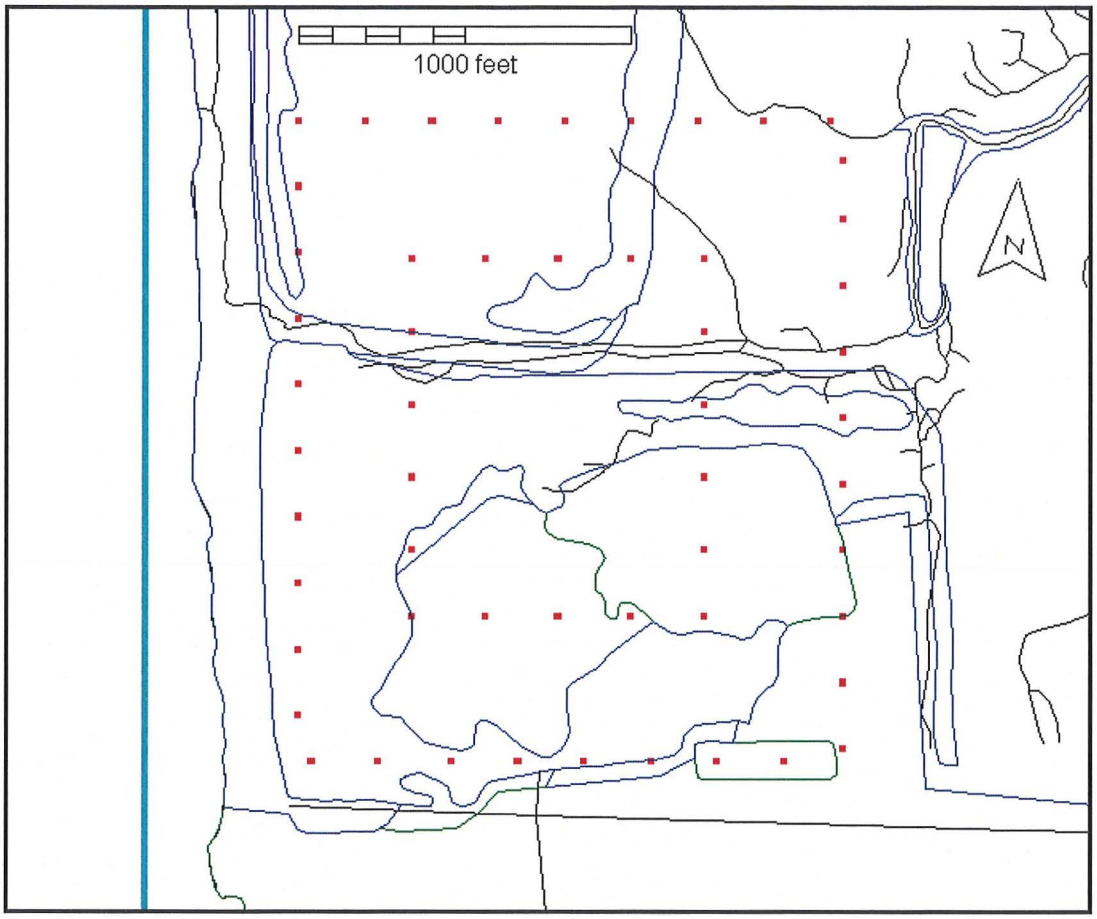


Figure B-26: Locations of simulated dewatering wells in the lower Vincentown unit. The locations of the wells follow the alignment of the barriers, and are about 200 feet apart. This depth is compatible with depth of deep dewatering wells employed at the Hope Creek unit dewatering. The wells are represented using the drain package in MODFLOW as they were for the alluvial and upper Vincentown aquifers.

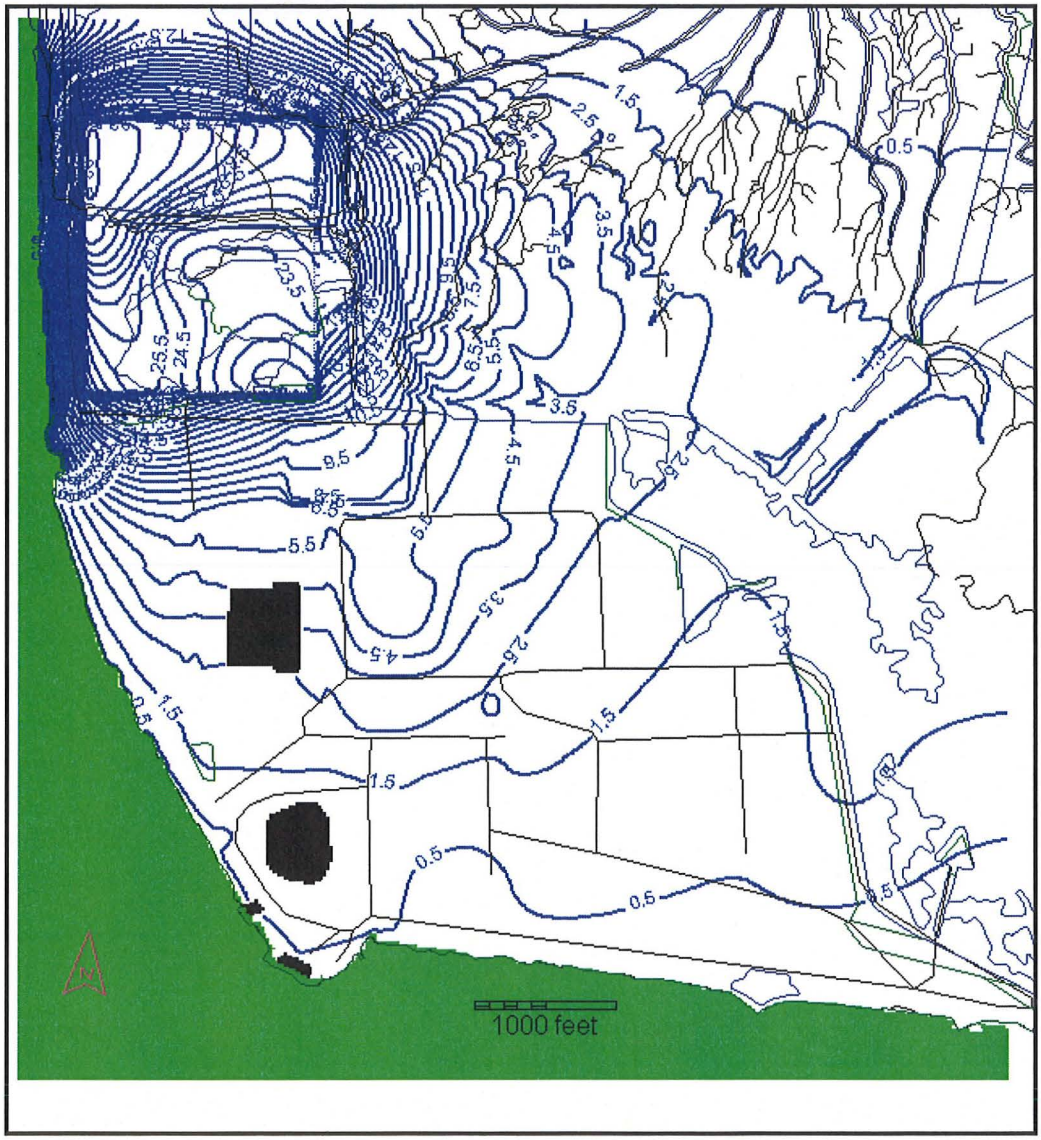


Figure B-27: Contours of drawdown (ft below static condition) at one year of dewatering in fills.

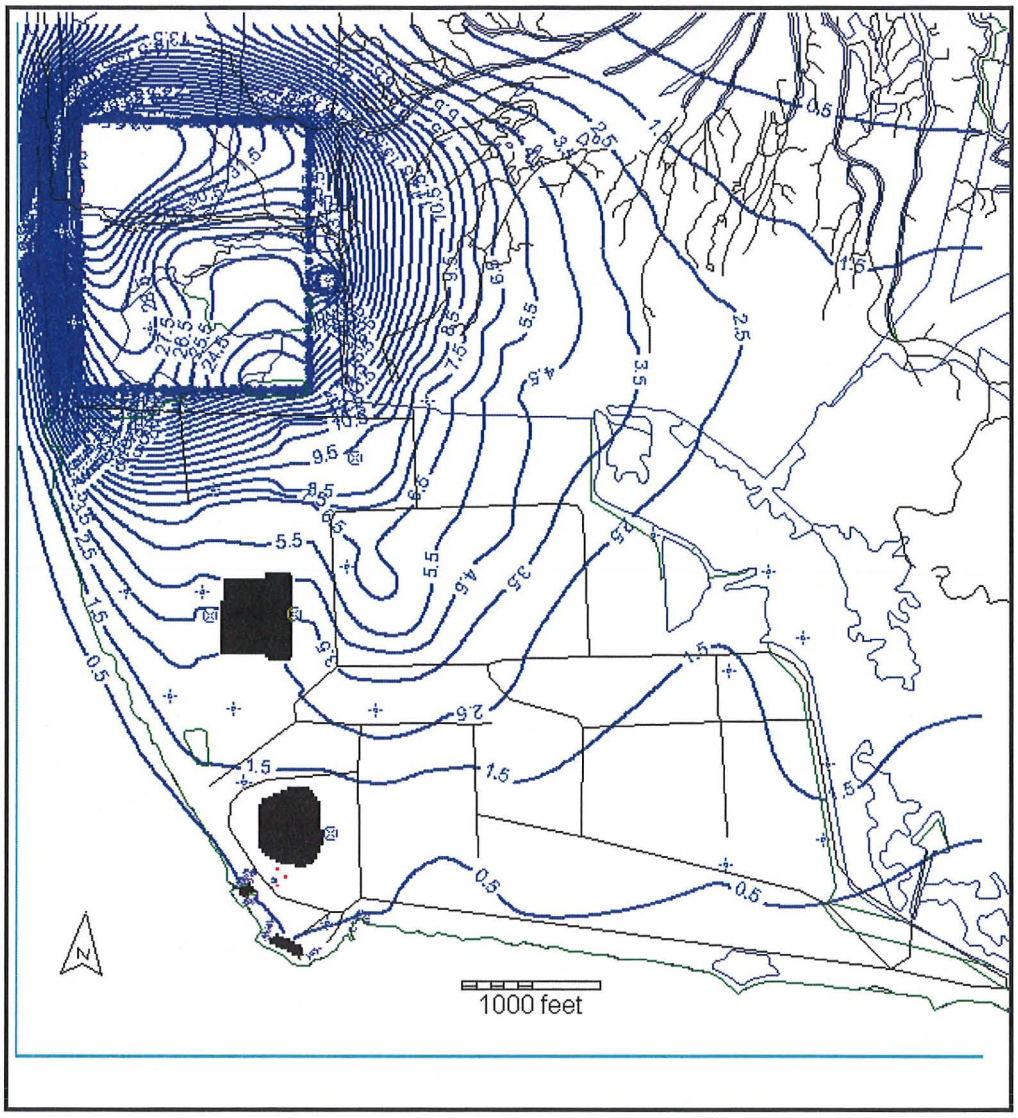


Figure B-28: Contours of drawdown (feet below static condition) at one year of dewatering in the alluvium.

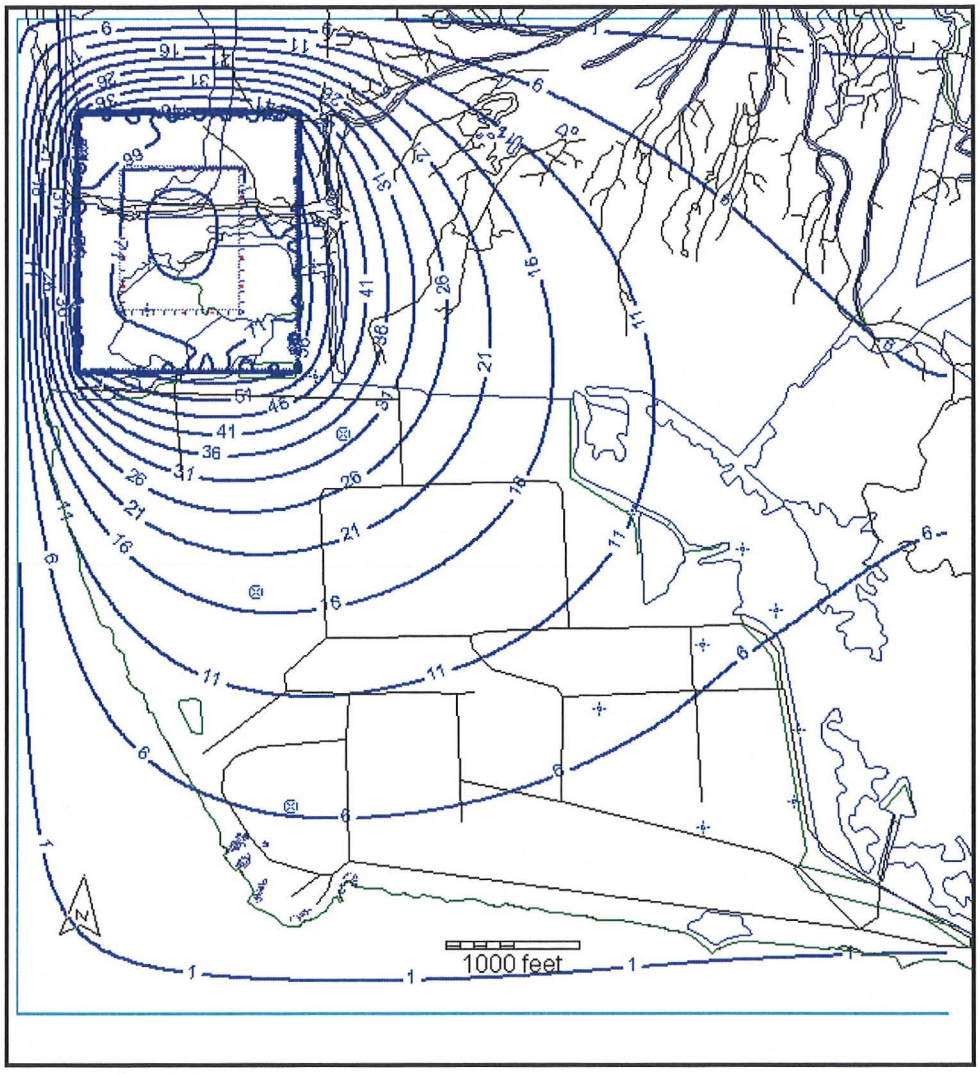


Figure B-29: Contours of drawdown (feet below static condition) at one year of dewatering the upper Vincentown.

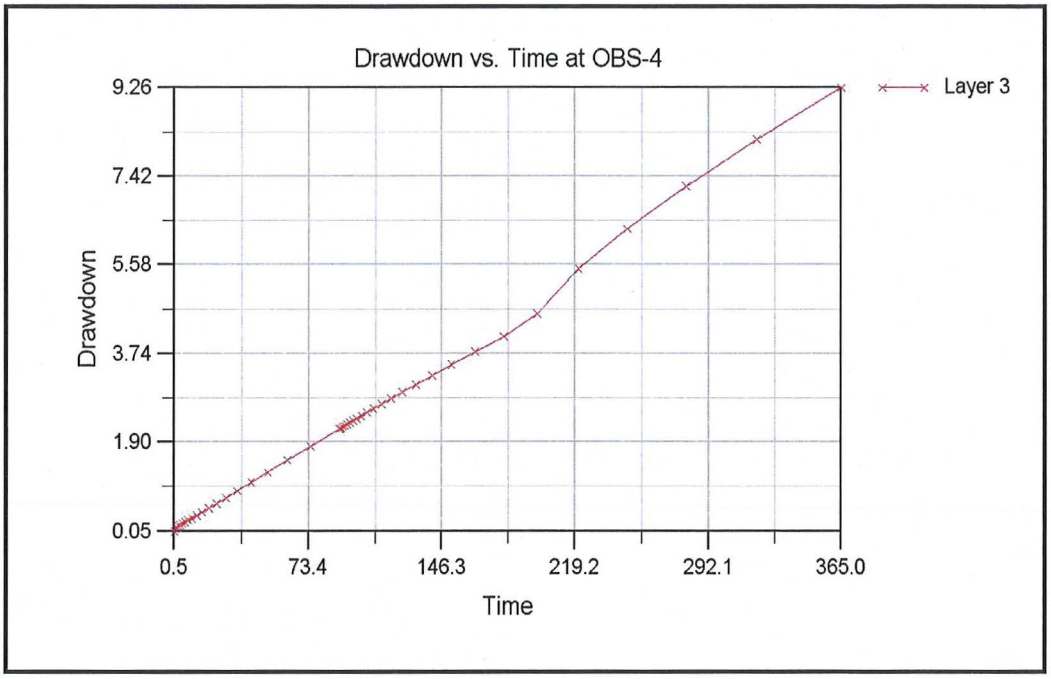


Figure B-30: Hydrograph - Simulated drawdown feet below static condition in the vicinity of the Hope Creek cooling tower in the alluvium. OBS-4 is a hypothetical observation point used to create the hydrograph for this location. Units are feet for drawdown and days for time.

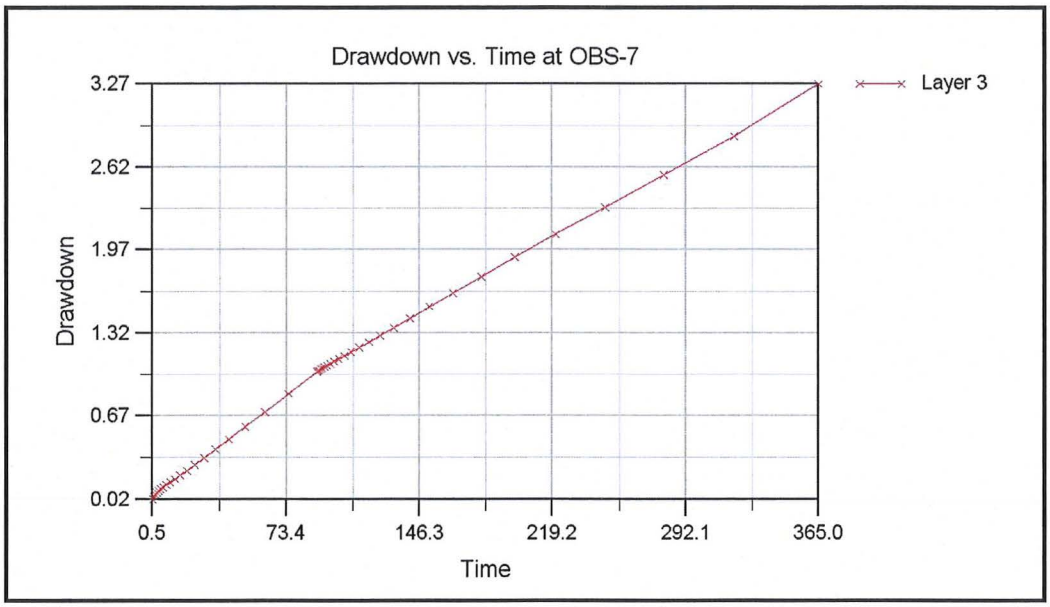


Figure B-31: Simulated drawdown (ft below static condition) in the vicinity of Hope Creek Unit 1 in the alluvium. OBS-7 is a hypothetical observation point used to create the hydrograph for this location. Units are feet for drawdown and days for time.

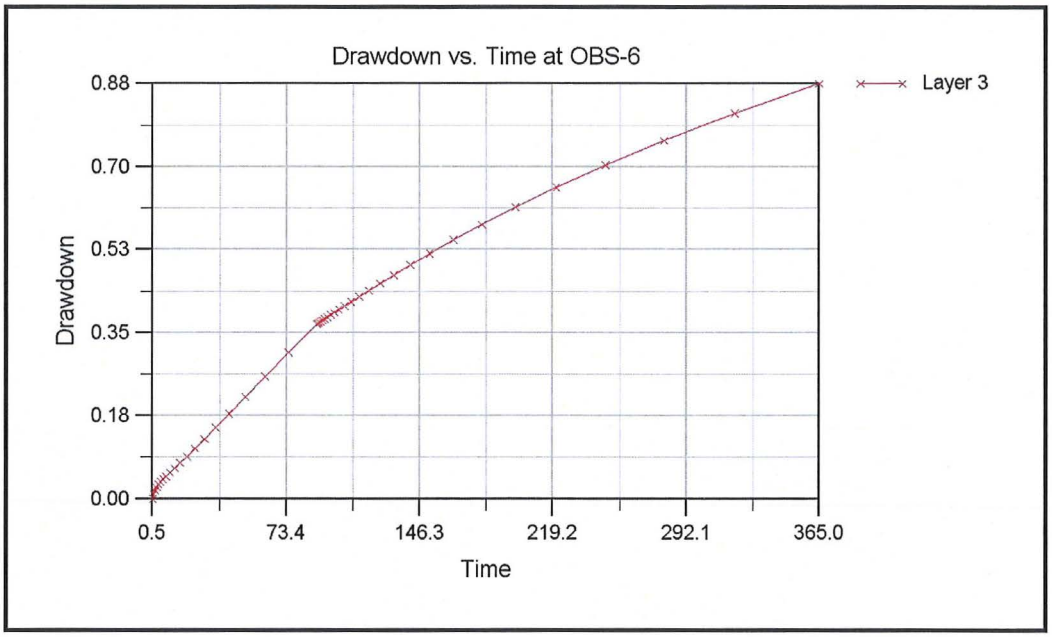


Figure B-32: Simulated drawdown (feet below static condition) in the vicinity of Salem Units 1 and 2 in the alluvium. OBS-6 is a hypothetical observation point used to create the hydrograph for this location. Units are feet for drawdown and days for time.

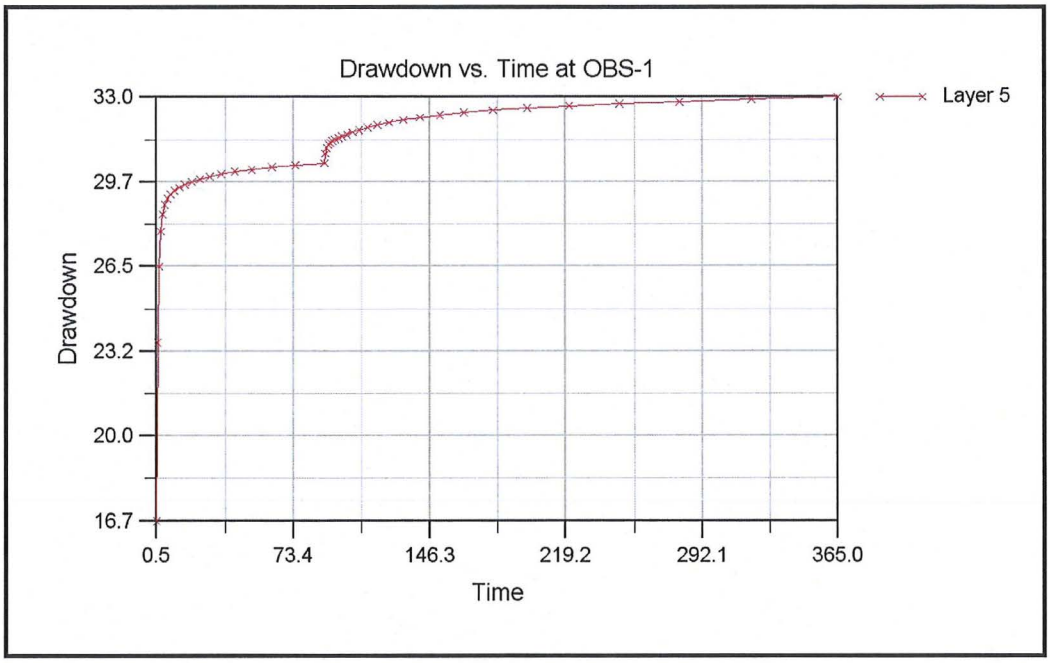


Figure B-33: Simulated drawdown (feet below static condition) in the vicinity of the cooling tower in the Vincentown. OBS-1 is a hypothetical observation point used to create the hydrograph for this location. Units are feet for drawdown and days for time.

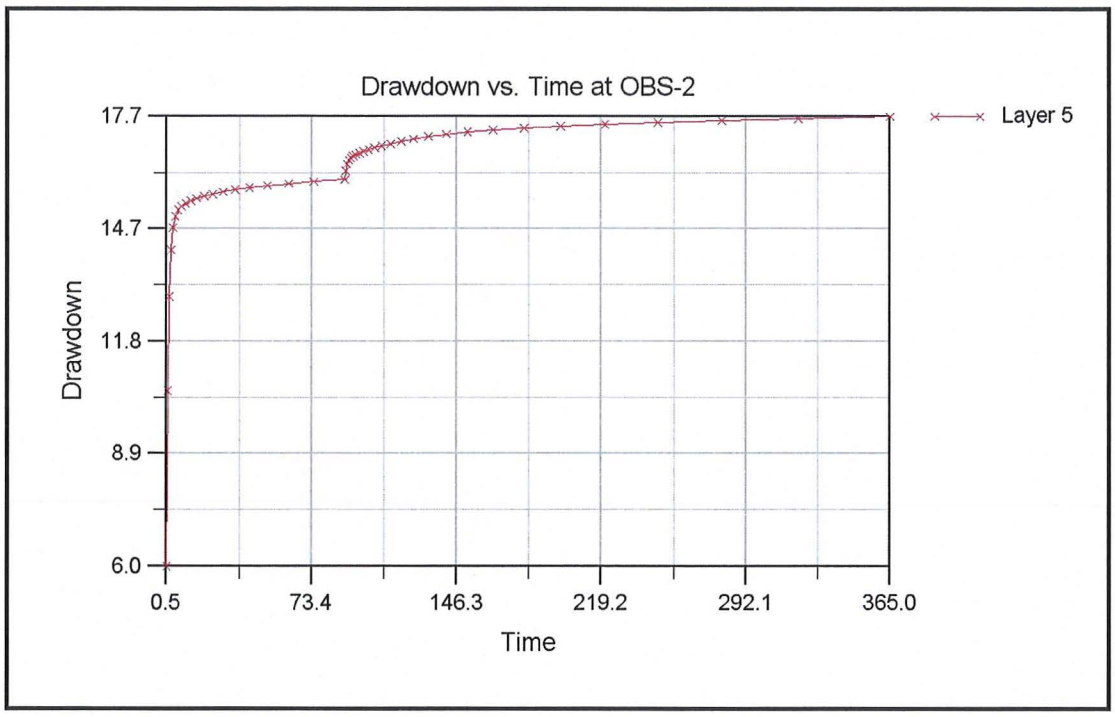


Figure B-34: Simulated drawdown (feet below static condition) in the vicinity of the Hope Creek Unit 1 in the Vincentown. OBS-2 is a hypothetical observation point used to create the hydrograph for this location. Units are feet for drawdown and days for time.

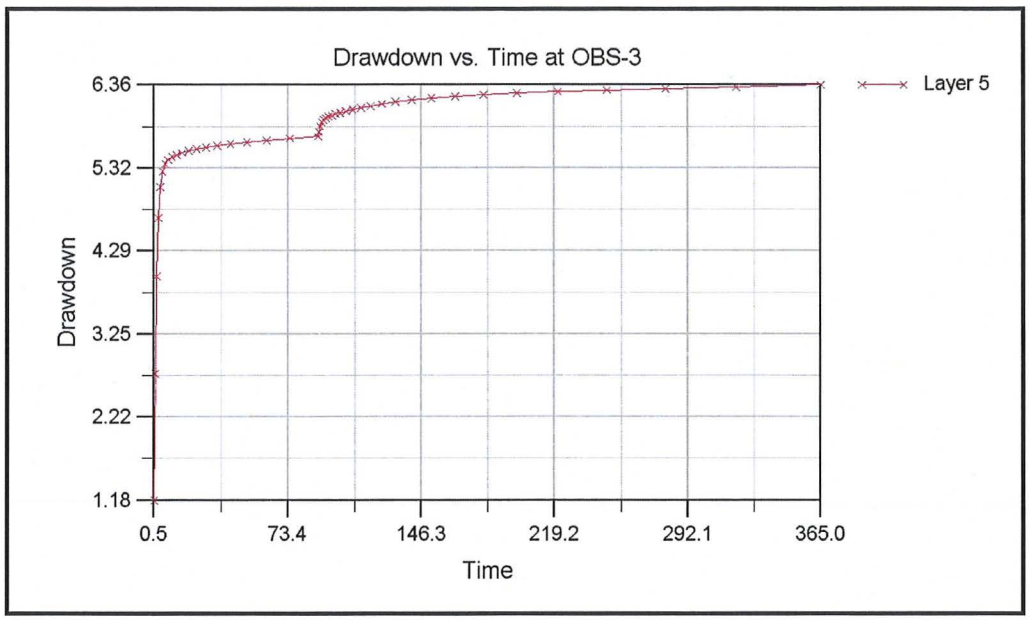


Figure B-35: Simulated drawdown (feet below static condition) in the vicinity of the Salem Units 1 and 2 in the Vincentown. OBS-3 is a hypothetical observation point used to create the hydrograph for this location. Units are feet for drawdown and days for time.

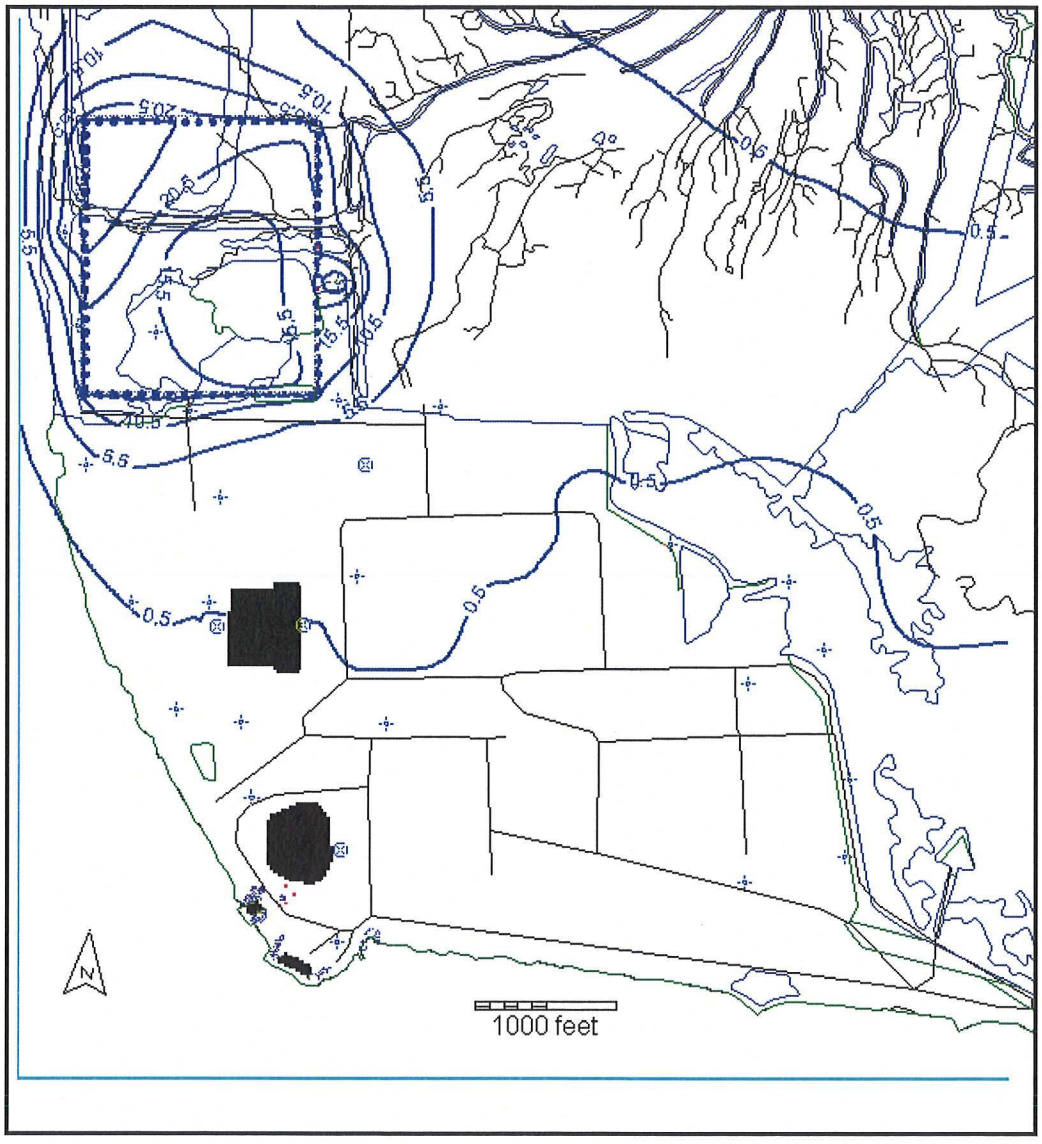


Figure 36: Contours of drawdown (feet below static condition) at one year of dewatering in the alluvium – low vertical hydraulic conductivity in the Kirkwood. In this sensitivity run, the vertical hydraulic conductivity of the Kirkwood aquitard has been decreased to 0.001 feet per day.

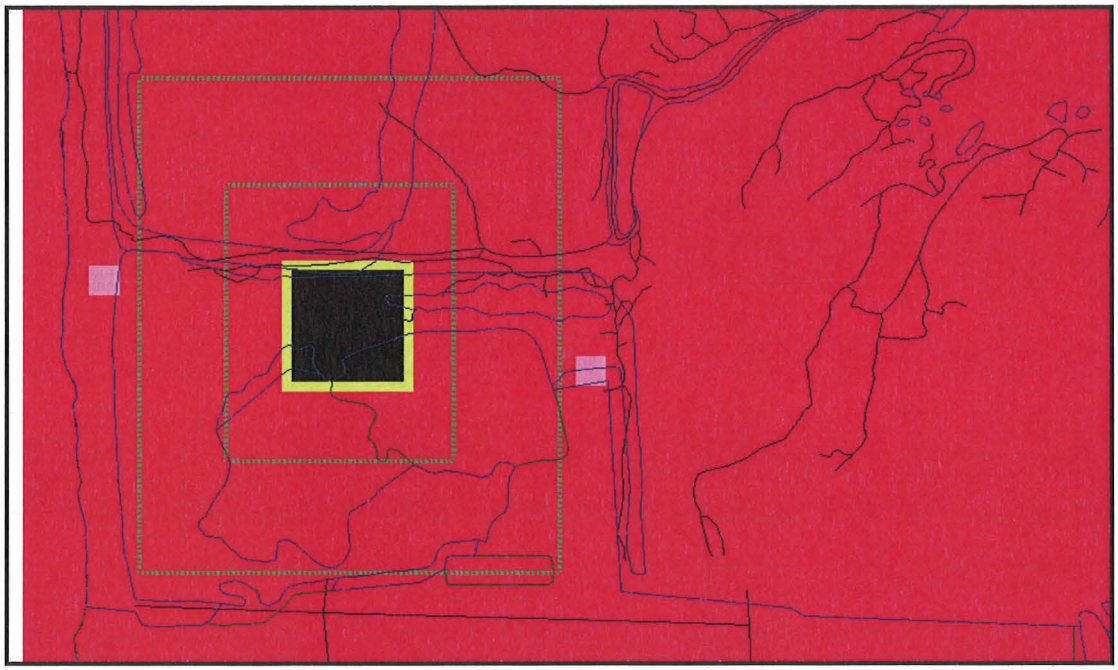


Figure B-37: Extent of assumed breach in the Kirkwood for assessing hydrostatic loading. The light yellow band around the black square illustrates the gap in the Kirkwood aquitard created to accommodate the nuclear island (a 440-foot square area). The larger yellow line rectangles show the location of the inner and outer soil retention barriers.

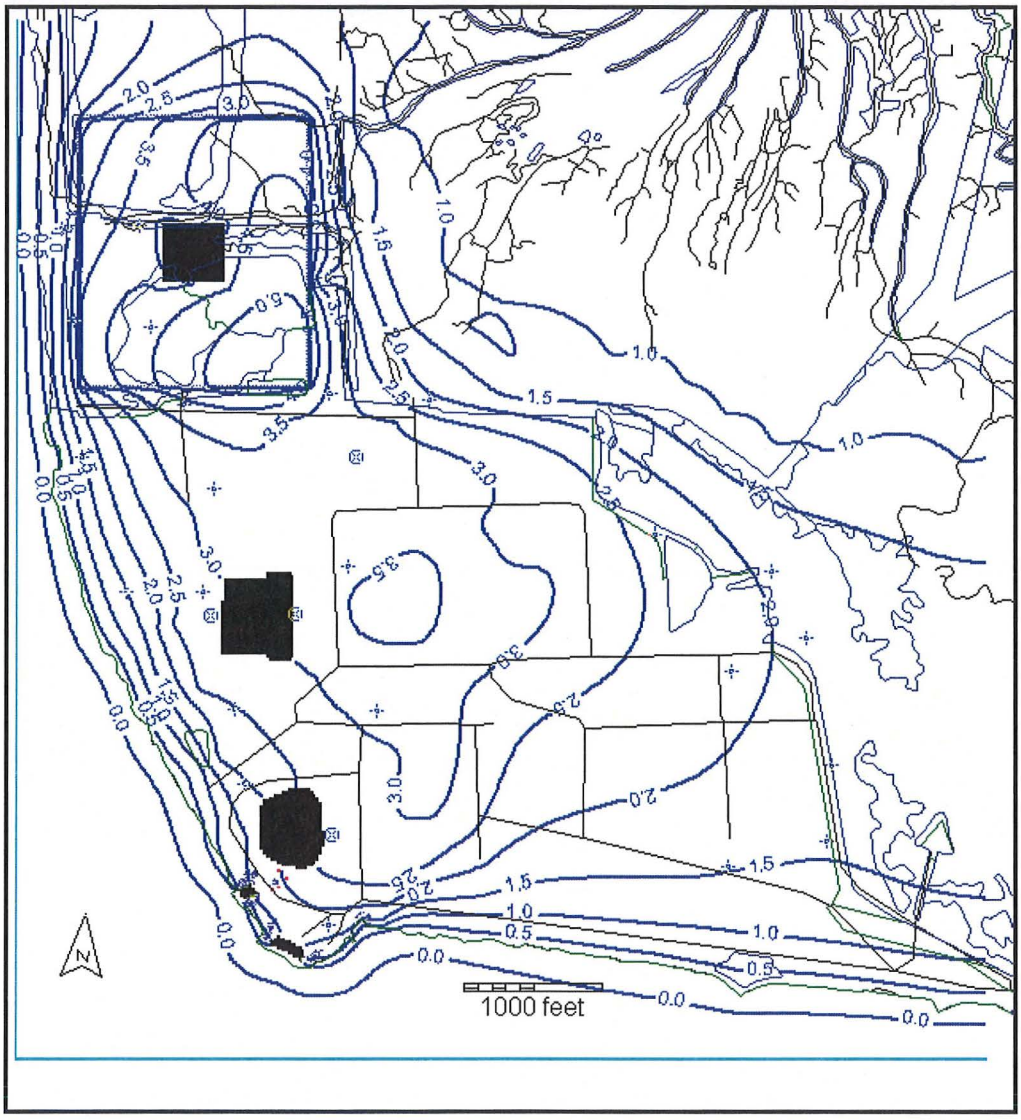


Figure B-38: Simulated post-construction piezometric heads (feet NAVD88) in the alluvium or structural fill. The breach in the Kirkwood at the site of the new unit is as shown on Figure B-37. At existing site structures, the maximum estimated hydrostatic loading under average conditions is about 3.5 feet NAVD88. Within the soil retention barrier, heads approach 5.3 feet NAVD88.

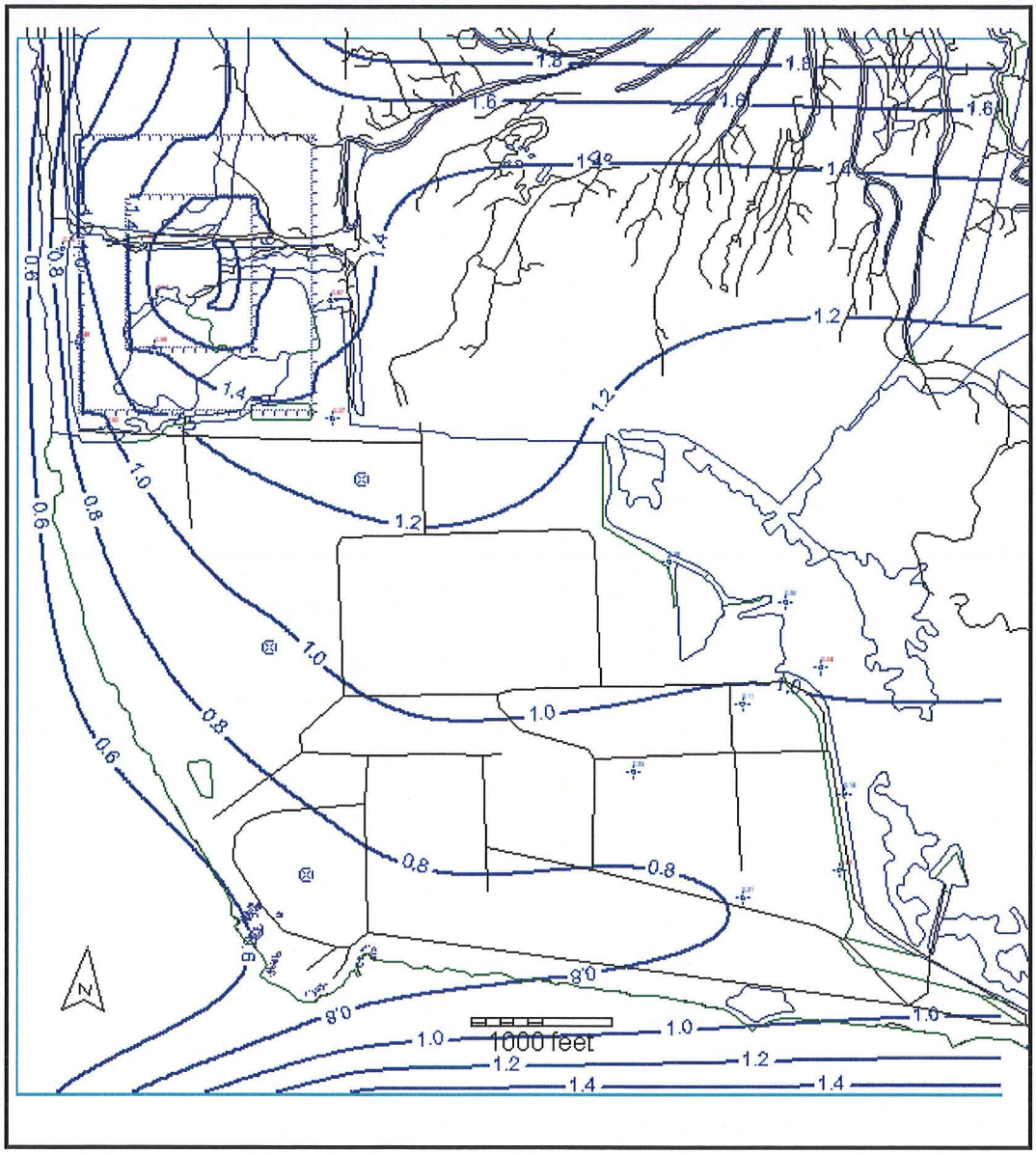
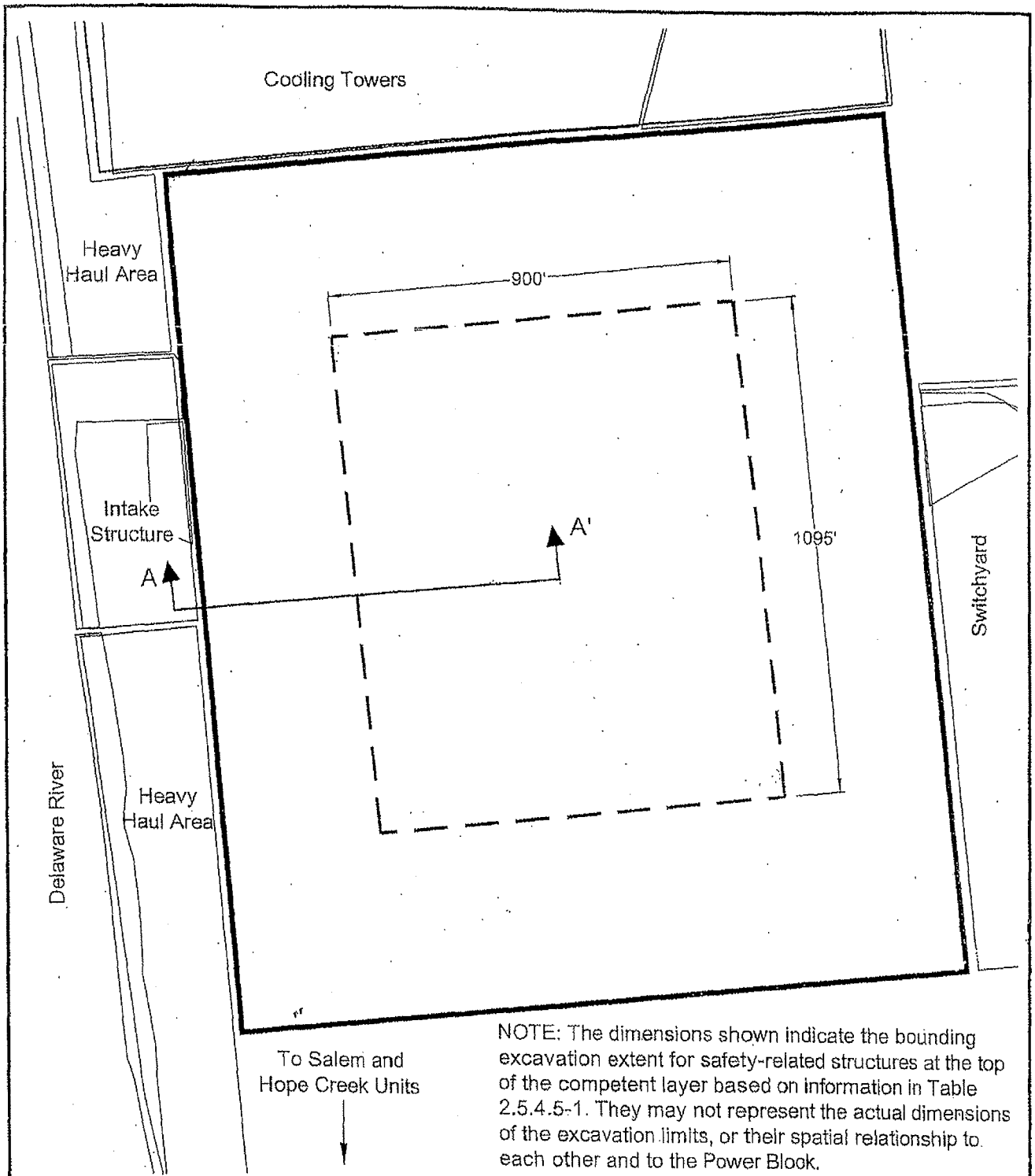
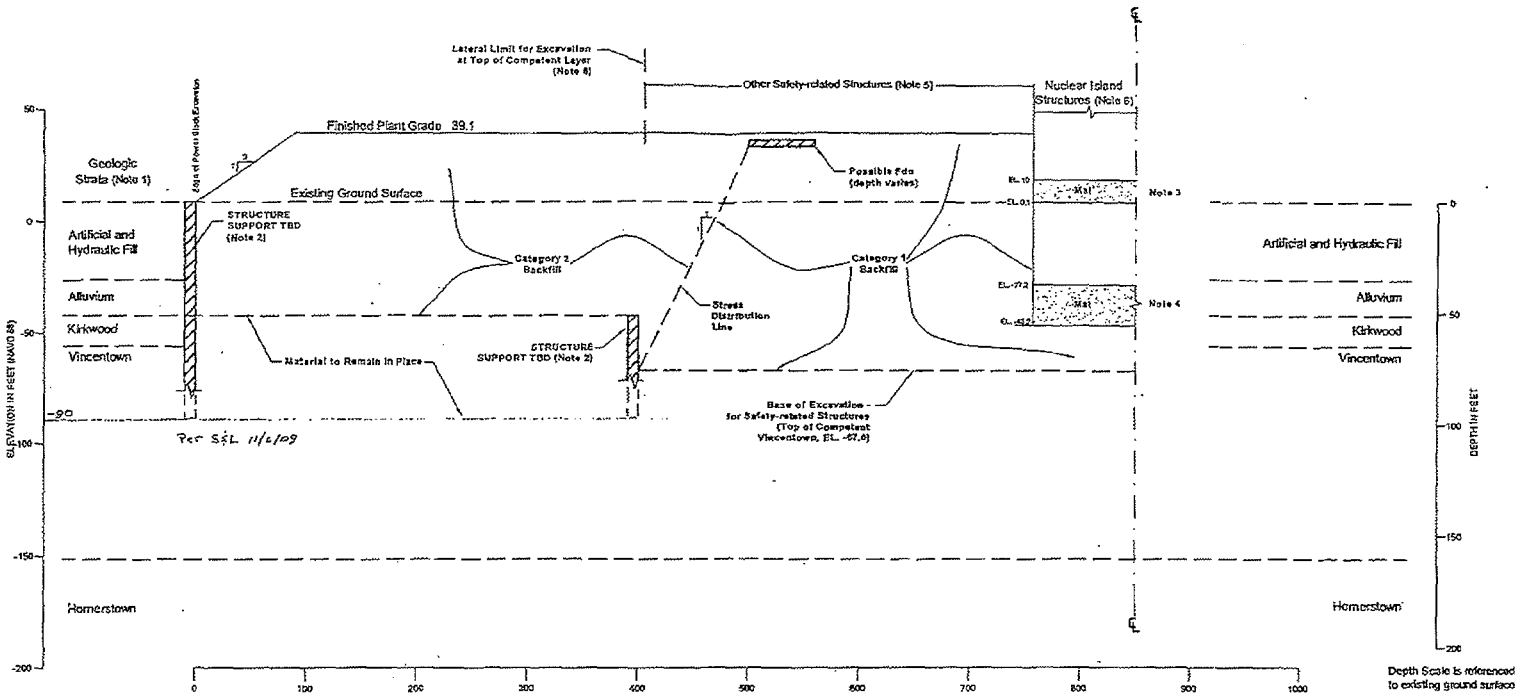


Figure B-39: Simulated post-construction piezometric heads (feet NAVD88) in the upper Vincentown. The breach in the Kirkwood at the site of the new unit is as shown on Figure B-37. Differences in heads across most of the model domain from pre- to post-construction are slight.

Attachment C

Figures Depicting Bounding Conditions for the Proposed Excavation and Dewatering


Cooling Towers
Heavy Haul Area
900'
Intake Structure
A
A'
1095'
Switchyard
Delaware River
Heavy Haul Area
To Salem and Hope Creek Units
NOTE: The dimensions shown indicate the bounding excavation extent for safety-related structures at the top of the competent layer based on information in Table 2.5.4.5-1. They may not represent the actual dimensions of the excavation limits, or their spatial relationship to each other and to the Power Block.
LEGEND
Power Block - Limit of Mass Excavation for General Power Block Grading
Approximate Lateral Limits of Excavation to top of competent layer for PPE Safety - Related Structures
N
W
E
S
0
150
300
Feet
PSEG Power, LLC
PSEG SITE ESPA
Conceptual Lateral Limits of Excavation
FIGURE 2.5.4.5-1
Rev 0



Notes:

1. Geologic Layers Based on Boring NB-1.
2. Structural support for excavation may consist of cellular cofferdams, sheet pile/tie-back walls or other methods as evaluated in the COLA.
3. Upper bound nuclear island mat (category 1 backfill below extends to top of competent Vincentown).
4. Lower bound nuclear island mat (category 1 backfill below extends to top of competent Vincentown).
5. Boundary of lateral extent of safety-related structures considering all technologies.
6. Width of nuclear island varies.
7. Category 1 backfill is placed below and against walls of Safety-Related structures. Category 1 backfill may include concrete fill, roller-compacted concrete or compacted granular material. Category 2 backfill is placed outside Safety-Related structure areas and may consist of Category 1 materials, materials removed from the excavation or other materials meeting engineering requirements.
8. The lateral excavation limit shown is determined at the top of the competent Vincentown formation and encompasses the estimated area of stress distribution below foundations.

HORIZONTAL SCALE - IN FEET

VERTICAL SCALE - IN FEET

PSEG Power, LLC

PSEG SITE ESPA
Part 2, Site Safety Analysis Report

Conceptual Excavation
Section A-A'
FIGURE 2.5.4.5-2
Rev 0

ATTACHMENT D

Hand Calculation for Dewatering Well Rate Balance

MACTEC
MACTEC Engineering and Consulting, Inc.
511 Congress Street, P.O. Box 7050
Portland, ME 04112-7050

JOB NO. 6448-08-2251 SHEET 1 OF 1
PHASE _____ TASK SWRPT
JOB NAME 2256 Salem ESP
BY R. Lewis DATE 1/11/10
CHECKED BY NSC DATE 1/19/10

Hand Calculation for Dewatering Well Rate Balance

This calculation sums and compares simulation dewatering rates for wells closer to the model boundaries with those further away to see if the proximity to the model boundaries has an overly great influence on pumping rates and possibly the projected drawdowns at safety-related structures.

The following well rates are for the end of the 365-day simulation period and are in units of cubic feet per day. The rates are summed using the mass balance/window tool in Groundwater Vistas and transcribed here.

Layer	North	South	West	East	
layer 3	1597	981	3023	880	
Layer 5	36969	21013	42152	26891	outer wells
	3769	1259	3182	2426	inner wells
Layer 6	106976	105251	141316	122922	outer wells
	39524	37693	52145	44404	inner wells
Totals	188835	166197	241818	196623	

North vs. South

Fraction North = 188835/(188835+166197) = 0.53

West vs. East

Fraction West = 241818/(241818+196623) = 0.55