N00164.AR.000031
NSWC CRANE
5090.3a

DEPARTMENT OF THE NAVY
NAVAL WEAPONS SUPPORT CENTER
CRANE, INDIANA 47522-5000

IN REPLY REFER TO:

5090/H1.4.3
0924

AUG 04 1989

United States Environmental Protection Agency
Region V
RCRA Permitting
Attn: Miss Carol Witt
230 South Dearborn Street
Chicago, IL 60604

Dear Miss Witt:

Enclosure (1) is Naval Weapons Support Center (NWSC) Crane's response to questions raised by Miss Carol Witt in a meeting with Mr. Jim Hunsicker on May 25, 1989, pertaining to the proposed tracer test for the Ammunition Burning Ground (ABG). The purpose of this test is to evaluate groundwater aquifers beneath the ABG.

NWSC Crane, at this time, does not see the need to evaluate or include the four springs located offsite in Sulphur Creek Valley in the proposed tracer test. This request is substantiated by information provided in the enclosure.

NWSC Crane point of contact is Mr. Jim Hunsicker, Code 0924, telephone 812-854-3114.

Sincerely,

M.L. FREY
Commander, CEC, USN
Public Works Officer
By direction of the
Commanding Officer

Encl:
(1) Installation of Additional Wells at ABG versus Tracer Testing of Offsite Springs

Copy to:
NORTHNAVFACENGCOM, Philadelphia (Code 14)
COMNAVSEASYSCOM (SEA-6541)

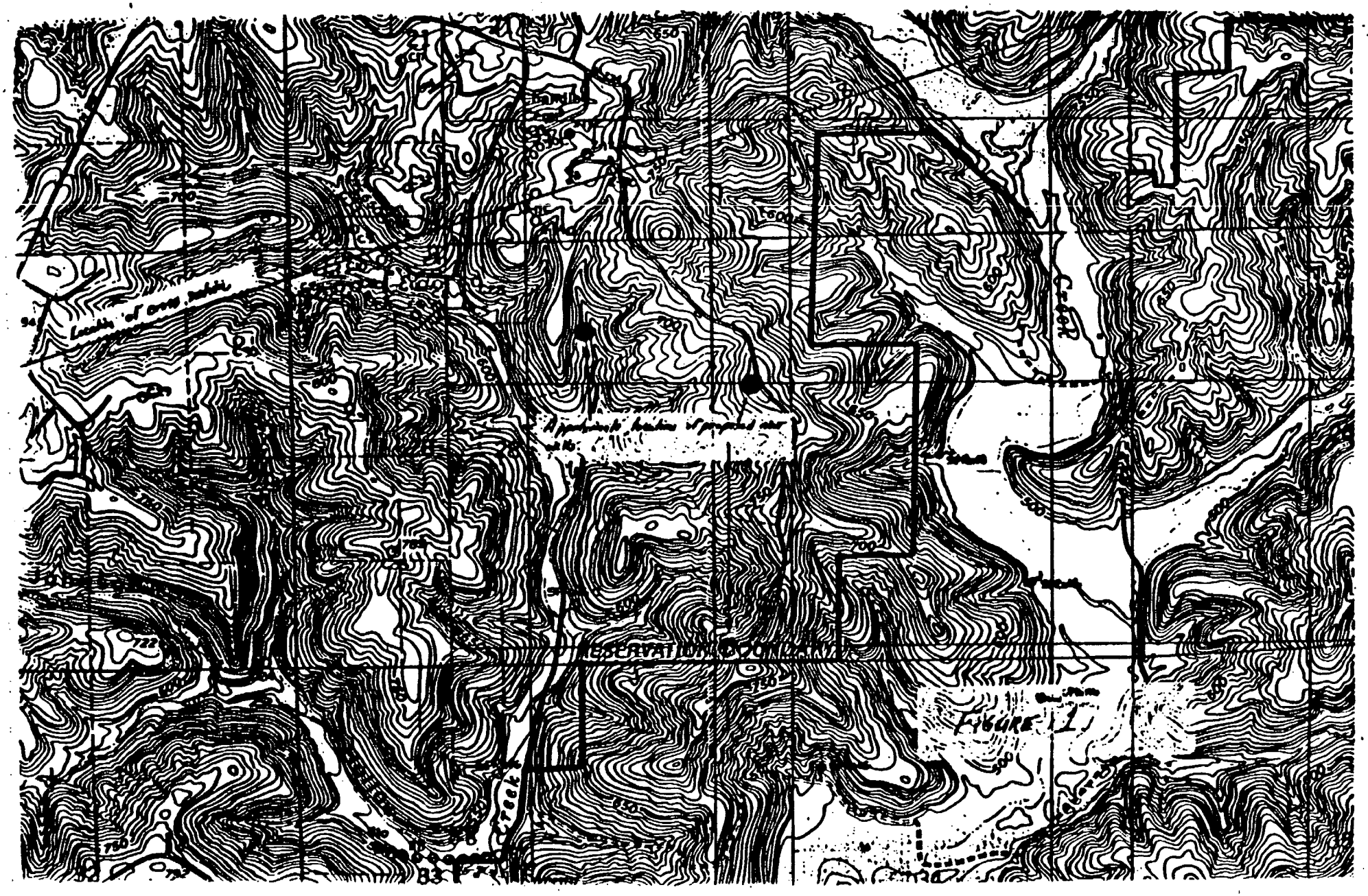
RECEIVED
AUG 15 1989
OFFICE OF RCRA
WASTE MANAGEMENT DIVISION
EPA, REGION V

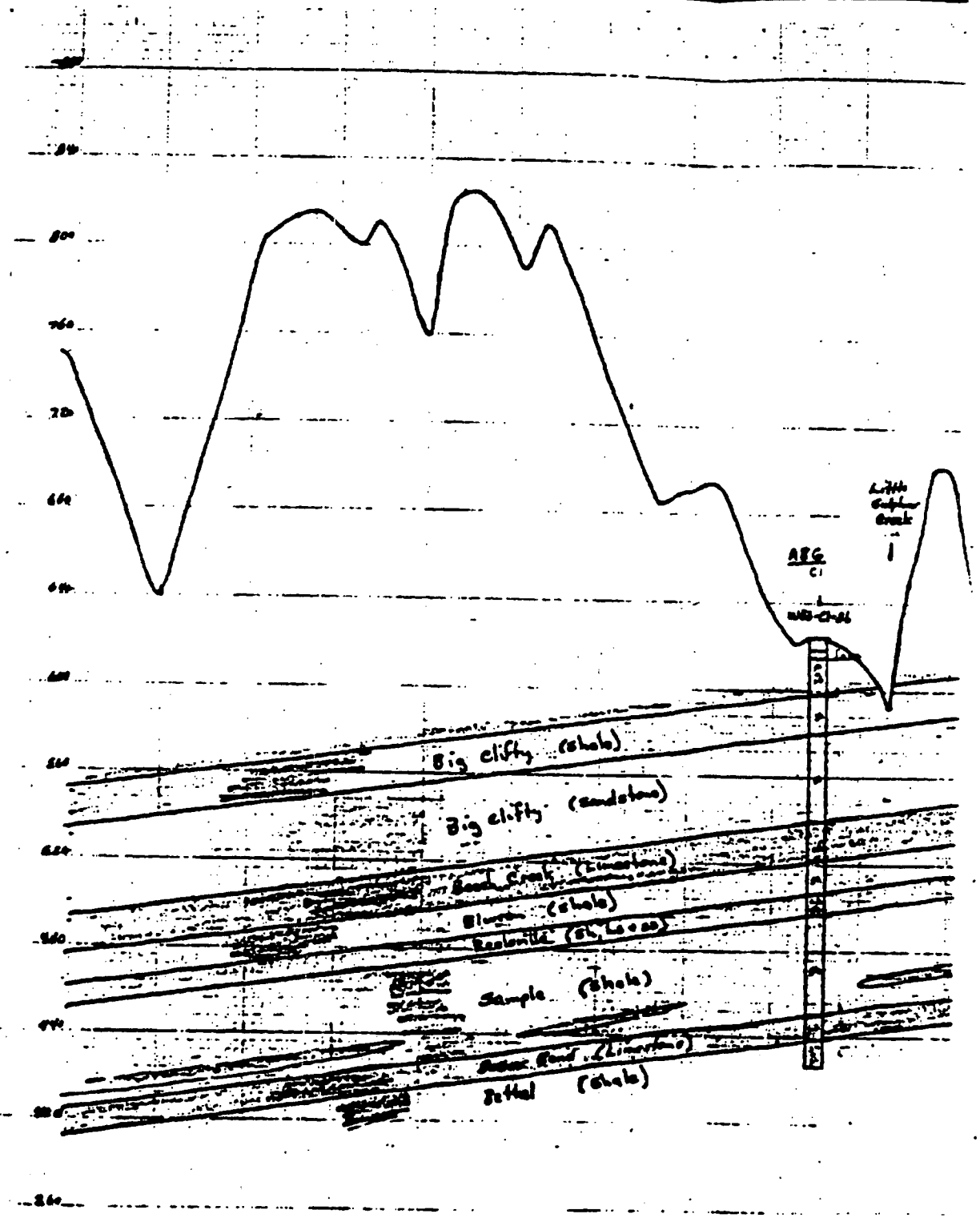
Installation of Additional Wells at ABG versus Tracer Testing of Offsite Springs

EPA suggested that the four springs located off-post in the valley of Sulphur Creek (see attached Figure 1) should be included in the tracer monitoring program. The WES field geologist determined earlier that the four springs in question emanate from the Beaver Bend aquifer, the deepest aquifer studied in the ABG ground water investigations. The Beaver Bend is separated from the Beech Creek limestone aquifer by about 70 feet of shaley rock which provides an effective aquiclude between the aquifers. Figure 2 is a geologic cross section aligned SW-NE through the ABG across Sulphur Creek. The section illustrates the vertical separation between the Beech Creek and Beaver Bend limestones. The tracer test is designed primarily to evaluate flow through the Beech Creek aquifer system. Therefore it is not considered necessary to monitor the off-post Beaver Bend springs at this time. It is prudent to evaluate the results of the tracer tests as proposed for the Beech Creek springs near the ABG before trying to trace flow at greater distances. If this first 'phase' proves successful, extension of the tracer tests to greater distances and deeper aquifers can be considered.

From discussions with the WES geologist on-site at Crane, we propose emplacing three additional wells in the Beech Creek aquifer east of Little Sulphur Creek and southeast of the ABG, between the ABG and the NWSC boundary to further monitor any flow in that direction. The additional wells will also better define the configuration of the piezometric surface and associated ground-water flow in the Beech Creek southwest of the ABG. Proposed additional well locations are indicated on Figure 1.

Another question concerned location of dye injection points at the ABG. EPA suggested injecting or emplacing the dye into 'swallow holes', areas where surface runoff in Little Sulphur Creek disappears into the subsurface within the ABG, rather than into wells penetrating the open conduits of the Beech Creek as we proposed. Dyes are susceptible to adsorption on fine-grained soils, such as those occurring in the bed of Little Sulphur Creek in the ABG. There is also approximately 40 ft of sandstone vertically between the ground surface and the Beech Creek and about 600 ft horizontally between the point where the stream goes underground and the open conduits of the Beech Creek (see Figures 3 and 4). It is likely that much of the dye would be adsorbed before reaching the open conduits and the tracer test would be aborted. We much prefer to inject the dyes directly into the conduit system through wells and flushing through the system with a large volume of water supplied by a tank truck as proposed.


Creek
Creek
Creek
RESERVATION BOUNDARY
Approximate location of proposed cover
Location of cover model
Hamilton
FIGURE 1


Big clifty (shale)
Big clifty (sandstone)
Sample (shale)
Bethel (shale)
ABG
C1

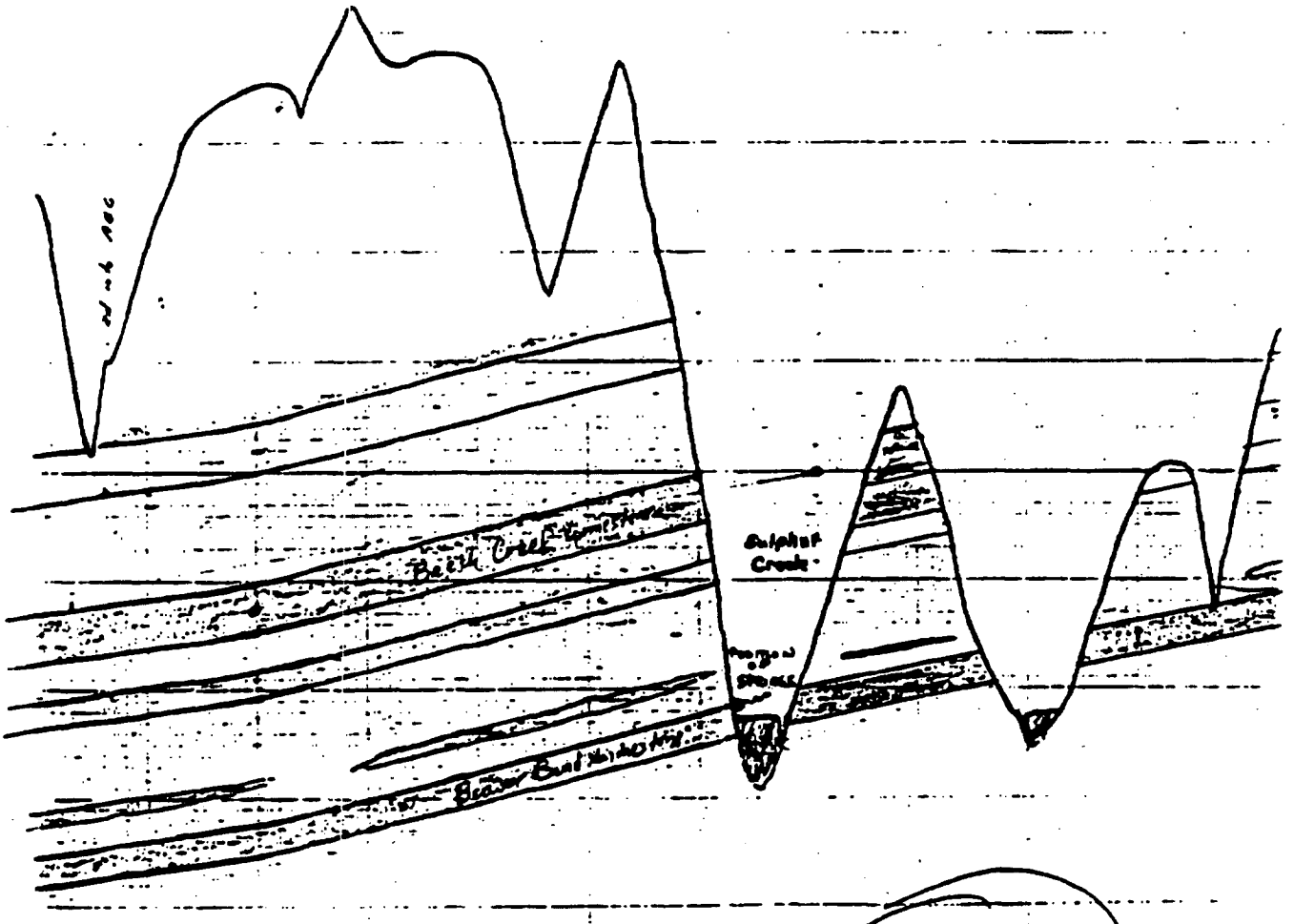


FIGURE 2

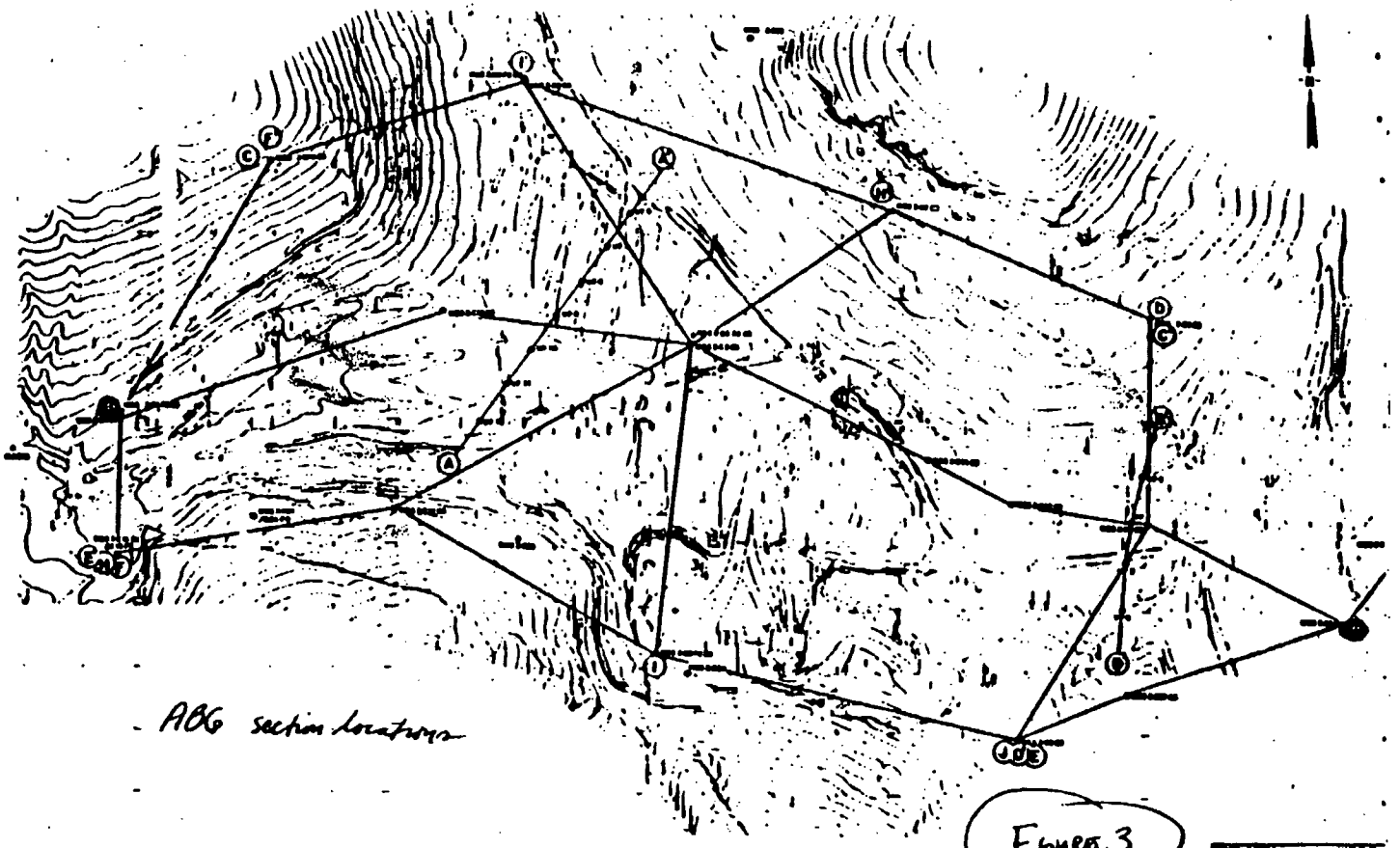
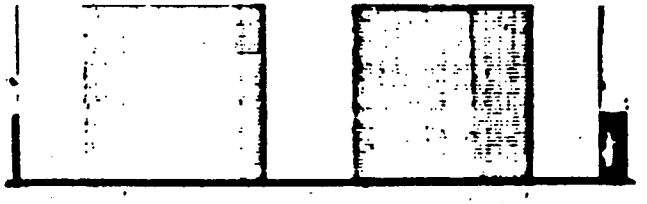


Figure 3

NOTE: SECTION C-C' THROUGH F'-F', PLATE 8
SECTION A-A' B-B' AND G-G' THROUGH J-J', PLATES 6, 7, 9-12 RESPECTIVELY.