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DRAFT GENERIC TECHNICAL POSITION ON GROUNDWATER TRAVEL TIME (GWTT)

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DWM TECHNICAL POSITION ON GROUNDWATER TRAVEL TIME

1.0 Introduction

One of the NRC performance objectives for High Level Waste repositories, commonly referred to as the "groundwater travel time (GWTT) objective", is stated in 10 CFR 60.113 (a)(2) as:

> "The geologic repository shall be located so that pre-waste-emplacement groundwater travel time along the fastest path of likely radionuclide travel from the disturbed zone to the accessible environment shall be at least 1000 years or such other time as may be approved or specified by the Commission."

The "disturbed zone" is defined in 10 CFR 60.2 as:

> "...that portion of the controlled area the physical or chemical properties of which have changed as a result of underground facility construction or as a result of heat generated by the emplaced radioactive wastes such that the resultant change of properties may have a significant effect on the performance of the geologic repository."

The "accessible environment" is defined in 10 CFR 60.2 as the atmosphere, land surface, surface water, oceans and the portion of the lithosphere that is outside of the controlled area. For purposes of this GTP, the "controlled area" is defined (consistent with the Final EPA high level waste rule 40 CFR 191) as extending no more than 5 kilometers from the original emplacement of the waste in the disposal system, with a maximum surface area of no more than 100 square kilometers. The disturbed zone, path and accessible environment are illustrated in Fig. 1.

The Disturbed Zone definition and groundwater travel time (GWTT) objective were established as part of a multiple barrier approach to high level waste isolation. The Disturbed Zone criterion is intended to prevent the reliance on only the zone directly adjacent to the engineered facility for the major portion of the geologic barrier protection, and to avoid the complication of consideration of coupled processes close to the emplaced High Level Waste when demonstrating compliance with the GWTT performance objective. The Disturbed Zone is being addressed by the NRC staff's Generic Technical Position which is presently under review. As the Commission stated when it proposed its technical criteria for licensing activities at geologic repositories (46 FR 35280, July

8, 1981), the GWTT objective should be viewed as a conceptually simple measure of the overall quality of the geologic setting.

It is generally agreed that groundwater is the most likely means by which significant quantities of radionuclides could escape a High Level Waste (HLW) repository. Transport of radionuclides to the biosphere then depend on factors which are directly related to the travel time of groundwater from the engineered facility to the environment. The 1000 year GWTT objective helps to assure that groundwater conditions are favorable, since a repository in compliance with the GWTT performance objective will be influenced by regional hydrogeologic processes (which are characterized by long travel times), rather than any local, relatively fast-moving groundwater.

The apparent conflict between the terms "pre-waste-emplacement" and "path of likely radionuclide travel" is recognized. The staff intended that the concept of pre-waste-emplacement groundwater travel time and "path of likely radionuclide travel" be interpreted to mean the paths which radionuclides would be likely to take if they were released from the disturbed zone under pre-waste-emplacement conditions.

Releases of radionuclides through groundwater pathways is limited by the three primary barriers:
(1) the integrity of the waste package and overpack;
(2) the ability of the groundwater to transport radionuclides, irrespective of geochemical effects; and
(3) the geochemical interaction of the radionuclide with the rock along the path of groundwater movement.
The present Position deals only with the second barrier.

1.1 <u>What is Groundwater Travel Time?</u>

Groundwater travel time was envisioned to be the time that it would take inert tracer particles released at the disturbed zone to reach the accessible environment under pre-waste-emplacement conditions. This travel time is often considered to be synonymous with the travel time T calculated by the average seepage velocity along the path s:

$$T = \int_{D.Z.}^{A.E.} \frac{U}{n_e}\, ds \qquad (1)$$

where A.E. = accessible environment,
D.Z. = disturbed zone,
U = the Darcy velocity along the path, and
n_e = the effective porosity

The term U/n_e is generally known as the seepage velocity, and is the apparent speed of the water in the open spaces in the rock. The travel time expressed by Eq. 1 however, may not be the same as the travel time based on the transport of an inert tracer. The bases for the differences are described below.

Transport of a non-decaying dissolved tracer in the groundwater can be expressed by a three-compartment model as shown in Fig. 2. The three compartments are; a) the mobile liquid phase (e.g., flow through connected pores and fractures), b) the immobile liquid phase (e.g., dead end pores) and c) the solid phase associated with the rock. This model can be succinctly represented by a material balance for the case of a dissolved tracer (Codell 1982):

$$n_e \frac{\partial C}{\partial t} + (n - n_e) \frac{\partial G}{\partial t} + (1 - n) \frac{\partial Q}{\partial t} = n_e \operatorname{div} (\underline{D} \operatorname{grad} C - \underline{U} C) \qquad (2)$$
$$+ n_e \lambda C + (n - n_e) \lambda G + (1 - n) \lambda Q$$

where C = the concentration in the mobile liquid phase,
Q = the concentration in the solid phase,
G = the concentration in the immobile liquid phase,
n = the total porosity of the rock,
n_e = the porosity of the rock in which the mobile water flows,
$\underline{D}$ = the dispersivity tensor representing molecular diffusion and mechanical dispersion in the liquid phase,
$\underline{U}$ = the seepage velocity vector
λ = the decay rate

Diffusion in the liquid phase is caused by the random motion of the water and solute molecules. Dispersion in the liquid phase is caused by deviations from the mean velocity vector $\underline{U}$. Diffusion and dispersion alone cause a spread in the travel time predicted from Eq. 1.

Another, potentially more important mechanism which could lead to the spread in predicted travel time is the partitioning of the tracer between the three compartments. The mobile liquid phase occupies a portion of the rock, n_e, usually known as the "effective porosity" (although this term is somewhat ambiguous). The immobile phase occupies the fraction $(n - n_e)$ of the rock. The solid phase occupies the fraction $(1 - n)$ of the rock. The relationship between the three compartments is key to understanding the movement of the tracer through the groundwater. An often-used simplification of the equation is to assume that the concentration of the constituent in all three compartments is in equilibrium, and that the solid phase concentration is related to the liquid phase concentration by a constant:

should spell out which constant in the following equation.

$$Q = KC \tag{3}$$

where

$$K = \frac{n - n_e}{1 - n_e} + \frac{1 - n}{1 - n_e} K_d R_s \tag{4}$$

K_d = the distribution coefficient, ml/gm, and
R_s = the real specific gravity, gm/ml.

In this case, a commonly used form of the transport equation can be derived

$$R_d \frac{\partial C}{\partial t} = \text{Div} (\underline{D} \text{ Grad } \underline{C} - \underline{U}C) + R_d \lambda C \tag{5}$$

Where R_d is the retardation coefficient, which expresses the velocity at which the tracer is being transported relative to the average seepage velocity:

$$R_d = \frac{n}{n_e} + \frac{n}{n_e} K_d \tag{6}$$

For a non-sorbing dissolved tracer, K_d would be zero. Note that the retardation coefficient for this case is not equal to unity, as is often considered to be the case; ~~but~~ it is always equal to or greater than unity. This deduction reflects the assumption stated above that the mobile and immobile phases are in equilibrium. Actually, the concentration of an inert tracer in the immobile phase can only approach and not reach equilibrium with the mobile water. This equilibrium is limited by the rate of transport between the phases, and depends on a number of factors, including the conditions under which the tracer is moving and the diffusion coefficient of the tracer in the water. In other words, if GWTT is supposed to represent the travel time of inert tracer molecules from their points of release along the disturbed zone to the accessible environment, then the diffusive properties of the tracer are important. Processes that control the transport of tracer between the mobile and immobile water phases ~~are usually~~ have been called "matrix diffusion" (Blencoe and Grisak, 1984).

If transport between the mobile and immobile phases is insignificant, R_d would approach unity and the GWTT could be based on the average seepage velocity of groundwater along the path, T, as determined from Eq.1. Conversely, if transport between the immobile and mobile phases is relatively fast, then the retardation factor R_d would approach n/n_e, and the GWTT would be greater than T.

Dick - I think this paragraph spells out very well the concept you were getting at in the ~~last~~ previous version of your paper.

Tracer particles considerably larger than molecules will not exhibit the same diffusive behavior as molecular tracers, and will be transported at a speed more typical of the average groundwater seepage velocity. The difference between the apparent velocity of a diffusive tracer and the apparent velocity of a non-diffusive tracer can be dramatic. For example, Cathles (1974) described a dual tracer experiment in a fractured granitic rock, where the GWTT for a non-diffusive tracer (0.5 micron silica spheres) was up to three orders of magnitude greater than that for a non-reactive diffusive tracer (salt water). The effect of matrix diffusion is probably most significant in media with high matrix permeability, especially where groundwater movement is very slow (Blencoe and Grisak, 1984).

Dick. We should come up with another term here. Diffusivity has another meaning in the groundwater literature. Talk about diffusion coefficient

It should be noted that the tracer does not cause matrix diffusion. The process proceeds because of Brownian motion of the molecules. Both the tracer and water molecules are diffusing. The magnitude of the diffusive flux in the matrix is proportional to the diffusivity of the molecule raised to a power less than 1. Diffusivity is an intrinsic property of the solute molecule in the solvent (e.g., water). The self-diffusivity of water is estimated to be 2.7E-5 cm^2/sec. The diffusivity of nearly any molecular or ionic solute is well within an order of magnitude of this value. Many common electrolytes such as chloride are within a factor of 2. Therefore, the effect of diffusivity on water must be fairly close to that of most common dissolved tracers. This is an important point, because in a situation where matrix diffusion is an important factor in the transport of a tracer, it would also be important in the transport of the water. In other words, the GWTT based on Eq. 1 does not necessarily account for the fact that the water arriving at the accessible environment is not all the same water leaving the disturbed zone, but may contain an amount of water exchanged with the immobile water along the pathway. This fact tends to support the notion that diffusion can rightfully be included into the concept of GWTT, even though the inclusion of diffusion effects may preclude the isolation of the absolute "fastest path" groundwater travel time.

Dick Can we add this? Or is it too strong

Molecular diffusivity decreases with ~~the~~ increasing size of the tracer particle. In the case of the 0.5 micron silica spheres in the tracer experiment of Cathles (1974), diffusivity can be estimated to be roughly 1.0E-8 cm^2/sec (CRC 1986), which is three orders of magnitude less than the diffusivity of molecular tracers. It is not therefore suprising that this tracer was not affected by diffusion into the matrix.

It can be argued that the effect of diffusion into the matrix is taken into account in Eq. 1 through the effective porosity term, since n_e is usually determined by means of a tracer experiments. Measurements of the effective porosity are difficult, however, and dependent on the experimental procedures and tracers used. For example, the effective porosity determined by a tracer test in a well ~~might~~ may be sensitive to the rate at which the groundwater is

moving. If the test is being conducted under conditions where the velocity has been increased, such as in a two well test, the tracer might not diffuse into the matrix to the same extent that it would under unpumped conditions, thereby underestimating the effective porosity. Although usually represented as a scalar quantity, effective porosity appears to be a tensor (i.e., directed) quantity in some geologic media (Endo and Long, 1984).

The radically different behavior of diffusing and non-diffusing tracers in some media makes interpretation of the GWTT position somewhat of a dilemma. While the staff intended the definition of GWTT to be the travel time for non-reactive tracers, the effect of tracer diffusion was not widely recognized.

The consensus in the geohydrologic community is that GWTT should be based on the average seepage velocity and should not consider matrix diffusion. There are several factors which tend to support this point of view:

- The apparent retardation caused by matrix diffusion is conservatively neglected if it is assumed that the tracer particles travel with the mean seepage velocity, except to the extent that tracer diffusion was a factor in the determination of the effective porosity.

- Transport of particulate or colloidal radionuclides would not be affected significantly by matrix diffusion. These larger particles would travel close to the average seepage velocity, if not affected by mechanisms such as sorption. In addition, phenomena such as anion exclusion can reduce the ability of certain dissolved species to diffuse into small pore spaces, thereby reducing the importance of matrix diffusion.

- The mechanisms of matrix diffusion are difficult to measure in the field. Without direct measurements of this phenomenon, estimates of the effect of matrix diffusion would have to be based on mathematical models which are largely untested, using parameters which are difficult or impossible to substantiate.

On the basis of the above points, and in keeping with the Commission's stated position that GWTT should be a simple measure of the overall quality of the repository, the staff will proceed with the understanding that GWTT is based on the travel time of non-diffusive, inert tracer particles which move with the seepage velocity, and encourages the applicant to follow this approach. Groundwater travel time could also be interpreted to consider the exchange of flowing and immobile water by diffusion. The staff would entertain arguments for travel times based on inert, diffusing tracers if ample justification is provided. Alternatively, such arguments for matrix diffusion might be used to

support the satisfaction of the GWTT performance objective in the case where the GWTT based on the average seepage velocity is calculated to be less than 1000 years.

Dick nice job!! Roy

The staff has endeavored to present in this Technical Position a workable definition of the pre-waste-emplacement groundwater travel time objective to be used for HLW repository licensing. The definition will assist the staff in evaluating compliance of a specific site with the performance objectives of 10 CFR 60. This Technical Position is however intended to ~~be~~ constitute guidance only. It reflects the Staff's interpretation ~~of the~~ GWTT objective, but does not prevent the Applicant or others from advancing alternative interpretations. This GTP is not intended to be a prescriptive guide to conducting field tests. Such guidance is beyond the scope of this document. It is instead a guide to defining the GWTT objective, and presenting the results in a defensible manner.

2.0 Interpretation of GWTT Objective

Compliance with the GWTT objective in 10 CFR 60.113 (a) (2) requires carrying out the following steps:

- Properly identifying and considering the pre-waste-emplacement environment and its potential spatial and short-term temporal variabilities;
- Identifying the fastest path of likely radionuclide travel; and
- Calculating the appropriate travel time along this path.

2.1 Pre-Waste-Emplacement Environment

Pre-waste-emplacement pertains to conditions which exist prior to significant disturbance of the geological or hydrological setting by construction or major testing activities capable of seriously disturbing the geologic setting. Restriction of the GWTT requirement to pre-disturbance conditions is in accord with the original intent of 10 CFR 60 to establish a straightforward criterion which is easily defined and determined. The present position does not deny the importance of post-waste-emplacement effects. Evaluation of groundwater and radionuclide movement under post-waste-emplacement conditions will be required as part of the demonstration of overall compliance of the repository with the EPA standards (40 CFR 191) as implemented by NRC.

The site must be characterized and understood to the extent that the fastest path of radionuclide travel (Section 2.2) can be identified and the ground water travel time (Section 2.3) can be determined. The determination of GWTT will be for present day environmental conditions only. Short-term changes to

the environment, (e.g., tens of years) which can be reasonably inferred from records in the vicinity of the site, such as cycles of wet and dry years, local flooding, changes in groundwater and surface water use and irrigation practices, and any other factors that may alter hydraulic heads should be factored into the conceptual model for determining GWTT. Groundwater systems which have been demonstrated to exhibit significant transient behavior for the period of record may have to be modeled in a time-dependent rather than a steady-state manner to demonstrate compliance with the GWTT requirement. The determinations do not have to take into account the long-term projections (e.g., thousands of years) of changes to the physical setting of the repository, such as earthquakes, changes to global climate, major changes to surface morphology or use of groundwater and land. If present-day conditions have varied markedly over the period of record, the investigator must question whether inappropriate credit is being taken for excessive groundwater travel times caused by these variations. For example, if a cone of depression has formed as a result of large groundwater withdrawals, it could reduce or even reverse the direction of an unfavorable hydraulic gradient. In this case, it would be prudent to consider the effects of an otherwise-likely hydraulic gradient corrected for the effect of the cone of depression. The rationale behind this philosophy is to avoid the appearance of taking credit for processes for which there could be no assurances of long-term reliability, e.g., continued groundwater withdrawals maintaining the favorable gradient.

2.2 Identification of fastest path of likely radionuclide travel

The paths from the disturbed zone to the accessible environment are to be described in a macroscopic sense; e.g., aquifers. In crystalline rocks, paths ~~may~~ probably will consist of fractured, weathered or brecciated zones. In porous media, paths will generally consist of layers of permeable rock. Paths may also consist of fractured zones in consolidated non-crystalline rocks. Several examples of paths for generic repositories are covered in Appendix B.

~~There may be~~ several alternative conceptual models for ~~the~~ a repository site may be proposed, each of which might determine a different path for radionuclide transport. For example, borehole information in a saturated zone might indicate the presence of permeable zones, but the investigator may be unable to determine whether or not these zones were connected in such a way that they constitute a path. Such information could only be gathered by ~~cross-hole~~ multiple well tests on the length scale of the order of the dimensions of concern (e.g., hundreds to thousands of meters). The analysis of GWTT therefore should consider all paths for radionuclide transport defined by alternative conceptual models, unless they can clearly be demonstrated to be unlikely, preferably through direct measurements of hydrogeologic properties of the site. Data collection must be focused on identifying and quantifying paths so that there ~~is~~ a high degree of confidence is provided

sich - cross hole tests have another meaning. PB

that potentially faster paths have not been overlooked. Selection of the proper drill and test program for the conceptual model is a key element in the process.

Dick - Shouldn't we say cumulative frequency distribution. Can we really be sure it is a probability distribution? The curves are the same

2.3 Groundwater Travel Time along the Fastest Path

Groundwater travel time as envisioned in this position paper (?) is a distributed variable rather than a fixed quantity. It ~~will~~ can be quantified as a cumulative probability distribution of the times of travel for inert tracer particles from the disturbed zone to the accessible environment along the thousand macroscopic paths. ~~There are~~ Several reasons for the distributed nature of the groundwater travel time are:

- Uncertainty - Measurement error or sparseness of data necessary to characterize the site adds uncertainty to the travel time estimates for the tracer particles. Site data must always be collected and interpreted in terms of a conceptual model. An invalid conceptual model will lead to an incorrect interpretation of the data. Drilling a well to an improper depth relative to a valid conceptual model or performing an inappropriate test are typical of common errors in measuring and interpreting field data. Such errors enhance uncertainty in groundwater travel time.

- Distributed source - The disturbed zone and accessible environment are defined as surfaces rather than points. Tracer particles released at different points along the disturbed zone ~~will~~ may reach the accessible environment at different times.

- Spatial variability of the properties of the medium (e.g., non-uniform thickness of hydrostratigraphic units, ~~intergranular~~ hydraulic conductivity or porosity).

- Temporal variability - Hydrologic and hydrogeologic data within recorded history of the site might indicate that the groundwater velocities are fluctuating. Temporal variations over the time period of concern are not expected to be an important consideration on the regional scale for saturated flows. These variations might be important at sites built in unsaturated media, however. For example, it is conceivable that a period of unusually heavy precipitation for several years (unrelated to a global climatic change) could increase hydraulic heads, decreasing travel times along a normally slow pathway. A transient GWTT should be weighted according to its frequency and duration. In addition, a path which changes direction or length over time as a result of variable fluxes of groundwater should be considered to be a single path for the purposes of GWTT calculations. This allows the low probability, fast GWTT's to be fairly weighed with the high probability, slow GWTT's.

The estimation of GWTT must accommodate spatial variability, temporal variability and uncertainty. GWTT can be presented as a distribution for each of the paths in terms of a Cumulative Distribution Function (CDF), an example of which is shown in Fig. 3. This CDF will combine all spatial variability, temporal variability and uncertainty of the GWTT into a single curve for each of the paths. The CDF itself however is assumed to contain no uncertainty. It is important to note that the CDF does not deny the existence of uncertainty, but that all uncertainty is incorporated into the CDF. Spatial and temporal variability and uncertainty can theoretically be treated separately, but grouping them both into a single CDF has the advantage of simplicity. Compliance with the 1000 year objective would be demonstrated if it could be shown that any tracer particle leaving the disturbed zone has a (100-X)% or greater probability of arriving at the accessible environment in a time greater than 1000 years, where X is a small number. The basis for choice of X% is presented in Section 2.4. The 15th percentile is shown in the figures for illustrative purposes only.

Overall, the identification of likely paths and reliable estimation of GWTT is strongly dependent on the adequate characterization of the hydrogeologic conditions between the disturbed zone and the accessible environment. Conceptualizations of paths will likely be simple during the early reconnaissance phase of site characterization. Continued characterization activities will produce more detailed and realistic conceptualizations of hydro-stratigraphy and geologic structure, which will lead to improved estimates of GWTT. One of the goals of field experiments is to narrow the GWTT distribution by eliminating as much of the uncertainty as possible; i.e., increase the steepness of the CDF. The criterion discussed in section 2.4 is sensitive to the steepness of the GWTT distribution, thereby providing an incentive to reduce uncertainty. Further discussion of the concept of GWTT and procedures for its calculation are presented in Appendix A.

2.4 Rationale for Choice of the Percentile of the Cumulative Distribution Function (CDF)

In applying 10 CFR 60.113(a)(2), the staff recognizes that groundwater travel time along the paths defined for each conceptual model can be represented by the Cumulative Distribution Function (CDF) rather than a single value, because of uncertainty in understanding the hydrogeology of the site, measurement errors, temporal variations in flow, multiple particle trajectories and a spatially-distributed source. (A single-valued GWTT determined from conservative models and coefficients would also be acceptable to demonstrate compliance with the GWTT objective). Uncertainties in estimating these phenomena are expected to cause the GWTT distribution to span as much as

several orders of magnitude. Phenomena leading to the distributed nature of the predicted GWTT are elaborated in Appendix A.

It is difficult to deal directly in terms of a distribution when stating performance criteria. It is often useful instead to specify a scalar norm of the distribution; e.g., the mean, median, or some percentile of the CDF. The "first particle" approach is a norm based on the zeroeth percentile of the CDF. This approach has a certain appeal because the travel time of the first particle is obviously the "fastest". There are some serious shortcomings to this approach, however. Consider for example the two curves shown in Fig. 4 which represent the cumulative distribution of GWTT for two sites. In this example, further consider that both sites are perfectly characterized, and that any variations in travel time are due to spatial variability of the medium or the distributed nature of the accessible environment and disturbed zone. These curves could represent breakthrough curves from tracer experiments at the sites. In Case 1, the distribution indicates a single groundwater travel time, t'. In case 2, there is a distribution of travel times with a minimum of t'. A zero percentile criterion would treat both cases as equals, whereas case 2 is obviously superior in terms of post-emplacement repository performance, if all other things are considered equal. The choice of a higher percentile would distinguish between Cases 1 and 2 and give credit to case 2.

"Dick - I realize that "repository performance" by definition means post emplacement but I think we ought to add it to make sure the reader doesn't become confused. —Ron

A choice for the percentile which is too high, say the median, would be undesirable because it may be insensitive to the variance of the GWTT distribution. This concept can be demonstrated for the hypothetical example depicted in Fig. 5. The two CDF curves of GWTT in this figure have the same median of 1000 years, but different variances. They may, for example, represent different sites. The curves may also represent a single site for which the data have no experimental bias, but at different points in the site characterization process. Under the median GWTT criterion, sites which exhibit a wide variance of the travel time distribution for reasons such as great spatial variability, an inadequate conceptual model, inadequate drill and test plan, or measurement uncertainty, would be treated as equals. A smaller percentile justifiably favors the site which has the smaller variance in the GWTT distribution. If the wider variance is due to quantifiable uncertainty (e.g., lack of data), the smaller percentile would serve as an incentive to further characterize the site. A smaller percentile favors the site which has the smaller variance in the GWTT distribution.

The percentile for the CDF as the criterion for GWTT is presently unspecified but the rationale from the above two examples suggests that a value greater than a few percent and considerably less than 50% would be desirable. The determination of the percentile for the GWTT criterion should also be based on considerations of "reasonable assurance". Licensing considerations to be made

in connection with GWTT involve substantial uncertainties, ~~many~~ some of which are unquantifiable (e.g., those pertaining to the correctness of the models used to evaluate GWTT). Such uncertainties can be accommodated within the licensing process only if a qualitative test such as reasonable assurance is applied for the level of confidence that the numerical performance objective is expected to achieve. Both the quantifiable uncertainties incorporated in the GWTT distribution and the unquantifiable uncertainties which are not included must be considered together in reaching a finding of reasonable assurance. It might, for example, be proper to select a different percentile criterion for a relatively well-understood, easily modeled site, where unquantifiable uncertainties are small, than would be appropriate for a site with larger unquantifiable uncertainties. Stated another way, selection of the percentile criterion is a qualitative judgement, ~~and~~ is part of a larger set of judgements necessary to reach a finding of reasonable assurance that the performance objectives will be achieved.

~~Note that~~ The applicant is not required to generate a detailed CDF of the GWTT distribution. A simplified approach would be acceptable, provided that achievement of the 1000 year GWTT objective could be demonstrated with reasonable assurance. Such a simplified approach could for example, define a conservatively short path along which the travel time of a single particle could be calculated using Darcy's law with conservatively chosen coefficients of hydraulic conductivity, gradient and effective porosity.

2.5 Special Considerations for Unsaturated Media

Groundwater movement through unsaturated media for pre-waste-emplacement conditions differs from that of saturated media in a number of important ways:

1. In a medium unaffected by boundaries, the gradient and therefore the direction of unsaturated flow is predominantly vertical (confining features such as aquicludes, faults and dikes complicate this general picture). Saturated flow is primarily horizontal, except in areas of recharge or discharge.

2. Unsaturated flow tends to be more responsive to episodes of recharge than saturated flow.

3. Unsaturated flow parameters are highly nonlinear, and depend on the degree of saturation of the medium. This nonlinear dependence could also lead to changes in the flow trajectories for differing levels of saturation, e.g., saturation of fractures or creation of a perched water table.

Dick - Could be over a period of days

The transient nature of flow in the unsaturated zone causes a certain difficulty in defining groundwater travel time. ~~There is~~ a conceptually important distinction between an episodic recharge event in an unsaturated medium and nearly-steady groundwater flow in a saturated medium. Even though ~~there may normally be~~ little downward flow through an unsaturated medium, it is conceivable that unusually heavy precipitation over ~~a period of years~~ could lead to short travel times during ~~that~~ period, at least through the unsaturated portion of the medium. The definition of GWTT as a cumulative distribution function allows the low probability, short travel time events to be fairly weighted with more-typical travel times.

Travel times would be weighted according to the intensity, frequency and duration of the event. The travel time distribution could be estimated, for example, from a transient groundwater flow analysis, coupled with the transport of hypothetical tracer particles released at constant time intervals at points along the disturbed zone. The cumulative distribution in this case would incorporate time variability of recharge, as well as the spatial and temporal variability in path lengths. It should be noted however, that the ~~estimation~~ measurement of parameters for unsaturated systems is considerably more difficult than for saturated flow, ~~and~~ may impose increased conservatism on the uncertainty analysis.

3.0 Summary and Statement of Regulatory Position

3.1 Summary

Groundwater travel time is a measure of the merit of the geologic setting of a high level waste repository. The Staff recognizes that ~~there may be~~ alternative conceptual models of the site because of the inability to completely characterize it with the available data. This inability may lead to a multiplicity of potential paths for likely radionuclide travel. The groundwater travel time along the paths will be a distributed quantity because of spatial variability, temporal variability, the distributed nature of the disturbed zone and accessible environment, and model or data uncertainty. Groundwater travel time should therefore be represented as a cumulative ~~to~~ frequency probability distribution, although a single-valued GWTT would be acceptable if it were derived from appropriately conservative models and coefficients. The "pre-waste-emplacement groundwater travel time along the fastest path of likely radionuclide travel" should be represented as a percentile of all travel times contained in the Cumulative Distribution Function for each of the potential paths identified. Pre-waste-emplacement pertains to conditions at the site prior to any significant disturbance of the hydrological or geological setting such as construction activities or the effects of radioactive waste, and whose spatial and temporal variability can be reasonably inferred from historical

records at or near the site. Testing activities capable of altering the pre-waste-emplacement environment should be taken into consideration. The analysis must take into account any information pertaining to preferential points of release from the Disturbed Zone, and consider reasonably likely conceptual models which might lead to transport through other paths.

3.2 Statement of Position

It is the staff's position that in demonstrating compliance with groundwater travel time performance objective of 10 CFR 60.113, DOE should ~~do the~~ proceed as following:

1. Determine the paths of likely radionuclide travel for the site as described in Section 2.2 and Appendix B.

2. For each of the paths, determine the pre-emplacement groundwater travel time as described in Section 2.3 and Appendix A.

3. Select the fastest such travel time so determined.

Appendix A - Calculation of the Groundwater Travel Time (GWTT)

A.0 Introduction

This section ~~gives~~ provides guidance on how to calculate the GWTT distributions for each of the identified macroscopic paths defined by conceptual models considered. Section A.1 describes the utility of hypothetical tracer particles and uses the concept to illustrate why there would be a distribution of travel times rather than a single value.

Section A.2 describes several mathematical modeling schemes which could be used to calculate the GWTT distribution. Section A.3 discusses the various methods for estimating parameters, quantifying their uncertainties, and choosing the input for the mathematical models on the basis of the available data. Section A.4 discusses a particular approach to calculating the GWTT distribution by applying a Monte Carlo sampling scheme to a deterministic mathematical model.

Finally, Section A.5 describes how simplified analyses may be used in some cases to satisfy the GWTT performance objective without having to resort to complicated analyses.

A.1 Travel Time Distributions

Dick - Don't you want to say tracers? (Pre emplacement)

It is useful in subsequent discussions to think of ~~the~~ released radionuclides as consisting of discreet particles, although it should be recognized that these are figurative rather than real. A single "particle" leaving the disturbed zone would generally follow the path traced by the moving groundwater, except for phenomena such as molecular diffusion and chemical interaction. Molecular diffusion would cause random motion to be added to the trajectory of the particle, allowing it to move into areas such as pores with little or no net flow. Chemical interaction with the surrounding rock would cause the radionuclide particle to leave the groundwater and become fixed temporarily or permanently in or on the surface of the rock. Because of a consensus in the geohydrologic community that the GWTT should be calculated using the average pore velocity, we restrict all subsequent discussion in this Technical Position to transport of the tracer by this velocity, without considerations of molecular diffusion or geochemical effects. Geochemical effects are covered in another regulatory position (Bradbury et.al., 1985).

This term is about out of nowadays hydrogeologic

Along any "path" as defined in Section 2.2 and Appendix B, ~~there will be~~ natural spatial variability in the properties of the medium, e.g. porosity, hydraulic conductivity. The tracer particles moving in the groundwater will follow trajectories governed by the hydraulic properties of the medium and the driving forces at their location. The more uniform the medium, the more

?

parallel will be the trajectory of the tracer particles. Conversely, the tracer particles in a heterogeneous medium may diverge from their neighbors for certain types of heterogeneity, following trajectories of least resistance which are not necessarily the shortest trajectories. Travel time distribution caused by non-uniformity of the medium is generally known as mechanical dispersion.

Unsaturated media are somewhat more complicated than saturated media. Not only the speed but the trajectory of tracer particles could change with time as a result of a change in boundary conditions or flow parameters in the unsaturated case. For example, in a fractured porous medium, conditions of high infiltration could cause certain fractures to fill with water and establish paths not present during periods of lower infiltration.

A.2 Mathematical Representation of the Repository and its Environment

Analysis of the GWTT for any real repository must depend on observations of hydrogeologic data at the site. These data must be collected with the appropriate drill and test program, based on a valid conceptual model for the site. Artificial tracers are useful in some cases (e.g., determining the effective porosity and thickness), but the time and distance scales are too great for direct characterization of the GWTT by such methods. Naturally occurring isotopes and those, produced from atmospheric weapons testing and nuclear reactors can be used for groundwater dating to support estimates of travel time distributions for real sites. Such techniques should be used whenever possible. Investigations must usually resort to mathematical models of the repository for predictions of performance.

Once conceptual models and drill and test plan programs have produced the appropriate data, values of travel time from the disturbed zone to the accessible environment are usually obtained from mathematical models consisting of the equations governing the hydraulic potential, flow of groundwater, and transport of a tracer. There are many models for groundwater flow in various media which are based on the equations at steady state or transient conditions in one, two or three dimensions.

Deterministic models consist of equations whose solution is based on the assumption that hydrogeologic properties, initial conditions and system geometries are known. Uncertainty and variability of the data are sometimes taken into account by obtaining many deterministic solutions, each one based on a different statistical realization of the hydrologic properties. Such techniques are generally known as "Monte Carlo" simulations. The results obtained by applying many random realizations (but chosen from a data base collected in a well-conceived and carefully executed experimental program) of the parameter

sets to the mathematical model can then be statistically analysed in order to estimate the travel time distribution (Smith and Schwartz, 1980, Smith and Schwartz, 1981, Clifton, 1984). Alternatively, the model may be used with conservative values of the input parameters in order to obtain conservative estimates of the GWTT.

~~Stochastic~~ models that are exclusively stochastic deal with the variability and uncertainty of the data in a more direct way. The coefficients and/or variables of the equations are treated as random processes rather than deterministic quantities. The PDE's are solved indirectly in terms of the moments of the dependent variables (e.g., mean and variance). This technique has the advantage of requiring only one solution rather than the numerous Monte-Carlo solutions required for the deterministic approach. Stochastic approaches to modeling are at a much less developed state than Monte Carlo techniques, although it is an area of rapid development. The stochastic approaches have been used to estimate means and variances of fields such as head (Mizell et.al.,1982) and concentration (Gelhar and Axness, 1983). They have apparently not yet been used to calculate directly such spatially integrated properties as GWTT.

A.3 Site Characterization from Field Data

Four levels of parameter quantification for site characterization ~~can be stated~~ are: (ONWI, 1983):

- Bounding value estimates - the range of possible values of the parameter. This is usually an extreme values of a range of parameters which does not take into account the correlation of the parameter with other parameters.

- Best estimate values - a single value of the parameter which is based on field measurements, laws of physics, expert opinion, or combinations of the above.

- Interval estimates - a bounding estimate which has been tempered by field data, laws of physics, expert opinion or a combination of the above. Correlations of the parameter may be taken into account, e.g., relationships between porosity and hydraulic conductivity.

- Probability density functions (PDF's). A function in which the probability that the parameter exceeds a certain value is known.

The PDF is of course the most informative quantification of the parameter, but requires the most knowledge of the site. In those cases where the data are too sparse for direct inference, rough estimates of the variability of parameters in the field may be inferred during early phases of the site characterization from expert opinion and observations of the distributions of the parameter in similar rock masses. For example, parameters such as hydraulic conductivity are often observed to follow a log-normal distribution, and conform to certain models of the spatial covarience function (Neuman, 1982). Expert opinion is not a substitute for field data, however.

Both data gathering and modeling depend on the establishment of a ~~good~~ valid conceptual model for the site. The conventional quantification of aquifer hydrogeologic parameters (i.e., transmissivity, storativity, hydraulic conductivity, effective thickness, ~~etc.~~) is based on a framework of established assumptions. Significant departures from the conceptual model will yield nonrepresentative values of the quantities sought.

Errors may be introduced because the collected data are misinterpreted. For example, water levels determined by a steel tape may be interpreted incorrectly because of temperature or salinity differences in the wells (ONWI, 1983). Another example might be the misinterpretation of transmissivities (hydraulic conductivities) from a drawdown test caused by phenomena such as leakage from another aquifer or a boundary of low permeability (e.g., fault or dike) within the cone of depression. In these cases, the principal cause of error is once again the inadequacy of the conceptual model.

The scale over which the data are collected is an important factor. For example, ~~geohydrologic~~ hydrogeologic properties determined from point tests (e.g., slug test) might only be valid for characterizing the medium a few meters from the borehole. The continuity of the medium between boreholes could be determined in some cases by spatial correlation such as variogram analysis, but it may be difficult or impossible to ~~determine the~~ quantitatively hydraulic ~~connections~~ continuity between the boreholes which determine~~s~~ the paths of groundwater flow without ~~cross-hole~~ multiple well tests on a scale similar to the dimensions of interest. Lacking ~~cross-hole~~ multiple well tests, conservative assumptions about the connect~~ivity~~ ivity of some number boreholes must be used. The fallibility of ~~cross-hole~~ multiple well tests must be recognized, however. The gradient in the medium may be highly distorted by pumping in order to complete the measurements in a reasonable length of time. Furthermore, ~~cross-hole~~ multiple well tests do not appear to be a a viable procedure in situations such as unsaturated flow, ~~so~~ analyses must therefore be based on point measurements.

Overall discussions of parameter estimation should include the reasonableness, within the known hydrogeologic regime, of all key assumptions. The likely effects of erroneous assumptions on parameter estimation and GWTT calculations

should be stated. The staff recognizes the importance of expert opinion in providing defensible interpretations of all types of aquifer field testing.

A.3.1 Treatment of Uncertainties in Site Characterization

~~There are~~ many possible sources of uncertainty in the ~~estimation of the~~ characterization of the site for determining GWTT. Among the most likely sources are:

- Measurement Errors in Data. These errors may be procedural (e.g. human) errors or systematic errors caused by faulty or improperly calibrated instruments. The staff recommends that these types of errors be minimized and quantified by standard techniques such as calibration, redundancy, and by using several independent ways of obtaining the same data (e.g., using more than ~~both a neutron probe and tensiometer for~~ one method for measuring moisture content).

- Validity of Analytical Assumptions (Conceptual Model) for Site Simulation. The simulation of flow and transport may not be representative of the physical system because of a poor understanding of the basic physical phenomena or oversimplification because of computational expediency. For example, the equivalent porous media (EPM) approach is often used to represent a fractured medium as a porous medium. The EPM approximation may be useful only for large scale transport, and not valid at scales in which the effects of individual fractures are important (Long et.al., 1982). Some investigators question the validity of the EPM approximation for properly modeling transport along the direction of fracture orientation regardless of scale (Endo,et.al., 1984). The validity of the conceptual model for simulating the site is closely coupled to the conceptual model used to interpret site data.

  The staff recommends that alternative conceptual models be proposed and tested in order to determine the sensitivity of the results to the choice of the conceptual models which can reasonably be constructed from the available data.

- Interpretation of Sparse Data. The temporal and spatial distribution of hydrogeologic field data are always less dense than desired. In the case of point measurements, conditions between points must be inferred, either by fitting a surface through the data points, or by using a physically realistic interpolation model. Sophisticated interpolation methods such as Kriging (e.g., Matheron, 1971) yield an estimate of the variance as well as the mean of spatially varying data. Mathematical models may be adjusted manually in order to produce a best fit to the available data

(e.g., Fogg, 1978, Mercer and Faust, 1980). In some cases, the fitted parameter may be determined automatically without the need for manual adjustment. Statistical inverse methods are available for fitting the hydraulic conductivity to head data in saturated media, and also calculate the variance of the hydraulic conductivity (e.g., Neuman and Yakowitz, 1979, Hoeksema and Kitanidis, 1984).

- Computational Errors. Since computer codes must be used extensively, errors may be introduced because of mathematic approximations (e.g., element size, step size) and intrinsic errors such as round-off and truncation. Computer codes should be verified with analytical solutions, validated with real field data, and compared or benchmarked with other similar computer codes (Silling, 1983). The sensitivity of the results to node size, time steps, grid orientation, or other parameters and assumptions should be tested by computational experiments.

A.3.2 Determination of the Input to the Model.

Once the conceptual model has been coded into a computer program, the computations must be performed with parameters inferred from the available data in order to generate the GWTT distribution. The types and quality of data available will determine how the computations are to be performed. For example, if only a few data points are available for a particular parameter, a conservative estimate of that parameter may have to be made and carried through the calculations. With more data, a mean and variance of the parameters can be calculated and used with a simple sampling approach (ONWI, 1983). If the site is correctly characterized with sufficient data, spatially varying properties of the parameters can be generated, permitting conditional simulations or stochastic models to be applied.

The GWTT computed using this general guidance will be sensitive to the degree of characterization of the site. That is, investigators of poorly-characterized sites will be forced to use conservative or at least overly-wide estimates to represent the distribution of the input parameters. Sites that have been tested with valid drill and test programs based on defensible conceptual models will facilitate the development of a more defensible GWTT distribution function. The GWTT distribution with smaller variance is preferable for the reasons stated in Section 2.4 of the Position.

A.4 Estimating GWTT from Deterministic Models with Randomly-Generated Input

The GWTT distribution can be calculated from multiple runs of deterministic models, with each run made for a realization of the data which can be inferred for the site. In ~~the~~ steady-state saturated flow example, each realization of

the data requires the solution of the hydraulic head and velocity field. This solution is generally accomplished by solving the partial differential equations (PDE's) using techniques such as finite differences or finite elements. Once the velocity field is known, travel time distributions can be calculated by simulating the release of tracer particles from single or multiple locations along the Disturbed Zone ~~and~~ ring count ing their arrival times as they reach the accessible environment.

A.4.1 Treatment of Spatial Variability

A large part of the variability of GWTT is caused by spatial ~~non-uniformity~~ inhomogeneities of the parameters which determine groundwater movement, particularly hydraulic conductivity and effective porosity. The motion of hypothetical tracer particles leaving the disturbed zone will be determined by the gradient, the hydraulic conductivity and the effective porosity encountered along the path. This variability alone will cause the paths of the particle leaving different parts of the disturbed zone to diverge. Added ~~to this phenomenon is~~ The incompleteness of the data which determine flow paths within the hydrological regime and the uncertainty due to measurement errors in field data add to the sources of variability.

At least one method, conditional (or unconditional) simulation, has been applied to account for the spatial distribution and uncertainty of field data in the determination of GWTT. This method has been applied to 2-dimensional steady state, saturated flow models for equivalent porous media (e.g., Delhomme, 1979, Clifton and Neuman, 1982), but it could be adapted to three dimensions (Mantoglou and Gelhar, 1985). The procedure is outlined below for the 2-dimensional, steady state case (Clifton, 1984):

a. Determine Spatial Variability and Uncertainty of Data

Field data for hydraulic conductivity and porosity are collected, and evaluated by methods of statistical inference in order to determine their spatial covariance and drift, which are measures of the variability of the property in space, and the "nugget effect," which is an indication of the measurement error or uncertainty. Expert judgement based on prior knowledge of the properties of rocks in similar formations may be useful in estimating the proper covariance models to apply to these data in this step (Mantoglou and Gelhar, 1985).

b. Generate Realizations of Data

Random fields of the model parameters are re-generated from the spatial covariances, drift, and uncertainties determined in Step a, so that the spatial covariances and auto-covariances of the new field or "realization"

are identical to those determined for the original data. It is usually necessary to treat the random variable and boundary conditions as "ergodic", for which the principles of first and second order stationarity apply. Cross correlation of the data, e.g., correlation between effective porosity and hydraulic conductivity, may be taken into account in this step. Two widely-used procedures for generating these random fields are the "nearest neighbor" method (Smith and Freeze, 1979) and the "turning band" method (Mantoglou and Gelhar, 1985). The random fields can be forced to comply with the original data by a process known as "conditioning;" otherwise, the parameter fields are "unconditional". Conditional simulations reduce the variance considerably, but are generally worthwhile only if there are sufficient high-quality data (Clifton, 1984).

c. Run Deterministic Model for Heads

The random fields are used with a finite difference or finite element model to generate a steady state head and groundwater flow field under the influence of either fixed or random boundary conditions.

d. Calculate Travel Times of Particles

The trajectory of tracer particles is tracked from one or multiple locations on the disturbed zone along the postulated paths, to the plane representing the accessible environment. The travel time of the particles from their starting position to the accessible environment is recorded.

e. Generate Multiple Realizations

Steps b through d are repeated numerous times in order to generate a large number of travel times for multiple tracer particles so that their cumulative distribution can be drawn. The probability of each realization is taken to be equal to any other realization for the purpose of constructing the CDF. If more than one particle is released per realization, each particle is given equal weight.

A.5 Simplified Analysis

The user is not required to generate a detailed CDF of the GWTT distribution. A simplified approach would be acceptable, provided that the 1000 year GWTT objective could be ~~met and~~ demonstrated the results could be demonstrated to be conservative. Alternatively, it has been shown that in the (conditional or unconditional) simulations outlined in Section A.4.1, high spatial covariance of hydraulic conductivity correlates with wider travel time distributions

Do you want to say for the greatest variance rather than is the widest?

(Clifton, 1984). If the medium is assumed to be spatially uniform (i.e., infinite spatial covariance), then it must be assumed that all variations of the parameters are caused by measurement error. The GWTT cumulative frequency distribution is widest under these circumstances, which gives a conservative indication of the small-percentile criterion for GWTT as discussed in Section 2.4 of the Position (but <u>not</u> necessarily the median of the distribution).

Appendix B - Choosing paths of radionuclide travel

B.0 Introduction

The paths which radionuclides will follow from the disturbed zone to the accessible environment are to be described in a macroscopic sense. In crystalline rocks, paths may consist of fractured, weathered or brecciated zones. In porous media, paths will generally consist of layers of permeable rocks. Paths may also consist of fractured zones in consolidated non-crystalline rocks.

~~There may be~~ several alternative conceptual models for the repository, each of which might determine a different path for radionuclide transport. The analysis of GWTT therefore should consider all paths for radionuclide transport defined by alternative conceptual models, unless they can clearly be demonstrated to be unlikely. Collection of data at the site must be directed to identifying these paths, establishing the validity of the conceptual models for interpreting and simulating the hydrogeology, and making a reasoned determination that potentially faster paths have not been overlooked.

Examples for several generic types of repository media are given in the sections below.

B.1 Repositories in saturated media

High Level Waste underground facilities located in saturated media will usually be emplaced in a rock unit of low permeability. More permeable units may underlie, and overlie the repository. However, ~~as shown in~~ Fig. B.1, ~~along with~~ several possible pathways (note, however that it is not likely that both vertically upward and downward flows could occur at the same time). Some of these hydrostratigraphic units may intersect the disturbed zone. While ~~there may be~~ little movement of groundwater in the host rock, ~~there may be~~ factors which could cause the movement of radionuclides from the disturbed zone to these more permeable hydrostratigraphic units. Transport between hydrostratigraphic units could ~~be by~~ fracture or porous flow under the driving force of natural hydraulic gradients. The fastest paths should therefore follow the hydrostratigraphic units which have the highest groundwater velocities.

The choice of the path need not be mechanistic; e.g., it is not necessary to propose or calculate the mechanisms by which transport from the hydrostratigraphic units intersected by the disturbed zone to the faster hydrostratigraphic units can occur (unless credit will be taken for the travel time from the disturbed zone to the hydrostratigraphic units). It may be

necessary, however, to determine whether such paths are "likely", or can be excluded from consideration. For example, an analysis could determine that the driving force would be inadequate to allow transport to other hydrostratigraphic units above a certain elevation, even if the necessary interconnections existed. Therefore, these hydrostratigraphic units will not be on "likely" paths and could be ignored. Even for "likely" paths, such analyses might allow quantification of travel times along the portion of the path between the disturbed zone and the assumed hydrostratigraphic unit.

B.2 Unsaturated media

Definition of paths for repository sites in unsaturated media will differ from those in saturated media. The direction of flow is likely to be vertically downward until the water table is reached. In some cases, the path may be defined in terms of the direction of the gradient, unless there are barriers to flow such as contrasts in hydraulic conductivity leading to perched water tables. The possibility of perched water under reasonably conceivable conditions (e.g., a series of wet years which are not a major climatic change, but could occur under present climatic conditions) should be explored, even if such conditions currently do not exist at the site. Paths should also consider the possible connections of perched water to fractures or other structural features of the site which would allow short-circuiting of the unsaturated material in which the repository would be placed. Phenomena peculiar to unsaturated flow such as "fingering" should also be considered. Examples of such paths are illustrated in Fig. B.2.

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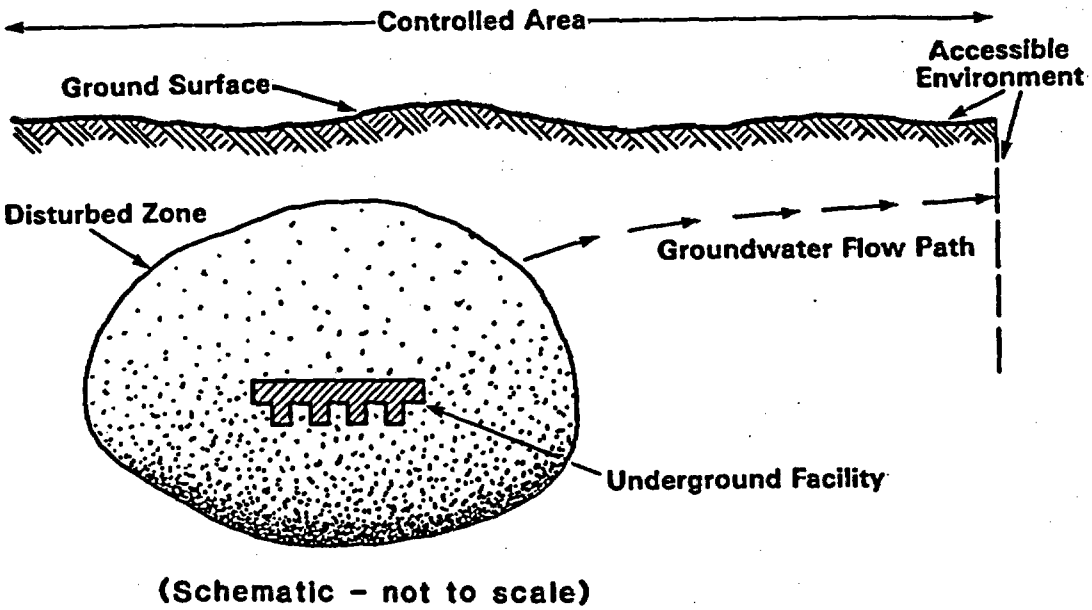


Figure 1 - Disturbed Zone, Path and Accessible Environment

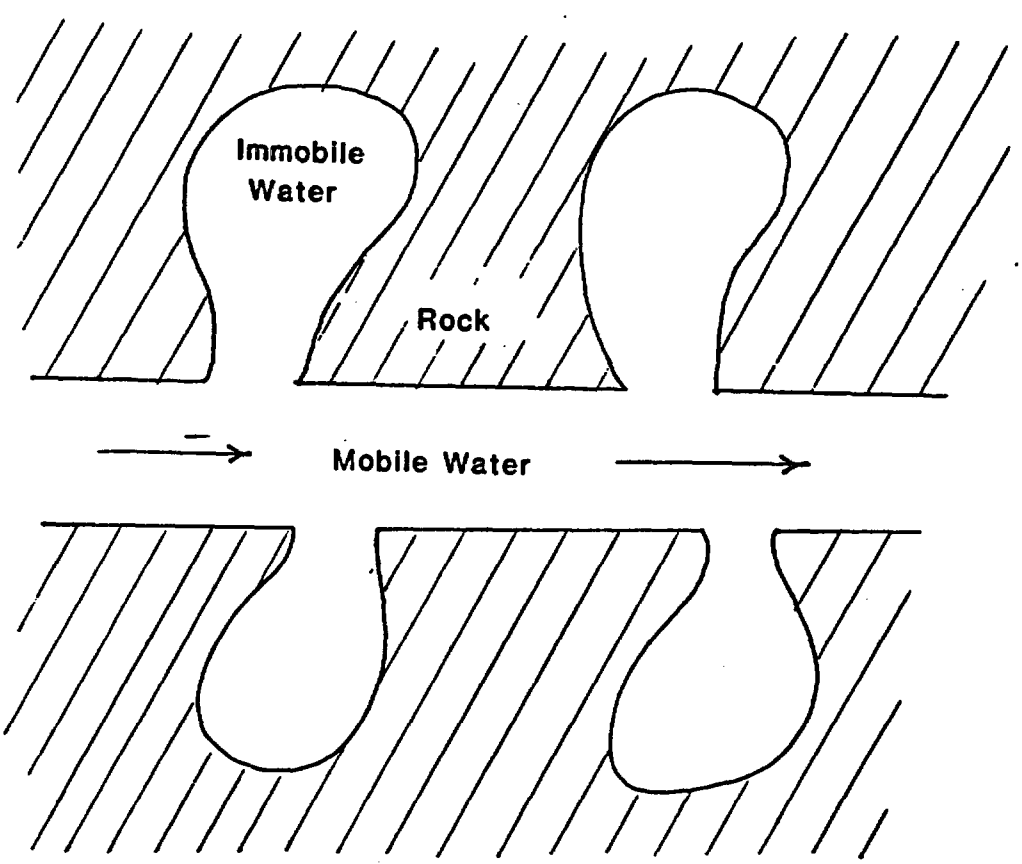


Figure 2 - Three Comparment Model of Groundwater

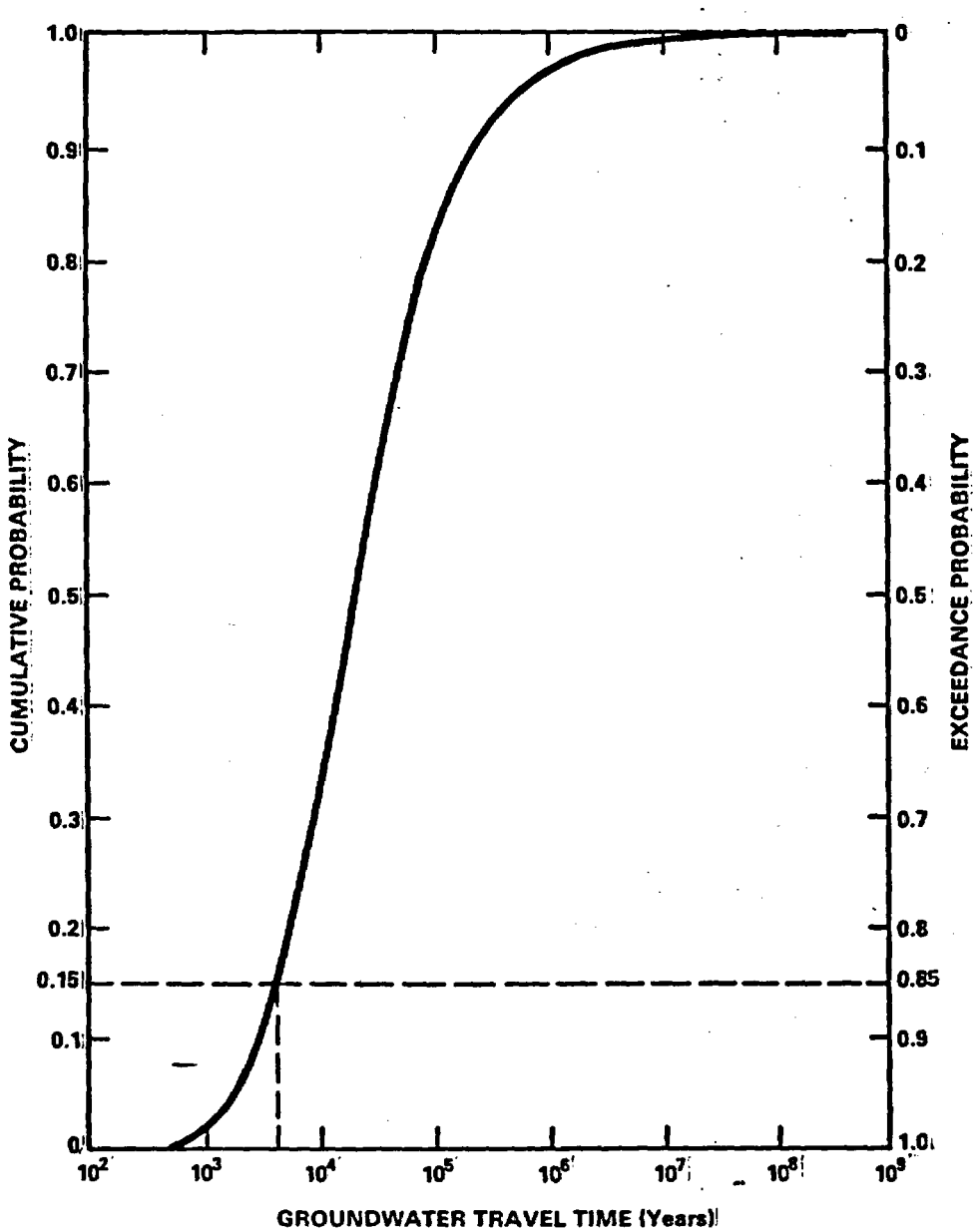


Figure 3 - Groundwater Travel Time Cumulative Frequency Distribution

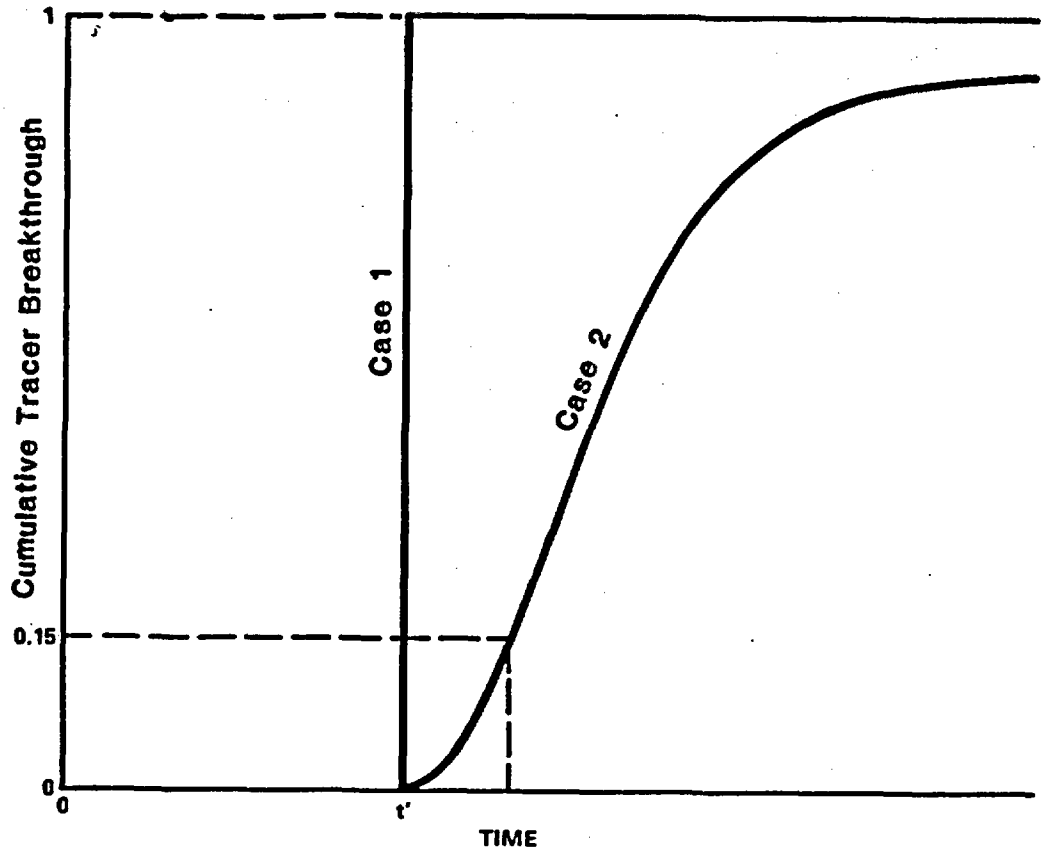


Figure 4 - Breakthrough Curves

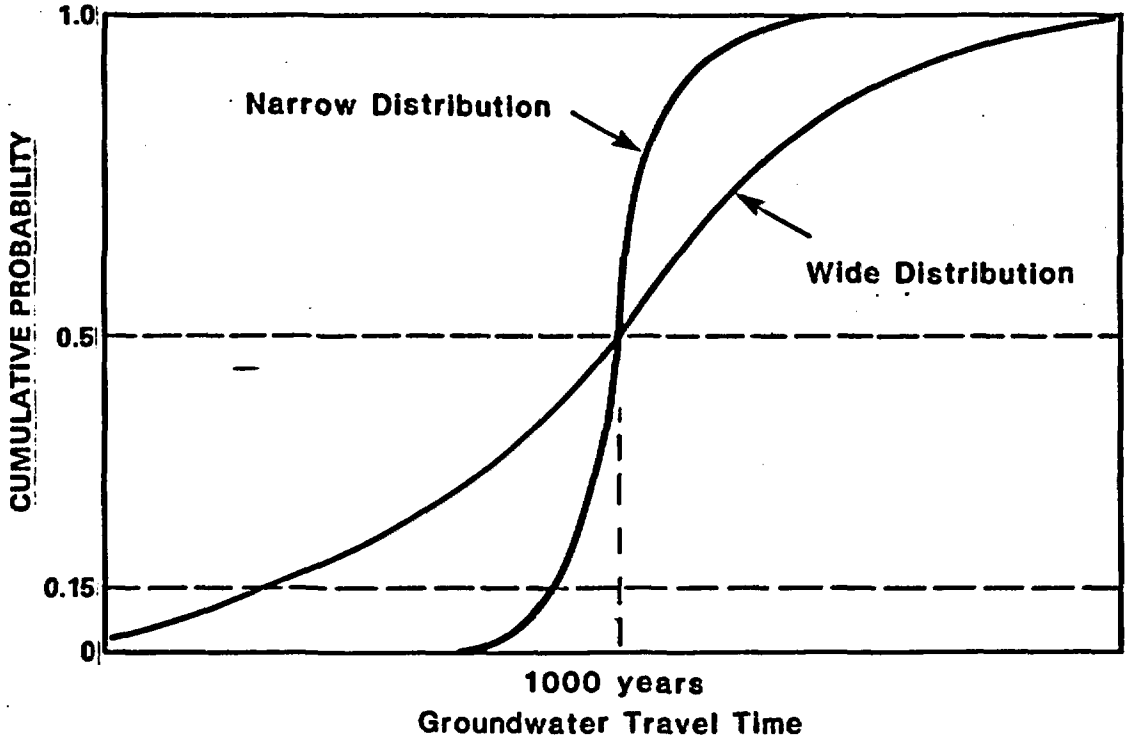


Figure 5 - Variance of Groundwater Travel Time Distribution

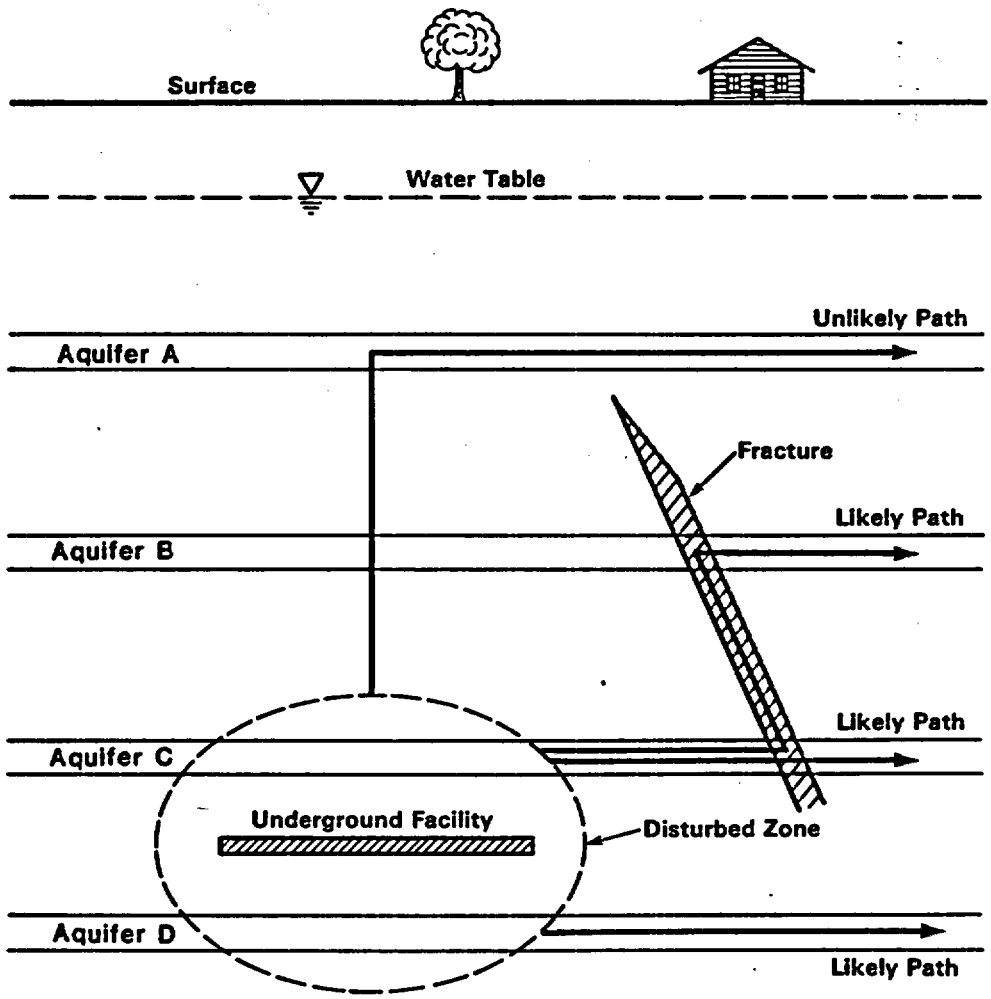


Figure B1 - Paths of Likely Radionuclide Travel - Saturated Media

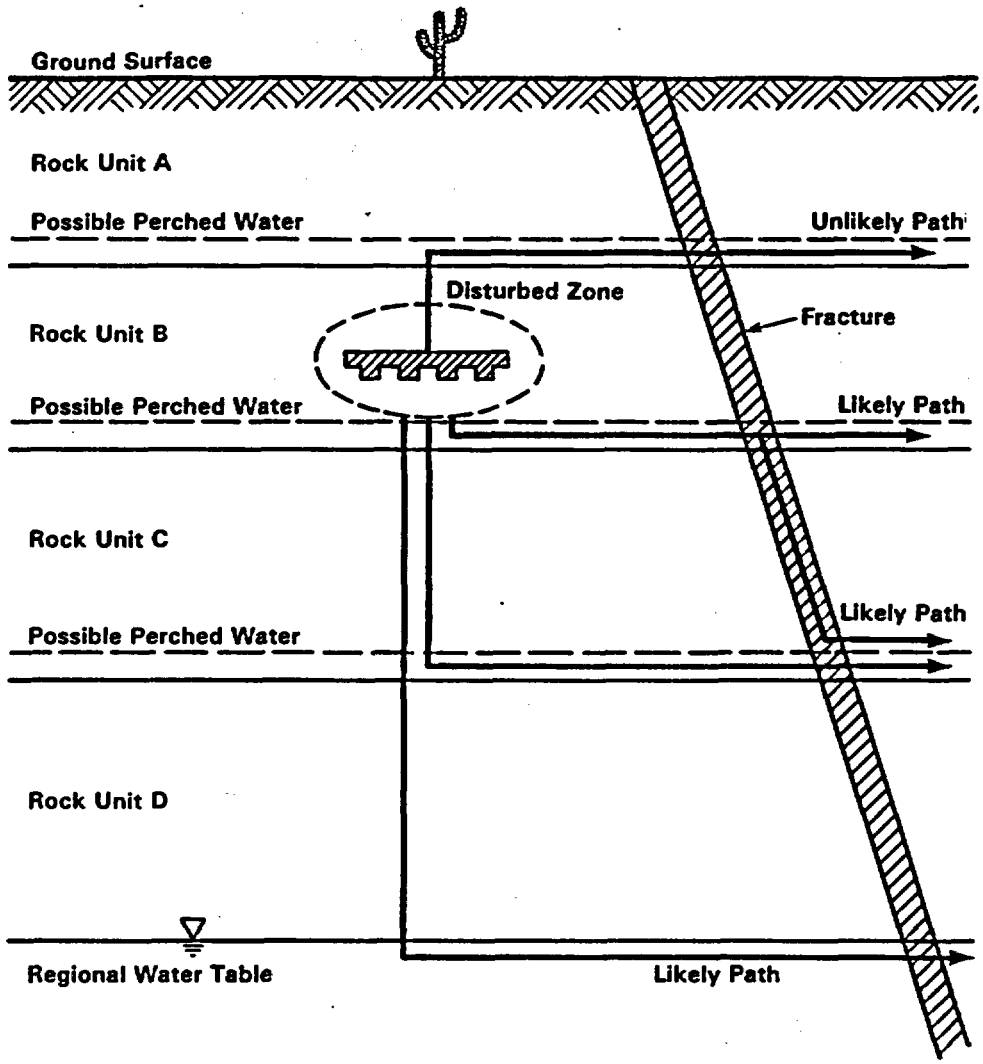


Figure B2 - Paths of Likely Radionuclide Travel - Unsaturated Media

See pocket 1 for encl. - ltr. 7/1/86 Communication # 67

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 7-1-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-106 DOE Comment No: ____ Comment Topic: Site subsystem performance

Location of Comment Address: 6-307 — 319

How Was Comment Addressed? (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) ____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
X Other (explain) new analyses and supporting documents

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
X Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) ____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 7-1-86

Site: NNWSI BWIP (DEAF SMITH) DAVIS CANYON RICHTON DOME

NRC Comment No: 3 DOE Comment No: _____ Comment Topic: Groundwater travel time

Location of Comment Address: 6-246 — 259

How Was Comment Addressed? (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
X Other (explain) new analyses do not address all uncertainties

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
X Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-21 DOE Comment No: _____ Comment Topic: Disqualifying condition

Location of Comment Address: 6-99 - 10.3

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-22 DOE Comment No: ____ Comment Topic: Radionuclide releases

Location of Comment Address: 6-100—101

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
X Other (explain) discussion adequate

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) ____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) ____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: WOA Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-23 DOE Comment No: ____ Comment Topic: Conclusion on qualifying condition

Location of Comment Address: 6-04 - 10.5

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
X Other (explain) adequately addressed for EA purposes

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) ____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) ____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: WGA Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-24 DOE Comment No: _____ Comment Topic: Conclusion on qualifying condition

Location of Comment Address: 6-104 - 105

How Was Comment Addressed? (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
X Other (explain) new analyses of travel time uncertainties remain

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
X Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-31 DOE Comment No: ____ Comment Topic: Potentially adverse condition

Location of Comment Address: 6-117 — 123

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
X Other (explain) statement questioned by NRC is not present

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-49 DOE Comment No: _____ Comment Topic: Potentially adverse condition

Location of Comment Address: 6-170 — 171

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
X Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

X Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Large scale testing should demonstrate hydraulic characteristics of potential boundaries

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W & A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-51 DOE Comment No: _____ Comment Topic: Potentially adverse condition

Location of Comment Address: 6-190 — 191

~~How Was Comment~~ Addressed? (Circle)
(New Information) New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

___ DOE agreed with problem, basis, and suggested resolution
X DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-610 DOE Comment No: ____ Comment Topic: Conclusion on qualifying condition

Location of Comment Address: 6-186 -187

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
X Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

X Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: WGA Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-67 DOE Comment No: _____ Comment Topic: Construction of an underground facility

Location of Comment Address: 6-218 top of page

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: WPA Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-71 DOE Comment No: _____ Comment Topic: Potentially adverse condition

Location of Comment Address: 6-231

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

X Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

X Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC/~~Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-88 DOE Comment No: _____ Comment Topic: Subsystem performance assessment

Location of Comment Address: 6-272 – 273

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

X Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
X Other (explain) stochastic analysis addressed by new comment

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-101 DOE Comment No. _____ Comment Topic: Site subsystem performance

Location of Comment Address: 6-307 – 319

How Was Comment ~~Addressed?~~ (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagrement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
X Other (explain) new analyses do not address all uncertainties

Status of Unresolved Comments:

____ Defer to SCP
X Precipitates FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-102 DOE Comment No: _____ Comment Topic: Site subsystem performance

Location of Comment Address: 6-307 — 319

How Was Comment ~~Addressed?~~ (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
X Other (explain) new analyses do not address all uncertainties

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
X Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-103 DOE Comment No: ____ Comment Topic: Site subsystem performance

Location of Comment Address: 6-307 - 319

How Was Comment ~~Addressed?~~ (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
X Other (explain) new analyses do not address all uncertainties

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
X Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-104 DOE Comment No: ____ Comment Topic: Site subsystem performance

Location of Comment Address: 6-307 — 319

How Was Comment Addressed? (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-105 DOE Comment No: _____ Comment Topic: Site subsystem performance

Location of Comment Address: 6-312 — 313

How Was Comment Addressed? (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

___ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
X Other (explain) new analyses, section rewritten

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
X Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-20 DOE Comment No: _____ Comment Topic: Potentially adverse condition

Location of Comment Address: 6-93 — 98

How Was Comment Addressed? (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
X DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-19 DOE Comment No: _____ Comment Topic: Potentially adverse condition

Location of Comment Address: 6-93

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
X Other (explain) stated problem in NRC comment is addressed in other location

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-18 DOE Comment No: ____ Comment Topic: Potentially adverse condition

Location of Comment Address: 6-92-93

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
X Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

X Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-17 DOE Comment No: _____ Comment Topic: Favorable condition

Location of Comment Address: 6-89—92
3-120

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-16 DOE Comment No: _____ Comment Topic: Favorable condition

Location of Comment Address: 6-89 — 90
3-104 — 105

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

X Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

X Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-17 DOE Comment No: _____ Comment Topic: Groundwater

Location of Comment Address: 3-96

~~How Was Comment~~ Addressed? (Circle)
(New Information) New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: W&A Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-18 DOE Comment No: _____ Comment Topic: Groundwater

Location of Comment Address: 3-97

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

X Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

X Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-19 DOE Comment No: _____ Comment Topic: Flow interiors

Location of Comment Address: 3-115—116

~~How Was Comment~~ Addressed? (Circle)
(New Information) New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

X Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: UA Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-20 DOE Comment No: _____ Comment Topic: Flow interceptors

Location of Comment Address: 3-117

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

X Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
X Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-21 DOE Comment No: ____ Comment Topic: Flow interiors

Location of Comment Address: 3-117

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-22 DOE Comment No: _____ Comment Topic: Geometric mean

Location of Comment Address: 3-119

How Was Comment Addressed? (Circle)
(New Information) New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
X Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

X Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-23 DOE Comment No: _____ Comment Topic: Flow contacts & interbeds

Location of Comment Address: 3-120

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-24 DOE Comment No: _____ Comment Topic: Flow contacts & interbeds

Location of Comment Address: 3-120

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: WEA Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-25 DOE Comment No: _____ Comment Topic: Bedrock structures

Location of Comment Address: 3-121

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

X Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 4-1 DOE Comment No: ____ Comment Topic: Large scale test

Location of Comment Address: 4-6

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-11 DOE Comment No: ____ Comment Topic: Favorable condition, travel time

Location of Comment Address: 6-77 — 81

How Was Comment Addressed? (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
X Other (explain) agreed with problem - new analyses

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) ____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
X Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) ____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-12 DOE Comment No: _____ Comment Topic: Favorable condition, travel time

Location of Comment Address: 6-77-81, 85-92, 307-319

How Was Comment ~~Addressed?~~ (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
X Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
X Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Supporting documents provide inadequate detail to provide a basis for complete evaluation of new travel time analyses.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: WGA Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-13 DOE Comment No: ____ Comment Topic: Favorable condition – large scale testing

Location of Comment Address: 6-83 – 85

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
_x_ Other (explain) section rewritten

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) ____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) ____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-14 DOE Comment No: ____ Comment Topic: Favorable condition

Location of Comment Address: 6-84

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
X Other (explain) objectionable section of report was reworded

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: W&A Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-15 DOE Comment No: _____ Comment Topic: Favorable condition

Location of Comment Address: 6-86

How Was Comment Addressed? (Circle)
New Information New Analysis (Revised Conclusions) Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-27-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-43 DOE Comment No: _____ Comment Topic: Disqualifying Condition Infiltration - Percolation - Recharge

Location of Comment Address: p. C.5-8, p 6-131 to p 6-132

How Was Comment Addressed? (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Uncertainty in the estimate of 0.5 mm/yr is noted in the FEA

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-27-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-44 DOE Comment No: _____ Comment Topic: Disqualifying Condition Infiltration - Percolation - Recharge.

Location of Comment Address: p. C.5-10, p. 6-130

How Was Comment Addressed? (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

✓ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Fracture flow is assumed to begin at a saturation level of 95% in the travel time calculations.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams & Assoc Date: 6-27-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-45 DOE Comment No: _____ Comment Topic: Disqualifying condition

Location of Comment Address: p. C.5-9 p 6-132, p6-153 - 6-162 Infiltration - Percolation - Recharge

How Was Comment Addressed? (Circle)
New Information New Analysis (Revised Conclusions) Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
✓ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

DOE now considers the "upper bound" on flux to be 0.5mm/yr. One mm/yr is now considered to be "unrealistically conservative estimate of flux" (p. 6-160)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-27-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-46 DOE Comment No: _____ Comment Topic: Disqualifying Condition Infiltration - Percolation - Recharge

Location of Comment Address: p. 6-149

How Was Comment Addressed? (Circle)
New Information New Analysis (Revised Conclusions) Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

✓ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Table 6-17 has been changed to indicate a saturated matrix hydraulic conductivity of 0.5mm/y for the Calico Hills.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-27-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-47 DOE Comment No: _____ Comment Topic: Disqualifying Condition Travel time Calculations

Location of Comment Address: p 6-155

How Was Comment Addressed? (Circle)
(New Information) (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Travel time estimates presented in the FEA are based on new information and a new analysis.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams & Assoc Date: 6-27-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-48 DOE Comment No: _____ Comment Topic: Disqualifying Condition Travel-Time Calculations

Location of Comment Address: p 6-153 and 6-155

How Was Comment Addressed? (Circle)
(New Information) (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Ranges of effective porosity values were used in the travel time estimates by random sampling from a frequency distribution (p. 6-153)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-27-86

Site: (NNWS) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-49 DOE Comment No: _____ Comment Topic: Disqualifying Condition - Travel Time calculations

Location of Comment Address: p C.5-3 to C.5-7 and 6-153 to 6-162

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Ranges of values for saturated matrix hydraulic conductivity were used in the FEA to estimate travel time. However, a constant value for flux was used instead of a range of values.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-27-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-50 DOE Comment No: _____ Comment Topic: Disqualifying condition Travel time calculations

Location of Comment Address: p. C.5-6, p 6-153 to 6-161

How Was Comment Addressed? (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
X Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

"The DOE disagrees that degree of saturation was not taken into account for travel-time calculations, because estimates of effective porosity took into account the estimated percent of voids drained" (p C.5-6)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams & Assoc Date: 6-26-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-28 DOE Comment No: _____ Comment Topic: Favorable Condition No. 5(i)

Location of Comment Address: p. 5-14 & p 6-136

How Was Comment Addressed? (Circle)
New Information New Analysis (Revised Conclusions) Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-26-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-29 DOE Comment No: _____ Comment Topic: Favorable Condition No 5(i)

Location of Comment Address: p 6-136, p. 6-230 C.5-12

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

✓ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

No direct response to this comment could be found in the FEA.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-26-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-30 DOE Comment No: _____ Comment Topic: Favorable Condition No. 5(iii)

Location of Comment Address: C-5-13, p.6-139

How Was Comment Addressed? (Circle)
New Information New Analysis (Revised Conclusions) Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

The statement "no evidence of fracture flow has been observed in the host rock" has been deleted from the FEA.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams & Assoc Date: 6-26-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-31 DOE Comment No: _____ Comment Topic: Favorable Condition 5(iii)

Location of Comment Address: p 6-137, p 6-150 C.5-8 – C.5-10 C.5-15
p 6-138

How Was Comment Addressed? (Circle)
New Information (New Analysis) (Revised Conclusions) Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
✓ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

DOE still believes in the existence of capillary barriers but acknowledges that no data are available to support the concepts of the barriers.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-26-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-32 DOE Comment No: _____ Comment Topic: Favorable conditions

Location of Comment Address: p 6-149 Table 6-16

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

The questioned value and conversion have been deleted from the FEA

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams and Assoc Date: 6-26-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-33 DOE Comment No: _____ Comment Topic: Favorable Conditions Table 6-16

Location of Comment Address: p 6-149

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

The table has been corrected

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams Date: 6-26-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-34 DOE Comment No: _____ Comment Topic: Favorable Conditions No 5(iii)

Location of Comment Address: p 6-138

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

The FEA changed the sentence to read
" thereby significantly decreasing the effective permeability to water".

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams & Assoc Date: 6-26-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-35 DOE Comment No: _____ Comment Topic: _____

Location of Comment Address: p 6-138

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

___ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
X Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

The DOE deleted the latter half of the sentence in question in the FEA to read.

"until structural features with high permeability were encountered".

The description in the draft EA is more accurate.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams & Assoc Date: 6-26-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-36 DOE Comment No: _____ Comment Topic: Favorable Conditions No. 5 (iv)

Location of Comment Address: ~~p. 6-139, p~~ C.5-13

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
X Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

The FEA references montazer and wilson (1984) "for a complete explanation of the relationship of air permeability measurements to bulk hydraulic conductivities" (p. C.5-13)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-26-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-37 DOE Comment No: _____ Comment Topic: Favorable Conditions No. 5(iv)

Location of Comment Address: p C. 5-13, p. 6.138

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- [x] DOE agreed with problem, basis, and suggested resolution
- [ ] DOE disagreed with suggested resolution; alternative resolution accepted
- [ ] DOE disagreed with problem and basis; DOE response accepted
- [ ] Comment resolved pending NRC review of new information/analysis
- [ ] Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

- [ ] Lack of recognition of NRC comment
- [ ] Lack of understanding of the NRC stated problem and basis
- [ ] Lack of agreement with NRC stated problem and basis
- [ ] Lack of adequate support for disagreement with NRC stated problem and basis
- [ ] Lack of agreement with NRC stated suggested resolution
- [ ] Lack of adequate support for disagreement with NRC stated suggested resolution
- [ ] Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
- [ ] Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- [ ] Defer to SCP
- [ ] Precipitate FEA Comment
- [ ] Unresolved but not significant to siting or characterization
- [ ] Other (explain) _____

Additional Comments: (use back if needed)

Meaning of free drainage has been clarified in the FEA.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams & Assoc Date: 6-26-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-38 DOE Comment No: _____ Comment Topic: Potentially Adverse Conditions No. 1

Location of Comment Address: p 6-142 p. C.5-19 to p C.5.21

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

The statement under question has been deleted from the FEA.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-26-86

Site: (WNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-39 DOE Comment No: _____ Comment Topic: Potentially Adverse Conditions, No. 1

Location of Comment Address: p. 6-142

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

The typo has been corrected in the FEA

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-26-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-40 DOE Comment No: _____ Comment Topic: Potentially Adverse Conditions, No. 1

Location of Comment Address: p. C-5-11 to pC.5-12
p. 6-142

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-26-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-41 DOE Comment No: _____ Comment Topic: Potentially Adverse Conditions No. 1

Location of Comment Address: 6-142 to 6-143

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

X Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

No direct response by the DOE to the NRC comment was found. However, the statement questioned by the NRC comment has been deleted from the final FEA.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-26-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-42 DOE Comment No: _____ Comment Topic: Potentially Adverse Conditions, No. 1

Location of Comment Address: C.5-11 to C.5-12
6-141 to 6-142

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 6-11 DOE Comment No. _____ Comment Topic: DOE stated in DEA that the host rock and immediately surrounding geologic units have low hydraulic Ks. NRC said that although matrix K is low, fracture K might not be.

Location of Comment Address: p. 6-101 bottom of page

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
X Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments:

X Defer to SCP – They refused to be as conservative as we suggested, only time will tell who is right
____ Precipitates FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 6-10 DOE Comment No. _____ Comment Topic: ~~[illegible]~~ NRC said DOE should consider the potential for localized upward gradients.

Location of Comment Address: 6-102

How Was Comment ~~Addressed?~~ (Circle)
New Information (New Analysis) (Revised Conclusions) Deferred to SCP Other

They reverse this favorable condition, and say it's not present.

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and ~~suggested resolution~~ included the potential for upward gradients in one of the geologic intervals when simulating groundwater flow paths and travel times.
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagrement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments:

____ Defer to SCP
____ Precipitates FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-26-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 2-11 DOE Comment No: ____ Comment Topic: Expert judgement

Location of Comment Address: 2-71

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) ____

Manner in Which Comment is Inadequately Addressed:

X Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) ____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
X Other (explain) mute point since candidate horizon has been selected

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: WHA Date: 6-26-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 2-12 DOE Comment No: ____ Comment Topic: Geohydrologic setting

Location of Comment Address: 2-72

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 4-23 DOE Comment No: _____ Comment Topic: local effects on baseline data due to additional recharge

Location of Comment Address: 4-111 P6

How Was Comment Addressed? (Circle)
New Information New Analysis (Revised Conclusions) Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
1 Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

They say'll. they'll install monitoring system to check for shallow contamination.

They say that "lines or tank leaks will be repaired and dewatering will be implemented, as required, to mitigate the impact of contaminant seepage on groundwater, what about the gw baseline heads?

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 4-28 DOE Comment No: _____ Comment Topic: Rainwater infiltrat'n of wind-blown salt.

Location of Comment Address: p. 4-111 to 4-112 continuing paragraph

How Was Comment Addressed? (Circle)
New Information (New Analysis) (Revised Conclusions) Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
__✓__ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

__✓__ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

They're probably right -- now that they've provided explanation.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 5-15 DOE Comment No: _____ Comment Topic: Construction Effects on GW

Location of Comment Address: _____

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
X DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Monitor wells + grouting technology if necessary seems like a good combination.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 6-3 DOE Comment No: _____ Comment Topic: Potential for dissolution rejected by DOE on the basis of one borehole.

Location of Comment Address: p 6-94 — 6-95

How Was Comment Addressed? (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

They have taken out any discussion of potential for diss'n in the discussion of relevant data

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
✓ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 6-4 DOE Comment No: _____ Comment Topic: fracture flow

Location of Comment Address: 6-97

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
✓ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
✓ Precipitate FEA Comment — See ~~key~~ major comment submitted by W+A
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

DOE does consider fracture flow (using an equivalent porous medium model). (6-97)
They never consider open joints or solution channels.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 6-5 DOE Comment No. _____ Comment Topic: Why does DOE reject horizontal flow in the interbed below cycle 6?

Location of Comment Address: p. 6-266
p. 6-271

How Was Comment Addressed? (Circle)
New Information (New Analysis) (Revised Conclusions) Deferred to SCP Other

They now consider the potential for horizontal flow in Paradox cycle 6 interbed. It is one of the possible exit layers in the PTRACK simulations (Andrews et al 1985)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagrement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments:

____ Defer to SCP
____ Precipitates FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 6-6 DOE Comment No. _____ Comment Topic: "DOE says No data support potential for dissolution"

Location of Comment Address: _____

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Was not addressed. They just chose not to discuss the subject at this point in FEA

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments:

__✓__ Defer to SCP
____ Precipitates FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 6-7 DOE Comment No. _____ Comment Topic: Groundwater travel time

Location of Comment Address: _____

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagrement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments:

____ Defer to SCP
✓ Precipitates FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

See major comment submitted by Williams and Associates

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-8 DOE Comment No. _____ Comment Topic: Upward gradients

Location of Comment Address: _____

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagrement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments:

____ Defer to SCP
✓ Precipitates FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

though we do agree, now, that upward gradients are not likely to exist all the way up to Elephant Canyon

Additional Comments: (use back if needed)

They now acknowledge potential for upward flow, but only in formation in which they found the anomalous data. If they found anomalous data in "zone A" in GD-1 (hypothetical zone) this does not mean you might not find anomalous head data in zone B in another borehole.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 6-9 DOE Comment No: _____ Comment Topic: DOE stated (1) that site would be easy to characterize and model because of simplicity of structural and stratigraphic features

Location of Comment Address: 6-101

6.3.1.2 Favorable cond #(3)

How Was Comment Addressed? (Circle)
New Information New Analysis (Revised Conclusions) Deferred to SCP Other

(2) Preliminary regional numerical models have been successfully applied to the site.

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
X DOE disagreed with suggested resolution; alternative resolution accepted — they didn't admit their problems, but at least they don't continue to overestimate the defensibility of their results
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

✓ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

~~They reduced their confidence~~

They pulled back to a more conservative position saying that because of the limited data base, the site cannot be readily characterized.

But they don't respond at all to all the problems we noted w/ their modeling effort. They'll have to, by SCP time. There was nothing more they could do by FEA time.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-26-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 1 DOE Comment No: _____ Comment Topic: Groundwater travel time

Location of Comment Address: 6-307—319

How Was Comment ~~Addressed? (Circle)~~
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
X Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-26-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 2 DOE Comment No: _____ Comment Topic: Geohydrologic regime

Location of Comment Address: 6-93 & 6-180

How Was Comment Addressed? (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
X Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

X Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-26-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: E-3 DOE Comment No: _____ Comment Topic: Travel time

Location of Comment Address: 16 & 6-207-319

How Was Comment Addressed? (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
X Other (explain) New analysis addresses some uncertainties

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
X Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-26-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 1-4 DOE Comment No: _____ Comment Topic: Geohydrologic settings

Location of Comment Address: 1-19

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

X Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
X Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-26-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 2-6 DOE Comment No: ____ Comment Topic: Regional groundwater

Location of Comment Address: 2-31 — 33

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

X Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
X Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-26-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 2-8 DOE Comment No: ____ Comment Topic: Ranking of sites

Location of Comment Address: 2-52 – 59

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

X Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

X Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-26-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 2-9 DOE Comment No: ____ Comment Topic: Preferred horizon

Location of Comment Address: 2-65

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
X Other (explain) reworded

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) ____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
X Unresolved but not significant to siting or characterization
____ Other (explain) ____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-25-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-56 DOE Comment No: _____ Comment Topic: Favorable condition

Location of Comment Address: 6-16B

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
X Other (explain) section rewritten to reflect lack of knowledge about Duckwall Grove water availability & quality

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

X Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-25-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-103 DOE Comment No: _____ Comment Topic: Geologic subsystem performance

Location of Comment Address: 6-243 — 259

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
X Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-25-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-104 DOE Comment No: _____ Comment Topic: Free surface modeling

Location of Comment Address: 6-243 — 259

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
X Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams & Assoc Date: 6-25-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-23 DOE Comment No: _____ Comment Topic: Favorable Condition No. 1

Location of Comment Address: p 6-131

How Was Comment Addressed? (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Stochastic approach used to evaluate uncertainty. According to FEA "conservative assumptions built into the flow model serve to shift the distribution to lower travel times".

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-25-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-24 DOE Comment No: _____ Comment Topic: Favorable Condition No. 2

Location of Comment Address: p.C. 5-19 p.C. 5-11 p 6-132

How Was Comment Addressed? (Circle)
(New Information) New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Bounding studies by Sinnock et al (1984) that require a significant amount of credit for geochemical retardation in order to meet EPA release limits under a pluvial type scenario do not appear to be discussed directly.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams & Assoc Date: 6-25-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-25 DOE Comment No: _____ Comment Topic: Favorable Condition No. 3

Location of Comment Address: 6-133

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

✓ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

No change in FEA p 6-134

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-25-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-26 DOE Comment No: _____ Comment Topic: Favorable condition No. 3

Location of Comment Address: C.5-1

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Brief explanation of what DOE did

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-25-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-27 DOE Comment No: _____ Comment Topic: Favorable Conditions No. 3

Location of Comment Address: _____

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

✓ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

FEA was not changed from the draft.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/25/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 4-22 DOE Comment No: _____ Comment Topic: DEA doesn't assess environmental effects an effect on gw regimes

Location of Comment Address: p. 4-111 to 4-112

How Was Comment Addressed? (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
X DOE disagreed with problem and basis; DOE response accepted until SCP
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

X Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

They don't think boreholes or ESF will disturb hydrogeologic regime. They don't think water on surface will contaminate aquifer because of thick unsat'd zone.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams & Assoc Date: 6-24-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-19 DOE Comment No: _____ Comment Topic: Data Relevant to the Evaluation

Location of Comment Address: p 6-124

How Was Comment Addressed? (Circle)
New Information New Analysis (Revised Conclusions) Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Table 6-15 has been changed to indicate that the condition does not apply to Yucca Mountain because of unsaturated conditions

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-24-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-19 DOE Comment No: _____ Comment Topic: Data Relevant to the Evaluation

Location of Comment Address: p 6-124

How Was Comment Addressed? (Circle)
New Information New Analysis (Revised Conclusions) Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Table 6-15 was changed to indicate the condition does not apply to Yucca mountain because of unsaturated conditions.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-24-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-20 DOE Comment No: P.C. 5-10 Comment Topic: Data Relevant to the Evaluation

Location of Comment Address: ~~p C.5-8 and~~ p 6-129.

How Was Comment Addressed? (Circle)
New Information New Analysis (Revised Conclusions) Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

✓ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

The portion of the quote "and the available data indicate that porous flow through the matrix, rather than fracture flow, dominates the prevailing flux" is not present in FEA.

Comment responded to by DOE on page C.5-10

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: U&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-40 DOE Comment No: _____ Comment Topic: Hydrogeologic setting

Location of Comment Address: 6-243 — 259

How Was Comment ~~Addressed?~~ (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
X Other (explain) new analyses addresses part of problem

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
X Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3.41 DOE Comment No: _____ Comment Topic: Hydrogeologic setting

Location of Comment Address: 3-155

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

X Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
X Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-42 DOE Comment No: _____ Comment Topic: Hydrogeologic setting

Location of Comment Address: 3-100, 101, 143, 155

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
X Other (explain) FEA contains new travel time analysis

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
X Other (explain) porosity values are used incorrectly

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
X Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-43 DOE Comment No: _____ Comment Topic: Hydrogeologic setting

Location of Comment Address: 6-244 — 259

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
X Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W & A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-44 DOE Comment No: _____ Comment Topic: Hydrogeologic setting

Location of Comment Address: 6-244 - 259

How Was Comment ~~Addressed? (Circle)~~
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
X Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W & A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-45 DOE Comment No: _____ Comment Topic: Hydrogeologic setting

Location of Comment Address: 3-143

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-46 DOE Comment No: _____ Comment Topic: Hydrogeologic setting

Location of Comment Address: 6-244 - 259

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
X Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-47 DOE Comment No: _____ Comment Topic: Groundwater

Location of Comment Address: 3-159 — 160

How Was Comment ~~Addressed?~~ (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
X Other (explain) uncertainties are partially addressed

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
X Other (explain) use of unanalyzed data is not addressed

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
X Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-26-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-50 DOE Comment No: _____ Comment Topic: Ground water quality

Location of Comment Address: 3-161

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
X Other (explain) statement removed from Draft EA

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
X Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: WPA Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 5-6 DOE Comment No: _____ Comment Topic: Hydrology

Location of Comment Address: 5-61

~~How Was Comment~~ Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
X Other (explain) assumption regarding complete mixing of phase was omitted

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 5-7 DOE Comment No: _____ Comment Topic: Ground-water

Location of Comment Address: 5-62

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-14 DOE Comment No: _____ Comment Topic: Geohydrology

Location of Comment Address: 6-243 — 259

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments; (Either adequately/inadequately addressed)

___ Defer to SCP
X Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-15 DOE Comment No: _____ Comment Topic: Qualifying Condition

Location of Comment Address: 6-247 & 253

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
X Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-16 DOE Comment No: _____ Comment Topic: Geohydrology

Location of Comment Address: 6-243 — 259

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
X Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-17 DOE Comment No: _____ Comment Topic: Qualifying condition

Location of Comment Address: 6-243 — 259

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
X Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-21 DOE Comment No: _____ Comment Topic: Geohydrology

Location of Comment Address: 6-96

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

X Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
X Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: WGA Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 644 DOE Comment No: ____ Comment Topic: Adverse condition

Location of Comment Address: 6-135

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-24-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-21 DOE Comment No: _____ Comment Topic: Data Relevant to the Evaluation

Location of Comment Address: p 6-129

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Reference to Blair et.al was stricken from the FEA (chapter 6)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-24-86

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-22 DOE Comment No: _____ Comment Topic: Favorable Conditions No. 1

Location of Comment Address: p C.5-5

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
✓ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

No mention of the fact that data and interpretations presented in Weeks and Wilson (1984) are preliminary could be found in the FEA.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-33 DOE Comment No: _____ Comment Topic: Hydrostratigraphic units

Location of Comment Address: p. 3-142

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
X DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-34 DOE Comment No: _____ Comment Topic: Hydrostratigraphic units

Location of Comment Address: 3-100, 101, 143, 151, 155

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
X Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

X Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

DOE does not appear to understand the difference between total and effective porosity.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 335 DOE Comment No: _____ Comment Topic: Hydrostratigraphic unit

Location of Comment Address: 3-143

How Was Comment Addressed? (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
X Other (explain) addressed in part based on available info

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
X Other (explain) comment was partially addressed; cannot be fully addressed given existing data base

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-36 DOE Comment No: _____ Comment Topic: Hydrostratigraphic units

Location of Comment Address: 3-143 — 151

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

X Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

X Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-37 DOE Comment No: _____ Comment Topic: Hydrostratigraphic units

Location of Comment Address: 3-151 – 155

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

X Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

X Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-38 DOE Comment No: _____ Comment Topic: Hydrostratigraphic units

Location of Comment Address: 3-155 — 160

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-39 DOE Comment No: _____ Comment Topic: Hydrostratigraphic units

Location of Comment Address: 3-151

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

X Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
X Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams & Assoc Date: 6-23-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-17 DOE Comment No. _____ Comment Topic: Summary of analyses for section 6.3.1.1

Location of Comment Address: Page 6-125

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagrement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments:

___ Defer to SCP
___ Precipitates FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Table 6-15 has been changed to incorporate NRC comment. However the EA states that the condition does not apply to Yucca Mountain because of unsaturated conditions.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W & A. Date: June 20 1986

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-11 DOE Comment No: 6.3.1.1.5 Comment Topic: Flux value

Location of Comment Address: C.4-12 C.5-8

How Was Comment Addressed? (Circle)
(New Information) New Analysis (Revised Conclusions) Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

See major comment.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W & A. Date: June 20 1986

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-12 DOE Comment No: 6.3.1.1.5 Comment Topic: Error in stratigraphic units

Location of Comment Address: Table 3-3 pg 3-29
Table 6-17 pg 6-149 pg C-4-13

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: June 20, 1986

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-13 DOE Comment No: 3.6.3.3 Comment Topic: Present & projected water use in the Area.

Location of Comment Address: 3.3.3 page 3-31

How Was Comment ~~Addressed? (Circle)~~
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: June 20, 1986

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-16 DOE Comment No: 3.6.3.3 Comment Topic: Water Supply

Location of Comment Address: 3-85

How Was Comment Addressed? (Circle)
(New Information) New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)
Table was updated but well locations are still not presented

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W & A Date: June 20, 1986

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 4-8 DOE Comment No: _____ Comment Topic: Hydrology

Location of Comment Address: 4.2.1.1.2 page 4-22
C4.1.2.3 page C. 4-12 page C. 7-4
C. 4-14

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: June 20, 1986

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 4-9 DOE Comment No: _____ Comment Topic: Hydrology.

Location of Comment Address: pg C.7-3

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W & Assoc Date: June 20, 1986

Site: (NNWSI) BWIP ~~DEAF SMITH~~ ~~DAVIS CANYON~~ RICHTON DOME

NRC Comment No: 5-7, 5-8, 5-9, 5-10, DOE Comment No: 5.2.2 pg 5-3C Comment Topic: Hydrologic Impacts.

Location of Comment Address: pg C.5-50, pg C.7-1 pg C.7-11

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WE Assoc. Date: June 20, 1986

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 5-11 DOE Comment No: 5.2.2 pg 5-36 Comment Topic: Infiltration & containment

Location of Comment Address: pg C.7-11

How Was Comment Addressed? (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hypolon lining will be used.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W & Assoc Date: June 20, 1986.

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-12 DOE Comment No: 6.2.1.7.5 pg 6-91 also sec 6.4.2 Comment Topic: Impact on water resource

Location of Comment Address: pg C.7-39
C.7-40

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: June 20, 1986

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-13 DOE Comment No: 6.2.1.8.2 Comment Topic: Flood Hazard.

Location of Comment Address: _____

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/20/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 3-30 DOE Comment No: _____ Comment Topic: DOE map ① May have incorrect value; flow could go toward Colorado River more directly ② No description of selection process for well data.

Location of Comment Address: Figure 3-__; Potentiometric Surface of Tower HSU.

How Was Comment Addressed? (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

They provide a new map of the potentiometric surface in the Leadville Limestone. However it is a very poor quality print, so that one can't really compare it to the old ~~one~~ map. Also, they removed all discussion in the text of how the data were culled, etc; ~~[illegible]~~ there was such discussion in the draft EA.

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

X Lack of recognition of NRC comment I think. It's hard to ~~see~~ address this in much more depth until SCP time.
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

X Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W & A Date: 6-20-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-30 DOE Comment No: _____ Comment Topic: Hydrology

Location of Comment Address: p 3-187

How Was Comment ~~Addressed?~~ (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: WGA Date: 6-20-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-31 DOE Comment No: _____ Comment Topic: Hydrostratigraphic Units

Location of Comment Address: p. 3-142

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

X Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
X Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-20-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-32 DOE Comment No: _____ Comment Topic: ~~Hydrostratigraphic~~ Units

Location of Comment Address: p. 3-142

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
X Other (explain) revised data presentation

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

10.10

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/20/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 4-A DOE Comment No: _____ Comment Topic: What will they do w/ the wells (HSU) after testing

Location of Comment Address: ?

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

X Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

They appear not to have addressed well closure at all.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/20/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 4-21 DOE Comment No: _____ Comment Topic: Will water be brought in? Inconsistency

Location of Comment Address: p. 4-110 and p. 4-111

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

No further ~~inc~~inconsistency. They're ~~pumping~~ trucking water in from municipalities.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: D. Williams Date: 6/20/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 4-3 DOE Comment No: _____ Comment Topic: What will be done with the water pumped from the lower HSU?

Location of Comment Address: _____

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
✓ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Now they say brines will be trucked to disposal wells.
~~[illegible]~~
Are we to assume that wells will be to Leadville?
Or will they be shallower?
Will they stress ~~[illegible]~~ local groundwater system.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/20/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 4-2 DOE Comment No: _____ Comment Topic: Borehole Plan ① They provided no rationale

Location of Comment Address: p 4-7
p. 4-112 P1

② They have ~~no~~ no data collection btwn 2 km and 22 km

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

✓ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Test holes appear to be in the same spots.
Still no technical rationale for hole placements

p. 4-112 "No drilling in Canyonlands National Park is planned."

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/20/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 3-33 DOE Comment No: _____ Comment Topic: DOE says that ~~sits~~ strata are laterally extensive (based on geophysical logs) and ∴ little or no influx of external gw.

Location of Comment Address: 3-200 to 3-204

Comparison of logs could identify missing units, but not signs of minor dissolution.

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
✓ Comment resolved pending NRC review of new information/analysis ← They do ~~make~~ a more complete treatment of data & altern. interpret'ns.
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

✓ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

They use hydrochemical discussion to discuss whether water ~~is likely to be~~ and TDS are likely to have come from dissolution.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/20/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

They stick to their simple conceptual model (for flow)

NRC Comment No: 3-34 DOE Comment No: _____ Comment Topic: model (for flow)

Location of Comment Address: 3-212

① little or no hydraulic communication
② Salt has very low permeability
→ Should ~~[illegible]~~ consider alternati[illegible] such as
① localized vertical flowpat[illegible] and gradients
~~[illegible]~~

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and ~~suggested resolution~~ added on a qualifier to address our concern.
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/20/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 3-32 DOE Comment No: _____ Comment Topic: DOE's statement that conceptual model is realistic may not be defensible. May not be conservative. May not be realistic w/r/t gradients.

Location of Comment Address: p. 3-210 ¶ 43

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

✓ Lack of recognition of NRC comment - Ignored it
____ Lack of understanding of the NRC stated problem and basis
✓ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

✓ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

They still say their regional conceptual model is realistic; they say this on the basis of realistic results from regional ~~model~~ simulation.

One could argue that they had little data to ~~argue~~ model with and less still to verify model results... but it ~~may~~ becomes pointless to argue with no data.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/20/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 3-31 DOE Comment No: _____ Comment Topic: Some of the head data show the potential for localized upward gradients.

Location of Comment Address: 3-208 P63

How Was Comment Addressed? (Circle)
New Information (New Analysis) (Revised Conclusions) Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution
~~___~~ DOE disagreed with suggested resolution; alternative resolution ~~accepted~~ [illegible]
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

They're ~~on~~ soft ~~pedaling~~ coddling our story line now, until new data comes in

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/20/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 3-29 DOE Comment No: _____ Comment Topic: Hydrochemistry (TDS ?)

Location of Comment Address: p. 3-204 ¶ #2 says there may be 2 HSU's in upper HSU. OR could be evidence of dissolution
(also 3-200, 3-202.

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

✓ DOE agreed with problem, basis, and suggested resolution That is, they presented more defensible analysis
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

✓ Defer to SCP for further resolution
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

They've ~~demonstrating~~ summarized ~~this comm discussion~~ of what motivates their choice of delineation btwn HSU's ~~their conclusion is stated on p. 3-171~~ on p. 3-204 ¶ #2

p 3-200 Elephant canyon water is meteoric water
p 3-202 Honaker Trail water is "old formation water"
p. 3-204

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/20/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 3-28 DOE Comment No: _____ Comment Topic: ① They mis-state that lab K > field K when high effective porosity is present. Their data don't support this ② They ~~misuse~~ misapply the term effective porosity to data from ~~unsaturated~~ tests which measure ~~total~~ ~~porosity~~ something between total porosity and effective porosity

Location of Comment Address: _____

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

✓ Lack of recognition of NRC comment ~~for~~ point ②
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

~~They remove~~ ~~the discussion of the~~ ~~(1) misapplication~~.

They remove the discussion which caused the first (①) problem to be raised.

They still call their porosity data effective porosity.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: WILLIAMS Date: 19 JUN 86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON (RICHTON DOME)

NRC Comment No: 3-16 DOE Comment No: 29 Comment Topic: GROUNDWATER CHEMISTRY

Location of Comment Address: C.4.1.1.7.

How Was Comment Addressed? (Circle)
(New Information) New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
X Other (explain) NEW THERMODYNAMIC DATA INCLUDED.

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: WILLIAMS Date: 19 JUN 86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON (RICHTON DOME)

NRC Comment No: 3-19 DOE Comment No: 32 Comment Topic: GEOHYDROLOGIC UNITS

Location of Comment Address: C.4.1.2.2.

How Was Comment Addressed? (Circle)
(New Information) New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
__X__ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed) CHECK DRAFT EA WITH FEA.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: WILLIAMS Date: 19 JUN 86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON (RICHTON DOME)

NRC Comment No: 3-20 DOE Comment No: 33 Comment Topic: MODELING

Location of Comment Address: C:4.1.2.2

How Was Comment Addressed? (Circle)
(New Information) New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

MODELING ASSUMPTIONS, HOWEVER, WERE NOT INCLUDED IN F.E.A. SO THAT READERS MUST STILL REFER TO THE CITED SOURCES.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: WILLIAMS Date: 19 JUN 86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON (RICHTON DOME)

NRC Comment No: 6-10 DOE Comment No: 78 Comment Topic: DATA FROM SALT CORES

Location of Comment Address: C.5.1 {3.2.3, 6.4.2.3.6, 6.3.1.1.1 FEA}

How Was Comment Addressed? (Circle)
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

or X Defer to SCP
X Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

STILL UNRESOLVED IS THE UNCERTAINTY INVOLVED IN USING LABORATORY (NON-SITE SPECIFIC) DATA.

RESPONSE C.5.1 DOES NOT, BY ITSELF, EVEN ADDRESS NRC COMMENT 6-10, BUT REFERS TO FEA SECTIONS 6.3.1.1.1 AND 6.4.3.2.5.

THE DOE ASSUMPTION IS THAT THE ASSUMED DATA ARE CONSERVATIVE.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: WILLIAMS Date: 19 JUN 86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON (RICHTON DOME)

NRC Comment No: 6-11 DOE Comment No: 79 Comment Topic: MODEL UNCERTAINTIES

Location of Comment Address: C.5.1 {FEA 6.3.1.1.1 6.4.2.3.5}

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
? X Unresolved but not significant to siting or characterization (D.O.E.)
X Other (explain) QUANTITATIVE ANALYSIS DROPPED FROM FEA

Additional Comments: (use back if needed)

FEA SIMPLY DROPPED ALL ANALYSES OUTSIDE THE DOME, AND IN THIS WAY DOE BYPASSED THIS COMMENT. DOE NOW USES ONLY TRAVEL TIMES WITHIN THE SALT STOCK. FLOW OUTSIDE THE DOME WILL, HOWEVER, ADD AN ADDITIONAL PERIOD TO THE TRAVEL TIME CALCULATION. THESE FLOW ANALYSES ARE IMPORTANT IN EVALUATING THE FLOW PATH IN THE EVENT OF A BREACHING OF THE REPOSITORY

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WILLIAMS Date: 19 JUN 86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON (RICHTON DOME)

NRC Comment No: 6-12 DOE Comment No: 80 Comment Topic: TRAVEL TIMES FROM EDGE of SALT DOME

Location of Comment Address: C.5.1. {FEA 6.3.1.1.2}

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
X Unresolved but not significant to siting or characterization
X Other (explain) FEA DROPPED TRAVEL TIME CALCULATIONS FOR ZONES OUTSIDE THE DOME. SEE ALSO COMMENT 6-11

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: WILLIAMS Date: 19 JUN 86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON (RICHTON DOME)

NRC Comment No: 6-13 DOE Comment No: 81 Comment Topic: DEFINITION OF ACCESSIBLE ENVIRONMENT

Location of Comment Address: C.5.1

How Was Comment Addressed? (Circle)
New Information New Analysis (Revised Conclusions) Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

DOE DEFINED THE EDGE OF THE DOME AS THE ACCESSIBLE ENVIRONMENT.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: WILLIAMS Date: 19 JUN 86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON (RICHTON DOME)

NRC Comment No: 6-14 DOE Comment No: 82 Comment Topic: ALTERNATIVE CONCEPTUAL MODELS of FLOW SYSTEMS

Location of Comment Address: C.5.16 C.5.11 {FEA 6.4.2.3.5 FEA 3.2.3}

How Was Comment ~~Addressed? (Circle)~~
New Information (New Analysis Revised Conclusions) Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
or X Lack of understanding of the NRC stated problem and basis
X Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

? or X Defer to SCP
X Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

EITHER D.O.E. INVESTIGATORS ARE CONFIDENT THE CONCEPTUAL MODEL USED IN THE FEA IS ADEQUATELY DEMONSTRATED OR DOE SEES NO NEED TO CONSIDER ALTERNATIVE FLOW PATHS. SINCE EDGE OF DOME IS NOW THE "ACCESSIBLE ENVIRONMENT", UNCERTAINTIES IN EXTRADOMAL FLOW SYSTEM ANALYSES ARE NOT COVERED.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: WILLIAMS Date: 19 JUN 86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-15 DOE Comment No: 83 Comment Topic: DIRECTION OF VAPOR-PHASE INCLUSION MIGRATION IN RESPONSE TO HEAT

Location of Comment Address: C.5.11 (p. C.5-39) {FEA 6.4.2.3.2}

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

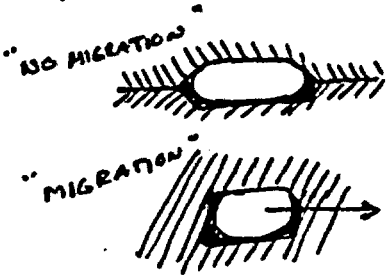
____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
X Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
X Other (explain) COMMENT COULD BE RESOLVED IF DATA ARE PRESENTED TO SUPPORT FEA STATEMENT

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

HOT ←——→ COLD



FEA STATES THAT VAPOR-PHASE FLUID INCLUSION MIGRATION STOPS AT INTERGRANULAR BOUNDARIES WHERE "INTERGRANULAR FLOW IS EXPECTED TO TAKE OVER." NO DATA OR REFERENCES ARE SUPPLIED TO SUPPORT THIS CONJECTURE.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: WILLIAMS Date: 19 JUN 86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-36 DOE Comment No: 105 Comment Topic: DISSOLUTION

Location of Comment Address: ~~C.5.6~~ C.5.6 C.4.1.1.8 } FEA 3.2.5.7 3.2.7 6.3.1.6

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
X Comment resolved pending NRC review of new information/analysis
X Other (explain) UNCERTAINTIES GIVEN COMMENT MAY REMAIN UNTIL SCP. STATEMENT ON P. 3-47 IS CONTRADICTED IN FIG. 3-29.

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
____ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
____ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

X Defer to SCP
or X Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

1) DOE SUGGESTS THE SALINE ANOMALY IN THE UPPER AQUIFER SOUTH OF RICHTON DOME IS THE RESULT OF "UNFLUSHED" CONNATE WATER, ALTHOUGH
2) IT IS ALSO STATED THAT SOME UNCERTAINTY STILL EXISTS.
3) ON P. 3-47 OF FEA IT STATES THAT BOREHOLE MCCG-2 SOUTH OF THE LEAF RIVER SHOULD NOT RECEIVE FLOW FROM RICHTON DOME BECAUSE (EITHER) THE LEAF RIVER IS JUXTAPOSED OR BECAUSE MCCG-2 IS ON A DRAINAGE DIVIDE. FIG. 3-29 (P. 3-96) HOWEVER, DEPICTS REGIONAL FLOW FROM RICHTON DOME PAST THE LEAF RIVER AND MCCG-2.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor WILLIAMS Date: 19 JUN 86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-64 DOE Comment No: 130 Comment Topic: HYDROLOGIC PROBLEMS CAUSED BY SHAFT SEALING.

Location of Comment Address: C.8.3

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

X Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

ASSUMPTION OF NO ANOMALOUS ZONES FOR RICHTON DOME BYPASSES PROBLEM. SITE CHARACTERIZATION WOULD PROVE OR DISPROVE THE EXISTENCE OF ANOMALOUS ZONES

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/17/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 3-27 DOE Comment No: _____ Comment Topic: Are all T data used?

Location of Comment Address: 3-200 and Fig 3-53, p. 3-114 They don't list the regional data from ONWI-290 They only presented T values for GD-1

How Was Comment Addressed? (Circle)
New Information (New Analysis) (Revised Conclusions) Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
✓ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
✓ Other (explain) New problem -- how to determine effective thicknesses in evaporite sequences

Status of Unresolved Comments: (Either adequately/inadequately addressed)

✓ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)

Assuming that the regional DST data were in the Leadville Limestone (which may be the case — NRC staff would have to check ONWI-290, Vol V, Appendix H, table A5), then they have presented the T data as permeabilities. This ~~pos~~ brings another problem to light.. who decided what the effective thickness (b) was for each test? T = Kb. Is "b" the producing unit, the packed interval, or what?

See D1620 7/1/86
Communication No. 67
J. Pohle

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/16/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: E-2 DOE Comment No: _____ DEA Comment Topic: T values in lower HSU are not necessarily lower than T values in upper HSU

Location of Comment Address: ~~[illegible]~~ FEA p 3-200

How Was Comment Addressed? (Circle)
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

X DOE agreed with problem, basis, and suggested resolution
___ DOE disagreed with suggested resolution; alternative resolution accepted
___ DOE disagreed with problem and basis; DOE response accepted
___ Comment resolved pending NRC review of new information/analysis
___ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

___ Lack of recognition of NRC comment
___ Lack of understanding of the NRC stated problem and basis
___ Lack of agreement with NRC stated problem and basis
___ Lack of adequate support for disagreement with NRC stated problem and basis
___ Lack of agreement with NRC stated suggested resolution
___ Lack of adequate support for disagreement with NRC stated suggested resolution
___ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
___ Other (explain) _____

Status of Unresolved Comments: (Either adequately/inadequately addressed)

___ Defer to SCP
___ Precipitate FEA Comment
___ Unresolved but not significant to siting or characterization
___ Other (explain) _____

Additional Comments: (use back if needed)

They now say that the Leadville Limestone (lower HSU) has higher transmissivities than the upper HSU. This is supported by the data.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: B. Williams Date: 6/16/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: E-3 DOE Comment No: _____ DEA Comment Topic: "Vertical downward gradient from upper to lower aquifer"

Location of Comment Address: FEA p. 9 (vol. 1)

How Was Comment Addressed? (Circle)
New Information New Analysis (Revised Conclusions) Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

____ DOE agreed with problem, basis, and suggested resolution
____ DOE disagreed with suggested resolution; alternative resolution accepted
____ DOE disagreed with problem and basis; DOE response accepted
____ Comment resolved pending NRC review of new information/analysis
____ Other (explain) _____

Manner in Which Comment is Inadequately Addressed:

____ Lack of recognition of NRC comment
____ Lack of understanding of the NRC stated problem and basis
____ Lack of agreement with NRC stated problem and basis
____ Lack of adequate support for disagreement with NRC stated problem and basis
____ Lack of agreement with NRC stated suggested resolution
____ Lack of adequate support for disagreement with NRC stated suggested resolution
✓ Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resoultion through changes to appropriate sections of the FEA
✓ Other (explain) Is inadequately discussed here; adequately treated elsewhere

Status of Unresolved Comments: (Either adequately/inadequately addressed)

____ Defer to SCP
____ Precipitate FEA Comment
____ Unresolved but not significant to siting or characterization
____ Other (explain) _____

Additional Comments: (use back if needed)