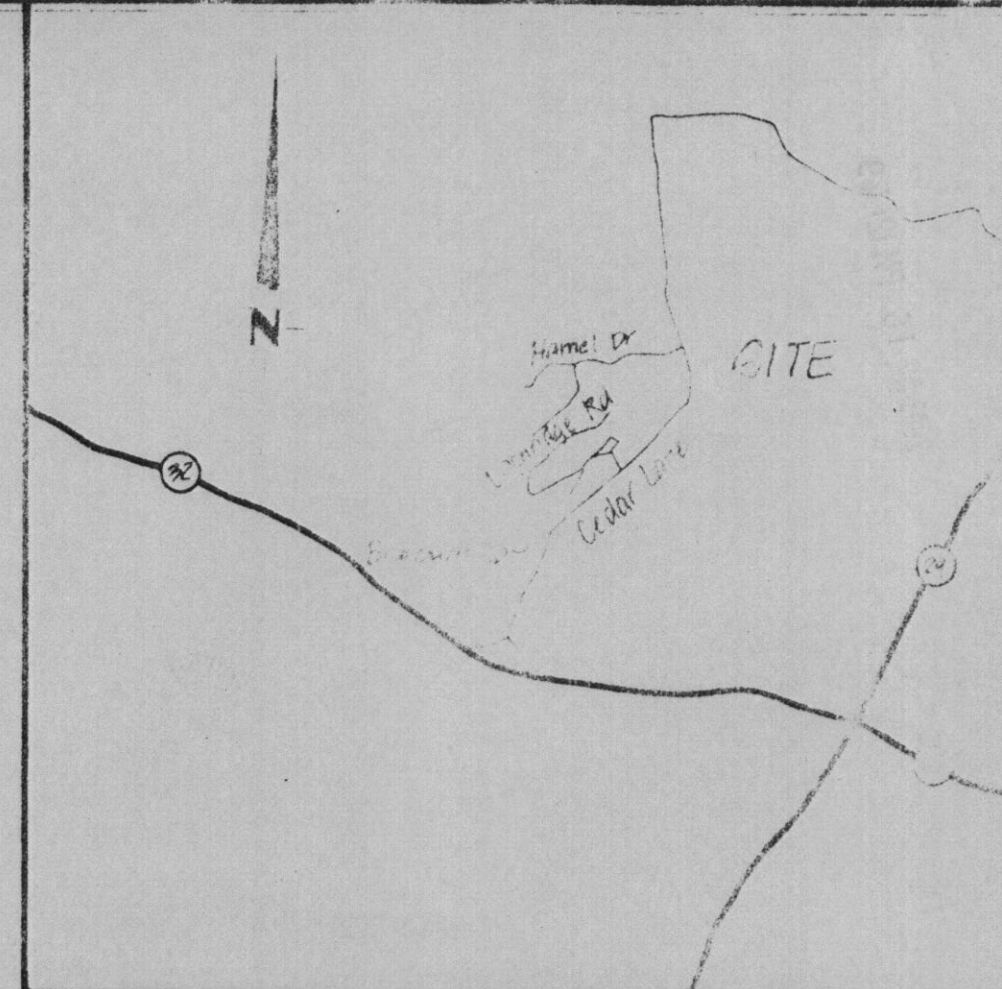
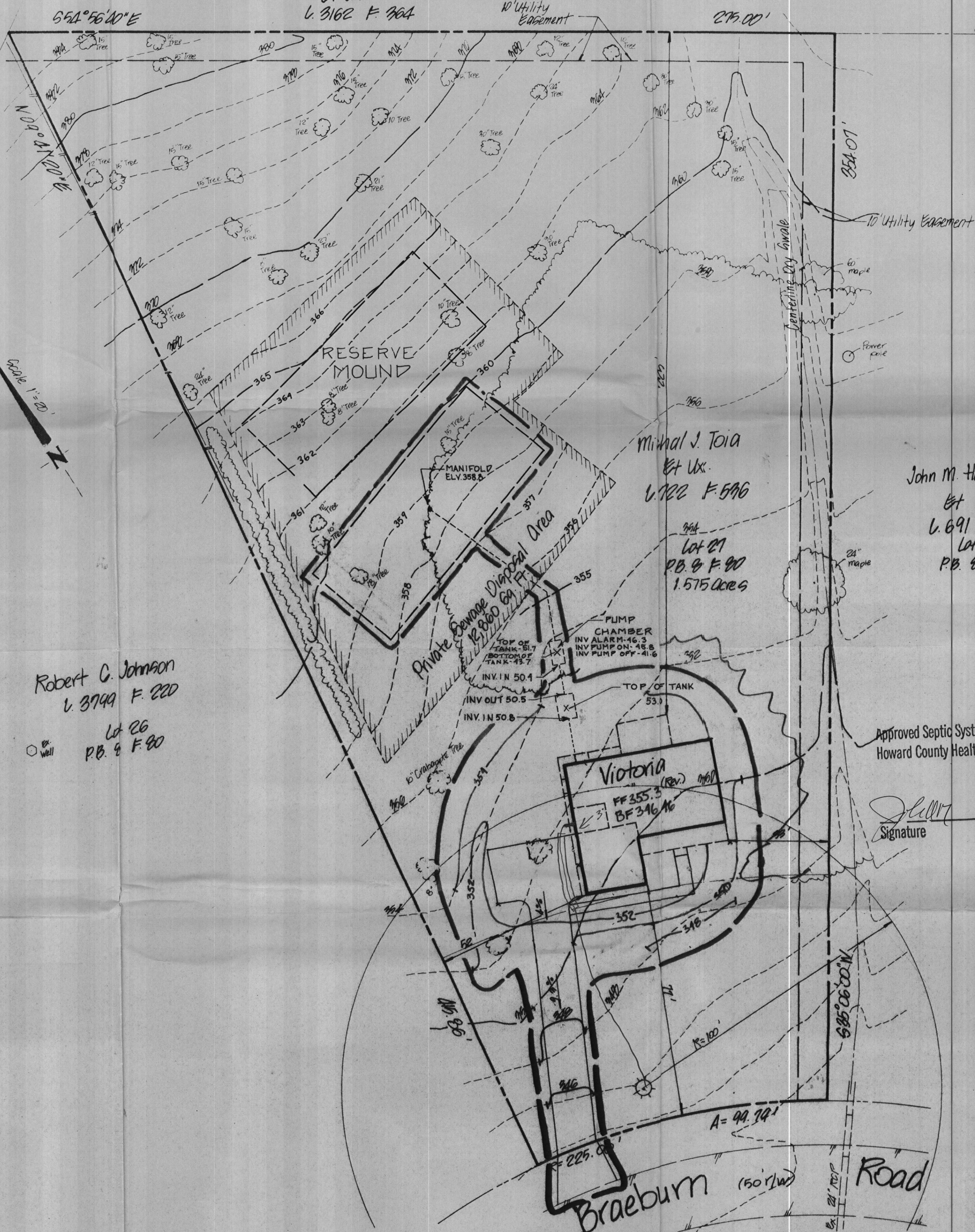


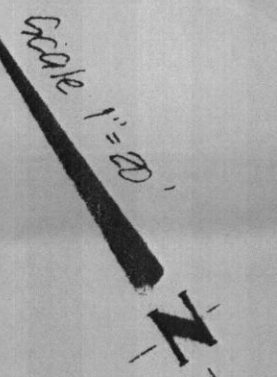


Charles R. Compton  
 Et Ux.  
 L. 843 F. 225  
 Lot 40  
 P.B. 10 F. 12

Paul V. Thompson  
 Et Ux.  
 L. 3162 F. 364



VICINITY MAP SCALE: 1" = 200'



This Area Designates a Private Sewage Disposal Area For Sand Mound Disposal Only As Required By The Maryland Department Of Environment For Individual Sewage Disposal. Improvements Of Any Nature In This Area Are Restricted. This Sewage Disposal Area Shall Become Null And Void Upon Connection To a Public Sewerage System. The County Health Officer Shall Have Authority To Grant Adjustments To The Private Sewage Disposal Area The Lot Shown Here On Complies With The Minimum Ownership Width And Lot Area Required By The Maryland Department Of Environment.

Robert C. Johnson  
 L. 3799 F. 220  
 Lot 26  
 P.B. 9 F. 80

Mikhail J. Toia  
 Et Ux.  
 L. 722 F. 596

Lot 27  
 P.B. 8 F. 80  
 1.575 acres

John M. Hamilton, Jr.  
 Et Ux.  
 L. 691 F. 339  
 Lot 28  
 P.B. 8 F. 80

Approved Septic System Plan  
 Howard County Health Department

*[Signature]*  
 Signature Date 5/21/03

APPROVED FOR PRIVATE WATER AND PRIVATE SEWAGE DISPOSAL SYSTEM IN CONFORMANCE WITH THE MASTER PLAN OF HOWARD COUNTY

HOWARD COUNTY OFFICER DATE

**B&A** Benning & Associates, Inc.  
 Land Planning Consultants  
 8933 Shady Grove Court  
 Gaithersburg, Md. 20877  
 (301) 948-0240

Site Plan - Lot 27

CALL "MISS UTILITY" AT  
 1-800-257-7777  
 48 Hours Before Start Of Construction

REVISIONS

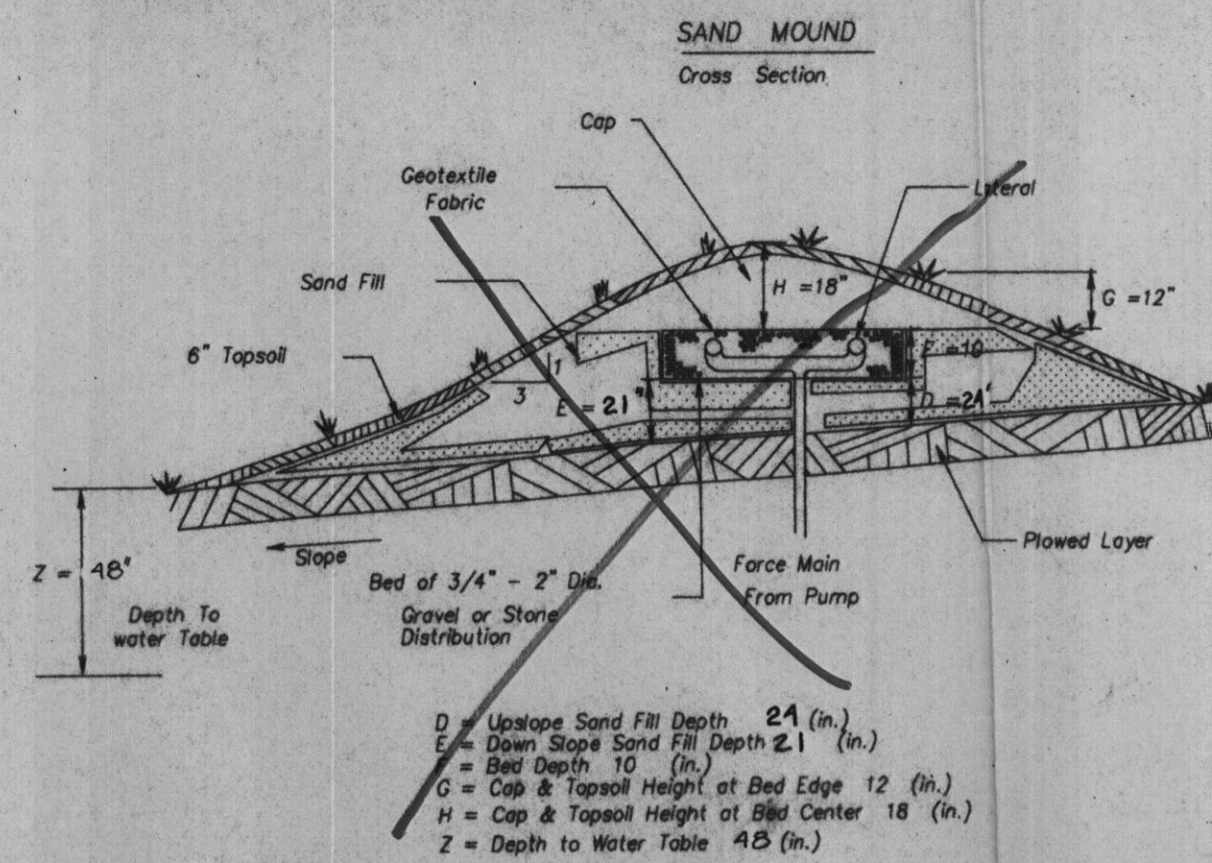
**BATTA GOODE & ASSOCIATES, INC.**  
 ENGINEERS LAND PLANNERS SURVEYORS  
 400 PROFESSIONAL DRIVE, SUITE 440  
 GAITHERSBURG, MD 20879  
 TEL: 301-417-0344  
 FAX: 301-417-0329

**BG & A**

DESIGN BY: <i>[Signature]</i>
DRAWN BY: Lewis T.
CHECKED BY: Ram Batta
DATE: August 2002
SCALE: 1" = 20'
SHEET: 1 of 2

**CONSTRUCTION PROCEEDURES**

- 5.1 GENERAL**  
 Proper construction is extremely important if the sand mound is to function as designed. Installation of a sand mound system is prohibited when soils are frozen. Construction of the mound should not occur if the soil is too wet. Compaction and puddling of the soil in the location of the mound and downslope should be avoided. Soil is too wet for construction of the mound if a sample, taken anywhere within the upper eight inches, when rolled between the hands forms a wire. If the sample crumbles, the soil is dry enough for construction to proceed.
- 5.2 EQUIPMENT**  
 The following special equipment is recommended:  
 1. A small track-type tractor with blade for placing and spreading the sand fill.  
 2. A cordless drill for drilling holes in the pipe on site.  
 3. A moldboard or chisel plow for plowing the soil within the perimeter of the mound. A rototiller may be used on structureless soils with USDA sand textures.  
 4. A rod and level for determining bed elevations, slopes on pipes, outlet elevation of the septic tank, slope of the site, etc.
- 5.3 MATERIALS**  
 The following specifications are required:  
 1. Sand fill material must be approved by the local Approving Authority prior to hauling to the site. Submit a sample to the local Authority for analysis at least three weeks in advance of construction or select a sand fill from the list of potential sand suppliers. If a sample is submitted for analysis a fee will be charged. Sand fill shall have an effective size between 0.25 mm and 0.50 mm with a uniformity coefficient of 3.5 or less. A copy of the receipt from the sand supplier showing the company name, address, phone number, date and product name will be required.  
 2. Aggregate shall be clean aggregate free of fines and between 3/4 to 2 inches in diameter.  
 3. Geotextile fabric shall be of a type approved by the Approving Authority.  
 4. Cap material shall be soil relatively free of coarse fragments and preferably a clay loam or silt loam texture.
- 5.4 TANK INSTALLATION AND SITE PREPARATION**  
 5.4.1 Locate and rope-off the entire sewage disposal area to prevent damage to the area during other construction activity on the site. Vehicular traffic over the disposal area should be prohibited to avoid soil compaction.  
 5.4.2 Install septic tank(s) and pumping chamber(s) and pumps as shown on the drawings. Call for inspection.  
 5.4.3 Stakeout the initial and recovery mound perimeters in their proper orientation as shown on the drawing(s). Reference stakes offset from the mound corner stakes are recommended. Locate the upslope edge of the absorption bed within the mound and determine the ground elevation at the highest location. Reference this elevation to a benchmark for future use. This is necessary to determine the bottom elevation of the absorption bed.  
 5.4.4 Excess vegetation should be cut and removed. Trees should be cut at ground level and stumps left in place.  
 5.4.5 Determine the location where the force main from the pumping chamber will connect to the distribution network manifold within the mound.  
 5.4.6 Install the force main from the pumping chamber to the proper location within the mound. Pipe should be laid with uniform slope back to the chamber so that in drains after dosing. Cut and stub off pipe one foot below existing grade within the proposed perimeter of the initial mound. Backfill trench and compact to prevent seepage along the trench.  
 5.4.7 Plow the soil within the perimeter of the mound to a depth of about eight inches. If the soil is not too wet, moldboard or chisel plow may be used. Plowing should be done along the contour, throwing soil upslope. Use a two bottom or larger moldboard plow in wooded areas with stumps, roughening the surface to a depth of four to six inches with backhoe teeth may be satisfactory. However, all work should be done from the upslope or sides of the mound if at all possible. Rototilling may be used on soils with USDA textures of sand. After plowing, all foot and vehicular traffic shall be kept off the plowed area.
- 5.5 FILL PLACEMENT**  
 5.5.1 Relocate and extend the force main several feet above the ground surface.  
 5.5.2 Place the approved sand fill material on the upslope edge(s) of the plowed area. Keep delivery trucks off the plowed area. Minimize traffic on the downslope side. Fill should be placed and spread immediately after plowing. Move the fill material in place using a small track-type tractor with a blade. Work from the end and upslope side. Always keep a minimum of six inches of material beneath the tracks of the tractor to minimize compaction of the natural soil. The fill material should be worked in this manner until the height of the fill reaches the elevation of the top of the absorption bed.  
 5.5.3 With the blade of the tractor, form the absorption bed. Hand level the bottom of the bed and check it for proper elevation. The bed should be level for proper functioning of the mound. Call for inspection.  
 5.5.4 Shape the sides of the sand fill to design slope (i.e. 3:1 or flatter).
- 5.6 BED AND DISTRIBUTION NETWORK**  
 5.6.1 Carefully place the coarse aggregate in the bed. Do not create ruts in the bottom of the bed. Level the aggregate to a minimum depth of six inches.  
 5.6.2 the distribution network is assembled in place setting the manifold to ensure draining the laterals between doses. The laterals should be laid level with the holes directly downward. Call for inspection. Test the pumping chamber and distribution network with clean water.  
 5.6.3 Place additional aggregate to a depth of at least two inches over the crown of the pipe.  
 5.6.4 Place the approved geotextile fabric over the aggregate bed. The fabric may extend beyond the bed over the sand fill.
- 5.7 COVER MATERIAL**  
 5.7.1 Place a finer textured soil material such as sandy clay loam, clay loam, or silt loam on top of the fabric over the bed. The minimum depth of this cap shall be six inches at the outer edges of the bed and 12 inches along the center.  
 5.7.2 Place a minimum of six inches of good quality topsoil over the entire mound surface including the sideslopes. Call for final inspection.
- 5.8 VEGETATION**  
 5.8.1 Fertilize, lime, seed and mulch the entire surface of the mound. Grass mixtures adapted to the area should be used.  
 5.8.2 Consult the county extension agent of Soil Conservation Service for recommendations.



D = Upslope Sand Fill Depth 24 (in.)  
 Down Slope Sand Fill Depth 21 (in.)  
 Bed Depth 12 (in.)  
 G = Cap & Topsoil Height at Bed Edge 12 (in.)  
 H = Cap & Topsoil Height of Bed Center 16 (in.)  
 Z = Depth to Water Table 48 (in.)

**SAND MOUND SPECIFICATIONS**

TYPE OF DISTRIBUTION SYSTEM - CENTRAL MANFOLD  
 NUMBER OF LATERALS - 6  
 LENGTH OF LATERALS - 56' - 1' = 55' / 2 = 27.5' x 6 = 165' LF. (TOTAL)  
 PERFORATION DIAMETER - 5/16"  
 SPACING BETWEEN PERFORATIONS - 42" (3.5)  
 NUMBER OF PERFORATIONS - 27.5 / 3.5 = 8 x 6 LATERALS = 48  
 DISTANCE FROM MANFOLD TO 1ST PERFORATION - 56' x 0.5 = [(8 - 1) x 3.5] / 2 = 17.5'  
 DIAMETER OF LATERALS - 1 1/4"  
 DIAMETER OF FORCE MAIN AND MANFOLD - 3"  
 DOSE:  
 (LATERALS) 6.5 LF. @ 7.8 GAL./100 LF. = GALS x 3 = 12.81 GALS  
 FORCE MAIN 6.3 LF. @ 38.4 GAL./100 LF. = 24.2 GALS  
 MANFOLD 6 LF. @ 38.4 GAL./100 LF. = 23 GALS  
 39.37 GALS.

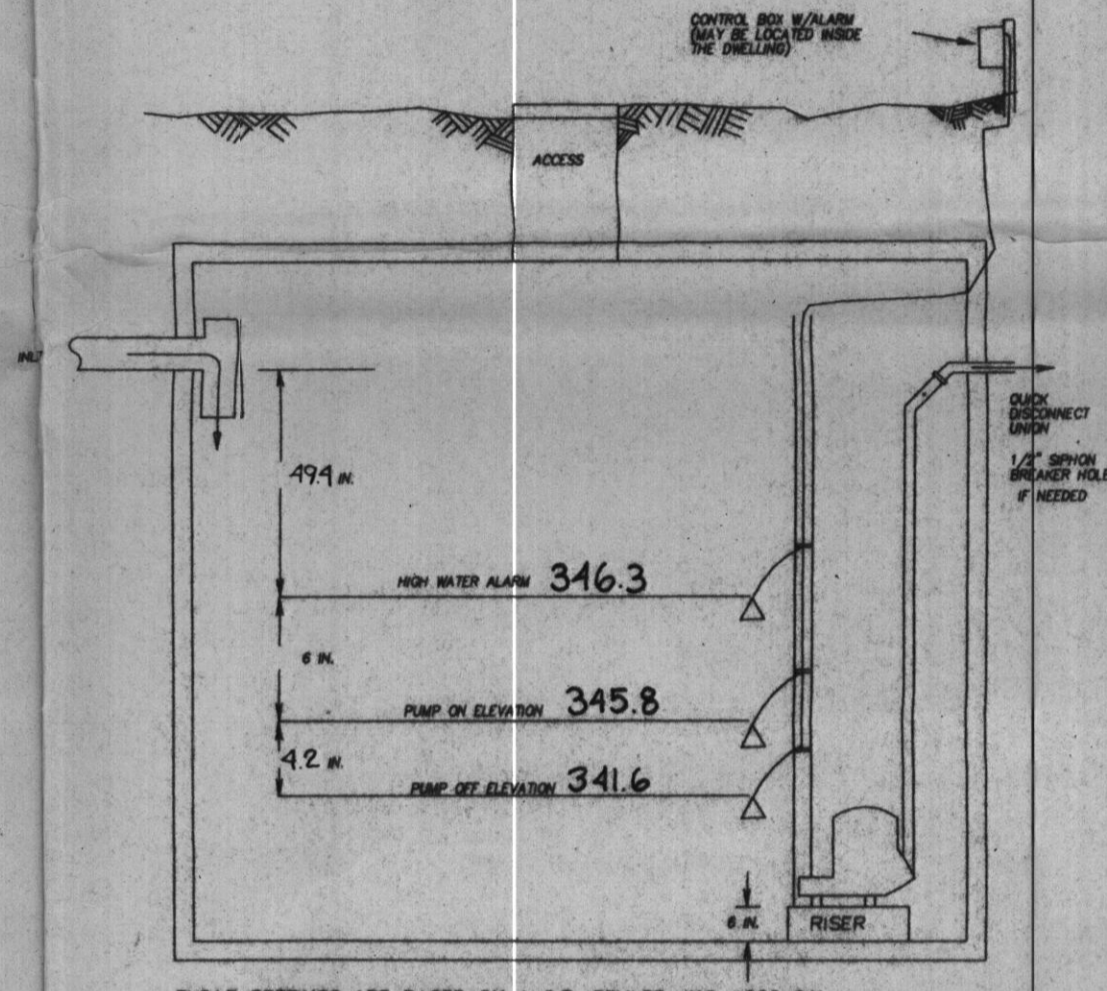
PUMP CHAMBER:  
 1 DAY STORAGE CAPACITY = 600 GALS  
 1 DOSE = 99.9 GALS  
 6" PUMP RISER = 132 GALS  
 347.32 GALS \*

\* ACTUAL PUMP CHAMBER MAY VARY WITH WITHIN MANUFACTURERS DIMENSIONS

PUMP SIZE:  
 REQUIRED FLOW = 48 PERFORATIONS x 1.83 G.P.M. = 78.2 G.P.M.  
 (MANFOLD ELEV. = 358.8) - (PUMP OFF SWITCH ELEV. = 341.6) = 17.2' STATIC HEAD  
 FRICTION LOSS = 6.3 LF. 3" PVC x 2.09 PER 100 LF. = 1.3' FRICT. HEAD  
 DISTAL END = 2' PER LINE x 3 LINES = 6.0'  
 TOTAL HEAD = 24.5'

24.5' (HEAD) @ 78.2 G.P.M. = 1/2 H.P. (USE GULDS MODEL 3870/HPH OR EQUAL)  
 IF A DIFFERENT TANK IS TO BE USED.

TYPICAL PUMP CHAMBER DETAIL



**EQUATIONS FOR CALCULATING SAND MOUND DIMENSIONS**

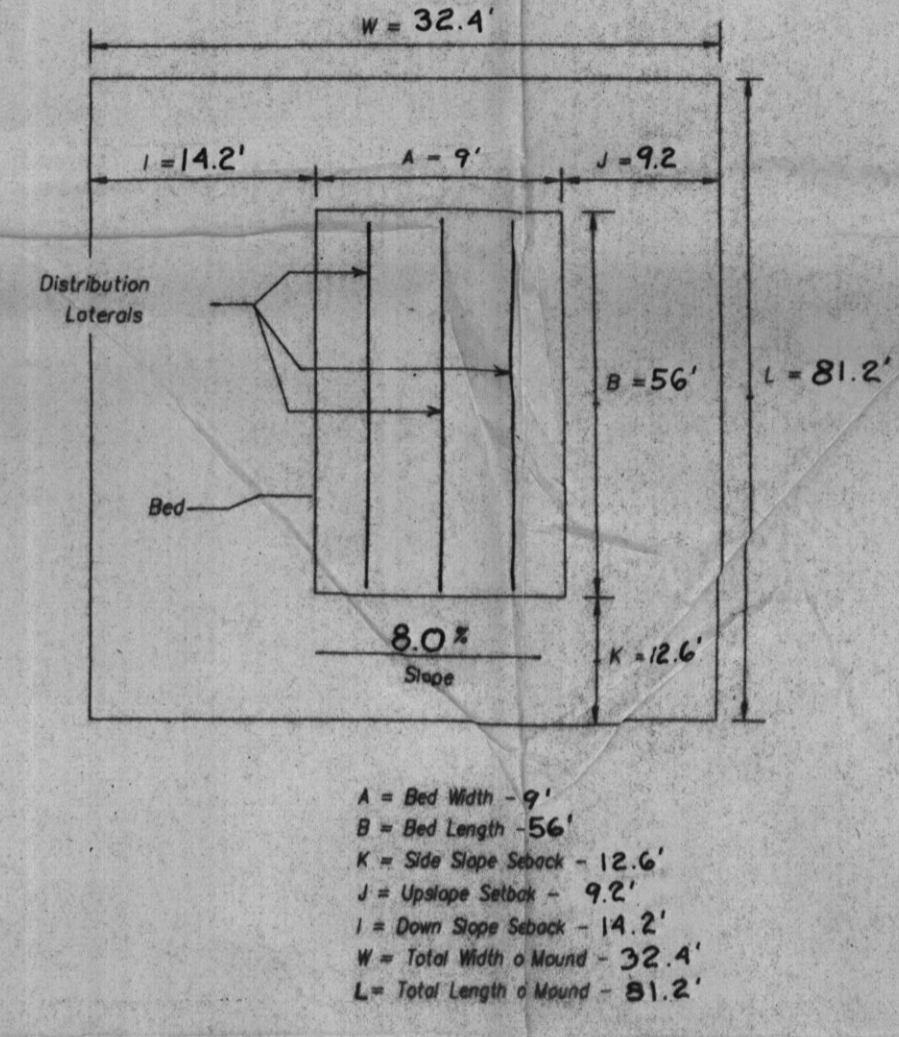
ABSORPTION BED FT. (A x B) = DESIGN FLOW = 500 FT.  
 1.2 GPD / FT.

BED LENGTH (B) = 56 FT. (21' TO 101' DEPENDENT ON SITE)  
 BED WIDTH (A) = BED 500 FT. = 9 FT. (5' OR LESS)  
 856 FT.

UPSLOPE SAND FILL DEPTH (D) = 48 IN. - 48 IN. (24 IN. MIN.)  
 DOWNSLOPE SAND FILL DEPTH (E) = (12(9) x 8.7% SLOPE) + 12 IN. = 21' IN.  
 CAP + TOPSOIL AT BED CENTER (G) = 12 IN.  
 CAP + TOPSOIL AT BED EDGE (H) = 16 IN.  
 TOTAL BED DEPTH (F) = 10 IN.  
 SIDESLOPE SETBACK (K) = ((24+21) + 28 IN.) x 3 = 151.5 IN.  
 2

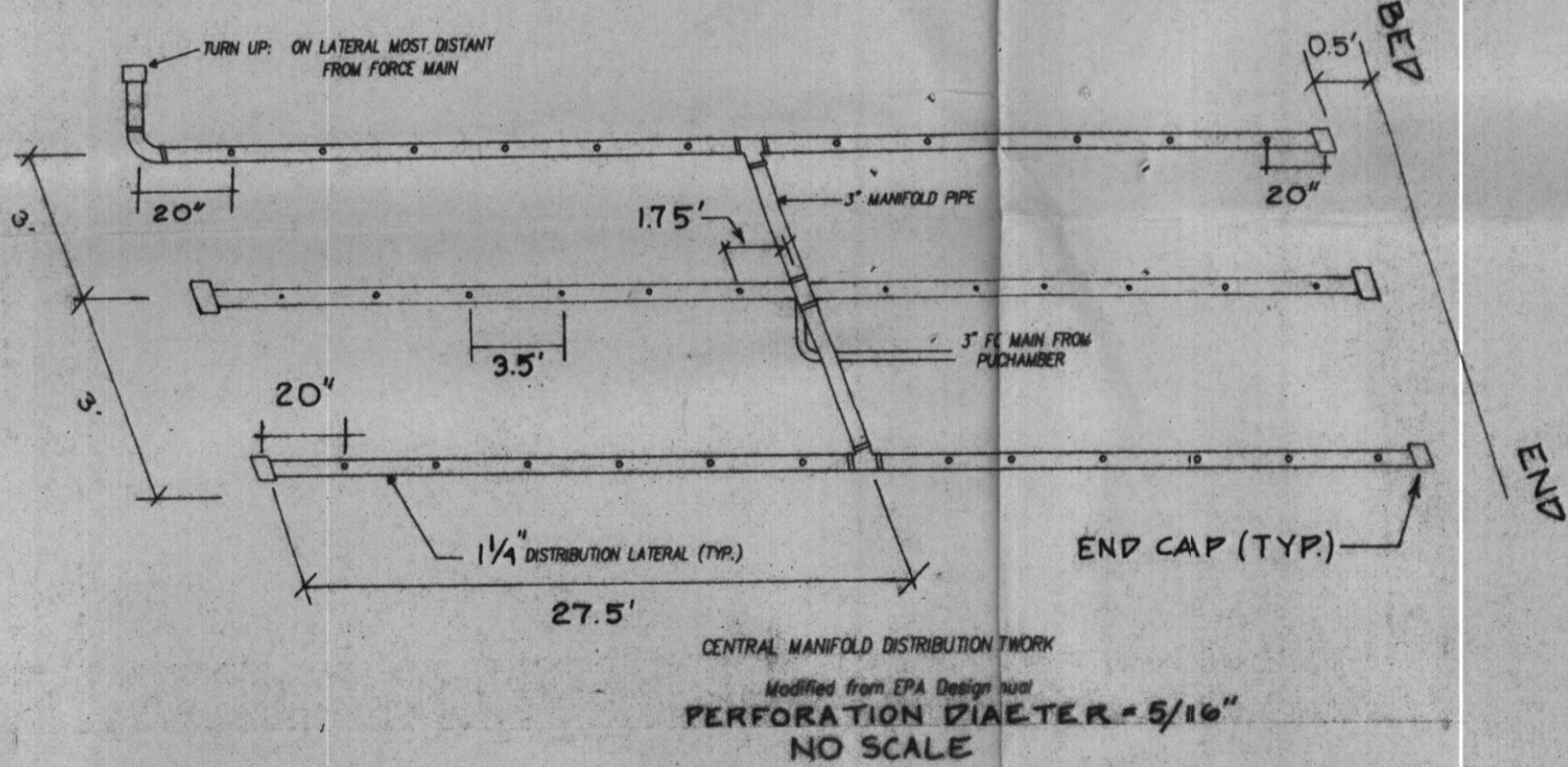
UPSLOPE SETBACK (I) = (22 IN. + 24) x 3 x 0.8 (SLOPE CORR. FACTOR) = 110.4 IN.  
 DOWNSLOPE SETBACK (J) = (22 IN. + 21) x 3 x 1.32 (DOWNSLOPE CORR. FACTOR) = 170.3 IN.  
 TOTAL WIDTH OF MOUND (M) = 12(9) + 110.4 + 170.3 = 389.9 IN.  
 TOTAL LENGTH OF MOUND (L) = 12(56) + 151.5 + 171.1 = 975 IN.

SAND MOUND Plan View



Approved Septic System Plan  
 Howard County Health Department

Signature: [Signature] Date: 5/21/03



**NOTE:**  
 THE MOUND SITE MAY NOT BE COMPACTED OR DISTURBED BY EARTHMOVING OR OTHER EQUIPMENT. WORK MAY NOT BE DONE DURING WET WEATHER, DURING WET SOIL CONDITIONS, OR DURING FREEZING AND THAWING CONDITIONS.

CALL "MISS UTILITY" AT  
 1-800-257-7777  
 48 Hours Before Start of Construction

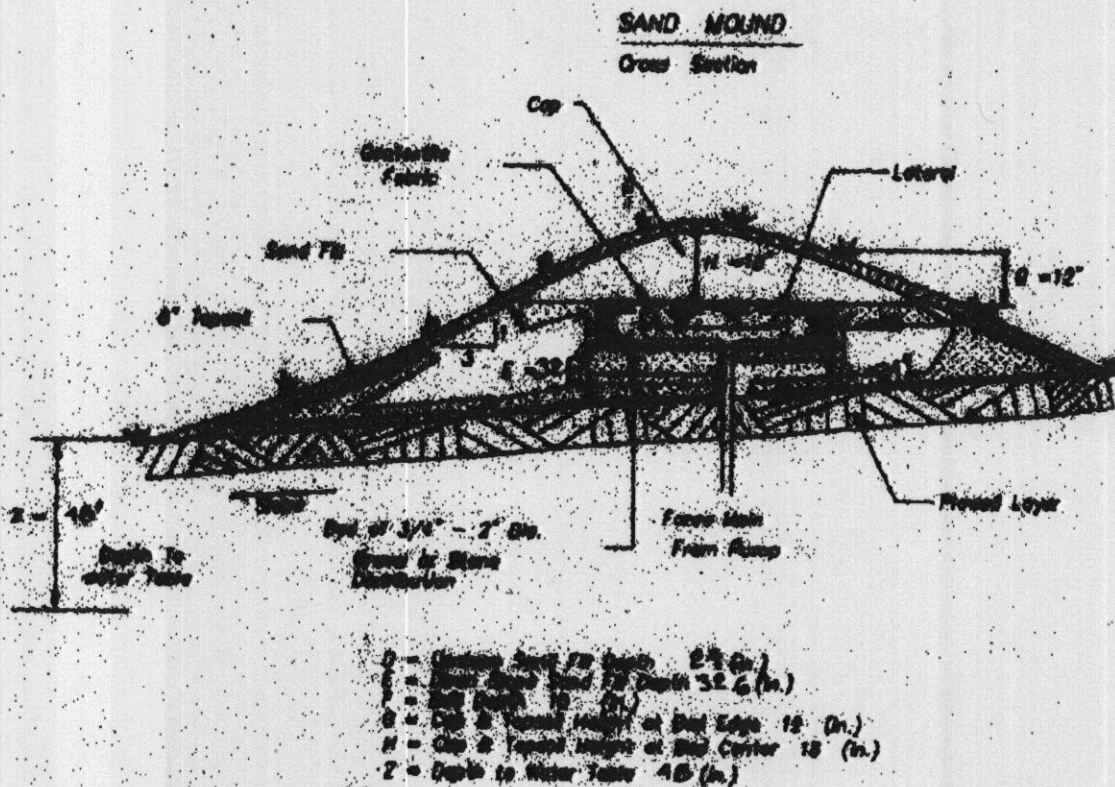
NO.	REVISIONS

**BATTA GOODE & ASSOCIATES, INC.**  
 ENGINEERS LAND PLANNERS SURVEYORS  
 400 PROFESSIONAL DRIVE, SUITE 440  
 GAITHERSBURG, MD 20879  
 TEL.: 301-417-0344  
 FAX.: 301-417-0329

**BG & A**

**B&A** Banning & Associates, Inc.  
 Land Planning Consultants  
 8833 Shady Grove Court  
 Gaithersburg, Md. 20877  
 (301) 948-0240

DESIGN BY: Cecily A.	SHEET: 2 of 2
DRAWN BY: Lewis J.	
CHECKED BY: Ram Batta	
DATE: August 2002	
SCALE: 1"=20'	



Attach to bldg permit  
approval (both sheets)

**EQUATIONS FOR CALCULATING SAND MOUND DIMENSIONS**

ABSORPTION BED FT. (A X B) = DESIGN FLOW = 500 ft.  
1.2 GPD / FT.

BED LENGTH (B) = 56 FT. (2" TO 10" DEPENDENT ON SIZING)

BED WIDTH (A) = BED 500 GPD = 9 FT. (8" OR LESS)  
56 FT.

UPPER SAND FILL DEPTH (D) = 48 IN. - 48 = 0 IN. (24 IN. MIN.)

DOWNER SAND FILL DEPTH (E) = (129) X 8% DEPTH = 24 IN. = 326 IN.

CAP + TOPSOIL AT BED CENTER (G) = 18 IN.

CAP + TOPSOIL AT BED EDGE (H) = 15 IN.

MIN. BED DEPTH (I) = 18 IN.

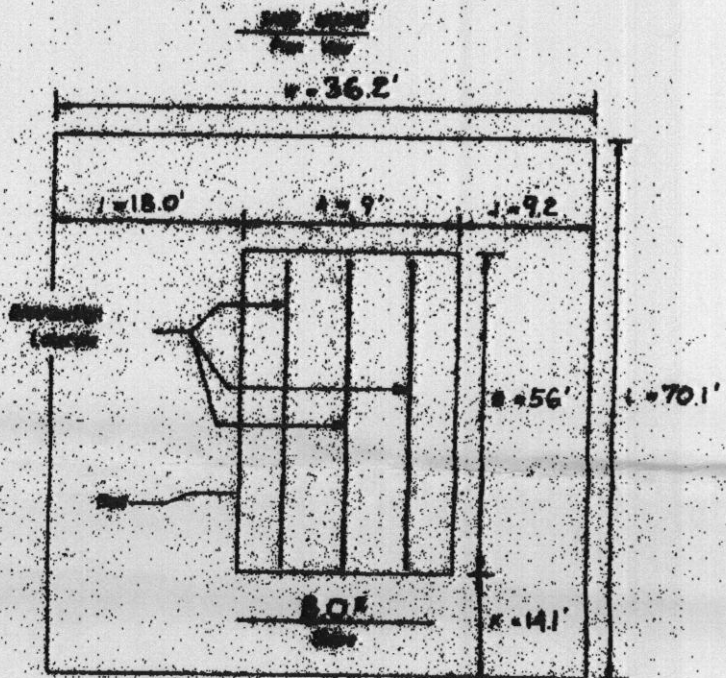
SLOPE SETBACK (J) = (24 + 32.6) + 20 IN. X 3.16228

UPPER SETBACK (K) = (24 IN. + 24) X 3 TO 5 (SLOPE SIDE FACING) = 110.4 IN.

DOWNER SETBACK (L) = (24 IN. + 32.6 IN. X 3) X 2 (OPPOSITE SIDE FACING) = 216.2 IN.

TOTAL WIDTH OF MOUND (M) = (29) X 110.4 IN. = 389 IN.

TOTAL LENGTH OF MOUND (N) = 564 IN. X 1.5 = 846 IN.



- A = Bed Width = 9'
- B = Bed Length = 56'
- C = Bed Depth = 18.1'
- D = Upper Sand Fill = 9.2'
- E = Downer Sand Fill = 18.0'
- F = Total Bed of Sand = 32.4'
- G = Total Length of Mound = 81.2'