maximum allowable waste concentrations for hazardous inorganic and organic constituents of concern. To set these levels, the Agency identified a fate and transport model that would provide some estimate of the dilution afforded to a constituent once the petitioned wastes were disposed of, based on the reasonable, worst-case management scenario for the wastes. The Agency considered the appropriateness of alternative waste management scenarios for DOE's liquid wastes and decided that disposal in a land-based waste management unit, such as a surface impoundment, is a reasonable, worst-case scenario. Under a surface impoundment disposal scenario, the major exposure route of concern for hazardous constituents would be ingestion of contaminated ground water.

The Agency, therefore, used the modified EPACML, which predicts the potential for ground-water contamination from wastes that are disposed of in a surface impoundment, to establish maximum allowable waste concentrations for DOE's petitioned wastes. See 56 FR 32993 (July 18, 1991), 56 FR 67197 (December 30, 1991) (and the RCRA public docket for these notices) for a detailed description of the EPACML model and the modifications made for delisting. This model, which includes both unsaturated and saturated zone transport modules, estimates the dilution and attenuation factor (DAF) resulting from subsurface processes such as three-dimensional dispersion and dilution from ground-water recharge for a specific volume of waste. Using this model, the Agency obtained a DAF of 10 for the maximum annual volume of petitioned wastes expected to be generated (i.e., 95,000 cubic yards or 19 million gallons). The Agency used this DAF to back-calculate maximum allowable levels (from the health-based levels) for the constituents of concern in ground water at a compliance point (i.e., a receptor well serving as a drinkingwater supply). The Agency requests comments on the use of the modified EPACML to set maximum allowable waste concentrations (see also Section -Verification Testing Conditions).

Because the petitioned wastes are mixed wastes, the disposal options for the petitioned wastes are realistically limited to disposal on-site in a Stateapproved land disposal facility. The preferred disposal system is an infiltration crib, which is described as a grid of diffuser pipes placed in a trench and covered by 6 feet of sand. DOE submitted to EPA a summary of a modeling effort which predicts tritium concentrations in ground water that would result from the operation of the infiltration crib. Based on the modeling information provided by DOE, the crib system would ensure that petitioned wastes (i.e., waste waters) containing tritium are isolated for many years while they migrate slowly through the subsurface environment from the crib to the Columbia River. By the time the waste waters reach the river (estimated to take more than 120 years), the effect of radioactive decay will have lowered concentrations of tritium in the waste waters to acceptable levels. In addition, the crib system would significantly reduce volatilization of organics.

Because EPA evaluated the hazardous constituents in the petitioned wastes, EPA requested DOE to provide additional modeling information concerning transport of hazardous chemical constituents using its existing model for transport of tritium. DOE submitted a ground water modeling study that was based on several conservative assumptions. A continuous waste water discharge of 150 gallons per minute (gpm) was assumed in the modeling (ETF is designed to handle a maximum feed rate of 150 gpm at 72 percent efficiency), which translates into approximately 78 million gallons per year (more than 4 times greater than the maximum annual volume of petitioned wastes expected to be generated). DOE's study also assumed that the ETF will treat hazardous waste forever (rather than the estimated period of 30 years or less needed to treat the petitioned wastes), chemical constituents will not be retarded in the unsaturated or the saturated zones, and there will be no attenuation processes (i.e., volatilization, biodegradation, hydrolysis, or adsorption). Under these worst-case assumptions, the DOE study predicted minimum dilution factors at the Columbia River ranging from 14 (after 200 years) to 9 (after 300 years).

Although the modeling assumptions were different, the dilution factors estimated from DOE's study (9 to 14) are consistent with the DAF of 10 calculated using the modified EPACML. Therefore, based on the results of both of these conservative analyses, EPA is assuming a DAF of 10 to establish delisting levels for the effluent wastes.

During the evaluation of DOE's petition, the Agency also considered the potential impact of the petitioned waste via non-ground-water routes. The Agency evaluated the potential hazards resulting from airborne exposure to volatile constituents present in DOE's treated effluent using a simple air dispersion model for releases from an underground crib disposal system. Similar to its use of the EPACML, the Agency used this model to backcalculate maximum allowable concentrations of volatile constituents that could be present in the treated effluent without presenting a potential hazard. The Agency then compared these concentrations with those set in the conditions proposed in today's notice (using the modified EPACML) to determine whether concentrations of volatile constituents would be of concern if the treated effluent met the criteria set forth in the proposed testing conditions. The results of this conservative evaluation indicated that there is no substantial present or potential hazard from airborne exposure to constituents from DOE's petitioned waste. A description of the Agency's assessment of the potential impact of DOE's waste, with regard to exposure to volatile constituents, is presented in the docket for today's proposed rule.

The Agency also considered the potential impact of the petitioned waste via a surface water route. (A description of the Agency's assessment is included in the RCRA public docket for today's notice.) In general, the Agency believes that constituents from the petitioned waste will not directly enter a surface water body without first traveling through the saturated subsurface where dilution of hazardous constituents, such as that modeled by the modified EPACML (or DOE's study), may occur. Further, the Agency believes that any constituents transported here would be diluted once they reached the Columbia River. The Agency, therefore, believes that this route of exposure is not of concern.

D. Conclusion

The Agency concludes that the descriptions of DOE's 200 Area **Evaporator Treatment Facility process** and analytical characterizations, in conjunction with the proposed delisting testing requirements, provide a reasonable basis to grant DOE's petition for an upfront conditional exclusion. The Agency believes that the samples collected from the treatability studies and waste variability study adequately represent the variations in raw materials and processing. The data submitted in support of the petition show that DOE's proposed ETF can substantially reduce the toxicity of the waste, and render effluent generated on site nonhazardous by reducing the levels of inorganic and organic constituents of concern in the waste to below delisting levels. In addition, under the testing provisions of the conditional exclusion, DOE will be required to retreat effluents in a verification tank exhibiting total constituent levels above a specified