



**OFFICE OF THE STATE ENGINEER**  
**DIVISION OF WATER RESOURCES**



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March 12, 1992

*2E801*

Mr. Scott Grace  
United States Department of Energy  
Rocky Flats Office  
P.O. Box 928  
Golden, CO 80402-0928

Dear Mr. Grace:

We have reviewed the document submitted entitled, "Public Health Risk Assessment, 881 Hillside Area (OU1), Technical Memorandum No. 6, Exposure Scenarios, Revision 3.0", dated March 1992. The purpose of our review was to specifically evaluate the findings presented in Appendix B, "Investigation and Simulation of Water Production Capabilities".

The basic conclusion of this appendix is that neither the shallow alluvial aquifer (Rocky Flats Alluvium) nor the underlying Arapahoe Aquifer is capable of producing sufficient water for even domestic purposes. This conclusion was derived from model simulation runs utilizing the USGS MODFLOW ground water flow simulation package. This conclusion is applied only to the 881 Hillside area.

While the basic input parameters are given in the appendix, actual model setup and output were not submitted. Basically, the parameters selected and presented in Table B-3 and Table B-4 appear to be reasonable with the exception of the specific yield value for the Arapahoe Aquifer. Based on previous work by the USGS and on researched funded by this office and the Colorado Water Conservation Board, the actual specific yield of the Arapahoe Aquifer ranges between 0.15 and 0.20. The simulation runs used a value of 0.30. The use of the higher value will result in more water being released from storage and a more rapid depletion. This will cause cells to "dry up" more quickly than they may in actuality. Although we suggest that the model be rerun with a specific yield of no more than 0.20, we do not feel that the result will significantly change the conclusion. It will change the length of time necessary to deplete cells.

Based on these comments, we feel that the conclusion that neither aquifer is a potential source for domestic water supplies in the 881 Hillside area is valid when considering future land use.

We would like to comment on several statements made in the document which are not necessarily correct and should be corrected prior to issuance of the final document.

ADMIN RECORD

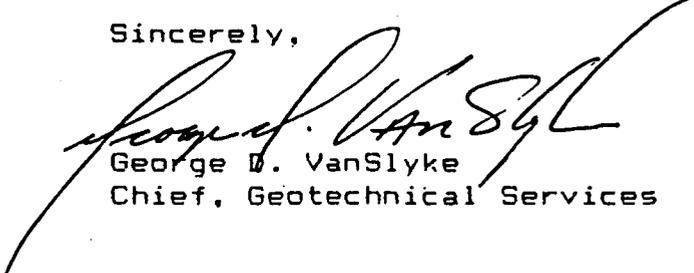
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1. Page B-5, Paragraph 4 -- This paragraph states that domestic wells drilled to the Laramie-Fox Hills Aquifer (500 to 700 feet) are not an economically viable alternative. This is not true. It is quite common in the Denver Basin for domestic wells to be drilled to depths in excess of 1000 feet. Therefore, Laramie-Fox Hills wells for domestic purposes are very likely in the future depending on the permitted land use.
2. Page B-8, last paragraph -- It is stated that well yields listed in Table B-5 are the maximum permissible pumping rates. Actually the rates listed for the domestic wells are those reported by the driller at the time the well was completed and actual permissible pumping rates may be either 15 gpm or 25 gpm depending on the year the well was permitted. It is true that the permissible rate is independent of the actual sustained yield. Permitted pumping rates for wells other than domestic and stock (permit numbers with the suffix "F") may also be different than either the maximum pumping rate or the sustained yield.
3. Page B-13; first paragraph -- Permitted well yields of less than 15 gpm do not necessarily mean that a well is limited to domestic or stock use.
4. Page B-17, last paragraph -- It is stated that the bedrock dips approximately 1 degree. However, Page 2 states that the dip is 2 degrees.

We hope that these comments are helpful. Should you have any questions please contact me at (303) 866-3585.

Sincerely,



George D. VanSlyke  
Chief, Geotechnical Services

cc: Hal Simpson, Acting State Engineer  
Gary Baughman, Colorado Department of Health, Rocky Flats Unit  
Ron Cattani, Executive Director's Office, CDNR ..

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OU1 881 Hillside

**Technical Arguments to Exclude  
Groundwater Ingestion from the BRA**

I Draft RFI/RI-BRA evaluates the potential for ingestion of GW and **concludes it is not viable** (hypothetical future scenario includes inhalation of vapors).

II Impact is that will be **no remedial action objectives developed (RAO's)** to remediate GW to ingestion levels.

- RAO's less stringent & more achievable
- No GW ingestion ARAR limits Agency enforcement

o Basis:

1) Followed EPA methodology (conservative) (attached Figure)

2) Hillside historically low yield.

a Physical feature (low conductivity and recharge)

b French Drain/collector well performance

c 27 of 57 wells dry (August)  
15 of 57 wells dry (April)

d 11 days to dry (Alluvium) @ 1.5 gpm  
67 days to dry (Sandstone) @ 1.5 gpm

e Actual yield: 0.03 to 0.05 gpm

f State Engineers Office: "the conclusion that neither aquifer is a potential source for domestic water supplies in the 881 Hillside area is valid when considering future land use" (Attached letter)

III Why dispute:

a Clear technical basis

b Likely to encounter similar situations on future OU's

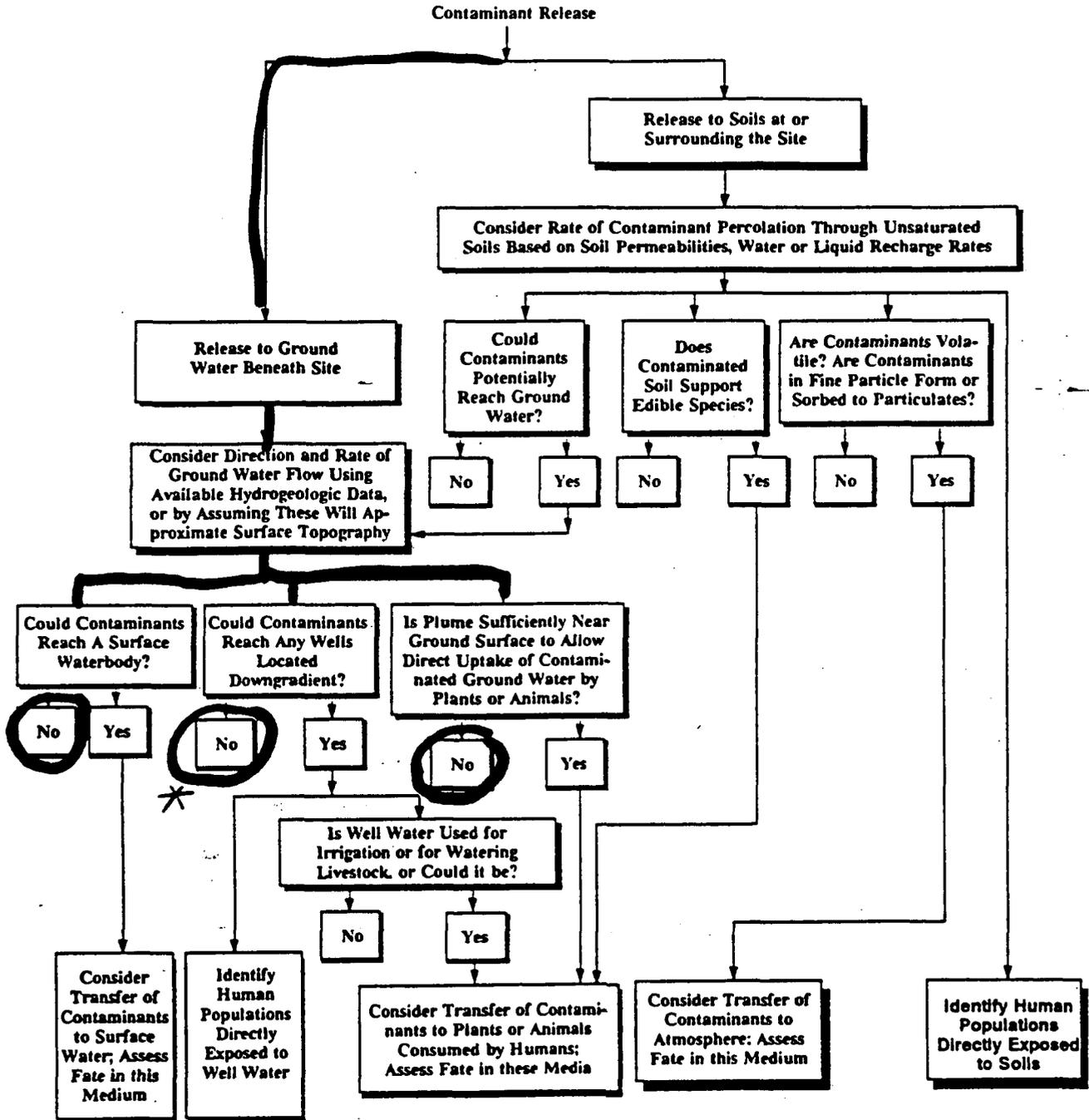
c Supports no future action for GW at 881 Hillside and possible nullify existing IRA. Early shutdown or reduced requirements.

d Permits program focus on more compelling problems

## EXHIBIT 6-6 (continued)

### FLOW CHART FOR FATE AND TRANSPORT ASSESSMENTS

Environmental fate and transport assessment: soils and ground water



Source: Adapted from EPA 1988b.

\* Well cannot supply water