DETAILED RESPONSES TO COMMENTS

1.0 Public Meeting Comments

The 30-day comment period for the Proposed Plan for the St. Louis Downtown Site began on April 8, 1998 and ended on May 8, 1998. A public meeting was held on April 21, 1998 to hear comments and answer questions regarding the SLDS' Feasibility Study and Proposed Plan. The following comments were taken from the St. Louis Downtown Site Public Meeting transcript and paraphrased for continuity and clarity. Verbatim statements by meeting participants, as they appear in the transcript, are written in italic font.

Comment 1

Commentor: Mr. Bob Eck. Mr. Eck is the director of the Missouri Department of Natural Resources, St. Louis regional office. He is speaking on behalf of the Department Director, Steve Mahfood.

Comment: Mr. Eck stated the preference of the St. Louis Site Remediation Task Force for Alternative 6 and that all backfill should be from approved offsite borrow locations. Mr. Eck stated,

> *"The State of Missouri prefers Alternative 6 as the remedy for cleaning up radioactive contamination at the St. Louis Downtown Site. We believe Selective Excavation and Disposal provides the best vehicle for attaining the objectives of the St. Louis Site Remediation Task Force. Only approved off-site borrow should be used to fill the excavations at the vicinity properties.*
>
> *We do believe the remediation should clean up to industrial use criteria the Mallinckrodt site and 5/15 'any use' levels at any depth for the vicinity properties. We believe Alternative 6 can be accomplished in a manner that will leave property owners whole. Such will result in the best response to the federal nuclear weapons production legacy in this part of the community*

Mr. Eck also expressed his support for the use of institutional controls *"to ensure continued protection until a remedy for inaccessible soils is developed."*

Response: The USACE agrees to select Alternative 6 as the preferred remediation alternative, instead of Alternative 4. This will be reflected in the Record of Decision (ROD). This decision is largely due to the

overwhelming support for Alternative 6 by the public, Mallinckrodt, Inc. and local, state and federal government officials. Both alternatives are protective of the current and future worker and the environment. However, Alternative 6 reduces radionuclide levels further, thus providing additional protectiveness relative to Alternative 4. In addition, this alternative will reduce the need for future studies, designs, and remedial actions, thus avoiding future potential liability and costs to the federal government. Alternative 6 also allows Mallinckrodt, Inc. the freedom to grow and support the local community without future remediation liabilities.

As stated in the Proposed Plan and the Feasibility Study, Alternative 6 will continue to use soils from onsite removal activities as backfill, as long as the radiological contamination levels of the soil are less than ALARA criteria. This soil will only be used as backfill up to depths of 4 or 6 feet, depending on the excavation zone. Only approved borrow from offsite will be permitted to backfill areas at the vicinity properties and above 4 or 6 feet at SLDS. This approach is more cost effective than using offsite soil for all the backfill due to avoidance of disposal fees and minimizing transport costs for the new soil. Additionally, clean offsite backfill to depth will provide little or no substantial health benefits since the backfill areas in question extend deeper than areas projected to be disturbed by future activities.

In addition to choosing Alternative 6 for implementation, the USACE has revised Alternative 6 so the vicinity property soils will be remediated to levels equal to or less than the more stringent "composite" criteria regardless of depth. Inaccessible soils on the vicinity properties will be managed through institutional controls until a remedy is developed for the inaccessible soils operable unit. This rigorous level of remediation will allow unrestricted use of the accessible soils on the vicinity properties.

Comment 2

Commentor: Anna Ginzburg. Ms. Ginzburg represented the Mayor's Office of the City of St. Louis.

Comment: Ms. Ginzburg read a prepared statement from Mayor Harmon. The statement was principally in support of Alternative 6 and for the Mallinckrodt's "outstanding corporate citizenship". The statement opened,

"As Mayor of the City of St. Louis, I submit the following statement in response to the Army Corps of Engineers Proposed Plan for the downtown site dated April 1998. The Mallinckrodt site should be cleaned up to the standards laid out in Alternative 6 of the April 1998 Proposed Plan. This alternative is most consistent with the recommendations of the St. Louis Site Remediation Task Force which states that the Mallinckrodt properties should be cleaned up to a depth of 8 feet. Cleanup to the 4 and 6-foot levels stated in Alternative 6 will allow for the future development at the Mallinckrodt site."

The statement went on to praise Mallinckrodt as a "positive presence" by reading,

"The Mallinckrodt Corporation has displayed outstanding corporate citizenship throughout the entire cleanup and public input process. They have made major in-kind contributions of time, energy and resources moving the site cleanup forward significantly. The City of St. Louis values Mallinckrodt's commitment to the Near North Riverfront area and the other neighborhoods surrounding its facility.

The plan laid out in Alternative 6 will allow Mallinckrodt to undertake development and expansion that will help the company maintain and expand its positive presence. Supporting Mallinckrodt development plan is a top priority for the City of St. Louis."

The Mayor was critical of Alternative 4 because it "*does not take into account the long-term costs related to ongoing oversight and monitoring for the significant level of contamination that would remain.*" And, "*it is unfair to assume that Mallinckrodt Corporation will accept this burden indefinitely.*"

The Mayor's statement expressed concern for the contamination on the vicinity properties by stating,

"These vicinity properties include several small businesses, as well as property owned by the City of St. Louis. The City property is adjacent to the recently opened Riverfront Trail. It is essential that this property be cleaned up to standards for unrestricted use in the near future since it is likely to be frequented by families using the trail.

The cleanup of the businesses included in the vicinity properties must be closely coordinated with the business owners so that economic activity is not disrupted. The Army Corps of Engineers should begin negotiations with these businesses in order to develop a cleanup plan. Under no circumstances should the burden of cleanup costs or the responsibility for monitoring and oversight of continuing contamination fall on these businesses.

At a minimum, we need to clean up the vicinity properties to the same unrestricted use standards that the City, the County and the State want to see utilized at the Airport Site and adjacent properties in the much more affluent North County neighborhoods surrounding the Airport Site."

Response: Based on public comment, the USACE has selected Alternative 6 for implementation, rather than the initially proposed Alternative 4. The public and stakeholders expressed strong concern that Alternative 4 did not provide satisfactory protection of workers during Mallinckrodt, Inc. industrial activities. These parties also expressed concern that the residual contamination left in place below 2 feet represents an open-ended liability for Mallinkrodt, Inc. with respect to management of waste soils made available during future activities. It was noted by commentors that minimizing limitations so Mallinckrodt, Inc. can freely expand and renovate is of utmost importance to the community and the local economy. Selection of Alternative 6 as the preferred alternative provides an additional level of protectiveness relative to Alternative 4, and satisfactorily mitigates stakeholder concerns by reducing further the amount of residual radionuclide contamination and eliminating any future burden associated with Mallinckrodt, Inc. land-use. In addition, Alternative 6 will reduce the need for future studies, designs, and remedial actions, thus avoiding future potential liability and costs to the federal government.

In addition to selecting Alternative 6 for implementation, the USACE has revised Alternative 6 so the vicinity property soils are remediated to levels equal to or less than the more stringent "composite" criteria regardless of depth. Those inaccessible soils on the vicinity properties at the time of remediation will be managed through institutional controls until a remedy is developed. This rigorous level of remediation will allow unrestricted use of the accessible soils on the vicinity properties.

Comment 3

Commentor: Mr. Richard Cavannaugh. Mr. Cavannaugh is the Chair of the St. Louis FUSRAP Oversite Committee. He represented the St. Louis County and presented a Statement from the St. Louis County Executive, Buzz Westfall.

Comment: Before reading the county executive's statement, Mr. Cavanaugh gave a brief overview of the committee's purpose to collaboratively work with the City "*to provide oversight and assurance that standards are maintained on the cleanup*" on the Downtown site as well as the Airport Site and adjacent properties.

The Mr. Westfall's statement, read by Mr. Cavanaugh, expressed disagreement with the proposed alternative based on recommendations by the St. Louis Site Remediation Task Force and the long-term adverse economic impact Alternative 4 may have to Mallinckrodt Inc. and the region. Mr. Westfall's statement read,

> *"I* [Mr. Westfall] *must, however, disagree with the Corps of Engineers' current recommendation for Alternative 4 for cleanup of the St. Louis Downtown site. Alternative 4 would only provide a partial solution to the cleanup issue at the Mallinckrodt plant. Most importantly, the proposed plan for Alternative 4 is not consistent with the recommendations of the St. Louis Site Remediation Task Force. The Task Force recommendation--based on over three years of hard work and study by the Radioactive Waste Commissions of both St. Louis County and the City of St. Louis--clearly calls for the use of clean backfill at the St. Louis Downtown Site.*
>
> *The Mallinckrodt Corporation is a long standing and vital employer in the St. Louis region. Several other businesses operate in the nearby vicinity properties. The proposed Alternative 4 would result in radioactive contamination remaining in the ground on the north St. Louis site. The perceived short-term cost savings of Alternative 4 are overshadowed by the long-term economic benefits of complete remediation of the Downtown Site.*
>
> *It is the hope of the St. Louis community that Mallinckrodt will continue to operate a plant at the Downtown Site. Further, it's expected that Mallinckrodt will build future manufacturing facilities at that location. When such construction is contemplated, further radioactive waste remediation would be required prior to*

construction. Both the cost and time involved in such future remediation will functionally argue against Mallinckrodt's consideration of the north St. Louis site for future economic development."

Mr. Westfall's comments conclude with the recommendations of proceeding with Alternative 6 instead of Alternative 4. Alternative 6, according to Mr. Westfall's statement will *"assure complete remediation of the Mallinckrodt Site and will be a worthwhile investment in the future of a vibrant economy for our region. Any strategy short of the complete remediation outlined in Alternative 6 would be short sighted".*

Response: Please refer to the Responses associated with Comments 1 and 2, pertaining to the selection of Alternative 6 for implementation, based on public comment.

Comment 4

Commentor: Ms. Mimi Garstang. Ms. Garstang's comments were on behalf of State geologist Dr. James Williams.

Comment: Ms. Garstang began with a brief description of the site's groundwater system and its current use. Her principle concern was for the protection of the aquifer system potentially influenced by the site's contamination and that the selected remedy provide this protection. Ms. Garstang's statement read,

"You're probably all aware that the St. Louis Downtown Site is located on the Mississippi River flood plain. The facility is underlain by a major groundwater aquifer that extends from the northern reaches of the Mississippi River to the Gulf of Mexico. This aquifer supplies groundwater for private, public and commercial uses throughout much of its extent.

I [Dr. Williams] *recognize that the Mississippi River alluvial aquifer in the general vicinity of the St. Louis Downtown Site is not currently used for public water supply. However, the potential for such use cannot be discounted. The quantity as well as the quality of the water in this aquifer is adequate and suitable for many uses. Protection of the aquifer is essential given the volume and reliability of the water present.*

The close proximity of the Mississippi River means that there is a measurable influence by the river on the aquifer. The bedrock aquifer to the west influences the alluvium to a lesser amount. I [Dr. Williams] *realize that treatment of the water in this alluvium may be necessary prior to consumption. The extent of treatment may also be impacted by man-made influences on the aquifer. However, that does not allow for contamination risks to exist that knowingly would or could cause degradation of water quality beyond reasonable limits for standard treatment by the user.*

All remedial actions considered for the St. Louis Downtown Site should include efforts to eliminate the potential for radionuclides or other contaminants to adversely impact the alluvial aquifer usable as a water supply."

Response: Alternative 6, in addition to protecting the workers and providing flexibility for Mallinckrodt growth, also provides protection of groundwater by removing the majority of the source material responsible for deteriorating the water quality. A more aggressive treatment approach for meeting remedial objectives is not practical from a cost and technological standpoint because of the proximity to the Mississippi River, the nearest receptor, and the reduction of source material provided by the preferred alternative. Despite not being treated, residual contamination left by Alternative 6 does not pose a significant risk to water users since groundwater is not directly used as a water source and contaminants in the Upper Zone are not present in sufficient concentration to impact the quality of the Mississippi River.

Alternative 6, in addition to removing the majority of the source material, also provides for future assurances that the current non-use of regional groundwater continues. Alternative 6 regulates groundwater use through institutional controls that restrict groundwater usage until such time as the water no longer poses a threat. In addition to water-use restrictions, Alternative 6 also monitors the potential migration of the contaminants to determine the remedy's effectiveness and to provide a determination of water quality impacts.

Comment 5

Commentor: Ms. Sally Price. Ms. Price's comments were made on behalf of the St. Louis FUSRAP Oversight Committee, of which she is a member.

Comment: Ms. Price presented the opinion of the oversight committee that the preferred Alternative 4 should be switched to Alternative 6 based on the

increased protection to human health offered by 6, as well as Alternative 6 being *"more conducive to the continued long term growth and viability interests of Mallinckrodt Chemical Company"*. She stated,

> *"At the committee's last meeting this past Friday on April 17, 1998, they discussed the St. Louis Downtown Site Feasibility Study and Proposed Plan. As a result of the discussions, the committee unanimously approved a motion to support the Alternative 6 cleanup option offered in the report".*

Ms. Price closed her statement by emphasizing the importance of Mallinckrodt, Inc. and the vital economic base it provides the community as well as the North St. Louis area.

Response: Please refer to the Responses associated with Comments 1 and 2, pertaining to the selection of Alternative 6 for implementation, based on public comment.

Comment 6

Commentor: Ms. Rita Bleser. Ms. Bleser is the Vice Present and General Manager of Mallinckrodt, Inc. and Plant Manager of the St. Louis Plant.

Comment: Ms. Bleser opened with an overview of the Mallinckrodt company and its past growth and future upgrade plans. She emphasized Mallinckrodt growth and commitment to the FUSRAP Program by stating,

> *"Over the last 10 years Mallinckrodt has invested more than 200 million dollars in new manufacturing and support facilities in the St. Louis plant. Over the next 5 years Mallinckrodt hopes to continue investment in upgraded and new facilities at the plant. Mallinckrodt's interest in the continued development of the St. Louis plant makes it very concerned about the government cleanup of residual contamination under the FUSRAP program.*
>
> *Mallinckrodt has been an active partner in all FUSRAP activities. Employees serve on the Oversight Task Force, and we have committed staff and revenue to cleanup projects. To facilitate FUSRAP remedial activities, Mallinckrodt has relocated on-going operations, utility systems and demolished structures.*

Given our involvement in FUSRAP remedial activities and our continued desire to invest in and expand the St. Louis plant, we are concerned about the Corps stated preference for implementation of Alternative 4 of the plan. This alternative simply does not remove enough contaminated soil to ensure that future investment in the plant is financially justified.

The presence of contaminated soil in future construction zones will add costs, complexity and time to the construction of manufacturing and support facilities at the St. Louis plant. As a result, it may be more cost effective for Mallinckrodt to invest in facilities where such burdens do not exist."

Ms. Bleser expressed concern for the USACE's preferred Alternative 4 and recommended acceptance of Alternative 6. She stated,

"The Corps' preferred alternative is also not consistent with the recommendation of the St. Louis Site Remediation Task Force. In its September 1996 report this task force of community representatives recommended that soil contaminants be removed to a depth permitting general excavation for maintenance without concern.

Implementation of Alternative 4 would require that restrictions on future excavation be imposed according to the Corps' own risk analysis. Thus, the proposed plan does not excavate enough contaminated soil to avoid these restrictions and meet the task force recommendation. The Corps' plan also leaves its ownership of remaining contaminated materials unaddressed in this plan. Therefore, the cost of Alternative 4 is understated.

As the agency responsible for implementing the FUSRAP program, and as the successor to the Department of Energy, the Corps is obligated to remediate all MED - AEC related residues. Any left-behind contamination remains the responsibility of the Corps. As the Mallinckrodt facility and vicinity properties are further developed, soils left behind under Alternative 4 will be excavated by Mallinckrodt and other property owners and provided to the Corps for management and disposal. These administrative and disposal costs of the Corps are not included in the cost of Alternative 4. Most importantly, Alternative 4 does not minimize potential employee exposure. Remediation of more, not less, contaminated soils at this time lessens overall worker exposure.

...Implementation of Alternative 6 would remove contaminated soil to a depth of 6 feet and backfill the excavated site with clean fill. Therefore, contaminated soils likely to be encountered during routine maintenance and construction activity would be removed. This remediation alternative is consistent with Mallinckrodt needs, the task force recommendation, and minimizes long term worker exposure."

Response: Please refer to the Responses associated with Comments 1 and 2, pertaining to the selection of Alternative 6 for implementation, based on public comment.

Comment 7

Commentor: Father Richard Creason. Father Creason is the pastor of Holy Trinity Church.

Comment: Father Creason opened with a brief historical overview of his church. He emphasized how Mallinckrodt, Inc. is part of what makes a community. He states this support for Mallinckrodt, Inc.'s continued presence and Alternative 6 by stating,

"...I think we [Mallinckrodt and Holy Trinity Church] *both strive to be very responsible citizens in this community, to make a contribution to the improvement to a life and the well being of all who live here. And I think when you look at the elements that go to constitute a community, that it's employment and housing and education, and those things that people cherish in terms of a strong family life. I really would like to see Mallinckrodt stay here and continue to be that corporate citizen along with us.*

I think that the choice of level 6 or Alternative 6 for remediation would help them to redevelop that property and help to strengthen an otherwise fragile neighborhood. And so I think that that's my reason for saying that, and I hope you will give that due consideration."

Response Please refer to the Responses associated with Comments 1 and 2, pertaining to the selection of Alternative 6 for implementation, based on public comment.

Comment 8

Commentor: Mr. Tom Bratkowski. A resident of the Old North St. Louis neighborhood

Comment: Mr. Bratkowski stated he would favor removal of all radioactive waste and "*We need to remove any stigma associated the Manhattan project from north St. Louis.....We need to think in terms of rebuilding our community*". He stated,

> "*And the best way that can be achieved is not by doing the minimum but by doing the maximum, to reinsure that every effort is made to remove radioactive waste as deep and as far as possible. So I think this is an investment in the future. We can't think in terms of cheap dollars today and long term costs tomorrow if we ignore the opportunity to clean it up.*
>
> *So I would speak in terms of Alternative 6 if that means complete remediation of the sites as effectively as possible. If Alternative 5 is even better, even though there's a difference in terms of millions of dollars, I think that's money well spent, and I think face my children with that decision without any doubt in my mind that is money well spent.*"

After listening to other comments from the participants who supported Alternative 6 he asked the question, "*Does Alternative 5 mean that Mallinckrodt would go out of business or disappear*?"

It was explained to Mr. Bratkowski that Alternative 5 would not put Mallinckrodt out of business: that it simply provides an even greater measure of protection than Alternative 6.

Response: Please refer to the Responses associated with Comments 1 and 2, pertaining to the selection of Alternative 6 for implementation, based on public comment.

Alternative 5 would remove all the accessible contaminated soil whose concentration exceeds the most stringent cleanup criteria, the composite criteria. This approach is much more costly than Alternative 6 with little added benefit toward human health and the environment. The USACE and the majority of commentors agree that Alternative 6 has a more reasonable cost-to-benefit ratio than Alternative 5.

Comment 9

Commentor: Dr. Carol Prombo. Dr. Prombo has a Ph.D. in isotope geochemistry and is a citizen of St. Louis.

Comment: Dr. Prombo opened her remarks by listing her credentials as a scientist, teacher and a concerned citizen active in community affairs. She expressed support for funding the SLDS clean up effort, as well as other hazardous waste sites by saying,

> *"I look at all of the ways that we can spend our money as a society. I look at some of the lead contaminated sites. I look at piles of lead tailings that are not contained in anywhere near what the waste here is being controlled by. I look at the school system. And as I say, I strongly support a cleanup of all of the local radioactive waste sites.*
>
> *And I guess this is more of a comment --my next comment is more to our political leaders, because the laws that are being followed here are laws that are set by Congress, you know, by the Senate and the House of Representatives. And they are set in response to the public. Our public perception of the hazards from radioactive wastes is very high. We also have a number of other hazards locally where our perception is not as high where I would like to see an equivalent reduction of hazard."*

Dr. Prombo supported the need for cleanup action but expressed concern about the expense of the alternatives and about disposal of the excavated contaminated soil offsite by stating,

> *"...I am not in support of taking waste that was produced here and dumping it on people with less power. And if we look at states like Utah and Nevada and Arizona, they don't have as many people in the House of Representatives as we do here.*
>
> *I strongly support a cleanup that will reduce hazards to the people of St. Louis. I would like to see it done in a cost effective manner. I recently served on the NASA panel on the creation and planning team for extra terrestrial materials which oversees specifically the curation of our moon rocks. And NASA is switching from a philosophy of spending a lot of money on one mission to a faster, better, cheaper.*

And I hope that some day when it comes to our hazardous waste disposal we 'll go to a faster, better, cheaper approach. I just wish to say I strongly support the materials being cleaned up. It would seem that they could probably be done in a more cost effective manner and without dumping it on people that have less power than we do."

Later in the meeting Dr. Prombo made a comment that the SLDS "*is right in the thick of the liquefaction zone*". She went on to explain that the ground in the region would behave as a liquid during a moderate or larger earthquake, and the level of cleanup should be appropriate for these areas where residential use is not appropriate. She stated,

"And as far as a level to which one is going to clean up, going after every last atom of contamination--personally I don't think residential--expanding residential use in liquefaction areas makes good sense for personal safety of individuals. So as far as cleaning up to a level for industrial use, this sounds like a good use of resources. And not going to a more stringent residential standard for an area that's at a high risk for earthquake hazard".

In response to an individual's observation that no one has supported the USACE's recommendation for Alternative 4, Dr. Prombo stated she supported Alternative 4 because she wanted the "*cheaper*" cleanup.

Response: Alternative 4 would be the least expensive of the offsite disposal options, however, the majority of the comments received were in favor of Alternative 6. Alternative 6 is somewhat more costly than Alternative 4 but the stakeholders believe that the added costs are justified in order to provide additional protection to Mallinckrodt workers and eliminate future liabilities associated with residual contamination in soils. Please refer to the Responses associated with Comments 1 and 2.

Comment 10

Commentor: Mr. Doug Eller. Mr. Eller is a resident of the area, and is employed with Grace Hill Neighborhood Services.

Comment: Mr. Eller identified and supported Mallinckrodt as an "anchor" in the community and supported Alternative 6 by stating,

"I would like to say that we are also -- and I'm speaking for myself --I'm also in support of the alternate 6. We believe that it's important that we keep what few anchors that we have in our community here. Mallinckrodt is one of the few anchors as is Holy Trinity Church. There aren't very many left any more. We're trying to develop the Riverfront Trail to become an anchor in the community but it nowhere comes close to the impact that Mallinckrodt has had in the community here and continues to have. And we need to support that in any way possible. We want to make sure that it's economically feasible for them to remain here and that they can continue to be supportive.

They've done such things as employ people in the neighborhood. They sponsor, underwrite events within the community. They work at bringing people together and helping to problem solve when they're sometimes fragmented. And the list goes on to the point that it would be a grave loss to lose something as valuable as Mallinckrodt here.

So we want to --especially me -- want to make sure that we have this understood, that we support Alternative 6."

Mr. Eller also commented that the meeting was not well publicized in community and that the "didn't get any notification of meeting today except at the last minute". As a result he "observed not many residents were present at the meeting". He stated,

"And I know that our neighborhood is perhaps 75 or 80 percent African American. And I don't see very many African American faces here either as well as neighbors. So I think though that if you would have more people from the neighborhood here, they would also support the things that I'm saying. Because anybody coming in contact with Mallinckrodt has done so in a very positive way".

Mr. Eller questioned how the meeting was publicized to the local residents. Mr. Chris Haskell, the environmental public information specialist, responded by stating,

"The quick answer is we did the standard things, sent out press releases, notice in the paper. In fact, we're required to put notice, and we, in fact, did. And then also Anna from the Mayor's office, I thanked her for the suggestion of using a service that drops fliers around the community. I've never used that before and I'm

regretful to hear it didn't work. Sorry. We did contract with this firm and we'll look into whether or not they, in fact, dropped those fliers. 2,000 fliers were distributed. That's their minimum, in fact, and we put it together and got it to them. And thanks for the feedback".

We're required to put a so-called legal notice. That's with the fine print. It's hard to read, granted. Then there was also an advertisement too in the St. Louis Post-Dispatch. Plus other papers too but primarily we looked to the Post-Dispatch."

Mr. Eller responded to Mr. Haskell's answer by stating

"I just feel again if there would have been a better notification of the residents in the neighborhood - I know there's a lot of very involved people - that there would have been a better turnout tonight and you would have heard a lot more from the people that this is actually affecting. That's my only comment. I think fliers aren't a bad idea. I think it might have been a bad idea to hire whoever you hired to have done that".

Discussions continued about the limited degree of advance notice possible because of the "problems with date changes." Mr. Eller reiterated his concern about residents not being aware of the meeting by stating

"If it's important to hear the residents in this whole process I would recommend for the record that you hold another one with a better beginning than what happened tonight".

Response: Please refer to the Responses associated with Comments 1 and 2, pertaining to the selection of Alternative 6 for implementation, based on public comment.

Comment 11

Commentor: Mr. Frank Muehlheausler, Mr. Muehlheausler is the principal of the Clay School, the Clay Community Education Center.

Comment: Mr. Muehlheausler spoke of the contributions that Mallinckrodt, Inc. has made to his school, both with their financial gifts and the volunteer services of their employees. He described how his school had evolved

from one that was in trouble to a school the neighborhood is proud of. He credits Mallinckrodt for helping bring about the change by saying

"What I'm getting to is this, partnership has played a big role in changing the school culture. And to a certain extent this neighborhood culture. I've been here for 13 years and I live in the city. I've seen an evolution in this school because of partnerships like Mallinckrodt Chemical. They developed the CAP program which brings a lot of partners together from the community and we talk about issues.

And I think that Mallinckrodt is very responsible. And that's what scares me. Because I see this whole issue of being one where Mallinckrodt has to be responsible to their business, they have to be responsible to their stockholders. And they will, I'm sure they will. Everything I know about these people from Mallinckrodt makes me believe that they are responsible.

That if they can't develop that property the way they want to, they're going to be responsible for their stockholders and they're going to move some place else. And that scares me. Because if we lose Mallinckrodt we lose an anchor in this neighborhood just like Doug said. And an anchor that's been here for a long time

I could go on and on about the involvement Mallinckrodt has had with not only this school but within the community. And it would be a loss, it would be a tremendous loss if they were to move.

...But it's very important to us that Mallinckrodt remains in this community and that's why I'm saying No. 6 to keep Mallinckrodt here."

Response: Please refer to the Responses associated with Comments 1 and 2, pertaining to the selection of Alternative 6 for implementation, based on public comment.

Comment 12

Commentor: Ms. Judice Green. Ms. Green is a resident of Hyde Park.

Comment: Mrs. Green stated her desires for the preferred alternative to be changed to Alternative 6 and questioned what effect the contamination may have had on the health of residents. She also expressed concern over the

publicity of the meeting, agreeing with earlier comments that another meeting should be held so those unaware of this meeting may have an opportunity to speak. She stated,

> *"And when I came in here I was quite taken because I wasn't expecting this. I didn't know what really to expect when I received a notice. And I didn't receive a notice until yesterday. So it didn't make it in this neighborhood until yesterday. And that was the 20th. Today is the 21st. So I really didn't get a chance to inform a lot of my neighbors. I don't know how many people I saw. I felt that there was interest, some serious interest. I needed to come out. If no one else came out then I needed to get the information to take back to my neighbors.*
>
> *I agree with this gentleman here who made a comment that another forum should be made available to people, for the residents. Like I said I didn't receive notice until yesterday. And I think that was very short. And it wasn't put in the community or any organizations like the Hyde Park Lions, through measures like that, for the information to be presented. I'm kind of - I'm sort of offended to a certain extent, you know, because I wasn't informed in time. But for my understanding since I've been here tonight I would be for the Alternative 6 for greater measures taken of cleaning up this contamination because I am greatly concerned because I have a daughter that I have raised in this area, and also I'm concerned about what are the effects this contamination has already had, if any. So that is also a question.*
>
> *And also I agree with the gentleman in that there should be an extended date if possible. That's my great concern. Because like I said, the meeting that - the means that you all have taken to give out this information, I'm disappointed, very disappointed."*

Response: Please refer to the Responses associated with Comments 1 and 2, pertaining to the selection of Alternative 6 for implementation, based on public comment.

The radiological contamination can only result in a health effect if an individual is exposed through direct contact with the material (ingestion or inhalation of the material) or spends an extended time in close proximity to the material (direct gamma exposure).

Because the MED/AEC materials are confined to the Mallinckrodt site and vicinity properties, and are generally not accessible to the general public, it is unlikely that exposure has occurred to member of the general public. Thus health effects to individuals living in the general area are not expected.

Comment 13

Commentor: Ms. Linda Ellenburg. Ms. Ellenburg is an employee of the Mallinckrodt, Inc. and a resident of the area.

Comment: Ms. Ellenburg expressed her support for the neighborhood and Mallinckrodt, Inc. In comment to the earlier statements pertaining to meeting pre-publicity, she indicated she had received notice of the meeting from a flyer sent to her home.

Response: No response statement is necessary.

Comment 14

Commentor: Ms. Debbie Eisenbraun. Ms. Eisenbraun is a resident of the Old North St. Louis.

Comment: Ms. Eisenbraun expressed her support for the complete cleanup associated with Alternative 5 and questioned the consequences of not cleaning it up. He stated,

> *"I know 15 years ago when my kids were young and they had detectable lead levels, the health department told us they weren't within a treatable range. But since then the kids who come up with that same level of lead are treatable. You know, the treatment range has changed.*
>
> *And I'm concerned about, similar to Tom Bratkowski, I'm concerned why not clean up at all. I mean what happens if in 5 or 10 years the problem, you know, range expands? Are we taking a risk of not cleaning it all up?"*

Response: Please refer to the Response associated with Comment 8, supporting Alternative 5 as the preferred alternative.

Comment 15

Commentor: Mr. Dennis Chambers. Mr. Chambers is a certified health physicist for the USACE.

Comment: Mr. Chambers responded to the concerns regarding risk by stating,

> *"With respect to the residual risk issues, the issues on the site, the allowable contamination going to be remaining there is being kept down to levels that are protective of the population, the workers there at the site as well as the environment.*
>
> *So we will minimize any effect on the personnel on site, let alone personnel off-site. And the levels are sufficiently low that they will meet the EPA risk criteria for the remediation and will be protective of the population."*

Response: Mr. Chambers comment was a response to an earlier comment. No additional comment is necessary.

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2.0 SPECIFIC RESPONSES TO WRITTEN COMMENTS FROM STAKEHOLDERS

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MDNR COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY/PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (April 1998)

Comments received 05/07/98, MDNR * denotes major comments/key issues			
Comment No.	**pp/§/¶**	**Comment**	**Response**
Letter from Stephen Mahfood - Dept. of Natural Resources		The Missouri Department of Natural Resources has reviewed the Corps' Feasibility Study and Proposed Plan (FS/PP) which addresses removal of radioactive waste material at the St. Louis Downtown Site (SLDS) and associated vicinity properties. This letter summarizes our review and is intended to supplement the testimony we presented at the April 21, 1998, hearing. Please consider this letter part of the official hearing record.	
		I applaud the Corps for moving forward with the cleanup of contamination from the nuclear weapons production era at SLDS. Based upon our experience, the key to a successful cleanup is community support and a remediation strategy founded on reasonably available scientific and technical knowledge. I urge the Corps to consider the following five issues in order to insure a successful cleanup at SLDS.	
		First, the vicinity properties need to be remediated to 5/15 pCi/g for Radium and Thorium combined, and 50 pCi/g for Uranium 238 to depth. This will insure that these properties are restored and economic hardships on the property owners are minimized.	The USACE agrees that the vicinity properties should be remediated using the 5/15 and 50 pCi/g criteria.
		Second, we strongly encourage the Corps to evaluate and implement measures to protect groundwater resources at SLDS. The department is unwilling to concede that groundwater in this area will never be used as a water supply. To do so would abdicate our responsibility to safeguard groundwater for future generations. Even though the groundwater is not currently used as a drinking water source, the studies we have seen to date do not eliminate the possibility that is could be used in the future if the radionuclides and other chemical contaminants from nuclear weapons production are removed. We recognize that the cleanup of contaminated soil may reduce the risk to groundwater. Therefore, if the Corp cannot reasonably address the groundwater issues without delaying this Record of Decision, groundwater should be the subject of a separate Record of Decision.	The USACE believes that the proposed remedy will prevent further degradiation of groundwater at SLDS, and provide for protection of human health and the environment.
		Third, we believe that the cleanup should address <u>all</u> chemical and radionuclide contamination that resulted from weapons production at this site. This includes Protactinium, Actinium, organic compounds and toxic metals. To do otherwise would not restore these properties to a useful condition. The FS/PP and supporting documents do not contain sufficient data for the department to determine whether the proposed cleanup will address all contaminants. We will need to work with Corps staff to answer these questions.	The USACE agrees that the cleanup should address chemical and radionuclide contamination that resulted from weapons production activities at this site. However, the USACE authority to remediate is limited to those areas and contaminants which can be specifically linked to MED/AEC activities.

MDNR COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY/PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (April 1998) (continued)

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Comment No.	**pp/§/¶**	**Comment**	**Response**
Letter (continued)		Fourth, we understand that the Corps is planning to issue a separate Record of Decision for the inaccessible soils in the vicinity properties. However, the department and the vicinity property owners need to be assured that human health and the environment will be protected until these soils can be fully remediated. We would also benefit from a more detailed description in the SLDS FS/PP regarding how the Corps intends to address the cleanup of inaccessible soils.	The USACE intends to develop institutional controls and a long term monitoring plan as part of the remedial design process.
		Finally, it is very important for federal agencies to comply with state environmental requirements in conducting their cleanup activities. This allows the state to reassure Missouri citizens that the federal government is subject to the same environmental standards as they are. It appears that the list of state "Applicable or Relevant and Appropriate Requirements" (ARARs) identified in the FS/PP is a significantly shorter list than the Corps provided in previous draft documents. We will need to clarify with Corps staff whether some requirements have been inappropriately removed.	The FS was revised to reflect only those regulations and statutes that were "applicable" or "relevant and appropriate" for establishing a cleanup. The ARARs are modified from the FS/PP to add Action Specific ARARs on Table 7-2.
		I appreciate the Corps' assistance in expediting the cleanup of the St. Louis Downtown Site. I trust that you will find our comments useful in proceeding with a cleanup that the Corps, the department and the public can all support. Thank you for the opportunity to comment.	Thank you for your comments and the support from your staff during development of the FS/PP.
1*		The FS/PP should clearly delineate the areas at the St. Louis Downtown Site (SLDS) which are covered by it. The St. Louis Task Force and MDNR have recommended the Vicinity Properties (VPs) be cleaned up to a 5/15 level at any depth.	Agree.
2		The FS/PP states that VPs will meet a dose limit of 15 mrem/yr. The Department requests that a site-specific, isotope-specific limit be used as the controlling metric, not a dose limit.	The FS/PP states that cleanup will result in conditions which satisfy CERCLA risk requirements. Isotope specific guidelines that will be used as controlling values for these guidelines are based on meeting the CERCLA risk guidance (i.e., 3×10^{-4} for a radiation site).
3*	4-25	States that only approved off-site borrow would be used to fill in the excavation done 4 or 6 feet across SLDS and the VPs. The FS/PP should include information on backfill for below 4 to 6 feet.	Below criteria soil will not be used as backfill at the VPs. Only approved borrow from offsite will be used at the VPs. At Mallinckrodt, material below the ALARA criteria could be used as backfill below 4 to 6 feet in depth.
4*		Currently the FS/PP for SLDS does not discuss water management. Water management issues, e.g., surface water and groundwater, must be included in any remedy for SLDS. The Department does not need to see all the detailed plans for water management in the FS/PP but some discussion by the USACE is necessary.	Some discussion is provided in the detailed analysis of alternatives under water quality/resources. Detailed plans for water management would be developed during design phase. Additional information on water management plans will be available in the remedial design documentation.

MDNR COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY/PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (April 1998) (continued)

Comments received 05/07/98, MDNR. * denotes major comments/key issues			
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5*		SLDS is located in an area that has been heavily industrialized for many years. However, continued degradation of groundwater is not justified on this basis. Although groundwater may not be currently used as a source for drinking water, its eventual use as a water source must be considered. The quantity of groundwater needed for a public water supply is available in the alluvial material in the vicinity of SLDS. The groundwater may not necessarily have been of potable quality prior to human impact. However, with standard treatment (such as softening, disinfection, and filtration), the alluvial groundwater must be considered a source of public drinking water and associated risks should be evaluated. Any remedial action objective considered for this site should include efforts to eliminate the potential for radionuclides or other contaminants to adversely impact the portions of the alluvium useable as a water supply. A groundwater monitoring system must be designed and a monitoring program implemented that ensures the detection of potential contaminant releases. It should also ensure that groundwater is evaluated on a regular basis to maintain representative, reproducible water quality information for each hydrologic unit.	Further measures will be taken to protect human health and the environment if MED/AEC contaminants are detected above MCLs and exceed site background. Additional monitoring wells will be installed during implementation of the remedial action. A groundwater monitoring system will be designed and a monitoring program implemented that ensures the detection of potential contaminant releases.
6		USACE needs to include a description in the FS/PP of how ground water and surface water treatment will be done for contaminated water encountered during remedial activities at SLDS.	Water Quality/Resources section in each excavation alternative acknowledges need for surface and groundwater management. Detailed description will be developed during design.
7	4-3, last ¶	The Department would disagree with much of this paragraph, specifically "Alluvial sediments beneath the site is not considered a potential source of drinking water due to its poor water quality." See statement 5 above.	See response to statement 5 above.
8	4-24	States that because SLDS is in an area expected to remain highly industrialized, agreements will be negotiated to restrict the installation of wells within specified areas to prevent unauthorized use of groundwater. The FS/PP should include a better description of the institutional controls to be used at SLDS, e.g. area of restriction, time, etc.	Specific details of institutional controls such as the area included would be developed during design. The time frame would be until MED/AEC COCs no longer present a hazard.
9		The aquifer below Mallinckrodt may not currently be used as a potable water source, but it must be looked at as a possible commercial usable water source. "Commercial" could also include a public water drinking system along with process water. See Statement 5 above.	See reply to statement 5 above.
10	5-16	The FS/PP should include a detailed map which shows the area to be affected by the well installation restriction. This makes the water unusable, which is in conflict with the desires of the Department. See Statement 5 above. The VP owners will be negatively affected by such a restriction, which is of grave concern to the Department.	Well restrictions could make provisions for requiring treatment to specific criteria if water is drawn. Criteria could be specified for both consumptive and non-consumptive use.
11*		The Department requests that off-site migration of contaminants in groundwater be addressed in this FS/PP and Record of Decision, or addressed as a separate operable unit.	Perimeter wells will be included in monitoring program.

MDNR COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY/PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (April 1998) (continued)

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12		The FS/PP should contain information on further investigation and/or characterization of groundwater contamination at SLDS, specifically any groundwater monitoring which is to be done along with institutional controls.	Further investigation of groundwater contamination at SLDS is planned. This information will be provided to the MDNR as characterization plans are developed. Institutional controls plans will be developed during remedial design.
13*		It is unclear what designations or definitions are or will be given to contaminated groundwater that has migrated outside of the current FUSRAP area designations and is not co-located with current contaminants. The Feasibility Study unilaterally declares that these conditions do not exist. USACE is responsible for all contaminants that are associated with AEC/MED activities as stated in the Federal Facilities Agreement. The Department expects the USACE to remediate any area which has been affected by AEC/MED activities directly or by movement of contaminants through the air and/or surface/ground water. The FS/PP should document all investigation conducted by the U.S. Department of Energy or USACE to determine the nature and extent of contamination.	All investigations to date have been incorporated by reference in the FS/PP. Site background in the fill outside of the area that may have been impacted by AEC/MED activities will be determined in order to identify areas that may potentially have been impacted by chemical contaminants. However, because the chemicals that may have ~~been~~ derived from the ore may also have originated from the fill material or other industrial processes in the area, suspect chemical contaminants must have plumes that are associated with radiological AEC/MED contamination in at least part of its extent.
14		Under several of the remedial alternatives, groundwater contaminant sources may remain in place in the form of inaccessible soils. The FS/PP must demonstrate that any proposed remedial action scenarios will mitigate future groundwater contamination source areas where inaccessible soils remain in place.	The inaccessible soils will be addressed as a separate operable unit. Monitoring will continue in inaccessible soils areas to ensure groundwater remains unimpacted. Excavation of accessible soils will proceed as close to inaccessible areas as feasible including shoring around buildings rather than sloping the excavation.
15		It is unclear what the delineation is or will be between chemical and radiological groundwater contamination from Mallinckrodt activities and MED/AEC activities. The FS/PP must address issues which affect both Mallinckrodt and USACE and how they plan to work together to remediate the site.	The USACE will remediate MED/AEC wastes pursuant to the ROD. Once a given excavation is completed, Mallinckrodt will be afforded the opportunity to investigate and remediate non MED/AEC wastes. The USACE is willing to incorporate this planning into an memorandum of understanding (USACE excavtion closeout analyses will include other results on a cost-reimbursable basis if desired).
16		There is not enough data to indicate whether groundwater contamination has or has not been found outside of areas containing FUSRAP-contaminated soils. The FS/PP must address how data gaps will be handled and what affect they may have on a final remedy.	Groundwater monitoring will detect any FUSRAP materials that may have migrated out of FUSRAP areas. Removal of source material should prevent further degradation of groundwater.
17		Although it has not been demonstrated, institutional controls and/or usage restrictions for on-site groundwater usage may, indeed, be effective in mitigating on-site exposures to contaminated groundwater. However, these measures do not take off-site migrations or future off-site exposures into consideration. Nor do these measures take into account the potential for future off-site uses of groundwater that could influence groundwater flow at SLDS.	Institutional controls would include the VPs as well as Mallinckrodt. Because the VPs extend all the way to the river, there is no offsite migration of contaminants.

MDNR COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY/PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (April 1998) (continued)

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18		The Department requests that groundwater monitoring not cease upon remediation of an area, as is suggested in the FS.	Monitoring would continue until it has demonstrated that source removal has adequately addressed groundwater contamination. Thereafter, there is no reason for the U.S. Government to continue to monitor.
19	4-18, 3rd ¶	Soil is listed as "high permeability" while the 4th ¶ lists soil as "low permeability." This inconsistency should be corrected.	Agree. The high permeability soils would refer to the lower unit and should have been specified as such. Low permeability in the next ¶ is referring to the upper unit soils.
20	4-5	"...potential for continued degradation of the groundwater quality is high..." While the statement may be correct, the USACE should avoid responsibility for continued degradation of any aquifer or river way in Missouri. An "applicable or relevant and appropriate requirement" which relates to this is Missouri's anti-degradation regulation (10 CAR 20-7.031(2)).	Most recent sampling of the Mississippi alluvial aquifer indicated non COCs above guidelines. Removal of source term will reduce the contaminant load to the aquifer. Perimeter monitoring will show any change of post-remediation COCs. Should monitoring indicate further risk-based degradation (although ~~the~~ USACE believes COC concentrations will reduce in time), additional appropriate action will be developed.
21		Groundwater flow directions have not been adequately characterized to determine whether groundwater is flowing away from SLDS. The FS/PP must provide a basic understanding of the nature and extent of contamination in all media.	Groundwater flow directions have been determined to be toward the Mississippi River in general. This river is undoubtedly the major influence for groundwater flow at the site and flow is generally toward the Mississippi River, although river stages complicate the lower unit groundwater flow direction. There is also a possibility that an old stream channel may complicate flow in the lower unit. The current site groundwater characterization and future monitoring should bring about a better understanding of flow directions.
22*		It should be noted that an assessment of Natural Resource damages may be considered based on impacts to the groundwater from MED/AEC activities.	Noted.
23	4-25	States that hazardous characteristic tests would be conducted on samples of potential backfill from each excavation. The use of below composite criteria and ALARA criteria soil as backfill must not have a negative effect on the RCRA corrective action site investigation. The limited hazardous characteristic testing may not adequately demonstrate that the proposed backfill material is appropriate for re-use. The Department requests that more complete sampling for chemicals be done on the possible backfill material to insure that it is appropriate for re-use.	Agree. However, we will require a list of chemicals to analyze.

MDNR COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY/PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (April 1998) (continued)

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24*		The document states that background health effects (i.e., those associated with naturally occurring levels of the radionuclides and metals found at the site) influence the development of health-based cleanup criteria. This is true, but the placement of fill material on a site to make it suitable for industrial use does not qualify it as natural occurring condition. This is especially true if the fill material is composed of coal cinders, coal ash and other debris material. It is appropriate to take background samples which determine the naturally occurring levels of radionuclides and metals, but those samples should not be in an area impacted by fill material. Accurate and appropriate background samples should be taken for both groundwater and soil.	Lower aquifer background will be compared with upgradient water in the lower aquifer. The perched water in the upper hydrostratigraphic unit will be compared to fill background.
25		The residual risk assessment does not include the appropriate or requested exposure pathways. The Department has requested in the past that groundwater consumption be included as an exposure pathway in the residual risk assessment. The Department again makes this request that to include the groundwater consumption exposure pathway in the residual risk assessment.	It was USACEs understanding that the industrial exposure scenario was the appropriate scenario for developing cleanup guidelines. This scenario does not include consumption of groundwater, but does include inhalation of vapor and dermal exposures to contaminants in groundwater (as might be possible during a process water line break at an industrial facility). This understanding was reached during discussions with DOE and MDNR before transition of FUSRAP to USACE, and reconfirmed during subsequent meetings with USACE and MDNR.
26	§2.5	Preliminary Remediation Goals (PRG) should be developed for all chemical constituents listed on page 2-25, 2nd ¶. PRG's were developed only for "potential contaminants of concern" (PCOC) consisting of chemicals and metals associated with the MED/AEC process which have been detected at concentrations exceeding 1×10^{-6} industrial risk criteria. The results are from sampling for chemicals, done mainly from the Remedial Investigation. The Department requests that PRGs be prepared for the complete list of PCOC instead of basing the list on current data because it is so limited in nature. The Department requests that both PCOC and PRG be listed in the FS/PP.	The USACE is responsible for cleanup of contaminants related to MED/AEC activities. Thus PRGs have been established only for these PCOCs.
27		The composite criteria includes cleanup levels for Ra-226, Ra-228, Th-230, Th-232, and U-238. The ALARA criteria is based only on Ra-226, Th-230, and U-238. The FS/PP should explain how the cleanup criteria listed above will handle other radionuclides, i.e., Ac-227, Pa-231, U-234, Ra-228. The residual risk assessment groups Ra-226 with Ra-228, Th-230 and Th-232, and U-238 with U-234/U-235. The residual risk assessment approximates the amount of Ac/Pa on Ra-226 with the radionuclide ratio used in the BRA. The Department questions whether those ratios are appropriate. The FS/PP should justify the use of the existing multipliers in the residual risk assessment.	Other radionuclides are assumed to occur at a constant ratio with those for which measurements are available. The ratios used in the BRA have been the multipliers consistently used throughout the St. Louis site.

MDNR COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY/PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (April 1998) (continued)

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28	4-19	USACE needs to also look at contaminants other than radiological, associated with MED/AEC activities at Mallinckrodt.	Given the K_D of metals that may have been associated with MED/AEC ores, it is expected that MED/AEC contaminants are co-located with radiological contaminants.
29	4-19	The FS/PP should address types of treatment, specifically any treatment of sludge.	Treatment of sludge would be identical to treatment of soils excavated from beneath the water table: dewater and dispose.
30	4-14	States that building materials which do not meet the surface criteria may, following crushing to a soil-like material, meet volumetric criteria and may then be used as backfill around the site. The Department does not consider dilution an acceptable treatment method.	Text also states "if regulatory approval can be obtained". It is not dilution to crush the materials and apply volumetric criteria rather than surface criteria. Dilution would involve the addition of clean material to increase the total mass relative to the mass of contaminants. Crushing the rubble does not add any new material to the total mass.
31*		The FS/PP states that monitoring will continue for as long as the media under the cap requires to protect human health and the environment. We assume the USACE means "indefinitely," since uranium's half-life is 4.5 billion years.	True. In 4.5 billion years the concentration of U-238 would be one-half what it is today. In 4.5 billion years the concentration of heavy metals will be unchanged if the site is left undisturbed. Five year reviews will be included in the remedy.
32*	2-41	Establishment of PRGs for chemicals includes the following exposure pathways: soil; soil ingestion; dermal contact with soil; inhalation of suspended particulate; groundwater; and, dermal contact with and inhalation of process water. USACE needs to include at a minimum the same groundwater exposure pathways in the radiological residual risk assessment as those used in the development of chemical PRGs.	The maximum radiological contamination in groundwater samples taken from the deep aquifer is about 10% of the proposed MCL for uranium.
33		PRGs for radiological constituents where included in the latest FS/PP for SLDS. The Department requests clarification and better documentation on the establishment of these PRGs.	PRGS were calculated using RAGS Part B guidance. A copy of the calculation package for the PRGs will be submitted for MDNR review.
34		The FS/PP should include a detailed description including maps showing the location where below composite criteria and ALARA backfill may be used at SLDS.	In Alternative 6, only approved borrow from offsite will be used as backfill at the VPs. Where excavations exceed 4-6 feet, soil below ALARA criteria could be used as backfill. Only approved offsite borrow would be used above the 4-6 foot depth.
35	Table 3-1	This table lists the isotopes covered by Uranium Mill Tailings Radiation Control Act (UMTRCA) regulations. UMTRCA covers Ra-226, Ra-228, Radon, and Uranium, but not Th-230 and Th-232 as currently listed in Table 3-1.	Table 3-1 referenced DOE Order 5400.5 as well as 40CFR192

MDNR COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY/PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (April 1998) (continued)

Comments received 05/07/98; MDNR * denotes major comments/key issues			
Comment No.	**pp/§/¶**	**Comment**	**Response**
36	3-19	The Sum of the Ratios (SOR) example does not include Ac, Pa, Ra-228, etc. Please explain why the SOR does not include the other radionuclide isotopes and how SOR is used during remedial activities.	The SOR uses the isotopes actually measured at the site. Other radionuclides were accounted for by assuming a constant ratio to the "indicator" isotopes. Concentrations used in the SOR equation were developed on the basis of dose assessments that accounted for all isotopes in the decay chain. The SOR will be used as a tool to help direct remediation activities. Post remedial action doses and risks will be calculated using actual sample data (including Ac-227 and Pa-231).
37	4-14	The FS/PP should provide a detailed list of what buildings or structures are left to be decontaminated at Mallinckrodt. Building materials which do not meet the surface criteria may (following crushing to a soil-like material) meet volumetric criteria and could be considered as backfill around the site, if regulatory approval could be obtained.	Building K has already been decontaminated and will be demolished. Building 30 was discovered to be contaminated during the RI, but subsequent renovations may have decreased surface contamination. There may be none left, or there may also be some as yet undiscovered surfaces in other buildings
38		The Department does not believe that dilution is an appropriate treatment method for either soil or groundwater. Therefore, we would disagree with a plan to allow groundwater flow through contaminated soil to the Mississippi River, simply because the large volume of water in the river dilutes the contaminants below detection levels or levels of concern.	The situation described is what is currently happening. The proposed remedial action would mitigate this situation and result in no further degradation of this system.
39		The USACE needs to document the contaminants of concern to be monitored with respect to radiological and chemical analyses.	COCs include U-238, U-235, Ra-226, Th-232, and decay progeny. Chemical COCs include Ni, Cu, Cd, U, and As.
40	Appendix C	The USACE should clearly document whether the concentrations in Table C-3 include other radionuclides.	For dose and risk calculations, all isotopes in the uranium series decay chain below U-238 are included as well as those in the actinium and thorium decay chains below U-235 and Th-232. Only the key indicator radionuclides are shown in the tables. However, the complete decay series for each indicator nuclide have been included in all calculations as documented in the ALARA analysis calculation package.
41		The USACE needs to clarify whether this FS/PP is intended to apply to radionuclides and chemicals both in soil and in groundwater. Please also explain how this FS/PP fits into the overall cleanup plans for the SLDS.	The remedy is intended to apply to MED/AEC radionuclides and to MED/AEC chemicals which are believed to be entirely co-located with the radionuclides in both soil and groundwater. Source removal is expected to remedy groundwater. Continued monitoring will verify success.
42		The PP deals only with radioactively contaminated soils. Chemical constituents associated with DOE's former processing activities should be addressed in the FS/PP.	

MDNR COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY/PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (April 1998) (continued)

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43		The subsurface in the FUSRAP areas has not been adequately characterized at this time with regard to the nature and extent of radiological and chemical contamination in soil and groundwater. Hence, this information will be needed in order to assure that potential contaminant exposure pathways and receptors can be identified to the extent necessary to support the soil clean-up levels, institutional controls and exposure assumptions presented in the PP.	The alternatives and their evaluation under the criteria for selection would not be likely to change if additional characterization data were available. Additional data would still not permit differentiation between site background and AEC/MED metals. The ALARA analysis was sufficiently conservative to ensure safe levels following cleanup even if the actual site mean is higher than currently believed.
44*	4-25	States that institutional controls would remain in place to insure continued protectiveness until a remedy for inaccessible soils is determined. The Department requests clarification that the inaccessible soil will be treated as a separate operable unit, and that the FS/PP for inaccessible soil will address how they will be handled by the federal agency in charge of long term operation and maintenance of the FUSRAP sites.	Inaccessible soils will be treated as a separate OU. Remedy documentation for the inaccessible soils will specify how they will be handled in terms of long-term O&M (if any).
45*	Appendix A	The FS needs to include a complete list of Applicable or Relevant and Appropriate Requirements (ARARs), along with a detailed analysis. The January 1998 version of the FS contained a more detailed list than the March 1998 version. A draft list of additional ARARs which were not included in the March 1998 version of the FS/PP have been attached with these technical comments. The detailed analysis should explain why an ARAR does or does not apply to SLDS.	The FS was revised to reflect only those regulations and statutes that were "applicable" or "relevant and appropriate" for establishing a cleanup under CERCLA.
46		SLDS is not an "official" NPL site under CERCLA. Therefore, the Department recommends that the USACE submit permit equivalent applications will allow the Department to establish ARARs for SLDS.	USACE is addressing SLDS as a CERCLA site via the NCP, as such all ARARs should be presented in the Record of Decision.
47	4-7	Disposal of waste at Mallinckrodt through excavation, consolidation and capping would not meet ARAR's for Missouri. (Solid Waste Regulations)	This is additional reason for selection of an alternative that features offsite disposal.
48		The FS/PP does not address protective measures for on-site workers, the public, and the environment during remediation activities at SLDS. The Department requests a general description of the protective measures to be implemented by the USACE or its contractors during the remediation activities.	Detailed health and safety procedures will be developed during design process and published in the site-specific Health and Safety Plan.
49		Clean-up criteria should be determined for groundwater below or down gradient of the site, which has been shown in previous assessments and reports to be contaminated.	PRGs were evaluated for chemicals in groundwater. However, the proposed remedy involves use of source removal to levels sufficient to prevent further degradation of groundwater due to MED/AEC contaminants of concern.
50*	5-34	USACE should clarify the use of the 30-year time frame and specify that it is only used for cost estimates, not for establishing a time period for walking away from the site.	Agree. The 30 yr. period is used as indicated. Long term monitoring and institutional controls would be developed based on conditions after remedial action.

MDNR COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY/PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (April 1998) (continued)

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Comment No.	**pp/§/¶**	**Comment**	**Response**
51	5-16	States that monitoring would include sampling to ensure that the remediation was adequate to protect human health and the environment as determined by risk assessment. The Record of Decision should document what will be monitored at SLDS.	ROD will include general description of contaminants to be monitored.
52		The USACE needs to clarify in the FS/PP how contaminant exposure pathway scenarios and concentration levels were derived when the site-specific residual risk assessment was performed based on the limited groundwater characterization at SLDS.	The groundwater pathway is a very minor exposure pathway in the industrial exposure scenario used to develop cleanup guidelines.
53	ES-3	Last paragraph needs appropriate spacing between words.	Agree.
54	4-9, Last ¶	Waste has already been shipped to Utah from SLAPS and North County Vicinity Properties so the requirements listed here have been addressed in the past.	True. Implementability should have taken into consideration that route planning and spill control plans have already been developed.

MDNR COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY/PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (April 1998) (continued)

Comments received 05/07/98, MDNR Hazardous Waste Program			
Comment No.	**pp/§/¶**	**Comment**	**Response**
Letter from Cindy Kemper - Hazardous Waste Program		The Missouri Department of Natural Resources' Hazardous Waste Program is hereby transmitting to you a copy of a letter to Mallinckrodt, Inc. regarding corrective action being undertaken pursuant to the Missouri Hazardous Waste Management Facility Permit issued to Mallinckrodt on September 19, 1997. Several of the issues raised in this letter relate to the division of responsibility between Mallinckrodt and the U.S. Army Corps of Engineers for investigation and remediation of environmental contamination both inside and outside of FUSRAP areas at the Mallinckrodt facility. Inasmuch as the resolution of these issues bears directly on the site-specific corrective action requirements to which Mallinckrodt is subject, we are hereby requesting that the Corps formally respond to the issues raised in the enclosed letter as they may relate to the proposed Feasibility Study and Proposed Plan. Thank you for your consideration in this matter. If you have any questions concerning the enclosed letter, please do not hesitate to contact me or Richard A. Nussbaum, P. E., R. G., of my staff, at (573) 751-3553.	Many of the general issues raised in this letter from MDNR to Mallinckrodt (Attachment A-1) are similar to or the same issues raised by MDNR in the following detailed comments on SLDS FS/PP (e.g. use of site-specific risk assessment to develop cleanup guidelines, characterization and future use of groundwater, etc.) These issues are addressed in the responses to specific comments on the SLDS FS/PP.

MDNR COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY/PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (January 1998 Issue)

Comments received 05/07/98, MDNR * denotes major comments/key issues			
Comment No.	**pp/§/¶**	**Comment**	**Response**
1		Previous groundwater monitoring and sampling activities at the site have been infrequent and sporadic. A baseline groundwater characterization was conducted in late 1997 and early 1998 at SLDS. The purpose of the characterization was to collect current baseline water quality data from existing groundwater wells to use as a basis for evaluating future remedial actions at the site. The information provided in this groundwater characterization was to be used for determining the adequacy of subsequent sampling and monitoring activities and should be evaluated as the baseline in which future remedial activities will be judged. Future characterization activities should be linked to site specific remedial scenarios using the data collected from this sampling effort. Information presented in the FS is based on historic groundwater monitoring at SLDS. The Department has not had the opportunity to review the results of the baseline sampling and data collection or the information contained therein. Therefore, the following comments on groundwater should be considered preliminary until the characterization data has undergone full review. It is likely that review of the groundwater characterization will generate further comments on the FS.	As noted, additional groundwater characterization is planned, particularly with regard to non-radiological constituents. While the proposed remedy is not dependent on additional groundwater characterization, the results from the additional characterization will be used to help design suitable institutional controls and the long term monitoring program.
2*	ES-4	Table ES-1 states that none of the VP groundwater monitoring wells exceed applicable contaminant levels. Based on the information provided in this document, wells B16W06S and B16W06D are the only wells that can be identified within VP boundaries. The Department requests that a map be included in the FS/PP that identifies all the groundwater monitoring wells located within VP boundaries.	No additional wells are available. The final version of the FS and PP have been issued. No further revisions are planned. However, the map requested is available in the draft *Groundwater Characterization Report of 1997/1998 Baseline Data for the St. Louis Downtown Site.*
3	ES-8	The Alternative 4 description in Table ES-4 mentions disposing of soil at an on-site disposal cell at SLAPS. This disposal option is not advanced within the Feasibility Study. Furthermore, this disposal method is not presented in the Proposed Plan. If this soil disposal option is being retained for consideration, it should be specifically discussed as part of a Remedial Alternative for SLDS soils and included in the Alternative Analysis portions of the Feasibility Study. However, this option clearly would not meet several State laws and regulations, one of which prohibits locating a disposal facility in a flood plain.	This statement was in error. The final FS (April) has corrected this error.
4	ES-9, Line 32	The FS/PP should document all conclusions made within it. The Department requests more information to verify that contaminant leaching to groundwater is currently negligible.	Supporting evidence is available in the aforementioned Groundwater Characterization Report. Shallow wells in the upper hydrostratigraphic zone contain high levels of uranium while the five wells completed in the lower hydrostratigraphic zone had only 2 detections of uranium at 0.34 and 2 µg/L. The maximum detected value is 10% of the proposed MCL for uranium.

MDNR COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY/PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (January 1998 Issue) (continued)

Comments received 05/07/98, MDNR * denotes major comments/key issues			
Comment No.	**pp/§/¶**	**Comment**	**Response**
5	ES-9, Line 42	Alternative 4 does not propose the removal of inaccessible soils. Therefore, in locations where inaccessible soils will remain in place, the source for potential future groundwater contamination below the water table exists.	A remedy for inaccessible soils will be presented in future documentation. The volume of accessible soil is much greater than that of inaccessible soils, thus the problem will be greatly reduced pending a final decision for inaccessible soils. In addition to the smaller volume, much of the inaccessible soil is under buildings where infiltration of rainwater through contaminated material is intercepted by the structure.
6	2-11, Line 41	The hydraulic conductivity of the upper hydrostratigraphic unit is reported as 9.9×10^{-6} cm/sec. Limited geotechnical soil testing has been performed at this site. One variable-head permeability test was conducted within the upper hydrostratigraphic unit. Given the heterogeneous nature of the unit, one permeability measurement is not necessarily representative of the geologic characteristics of this unit. The hydraulic conductivity of this unit should be reported as a location-specific measurement, or an average hydraulic conductivity should be reported, based on information obtained from more than one permeability test.	Agree. This hydraulic conductivity value is a location-specific measurement.
7	2-13, Line 2	It is difficult to establish the relationship between the upper hydrostratigraphic unit and fluctuations in the Mississippi River stage. The hydrograph analysis that is presented in the Remedial Investigation Report takes into account only four wells open to the upper unit. The nearest of these wells is over one-half mile upgradient from the river. Given the hydrograph information, it is not obvious that water stages in the river significantly affect water levels measured in the four upper-unit wells. Furthermore, there is no information on how the river stage might affect the upper unit at locations closer to the river, since data from the upper-unit monitoring wells that are closer to the river were not used in the hydrograph analysis. That information, if available, may be used to establish the relationship and hydraulic connection between the two hydrostratigraphic units and the river.	Agree. The relationship between the Mississippi River and the upper unit have not been well defined. However, the relationship will be better defined during planned additional groundwater characterization efforts at SLDS.
8	2-13, Line 18	The document discusses two distinct alluvial hydrogeologic zones- an upper unit and a lower unit. It is reported that measured water levels in the two units can differ as much as 30 feet. Figure 2-5 shows monitoring well locations, water level measurements, and groundwater flow directions. However, this potentiometric surface map was constructed using water level measurements from both the upper and lower hydrostratigraphic units. This figure does not represent groundwater flow direction in either hydrostratigraphic unit. Furthermore, the difference in water level measurements is derived from shallow wells in the western portion of the site where the lower hydrostratigraphic unit is absent, and from deep wells near the river, where the lower hydrostratigraphic unit is the thickest. Potentiometric surface maps should be unique to the alluvial unit from which water levels were measured. Differences in water level measurements should be location comparative and site-wide. This information should appear in the FS as separate and distinct maps, and the text should contain a discussion about each hydrostratigraphic unit.	Agree. Figure 2-5 was deleted from the final FS published in April.

MDNR COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY/PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (January 1998 Issue) (continued)

Comments received 05/07/98, MDNR * denotes major comments/key issues			
Comment No.	**pp/§/¶**	**Comment**	**Response**
9	2-30, Line 5	The Department requests the USACE include information in the FS/PP as to where the trichloroethylene (TCE) was stored and used at SLDS.	Such information is not presently known. In the event such information is discovered during the RD/RA phase, it will be addressed.
10	2-34, Line 25	It has been determined that high water stages in the Mississippi River contributed to the mobilization of thorium and radium detected in the sediment. The Department requests that the movement of contamination and transport media be documented in the FS/PP, e.g., how sediments in the river became contaminated with Th-230 and Ra-226. Furthermore, it is unlikely that the periods of high water between 1988 and 1992 are the only instances where contaminants have been mobilized from the river sediment. Therefore, it is assumed that contaminants are migrating to the river sediments from an upgradient source and are periodically being mobilized by high water stages. The FS/PP should also document in detail all investigation conducted by the US Department of Energy or USACE on the nature and extent of contamination. (See Comment 11)	Detailed information on investigations on the nature and extent of contamination is contained in the RI and RI Addendum reports which are part of the Administrative Record. The FS only summarizes the information in these reports.
11	2-34, Line 25	The document states that high water in the Mississippi River mobilized the Ra-226 and Th-230 previously detected in the river sediments. The FS/PP should document whether the sediment contaminated with radionuclides was mobilized by high water and removed, or whether the radionuclides themselves were mobilized from the sediments. It should also explain how high water is expected to continue to mobilize the thorium and radium previously detected in the sediment. (See Comment 10)	Because of the low solubility of radium and thorium compounds it is likely that the contamination was transported along with the sediment. However, there is no way to prove this after the fact. Additional tests of chemical form of the radionuclides is planned as part of the SLDS characterization effort.
12	2-34, Line 32	The FS/PP must indicate in which groundwater wells were elevated metals detected to aid in understanding nature and extent of contamination. Levels of fluoride and VOCs, and corresponding groundwater wells, should be indicated as a map attachment in this document.	This information is available as part of the SLDS groundwater characterization report.
13*	2-36, Line 15	The possibility of an open jointed and leaking sewer creating an accumulation of contaminated sediment off-site does exist. Although sediments in the system have probably been scoured away, the sewers would have deposited contaminants in the soils around the lines, and contamination would not necessarily be found exclusively in those sediments remaining in the utilities.	No areas have been located in which this occurred. If such areas are discovered during remedial activities, they will be remediated. However, no further characterization is planned to locate these areas in advance.

MDNR COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY/PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (January 1998 Issue) (continued)

Comments received 05/07/98, MDNR * denotes major comments/key issues			
Comment No.	**pp/§/¶**	**Comment**	**Response**
14	2-39, Line 6	The permeability of the alluvial sediments is not known. Although the upper hydrostratigraphic unit likely exhibits lower permeability than the lower hydrostratigraphic unit, only one permeability test has been conducted within the upper hydrostratigraphic unit at this site. Three permeability tests have been conducted in the upper portion of bedrock. There have not been permeability tests done on the lower (likely more permeable) alluvial hydrostratigraphic unit. The statement that groundwater in the alluvial aquifer is controlled by low permeability materials is, therefore, misleading. (See Comment 6)	Agree. This sentence is poorly worded. This situation is appropriately worded for the upper unit.
15	2-41, Line 18	The statement that only limited groundwater data was available from SLDS during the Baseline Risk Assessment (BRA) suggests that new groundwater data has been provided since the BRA was developed. Any new residual risk assessment should be based on the most current data available. The Department requests to review any data that becomes available during the FUSRAP project.	A draft of the groundwater characterization report has been provided to the state. The data were not available in time to incorporate new risk calculations into the FS. The residual risk assessment conducted after remediation will incorporate the most current data available.
16	3-17, Line 16	The potential for future groundwater degradation due to the industrial future-use scenario does not preclude protection of groundwater as a resource. Numerous factors should be taken into account in determining which groundwater protection and remediation activities will be implemented at this site. These factors include the degree to which groundwater has suffered or will suffer degradation due to historic MED/AEC activities at this site.	Agree, however the proposed remedy will prevent further degradation by MED/AEC materials through source term removal.
17	3-17, Line 33	The document states: "If contaminants in groundwater reach the Mississippi River, they are below drinking water MCLs." The USACE will need to clarify the meaning of this assumption in the FS/PP. No modeling on the data has been presented which supports this statement.	The very low flow rate in the groundwater relative to the very high flow rate of the Mississippi will dilute contaminants in the groundwater to below detection limits.
18	4-3, Line 1	Again, this hydraulic conductivity information is the result of one permeability test in this unit. (See Comments 6 and 14)	Acknowledged.
19	4-3, Line 8	The text should be corrected to read "B16W07D." Well B16W017D does not exist.	Agree. The text should read "B16W07D".
20	4-3, Line 24	Very little information exists about the hydrologic properties of the alluvial sediments at SLDS. The USACE should document how the groundwater discharge was measured in the FS/PP. The documentation can include simply the reference of a standard method if documentation is available publicly.	Agree. A basic equation was used to determine approximate permeability and discharge rate in the RI. The method was not referenced. To check this result, a back-calculation was performed to determine the permeability factor used; permeability was determined to be within the published limits for this soil type.
21	4-3, Line 26	The statement that the saturated bedrock beneath the site has not been penetrated is not correct. The bedrock at the SLDS site has been penetrated with groundwater wells. Wells B16W01S and B16W04S are partially screened in the upper portion of the bedrock.	Agree. The April 1998 version of the FS was revised to state the saturated bedrock has not been penetrated more than 4m (13 ft) with a well.

MDNR COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY/PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (January 1998 Issue) (continued)

Comments received 05/07/98, MDNR * denotes major comments/key issues			
Comment No.	**pp/§/¶**	**Comment**	**Response**
22*	4-3, Line 35	The text suggests that, due to the large volume of the river relative to groundwater discharge, no impacts to the water quality of the Mississippi River can be expected. Although groundwater discharge to the river will effectively reduce contaminant concentrations, dilution is not considered a groundwater treatment alternative.	Agree.
23*	4-24, Line 10	The Department is unaware of any groundwater modeling of the St Louis site. It may be appropriate that some type of groundwater model be developed for SLDS. Any groundwater model that is developed for SLDS should be reviewed by the Department.	The reference to groundwater modeling was deleted from the final revision issued in April.
24	5-17, Line 22	The USACE's proposed sampling and monitoring of groundwater should be presented in greater detail in the FS/PP.	Should Alternative 3 be selected, a long-term monitoring plan would be developed during the design phase.
25*	5-30, Line 32	The document states that annual monitoring would include ten groundwater samples. There are currently 17 groundwater monitoring wells at SLDS. Ten samples per year would not be considered an adequate monitoring program. Furthermore, the baseline groundwater characterization could present data that might be pertinent in determining sampling frequency and numbers of samples to be taken. There is also the possibility that additional groundwater monitoring wells will be required at SLDS or the VPs.	Deleted reference to the number of groundwater samples. Monitoring plan would be formulated during design.
26*	5-31, Line 5	This alternative does not take into account potential groundwater contamination from soils that are inaccessible and remain in place. The potential for contaminant migration into groundwater would exist until all access-restricted soils can be removed.	The final FS issued in April separates the inaccessible soils into a separate operable unit. Inaccessible soil locations would be assessed as part of the monitoring program until a remedy is selected. Surface water would be monitored as well.
27	5-42, Line 21	Alternative 5 states that the potential for contaminant infiltration leaching into groundwater would exist until all access-restricted soil is removed and that groundwater quality would eventually improve over baseline conditions. Alternative 4 should also discuss the effect on groundwater, where these conditions will remain a factor in potential future groundwater contamination at this site.	Inaccessible soils were removed from the scope of this FS.
28	5-53, Line 34	The document states that implementation of Alternative 4 would remove the source of potential future groundwater contaminants from below the water table. However, Alternative 4 leaves approximately 32,000 yd^3 of contaminated soil in place, which could function as a potential source of future groundwater contamination. This should be explained in the FS/PP with some detail.	The final version of the FS was issued in April. The soil left in place would be below the ALARA criteria. The soil removed would contain the highest concentrations of radionuclides and is therefore the most likely to contribute to groundwater contamination.
29	5-54, Line 46	Alternative 4 would not achieve the same groundwater protection as Alternatives 3 or 5. Alternative 4 leaves approximately 32,000 yd^3 of contaminated soil in place, which could function as a source of potential future groundwater contamination. The document should discuss this.	Acknowledged. Alternative 4 is less protective of groundwater than the other excavation alternatives.

MDNR COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY/PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (January 1998 Issue) (continued)

Comments received 05/07/98, MDNR * denotes major comments/key issues			
Comment No.	**pp/§/¶**	**Comment**	**Response**
30		The Missouri Department of Health (MDOH) offered assistance to SAIC in determining clean-up criteria for this site by offering information on current Risk Assessment Guidance for Superfund (RAGS) methodology, modifications, and accepted default values. To promote and expedite the determination of health protective clean-up criteria, MDOH also offers to answer any assessment questions SAIC may have during their in-house revision process.	We appreciate the efforts of MDOH and MDNR in reviewing the SLDS FS to help meet the tight FFA milestone schedule.
31		It is still unclear as to the target dose to be achieved at this site. As presented, there has been no agreement between using EPA's starting point of 15 mrem/yr and NRC's starting point of 25 mrem/yr. The "Concentrations Producing Target Limits for SLDS Radionuclides..." tables presented to our office, however, show comparisons to the NRC limit of 25 mrem/yr. Please include comparisons and subsequent clean-up criteria for the target dose of 15 mrem/yr.	The EPA target limit was set to 15 mrem/yr as a level that would fall in the 10^{-4} to 10^{-6} risk range considering only a generic conversion factor for gamma radiation. The site-specific ALARA analysis and exposure pathways found that reduction below 25 mrem/yr for the isotopes at SLDS reduced the incremental lifetime cancer risk to the 10^{-4} to 10^{-6} range for future industrial land use.
32		If pending documentation is determined to be correct, the approaches utilized in Attachment C, SLDS ALARA Analysis, appear to be protective of industrial exposure from radionuclides in the soils at this site. MDOH has yet to review the calculations and references on which the conclusions in this attachment were based. Final comments as to the protectiveness of the approach presented will be submitted after review of the documentation.	The complete ALARA analysis calculation package was submitted to MDNR in February, 1998
33		All Chemicals of Concern (COCs), excluding radiological aspects, should be assessed using RAGS, Part B, methodology. This would include determining a clean-up level for VOCs, SVOCs and inorganics. MDOH would request that uranium be included in the chemical toxicity analysis, as it has been found to have to have greater risk from toxicity than radioactivity in past assessments. The level determined should take into account the ingestion, inhalation and dermal contact pathways. This should be done for industrial exposure to surface soils and subsurface soils.	Agree. These methods have been incorporated for development of the PRG tables published in the April version of the FS.
34		Although presented in the review meeting as a risk driver, radon is not discussed in Attachment C. Discussion as to the reason for its exclusion and any plans to monitor radon levels should be included in the text.	Radon is regulated separately from other radionuclides. Outdoors, radon concentrations are negligible due to rapid dispersion into the atmosphere. Indoors, the concentration is dependent on ventilation of the structure. A section discussing potential indoor worker exposures to radon was added to the ALARA assessment in the April version of the FS.
35		Cleanup criteria should be determined for groundwater below or downgradient of the site, which has been shown in previous assessments and reports to be contaminated.	PRGS were evaluated for chemicals in groundwater. However, the proposed remedy involves source removal to levels sufficient to prevent further degradation of groundwater due to MED/AEC constituents.

MDNR COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY/PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (January 1998 Issue) (continued)

Comments received 05/07/98, MDNR * denotes major comments/key issues			
Comment No.	**pp/§/¶**	**Comment**	**Response**
36		MDOH suggests utilizing the Jury model for determination of the volatilization factor. EPA Region VII is requesting that risk assessments and preliminary removal goal documents use this method. The use of this model in the next revision would expedite the review process. Complete inclusion of all exposure variables used, in addition to justification of the use of any non-default values, would assist the reader and prevent delays due to further revisions.	The Jury model pertains to soil to air transfers. Because the PCOCs at SLDS are metals and radionuclides (no volatile PCOCs), we only evaluated groundwater to air transfers in the development of PRGs.
37*		The hours worked per year by an industrial worker should be increased to 2125 in the determination of the Fraction of Time Outdoors variable.	Agree.
38	Appendix C	Ground water consumption was not used as a pathway in the residual risk assessment. The FS/PP should clarify why the groundwater consumption was not included in the residual risk assessment for radiological constituents.	Groundwater consumption was not included since residential exposures are not considered in the ALARA assessment. During previous discussions it was agreed that since SLDS has been an industrial site for over 100 years, and is likely to remain an industrial site for the foreseeable future, the industrial worker exposure scenario is appropriate for use in development of cleanup guidelines.
39	Appendix C	The Department requests that the location and time frame for the background sampling to determine the background levels for radionuclides which were used in the risk assessment be included in the FS/PP. (Ra-226 0.9 pCi/g, Th-230 1.5 pCi/g, Th-232 1.0 pCi/g, U-238 1.1 pCi/g) Background levels for groundwater also needs to be included in the FS/PP.	Background for soils was chosen to be consistent with the BRA. Groundwater background has not been determined.
40	Appendix C	The Department recommends that the multiplier for Ac-227 and Pa-231 used in the residual risk assessment be based on validated data for Ac-227 and Pa-231 from the SLAPS West End Excavation or results from Westlake Landfill Remedial Investigation. The multipliers used in the BRA can be used again if USACE verifies that the multiplier from the BRA is correct for the site with validated data. This work must be done before excavations are completed in order to avoid the possibility of going back to remove more soil after the project is complete because the data from the excavation used in the final residual risk assessment shows that the risk exceeds the appropriate risk levels ($<10^{-6}$).	During remediation samples will be analyzed for Ac-227 and Pa-231. Actual data not multipliers will be used to calculate post-remedial risk.
41		In the Summary of Radionuclides in Soils tables, exposure concentrations are presented. The actual sample results are not included, therefore, MDOH could not verify the accuracy of the standard deviation and subsequently, the exposure concentrations calculated.	UCL_{95} values are calculated according to RAGS guidance. Raw data tables may be provided if requested.

MDNR COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY/PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (January 1998 Issue) (continued)

Comments received 05/07/98, MDNR * denotes major comments/key issues			
Comment No.	**pp/§/¶**	**Comment**	**Response**
42		In the Summary of Radionuclides in Soils tables, several constituent concentrations could not be distributed due to low number of detects (footnote D). However, a 95% UCL seems to be presented for these constituents with the mentioned footnote. For example, in the Summary of Radionuclides in Soils (No Removal), the exposure concentrations for Th-232 and U-238 in Plant 1 Waste should be the maximum detected (6 pCi/g and 160 pCi/g, respectively) due to the low number of detects. In the Summary of Radionuclides in soils (SOR>1 Removed in Top 8 Feet and Labeled as Waste), the exposure concentrations for Th-232 and U-238 in Plant 1 Waste should be the maximum detected (6 pCi/g and 160 pCi/g, respectively) due to the low number of detects. The exposure concentration in Plant 2 After Removal for U-238 should be the maximum detected (35 pCi/g) due to the low number of detects. In the Summary of Radionuclides in Soils (SOR>1 Removed in Top 2 Feet with SOR>1 Removed and Labeled as Waste), the exposure concentrations for Th-230, Th-232 and U-238 in Plant 1 Waste should be the maximum detected (230 pCi/g, 6 pCi/g, and 160 pCi/g, respectively) due to the low number of detects. If these values are in error, please correct. If the values are correct, then the footnote should be omitted.	Exposure concentrations were estimated per RAGS guidance. This includes using reported values for all non-detects and using the smaller of the maximum value and the UCL_{95}. In the 6/160 example given, there are six results but only one detect for U-238 and three detects for Th-232. The UCL_{95} values were estimated using reported values (usually the detection limit). Because the estimated UCL_{95} was less than the max, the UCL_{95} was used.
43		In the Radionuclide Concentrations by Cleanup Option and Exposure Unit table, U-238 is listed as having an exposure concentration of 1.1 pCi/g at Plant 1 in the SOR>1 to 8 ft column, yet the Summary of Radionuclides in Soils (SOR>1 Removed in Top 8 Feet and Labeled as Waste) does not list the exposure concentration for U-238. The only value listed for U-238 at Plant 1 is 4.0 pCi/g for a mean concentration. Please explain.	The exposure concentration (RME) was determined by subtracting background from the UCL_{95} concentration. When there were no data to use in a UCL_{95} calculation, background was inserted as a place holder. Background was inserted so that once background was subtracted, a final concentration of zero, the actual value listed in the database, would be obtained.

MDNR COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY/PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (January 1998 Issue) (continued)

Comments received 05/07/98, MDNR * denotes major comments/key issues			
Comment No.	**pp/§/¶**	**Comment**	**Response**
44		In the Dose Estimates Tables, MDOH checked the accuracy of the calculations and found small inconsistencies in the values calculated. For example, in the Remove SOR>1 (top 8 ft), 6" Cover, Plant 1 table, the risk for Pa-231 should be 1.9×10^{-7} and the risk for Th-230 should be 1.5×10^{-6} for the Year 1000. This leads to a total risk at year 1000 of 4.8×10^{-6}, instead of the listed 5.1×10^{-6}. Although there were similar errors throughout these tables, the errors are not significant enough to warrant major concern. The 6" cover alternative risks in the 15/40/100, 50/100/150 and the 100/200/300 should be increased by 0.00001 to 3.0×10^{-4} and 4.3×10^{-4}, respectively, for Plant 2. The 6" Cover alternative risk in the 200/400/600 should be increased by 0.00001 to 2.7×10^{-4} for Plant 6A. The 6" Cover Alternative risk in the 15/40/100 should be increased by 0.00001 to 5.8×10^{-5} for Plant 6B. The No Cover alternative risk in the Remove SOR>1 should be increased by 0.00001 to 8.7×10^{-5} for Plant 6C. The No Cover alternative risk in the Remove SOR>1, 15/40/100, 50/100/150 and the 100/200/300 should be increased by 0.00001 to 2.3×10^{-4}, 2.3×10^{-4}, 9.6×10^{-4} and 9.6×10^{-4}, respectively, for Plant 7. The 6" Cover alternative risk in the Remove SOR>1 and the 15/40/100, 50/100/150 and the 100/200/3000 should be increased by 0.00001 to 3.5×10^{-5} and 3.5×10^{-5}, respectively, for Plant 7.	Small differences such as identified here may be attributable to a number of causes. New updated versions of RESRAD appear frequently. Different versions of the model may account for these differences, or small variations in input parameters. Dose to source and risk to source ratios were computed using RESRAD with estimated unit concentrations for each radionuclide. These values were then imported into a spreadsheet for subsequent concentration calculations. This approach vastly simplified the assessment. However, using spreadsheets to estimate dose and risk can introduce roundoff error that may not appear by using RESRAD exclusively. This error can be propagated through multiple calculations and result in slightly different answers. This is one reason that slight discrepancies have occurred. Please also note that the RESRAD output, on occasion, contains roundoff error such that the doses or risks from individual pathways do not sum to the total dose or risks. These sources of error are usually minor and, when considering the multiple levels of conservatism built into each modeled dose or risk, are insignificant.

COMMENTS AND RESPONSES ON
THE FEASIBILITY STUDY FOR THE ST. LOUIS DOWNTOWN SITE
ST. LOUIS, MISSOURI (April 1998)

Comments received 05/8/98, Mallinckrodt			
Comment No.	**pp/§/¶**	**Comment**	**Response**
General			
Mallincrokdt Letter		Mallinckrodt appreciates the opportunity to review the Feasibility Study and Proposed Plan for the St. Louis Downtown Site. Mallinckrodt commends the U.S. Army Corps of Engineers for its efforts in moving this project forward. Mallinckrodt, like the Corps, is looking forward to the timely completion of a practical remedial program which protects the public, current and future employees and property owners, and the environment while providing for continued operation, maintenance, and development of Mallinckrodt's manufacturing activities. As discussed in the attached, Mallinckrodt encourages the Corps to select and implement Alternative 6. Alternative No. 6 will remediate contamination to levels which are protective of human health and the environment. It will remove contaminated soils likely to be encountered during routine maintenance and construction activity and therefore will allow cost-effective operation, maintenance, and development of the facility by current or future property owners. It is therefore consistent with the St. Louis Site Remediation Task Force recommendations. As this alternative will provide clean borrow in future development areas, excavation for site maintenance and development may proceed with significantly lower risk of encountering contaminated soils. It has increased long term effectiveness and permanence than Alternatives 1-4. In addition, Mallinckrodt and Federal Government costs for the management and disposal of contaminated soil generated during facility maintenance and development will be greatly reduced when compared to all other alternatives except No. 5. Implementation of Alternative 6 is also endorsed by Federal, State, and local government representatives and officials as well community leaders and residents. Mallinckrodt will be pleased to review our comments with you and your staff and answer any questions you may have. Please contact Robert Boland at 314-654-6170 if you have any questions or comments.	After consideration of public comment, the USACE has selected Alternative 6 for implementation.

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (April 1998) (continued)

Comments received 05/8/98, Mallinckrodt			
Comment No.	**pp/§/¶**	**Comment**	**Response**
	Introduction	Mallinckrodt Inc. ("Mallinckrodt") recommends that Alternative No. 6 be selected as the preferred remedial action at the St. Louis Downtown Site (SLDS). It will impose less restrictive use-limitations on Mallinckrodt and future property owners. Alternative No. 6 will remediate contamination to levels which are protective of human health and the environment. It will remove contaminated soils likely to be encountered during routine maintenance and construction activity and therefore will allow cost-effective operation, maintenance, and development of the facility by current or future property owners. It is therefore consistent with the St. Louis Site Remediation Task Force recommendations. As this Alternative will provide clean borrow in future development areas, excavation for site maintenance and development may proceed with significantly lower risk of encountering contaminated soils. It has greater long term effectiveness and permanence than do Alternatives 1-4. In addition, Mallinckrodt and Federal Government costs for the management and disposal of contaminated soil generated during facility maintenance and development will be greatly reduced when compared to all other alternatives except No. 5. The following paragraphs provide general and specific comments on the Feasibility Study and Proposed Plan and support the selection and implementation of Alternative 6 by the Corps.	After consideration of public comment, the USACE has selected Alternative 6 for implementation.
2		**A. Mallinckrodt's Significant Investment in and Contribution to St. Louis** Mallinckrodt is a St. Louis-headquartered company with global operations. Mallinckrodt's economic presence in Missouri is significant and growing. Mallinckrodt's St. Louis area facilities have approximately 2200 employees with a total payroll of approximately $150 million. In 1997, Mallinckrodt paid a total of $6 million in state and local property, business, and income fees and taxes. Over the past 10 years, Mallinckrodt has installed $370 million in new manufacturing and support facilities in the St. Louis area. $200 million of this investment was at the St. Louis Plant. Employment at the St. Louis Plant has increased by 300 over this period. As a result of these St. Louis Plant investments, an estimated 450 jobs and an economic "output" benefit of $165 million were created in the local economy. Mallinckrodt[1] has shown a commitment to the City of St. Louis and the St. Louis area through continued investment and expansion at the St. Louis Plant. Our plant's location in North St. Louis helps stabilize this area. In addition, Mallinckrodt is an active corporate citizen in this neighborhood through its ongoing work with Grace Hill Settlement House, Hyde Park Neighbors, Clay Community Education Center, and The North Broadway Business Association.	The importance of Mallinckrodt's operation to the economic stability and development of the downtown area is recognized by the USACE.

[1] The St. Louis Plant and downtown vicinity properties contain approximately one third of the estimated total volume of St. Louis Site contaminated materials. Therefore, Mallinckrodt is a significant st[illegible] in the St. Louis Site FUSRAP program.

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (April 1998) (continued)

Comments received 05/8/98, Mallinckrodt			
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3		**B. Under FUSRAP and the Federal Facilities Agreement, the Corps Must Remediate All MED/AEC-Related Contamination.** As DOE's successor with responsibility for implementing the FUSRAP program, the Corps is obligated under FUSRAP and the Federal Facilities Agreement (FFA) to remediate all MED-AEC related residues - including both accessible and access-restricted materials. The presence of these contaminants hinders use and continued development of manufacturing operations at the St. Louis Plant. The Downtown site remediation plan must recognize that Mallinckrodt has an active manufacturing facility and that site operations will continue and expand after completion of the work. Remedial criteria and institutional controls which are appropriate for dormant land are not applicable and appropriate for this expanding industrial site. Alternative 4 does not adequately address the issues associated with an active plant site. To continue development, Mallinckrodt must be able to excavate for the construction of new facilities and for the maintenance of those that are now being operated without having each new construction or maintenance project, no matter how small, become a remediation project. Consistent with the United States' obligation to address all MED/AEC contamination under the FUSRAP program, several activities have recently been completed including: remediation of soils at City Block 1201, demolition of the 50 Series buildings, decontamination of surfaces in K building, and demolition of former uranium processing buildings in Plants 6 and 7. See FS at p. 2-47. To facilitate these FUSRAP remedial activities, Mallinckrodt has relocated ongoing operations, utility systems (gas, water, power), and demolished structures at a cost of approximately $7 million. Mallinckrodt anticipates working with the Corps to facilitate remedial activities in the future.	After consideration of public comment , the USACE has selected Alternative 6 for implementation. Alternative 6 reduces the need for future studies, designs, and remedial actions over Alternative 4. The USACE looks forward to maintaining a continued relationship with Mallinckrodt that supports the needs of all parties to maintain operations and provide cost-effective remediation.
4		**II. The Corps Should Select Remedial Alternative 6[2]** Mallinckrodt recommends that the Corps select Alternative 6. Implementation of Alternative 6 would remove contaminated soil to a depth of 4 to 6 feet and backfill the excavated site with clean fill. Contaminated soils likely to be encountered during routine maintenance and construction activity would be removed thereby eliminating a primary exposure risk which Alternative 4 fails to address. Alternative 6 is more consistent with CERCLA guidance than Alternative 4, is more protective of human health and the environment than Alternative 4, and minimizes long term worker exposure which is underestimated in the Corps' analysis of Alternative 4. In addition, Alternative 6 better addresses actual site conditions including Mallinckrodt's plans for future development and is consistent with the recommendation of the St. Louis Site Remediation Task force.	After consideration of public comment, the USACE has selected Alternative 6 for implementation.

[2] Since the FS and the Proposed Plan are based on the same analysis, Mallinckrodt's comments also apply to the Proposed Plan.

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (April 1998) (continued)

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4 (continued)		In comparing Alternative 4 to Alternative 6, CERCLA requires the Corps to apply the following criteria: • Threshold Criteria – overall protection of human health and the environment; and – compliance with ARARs. • Balancing Criteria – long-term effectiveness and permanence; – reduction of volume, toxicity, and mobility through treatment; – short-term effectiveness; – implementability; and – cost. • Moifying Criteria – state acceptance; and – community acceptance.	
	page 5-2	As Alternative 6 includes excavation of contaminated soils which will be encountered during plant maintenance and development, it will be more protective of human health and the environment and will provide for more cost-effective operation, maintenance, and development of the site. It therefore better satisfies the Threshold Criteria objectives of protection of human health and the environment and of establishment of remedial criteria which are applicable, relevant, and appropriate for the continued use and development of an industrial facility. Alternative 6 also better satisfies the objectives of Balancing and Modifying Criteria than does Alternative 4. The removal of soils which will otherwise be disturbed by continued industrial activity at the facility will increase the long term effectiveness and permanence of the remedy when compared to that provided by Alternative 4. As Alternative 6 requires the establishment of fewer institutional controls and restrictions on site activities, it has increased implementability than Alternative 4. As described below, the long term costs of Alternative 6 are no greater, if not less, than those of Alternative 4. Lastly, implementation of Alternative 6 is supported by Federal, state, and local officials as well as local community residents. The following paragraphs further demonstrate that the required comparative analysis favors selection of Alternative 6.	After consideration of public comment, the USACE has selected Alternative 6 for implementation.

COMMENTS AND RESPONSES ON
THE FEASIBILITY STUDY FOR THE ST. LOUIS DOWNTOWN SITE
ST. LOUIS, MISSOURI (April 1998) (continued)

Comments received 05/8/98, Mallinckrodt			
Comment No.	**pp/§/¶**	**Comment**	**Response**
5		**A. Alternative 4 Poses More Risk than Alternative 6** The Corps' risk analysis shows that potential exposures to employees and construction workers may exceed Nuclear Regulatory Commission rules for site cleanup unless unrealistic restrictions on excavation (and hence future plant development) are imposed. These restrictions would include prohibitions on excavation at the St. Louis Plant. This is unreasonable at an active plant. Such restrictions on future excavation are not required by Alternative 6.	Future excavation activities would not be prohibited under Alternative 4, but would require implementation of safety measures to assure adequate worker protection. After consideration of public comment the USACE has selected Alternative 6 for implementation.
		The FS is in error when it fails to identify the exposure pathway of a construction/industrial worker digging in soil as important. Excavation for plant maintenance and development is a routine activity at the St. Louis Plant and represents the primary route of worker exposure, particularly for those alternatives, such as Alternative 4, which leave contaminated soils at depths of six feet or less. The baseline risk assessment (BRA) identified that potential health impacts at the St. Louis Plant are highest for the construction worker. In addition, the potential for adverse impacts on human health and the environment is increased since these future excavation projects will not be implemented as part of a single remedial effort as would occur under Alternative 6.	The FS ALARA assessment fully evaluated the construction/industrial worker under a variety of cleanup scenarios. The industrial/worker scenario was modeled as a worker who works at the site and digs into contaminated soil during a portion of the year. This worker scenario was based on site-specific information, including input from Mallinckrodt. Both dose and risk assessments are provided in Appendix C of the FS.
		To properly address this recognized risk to maintenance and construction workers, removal of MED/AEC contamination which restricts or impedes the current and future operation, maintenance, and development of the site must be included as a remedial objective and the effectiveness and implementability of a remedial alternative must be evaluated on the basis of how well the alternative accommodates current and future plant operations and development.	As stated in the FS, the distribution of radioactive contaminants at the SLDS is very similar to the distribution of contaminants at a typical UMTRCA site. The USACE did not intend this comparison to extend to work activities conducted at the SLDS. Per EPA's OSWER Directive No. 9200.4-18, "Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination", cleanup of UMTRCA sites "is consistent with the minimally accepted dose limit of 15 mrem/yr effective dose equivalent (EDE) under a residential exposure scenario for Ra-226, Ra-228, and Th-232, and is much more stringent for all 4 radionuclides." After consideration of public comment, Alternative 6 has been selected for implementation.

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (April 1998) (continued)

Comments received 05/8/98, Mallinckrodt			
Comment No.	**pp/§/¶**	**Comment**	**Response**
6		**B. Site Appropriate ARARs favor Alternative 6** The FS study (see, e.g., p. 3-20, Table 3-3) does not appropriately consider soil removal requirements associated with the future use of the property in establishing ARARs and remedial objectives, specifically the need to: • Provide for and allow future industrial use and development of the facility. • Minimize the administrative and financial burden of managing contaminated soils excavated during site maintenance and development. • Minimize the administrative and financial burden of managing radon exposure from access-restricted soils beneath existing and new site structures. In selecting ARARs and evaluating risks, the FS fails to recognize that site operations will continue and expand after completion of the work. The Corps mistakenly applied remedial criteria and institutional controls which are appropriate for unused land but which are not applicable and appropriate for this industrial site. Because the site is actively being developed, the ARARs must take into account excavation for the construction of new facilities and for the maintenance of those that are now being operated. Mallinckrodt believes that UMTRCA (40 CFR 192) is not appropriate for soils in an active facility. See FS at p. 3-20, Table 3-3. The Corps is simply wrong when it states that the St. Louis Plant is similar to "inactive" uranium processing sites where these standards apply. See FS at p.3-9. The St. Louis Plant is anything but inactive particularly when it comes to ongoing excavation activities for maintenance and construction. Hence, these standards are not appropriate for this site. Failure of the Corps to effectively address the management of soils containing above-background radioactivity which will be routinely excavated during ongoing plant maintenance and anticipated future development is a significant shortcoming of the FS. The Corps has not considered how effectively remediation alternatives allow continued operation, maintenance, and development of Mallinckrodt's manufacturing activities and facility, nor did the Corps consider the effectiveness of the Alternative for addressing the management and disposal of excavated soils during these activities. Since these points were not considered, the evaluation of Alternative 4 is incomplete. Alternative 4 would be very difficult to implement at an active site and impossible to implement cost-effectively at an expanding site.	Alternative 6 has been selected in response to public support.

COMMENTS AND RESPONSES ON
THE FEASIBILITY STUDY FOR THE ST. LOUIS DOWNTOWN SITE
ST. LOUIS, MISSOURI (April 1998) (continued)

Comments received 05/8/98, Mallinckrodt			
Comment No.	**pp/§/¶**	**Comment**	**Response**
6 (continued)		Rather than addressing contaminated soils on a continuing and ongoing basis as the plant is maintained and developed, it is more reasonable and practical that the Corps remove all soils containing elevated radioactivity which will likely be encountered during plant maintenance and development at this time and in so doing minimize the burden and cost of management in the future. Mallinckrodt believes the use of clean cover as well as clean fill within the construction/excavation zone (depth of 4-6 feet, depending on location) will best minimize potential doses and risks to construction workers and workers or the public exposed to excavated soils, both on-site and off-site. Removal at this time will minimize the potential for mismanagement at some point in the future. Alternative 6 accomplishes this. In addition, both DOE and the St. Louis Site Remediation Task Force embraced this concept. Isolation from radioactive materials by providing clean fill in the excavation zone is the most practical and workable approach for remediation at the St. Louis Plant. If such isolation is not provided, the institutional controls envisioned by Alternative 4 will be violated and the Corps will be continually and repeatedly managing soils containing above-background radioactivity, or development at the plant could be severely curtailed. See page 4-9, paragraph I.	
		The plan does not identify elimination of the potential for direct contact when contaminated soil is brought to the surface by subsurface excavation and subsequently managed for disposal as a remedial objective. See Page 3-29, paragraph 4. This situation will occur whenever excavation is performed for facility maintenance or development. This pathway has the potential to expose excavation workers, Mallinckrodt employees and contractors working around the excavation area, and employees of waste transportation and disposal firms who handle the excavated materials. Failure of a remedial alternative to eliminate such exposures will increase the potential for worker exposure during facility maintenance and construction and reduce Mallinckrodt or future property owner's ability to cost-effectively operate, maintain, and expand the facility.	
		Alternative 6 would excavate soil containing more than 5 pCi/g to 6 inches deep and subsoil containing more than 15 pCi/g to 6 feet deep in some areas and to 4 feet deep in other areas of the St. Louis Plant. Only approved (non-contaminated) earthen fill would be used to backfill. This remediation strategy would allow industrial use of the St. Louis Plant without prohibition against disturbing land shallower than 4 or 6 foot below grade. Restrictions when excavating deeper than 4 or 6 feet, restriction against ground water withdrawal, and provisions to manage excavation into currently inaccessible areas are expected and are acceptable to Mallinckrodt.	Approved earthen fill would be used to backfill to depths above 4 to 6 feet. Deeper excavations could be backfilled using material that is below ALARA.
		To a depth of 4 or 6 feet, Alternative 6 would resolve the incompatibility between Alternative 4's proposed restriction against disturbing land at the St. Louis Plant and Mallinckrodt's need to maintain and change its operations. Alternative 6 also reduces the need for future radiation protection and contaminated soil disposal accompanying subsurface utility work, foundation construction, and grading on-site.	

COMMENTS AND RESPONSES ON
THE FEASIBILITY STUDY FOR THE ST. LOUIS DOWNTOWN SITE
ST. LOUIS, MISSOURI (April 1998) (continued)

Comments received 05/8/98, Mallinckrodt			
Comment No.	**pp/§/¶**	**Comment**	**Response**
6 (continued)		Moreover, under Alternative 4, there appears to be no safeguard during remediation against excavating radioactivity concentration in soil greater than remediation criteria, then mixing it to less than *composite* criterion, and depositing it back onto the site. Although that might be effective in reducing residual radioactivity concentration over larger area, it might be much less effective in reducing site-wide inventory of residual MED-AEC material. And the lower concentration, higher volume soil might still have to be dealt with in the future. Whereas Alternative 4 depends on restriction against disturbing the remediated site to meet ARAR, Alternative 6 is better able to meet ARAR for industrial use. Thus, Alternative 6 is the preferred alternative.	
7		**C. The Corps has Underestimated Alternative 4 Costs** The Corps has not considered all the costs associated with implementation of Alternative 4. As the Mallinckrodt facility and vicinity properties are developed, soils in the near-surface building zone will be excavated by property owners and provided to the Corps for management and disposal. In analyzing Alternative 4 in the FS, the Corps addressed neither Mallinckrodt's nor the Corps' administrative or remedial costs of managing these soils in the future. This soil removal will occur during utility maintenance and facility development (foundations, sewers, elevators, etc.). The actual costs for excavation and disposal of contaminated soil above free release criteria will be incrementally increased over those estimates for the planned remediation because of the smaller volumes handled and the cost and availability of support staff resources to plan, implement, and coordinate disposal activities. As a result, the purported savings recognized by leaving these contaminated soils in-place are exaggerated and, at best, temporary. The Corps implicitly recognized the future costs associated with Alternative 4 when, in analyzing Alternative 6, it said: "Alternative [6] focuses on reducing the need for future studies, designs, and remedial actions, in addition to protection of human health and the environment relative to Alternative 4." FS at p. 4-25. The Corps proposes to allow soils with concentrations 30 times higher than the appropriate limit to remain after excavation. See FS at p. 3-10, fn. c. This will result in increased exposures to maintenance and construction workers and increase the cost and complexity of management and disposal of excavated soil. As such, exposures and costs associated with those alternatives which leave contaminated soil in the construction zone are underestimated.	The USACE agrees that Alternative 6 will reduce the need for future studies, designs, and remedial actions for residual soils relative to Alternative 4. After consideration of public comment, the USACE has selected Alternative 6 for implementation.

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (April 1998) (continued)

Comments received 05/8/98, Mallinckrodt			
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7 (continued)		To appreciate the substantial future costs of soil removal which the Corps ignored in evaluating Alternative 4, during the past three and one half years, Mallinckrodt has spent approximately $660,000 (roughly $190,000/yr) managing soil which contains MED/AEC residues. These soils were generated during routine operation and maintenance and by minor construction projects. DOE took possession of most of the soil and the Corps is obligated to take the remainder. Mallinckrodt estimates that it will generate approximately 340 cubic yards per year of soils containing MED-AEC contamination through future routine operation and maintenance activities, and spend approximately $195,000 per year for health-physics support and soil management and storage. The presence of radioactivity in soils also increases the cost and complexity of site construction. During a typical construction project, Mallinckrodt will incur approximately $150,000 in increased design, coordination, and contractor costs. Fifteen hundred to two thousand cubic yards of soil will be excavated during a typical major construction project such as installation of a new manufacturing or support structure. Based on recent experience, Mallinckrodt will spend approximately $400,000 per project to analyze, store, and deliver these soils to the Corps if construction is performed in an area containing FUSRAP contamination. Therefore, the presence of soil contamination increases the cost of major construction projects in areas containing FUSRAP contamination by approximately $554,000 each. Based on past history, Mallinckrodt assumed implementing eight development projects in areas containing MED-AEC contamination over the 30 year cost evaluation period. Over the 30 year period evaluated in the FS, Mallinckrodt will experience increased costs of approximately $10 million (1998 dollars) to manage the contaminated soils which will remain on site if Alternatives 1, 2, 3, or 4 are implemented by Corps. Over the same period, the Corps will spend approximately $11 million (1998 dollars) for the management, transportation, and disposal of these soils. These expenditures were not taken into account in evaluating Alternative 4. When these additional costs of future soil handling are taken into account, there is no cost justification for selecting Alternative 4 instead of Alternative 6.	
8		**D. Alternative 4 Would Limit Future Development of the Site to the Detriment of the Surrounding Community** The adverse impacts on the community, as well as Mallinckrodt, are not justified by the purported short term savings achieved by Alternative 4. Since 1980, City of St. Louis employment has declined in the services, manufacturing, and military industries. In contrast, during this period, Mallinckrodt employment increased by approximately 100. Further growth and the associated increased employment and community benefits are at risk if Mallinckrodt is unable to continue expansion in a cost-effective manner due to the presence of FUSRAP residues left behind by Alternative 4.	The importance of Mallinckrodt's operation to the economic stability and development of the downtown area is recognized by the USACE. After consideration of public comment, the USACE has selected Alternative 6 for implementation.

COMMENTS AND RESPONSES ON
THE FEASIBILITY STUDY FOR THE ST. LOUIS DOWNTOWN SITE
ST. LOUIS, MISSOURI (April 1998) (continued)

Comments received 05/8/98, Mallinckrodt			
Comment No.	**pp/§/¶**	**Comment**	**Response**
8 (continued)		Over the past ten years, Mallinckrodt has made capital investments of approximately $200 million for installation of new manufacturing facilities and upgrading of existing processes at the St. Louis Plant. Mallinckrodt has constructed state-of -the-art laboratory, maintenance, and warehouse facilities to support pharmaceutical manufacturing operations on previously remediated property. Mallinckrodt anticipates constructing new manufacturing facilities when other areas are fully remediated. Thus, continued remedial activities at the St. Louis Plant will provide immediate economic benefit to the St. Louis area. Over the next five years, Mallinckrodt anticipates a further capital investment of $120-150 million at the St. Louis Plant. Mallinckrodt hopes to install approximately $30 million of this new capital in areas remediated under FUSRAP. However, if Alternative 4 is selected, Mallinckrodt will be unable to construct new manufacturing facilities in these areas without encountering FUSRAP contamination. This creates a financial burden on development at the St. Louis Plant. Elimination of future Mallinckrodt costs and restrictions which would impede operation, maintenance, and future development of the site are best addressed by adopting Alternative 6 which provides for clean fill to depths ranging from four to six feet.	
9		**E. Alternative 6 is Preferred by Government and Community Leaders.** Alternative 4 is not consistent with the recommendations of the St. Louis Site Remediation Task Force. In its September 1996 report, this task force of community representatives recommended that soil contaminants be removed to a depth permitting general excavation for maintenance without concern. Because it includes removal of contaminated soils likely to be encountered during routine maintenance and construction activity, Alternative 6 is consistent with the Task Force recommendation. In addition to support by Mallinckrodt, implementation of Alternative 6 is supported by Missouri DNR, City of St. Louis Mayor Harmon, St. Louis County Executive Westfall, and the St. Louis Congressional delegation. Implementation of Alternative 6 is also supported by numerous community leaders and area residents, several of whom voiced their support at the public meeting held by the Corps at Clay School on April 21, 1998.	After consideration of public comment, the USACE has selected Alternative 6 for implementation.

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (April 1998) (continued)

Comments received 05/3/98, Mallinckrodt			
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10		**F. Requirement for Long Term Commitment** The FS provides: "inaccessible soil will be addressed at a later date when an appropriate remedy that minimizes disruption of active facilities has been identified." FS at pp. 1-5; 4-1. However, the Feasibility Study and Proposed Plan fail to address how the Corps will take responsibility for the long term management of contaminated soils which are not removed by the cleanup. The Corps, DOE, or another Federal Government entity must establish a long term commitment to Mallinckrodt for management and disposal of residual materials if MED-AEC materials are left on site following remediation. In contrast to the Corps' inaccurate suggestion that there is uncertainty concerning the source of radionuclides at the St. Louis Plant (FS at ES-3), the MED/AEC operations caused by far the bulk of the radioactive materials processed at Mallinckrodt.[3] It would be inappropriate and inequitable to shift the burden of dealing with MED/AEC contamination to Mallinckrodt. The congressional intent of FUSRAP was to relieve property owners of this burden. Moreover, the United States is contractually obligated to Mallinckrodt to address all contamination related to MED/AEC uranium processing. Future responsibility must be acknowledged at this time to ensure that contaminated soils do not become a burden to future property owners or present a risk to human health and the environment when they are disturbed during future operation, maintenance, and development of the facility. Mallinckrodt believes that the FS must either address remediation of inaccessible soils which will occur at some point in the future, provide a long term commitment that the these soils will be addressed when they become accessible, or provide for remediation of these soils now with appropriate compensation to property owners for the disruptions caused by this remediation. Failure of the Corps to include these soils in the FS leaves their status and future remediation uncertain. In addition, the FS does not anticipate and address response actions for contaminated soils that are not now known but are discovered in the future. Mallinckrodt and future property owners must not be burdened with the administrative and financial costs of managing such contaminated materials in the future.	The USACE fully recognizes its responsibilities regarding MED/AEC contamination at Mallinckrodt, however this is not the only source of radioactive contamination at the facility. In clarifying the limits of the USACE's responsibility, there was no intent to reduce the U.S. Government's share of the obligation to remediate MED/AEC related contamination. Inaccessible soils will be addressed as a separate operable unit. Details regarding the management of these soils and the roles and responsibilities of the various parties will be included in subsequent CERCLA documentation.

[3] The Corps essentially concedes this fact in the FS stating: "the MED/AEC operation comprised most of the radioactive materials processed at Mallinckrodt." FS at p.

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Comments received 05/8/98, Mallinckrodt			
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11		**G. Corps Responsible for Chemical Contamination Resulting from Uranium Processing and For all Contamination Commingled with MED/AEC Residues** The FFA requires the Corps to remediate all waste, including but not limited to, radiologically contaminated waste, resulting from or associated with uranium manufacturing or processing activities conducted at the St. Louis Plant as well as other chemical or non-radiological waste which have become mixed or commingled with radiological contaminated waste resulting from or associated with uranium manufacturing or processing activities conducted at the St. Louis Plant. The FS expressly acknowledges the scope of the Corps' obligations when it cites the FFA as covering: • All wastes, including but not limited to radiologically contaminated wastes, resulting from or associated with uranium manufacturing or processing activities conducted at the St. Louis Plant. • Other chemical or radiological wastes that have been mixed or commingled with wastes resulting from or associated with uranium manufacturing or processing activities conducted at the St. Louis Plant. Areas of chemical contamination from MED/AEC activities are therefore also within the scope of the FFA and this remedial project. In evaluating the extent of chemical contamination for which the Corps is responsible, characterization activities did not attempt to identify all organic compounds used in uranium processing. See FS at p. 2-27, paragraph 4. Consequently, characterization studies completed to date may not have identified all of the compounds used in uranium processing which remain in the environment. In addition, the Corps is incorrect in stating that "No RCRA listed compounds were used..." The remedy that is implemented must account for all of the chemical contamination associated with MED/AEC operations. See FS at p. 2-33, paragraph 3. Acids (e.g., nitric) and organics (e.g., TCE) were used in uranium processing and are listed hazardous wastes. In fact, the FS lists numerous chemicals associated with uranium processing: chemicals associated with MED/AEC materials or processes include trichloroethylene (TCE), diethyl ether, inorganic compounds such as hydrofluoric, nitric, and sulfuric acids (Harrington and Ruehl, 1959), nitrates, calcium hydroxide, caustic soda, sodium bicarbonate and carbonate, anhydrous ammonia, graphite, and petroleum products. FS at p. 2-25.	USACE understands that it has responsibility for chemical contamination resulting from past uranium processing for MED/AEC. However, that does not make the USACE responsible for cleanup of all chemicals at the site that may have had some incidental use during uranium processing. This is a particular concern given the long history of the site as a chemical manufacturing facility. The context inwhich the statement was made was in considering PCOCs. A substance is RCRA hazardous if it either exhibits a hazardous characteristic or is a listed waste. A waste is a RCRA listed waste if it can be demonstrated that the waste derives from a source as specified in 40 CFR Part 261 Subpart D. None of the samples tested exhibited a characteristic, nor is the specific source of potentially hazardous constitutents known. Therefore, no RCRA listed and no RCRA characteristic wastes have been detected.

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (April 1998) (continued)

Comments received 05/8/98, Mallinckrodt			
Comment No.	**pp/§/¶**	**Comment**	**Response**
12		**III. Conclusion** As stated above, Mallinckrodt recommends that Alternative No. 6 be selected as the preferred remedial action at the St. Louis Downtown Site (SLDS). It will impose less restrictive use-limitations on Mallinckrodt and future property owners. Alternative No. 6 will remediate contamination to levels which are protective of human health and the environment. It will remove contaminated soils likely to be encountered during routine maintenance and construction activity and therefore will allow cost-effective operation, maintenance, and development of the facility by current or future property owners. It is therefore consistent with the St. Louis Site Remediation Task Force recommendations. As this alternative will provide clean borrow in future development areas, excavation for site maintenance and development may proceed with significantly lower risk of encountering contaminated soils. It has greater long term effectiveness and permanence than do Alternatives 1-4. In addition, Mallinckrodt and Federal Government costs for the management and disposal of contaminated soil generated during facility maintenance and development will be greatly reduced when compared to all other alternatives except No. 5.	After consideration of public comment, the USACE has selected Alternative 6 for implementation.
13		**A. Inadequacy of Radon Analysis** Page 3-18, paragraph 2. This statement is incorrect. Radon emissions from materials beneath buildings 101 and K required installation of radon control measures to maintain concentrations at acceptable values. These soils also represent exposure risks when subsurface maintenance is performed. The Feasibility Study proposes, "... occupancy and use restrictions and engineered control measures would also be implemented for buildings where radon gas is a concern." [FS 5-32]. "... use of active and passive radon control systems and adherence to worker safety regulations will be used to maintain safe work levels for all SLDS employees." [FS 5-29] This, as well as routine monitoring for radon gas, are additional costs to Mallinckrodt which has not been identified.	Statement that inaccessible soils do not pose a current risk is not incorrect. Radon control measures are currently mitigating potential current risk. If subsurface maintenance is performed, these soils are no longer inaccessible. Radon monitoring costs are included in the cost estimates.

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (April 1998) (continued)

Comments received 05/8/98, Mallinckrodt			
Comment No.	**pp/§/¶**	**Comment**	**Response**
13 (continued)		Industrial worker scenarios assumed a 2-foot thick zone of contamination. Yet a substantial fraction, perhaps the majority, of radon entering a building through its floor may originate deeper than 2 feet wherever cinder fill is relatively porous and dry. RESRAD models radon entry into a building by assuming diffusion from ground below and inflow of ventilation air from outside as the motives for entry. Although argumentative perhaps, the primary motive is apparently pressure differential between interior and exterior of the house near the ground floor caused by the chimney effect, wind, and atmospheric pressure drop that draws in soil gas.[4],[5] In view of this likely deficiency in RESRAD and RESRAD-BUILD models, the Corps should request ANL to re-examine the radon model in RESRAD and RESRAD-BUILD. The Corps should reconsider its estimation of potential radon exposure within a habitable building on land containing elevated Ra^{226}. If the Corps proposes to rely on the RESRAD model to predict indoor radon progeny concentration, it should address these concerns. The Corps should reconsider its estimation of potential radon exposure within a habitable building on land containing elevated Ra^{226} made using RESRAD or RESRAD-BUILD. The State of Missouri's prohibition on the placement of radioactive materials in landfills will increase the cost of disposal of soils containing <u>any</u> radioactivity above background levels. It was not considered a relevant and appropriate factor in evaluating the acceptability of remedial alternatives.	The contaminated zone is assumed to be 2 meters thick and not 2 feet, as indicated in the comment. Therefore, the source depth is probably less inadequate than thought by the commentor. "Less inadequate" is used here specifically because, as the commentor knows, the source of radon may be many meters away or may be limited to the top few inches of soil depending on the geology at the specified location. The current model assumes a conservative yet reasonable depth of contamination. An accurate model for predicting indoor radon concentrations has been quite elusive and is likely to be so for some time. If Argonne National Labs (ANL) comes up with a new model for predicting indoor radon, it will surely suffer the same scrutiny that their current model must endure. The current model is considering that the stack effect is typically a seasonal phenomenon and reverse stack effect conditions can apply (neither of which is necessarily a good thing).

[4] Nazaroff, W.M. "Entry by Pressure-driven Flow or Molecular Diffusion? A Reassessment of ^{222}Rn Concentrations Measured in an Energy-Efficient House." *Health Physics*. 55, no. 6. Pp1005-1008. Dec. 1988.

[5] Nilub, R.F. "Reply to "Entry by Pressure-driven Flow or Molecular Diffusion?" *Heal* 55, no. 6. Pp1009-1011. Dec. 1988.

COMMENTS AND RESPONSES ON
THE FEASIBILITY STUDY FOR THE ST. LOUIS DOWNTOWN SITE
ST. LOUIS, MISSOURI (April 1998) (continued)

Comments received 05/8/98, Mallinckrodt			
Comment No.	**pp/§/¶**	**Comment**	**Response**
14		**B. The Corps Is Correct in finding Groundwater Treatment Unnecessary** Mallinckrodt concurs with the Corps' assessment of the overall poor conditions of groundwater in the vicinity of the St. Louis Plant. See FS at pp. 2-36, ES-3, 2-11, 2-36, 2-39, 3-16, 4-3. Page 2-36, paragraph 2. Residents consuming groundwater from on-site wells and produce from home gardens is not a realistic future use scenario for SLDS. Residential use of the property is not a reasonable future use assumption and is therefore not a reasonable basis for evaluation of future exposures.	Agree.
15	2-3 and elsewhere	Uranium processing was not performed in plant 6E to our knowledge. Some portions of plant 6E may have been contaminated by migration of radionuclides into the area.	Thank you for this information.
16	2-25, ¶ 3	It is likely that the presence of coal slag and cinders in fill material has resulted in the presence of both inorganic and organic compounds in the environment (e.g., polycyclic aromatic hydrocarbons). PAHs are not believed to be from Mallinckrodt processing, but from the cinder fill material. Such fill material was used throughout the river front area to raise the grade elevation and allow development.	Agree. Additional background sampling in this fill material offsite is planned to enable establishment of the source of this contamination.
17	3-8, ¶ 5	Although the State of Missouri has not implemented regulations which address radioactive contamination in soil, it has issued regulations which effectively prohibit the landfill disposal of soils containing above-background concentrations of radioactivity. This effectively precludes the use of Missouri landfills for disposal of soils containing FUSRAP residues in any concentrations and creates a significant burden on property owners whenever soils are excavated for facility maintenance or expansion.	Agree.
18	Table 3-1	Soil Guidelines. The guidelines list is incomplete. It appears to provide only the guidelines in 40 CFR 192 and DOE Order 5400.5. Soil criteria for the full list of MED/AEC radionuclides to be addressed by the project and the impact of depth on criteria are not identified.	Table 3-1 addressed the primary radionuclides of concern for this site (Ra-226, Th-230 and U-238). Other radionuclides (e.g. Th-232 and Actinium series decay products) will be controlled by remediation of these primary radionuclides.
19	Table 3-1	External Gamma Radiation. 20 μR/hr is cited as a criterion in a habitable building. However, 7.5 μR/hr exposure rate times 2000 hr/yr occupancy would produce about 15 mrem/yr, absent any other exposure.	Agree. The 20 μR/hr limit would likely not be used as a guideline for areas with high occupancy.
20	3-10, Line 37	The DOE interpreted the equivalent of Table 3-1 to specify a surface release criterion of 5000 α(min 100 cm^2), ignoring the thorium criterion. How will the Corps interpret Table 3-1 surface criteria with the prospect that thorium is present? The proposed criteria do not seem to account for potential presence of thorium series radionuclides.	It has been our experience to date that thorium series (Th-232 + D) nuclides are a very small portion of the overall site radioactivity total. However, the values in Table 3-1 for thorium would be used in separate areas where thorium (particularly Th-230) was the dominant radionuclide.

COMMENTS AND RESPONSES ON
THE FEASIBILITY STUDY FOR THE ST. LOUIS DOWNTOWN SITE
ST. LOUIS, MISSOURI (April 1998) (continued)

Comments received 05/8/98, Mallinckrodt			
Comment No.	**pp/§/¶**	**Comment**	**Response**
21	4-7, ¶ 6	The containment alternative is not acceptable to Mallinckrodt. Such an alternative would have significant impact on plant maintenance and development and would significantly reduce property values.	USACE has selected Alternative 6 for implementation.
22	5-51	Public Services. The statement that Alternative 4 has a low impact on utilities is not correct. Utilities exist in the soil horizons where residual contamination will remain.	The short duration of exposure to contaminants under a utility worker scenario effectively limits impacts to a utility worker. However, USACE has selected Alternative 6 after consideration of public comment.
23	5-57, ¶ 4; 4-10, ¶ 5	The use of Plant 2 as a location for fill or treatment processing facility is unacceptable to Mallinckrodt as this area is in the middle of the manufacturing facility. Moreover, as the Corps notes: "Consolidation at Plant 2 would have an impact on Mallinckrodt Inc.'s ability to expand its operations. This could result in reduced employment." FS at 5-23.	Alternative 6 has been selected for implementation.
24	5-9, ¶ 9	Alternative 2 - Institutional Controls And Site Maintenance is not acceptable to Mallinckrodt as it does not reduce employee exposures or impediments to facility maintenance and development.	Alternative 6 has been selected for implementation.
25	5-15, ¶ 3	Alternative 3 - Consolidation and Capping is not acceptable to Mallinckrodt as it does not reduce employee exposures or impediments to facility maintenance and development.	Alternative 6 has been selected for implementation.
26	5-15, ¶ 5	Mallinckrodt will not agree to consolidating and capping contaminated materials from property outside their boundaries.	Alternative 6 has been selected for implementation.

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY AND PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (May 1998)

Comments received 05/05/98, Michael Alesandrini			
Comment No.	**pp/§/¶**	**Comment**	**Response**
1		Several member companies of the St. Louis Regional Commerce & Growth Association have expressed a great deal of concern over the recently released Feasibility Study/Proposed Plan (FS/PP) with regard to the Corps' intentions to remediate the St. Louis FUSRAP. We are concerned because certain elements of the plan do not appear to be consistent with regional development goals.	Although regional development goals are not among the CERCLA evaluation criteria, these concerns may be considered under the CERCLA community acceptance criterion.
2		Under the previous plan, the contaminated sites were to be cleaned and made essentially available for redevelopment. The FS/PP does not provide for such treatment. Much of the property affected does have local market appeal. Responsible remediation planning would seek to take advantage of such favorable market conditions. It is not clear why the FS/PP not only fails to leverage said conditions, but also effectively removes these properties from the playing field in the immediate term—contaminated properties are at a distinct competitive disadvantage in the St. Louis area as available properties can be had readily which are not contaminated.	It is unclear what previous plan is being referenced. The Task Force Report recommended commercial and industrial use for Mallinckrodt, recreational for the Riverfront Trail, and unrestricted use for the VPs. The levels of cleanup proposed are consistent with these recommendations.
3		In addition to the plan's failure to envision new, short term growth on FUSRAP property, the plan clearly does not recognize the propensity, given historical tendencies, for near term expansion onto remediated parcels located on the Mallinckrodt facility.	These concerns have been addressed by the selection of Alternative 6 in the Record of Decision rather than Alternative 4 which was favored in the Proposed Plan. Implementation of Alternative 6 will increase the depth of complete remediation, providing additional protection against inadvertent intrusion.
4		The RCGA established a goal of generating 100,000 net new jobs by the year 2000. One of our most pressing economic development goals is therefore to foster expansion of existing operations and growth of new operations in the immediate term. Clearly, the FS/PP is inconsistent with that end. We would respectfully request, therefore, that you reconsider your strategy for remediation of the affected real estate.	In response to community concerns and other issues, USACE has changed its selection of alternatives from Alternative 4 to Alternative 6.

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY AND PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (May 1998) (continued)

Comments received 05/06/98, Senator John Ashcroft			
Comment No.	**pp/§/¶**	**Comment**	**Response**
1		I have reviewed the Army Corps of Engineers' plans for remediation of the SLDS under FUSRAP. I commend the Corps for developing these assessments and plans under a challenging schedule. I look forward to the timely completion of the work and elimination of the burden that resides from early weapons production placed on property owners.	USACE appreciates your interest in this project.
2		While I believe cost should be one factor in deciding which plan should be implemented, it should not be the only factor. I encourage the Corps to select an alternative that will minimize the future administrative and financial burdens to property owners and minimize impediments to future development. Please choose an alternative that will best preserve and enhance the cost-effective development and expansion of SLDS properties and the resulting economic benefits that flow to the local and regional community.	Although development and expansion of SLDS properties and economic benefits to the community are not valid evaluation criteria under CERCLA, under Final Remedy Selection the law requires reassessment of the initial preferred alternative on the basis of new information or points of view expressed by the state and community. On the basis of concerns expressed by the community, USACE is selecting Alternative 6 in the Record of Decision.
3		I encourage the Corps to resolve the issue of continuing future responsibility for residues which are not removed under the current plan. Property owners must not bear a burden that is the government's responsibility, and it is appropriate and reasonable that the mechanism for establishing and guaranteeing such responsibility be established prior to issuance of the Record of Decision.	This concern will not be addressed prior to the issuance of the Record of Decision, especially for inaccessible soils. Inaccessible soils will be addressed as a separate operable unit in future documentation.

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY AND PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (May 1998) (continued)

Comments received 04/29/98, William L. Clay			
Comment No.	**pp/§/¶**	**Comment**	**Response**
1		I have reviewed the Army Corps of Engineers' plans for remediation of the St. Louis Downtown Site (SLDS) under FUSRAP. I commend the Corps for the timely development of these assessments and plans. I look forward to the expedient completion of this cleanup project; it is time the St. Louis community is relieved of the burdens brought by early weapons production.	USACE appreciates your interest in this project.
2		I encourage the Corps to select and implement Site-Wide Alternative No. 6, Selective Excavation and Disposal. This alternative will minimize the future administrative and financial burdens to property owners and will minimize impediments to future development which would be created under Alternative 4. Although short-term cost to the federal government will be higher under Alternative 6, this plan will prevent the need to shift more than $10 million in costs for the management of soils not removed by Alternative 4 from FUSRAP to property owners. Alternative 6 will allow the most cost-effective development and expansion of SLDS properties while spurring economic benefits throughout the community. This alternative will also reduce the government's continuing obligation for the disposal of soils excavated by property owners.	USACE has selected Alternative 6 in the Record of Decision for this site because of the widespread public support for this alternative.
3		I encourage the Corps to resolve any question of future responsibility for residues which are not removed under the current plan. Property owners must not bear a burden that is the government's responsibility; it is both appropriate and reasonable that the mechanism for establishing and guaranteeing such responsibility be established prior to the issuance of the Record of Decision.	This concern cannot be addressed prior to the issuance of the Record of Decision, especially for inaccessible soils. Inaccessible soils will be addressed as a separate operable unit in future documentation.

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY AND PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (May 1998) (continued)

Comments received 05/06/98, Congressman Jim Talent			
Comment No.	**pp/§/¶**	**Comment**	**Response**
1		Upon examining all of the proposed options for the remediation of the SLDS, I have decided to support Alternative 6, which provides for selective excavation and disposal. Under Alternative 6, all contaminated soils to a depth of 4–6 feet will be removed, and all excavated areas will be backfilled with clean soil. This recommendation is consistent with the recommendation of the St. Louis Site Remediation Task Force.	Agree. However, the plan is to use clean soil as backfill only in the top 4 to 6 feet. Below that depth, excavated materials below the ALARA criteria may be used as backfill.
2		I support Alternative 6 instead of the preferred alternative of the Corps of Engineers (Alternative 4) because: • Under Alternative 4, greater quantities of radioactive contamination will be left in the soil. This will inhibit further development at SLDS since the ongoing management of these soils, particularly during site development, is not addressed. Alternative 6 removes contaminated soil from most areas likely to be involved in future maintenance and development work. • Also, if one considers the costs of managing these soils over the long term, there is essentially very little, if any, difference between Alternatives 4 and 6, and Alternative 6 avoids shifting costs to property owners.	Agree.
3		In addition to selecting Alternative 6 for remediation at SLDS, I urge the Corps to resolve the issue of continuing future responsibility for contaminated soils and materials that will not be removed. Property owners should not be required to bear the burden that is the federal government's responsibility.	This issue must ultimately be resolved, but the resolution is not a part of this Record of Decision.
4		I would like to congratulate the St. Louis District Corps of Engineers for their commitment to cleaning up all the FUSRAP sites in the St. Louis area. In less than a year since the Corps took over the cleanup responsibilities for all FUSRAP sites, significant progress has been made in formulating a thorough and acceptable remedy for the St. Louis FUSRAP sites.	USACE appreciates your support.

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY AND PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (May 1998) (continued)

Comments received 05/06/98, John Bratkowski			
Comment No.	**pp/§/¶**	**Comment**	**Response**
1		After consideration of the alternatives, the Old North St. Louis Restoration Group voted in favor of Alternative 5, the most complete cleanup. It was felt that the cost of complete cleanup was not that much greater than Alternatives 4 or 6 and that the nature of radioactive waste warranted complete cleanup. It was also noted that a natural disaster such as flooding or an earthquake in the immediate area could spread the radioactive contamination over a much wider location than the current site.	Alternative 5 is estimated to cost $48 Million dollars more than Alternative 4, about a 50% increase. USACE feels that is significantly greater cost. In response to community concerns, USACE is selecting Alternative 6 which is more protective than Alternative 4 at an increased cost of $22 Million. As demonstrated by the ALARA analysis in Appendix C of the FS, little reduction risk is achieved by more aggressive (and expensive) remediation than is proposed in Alternative 4. Alternative 6, by excavating to the most stringent criteria to depths of 4 to 6 feet, will further reduce the chance of inadvertent intrusion into contaminated materials and will also reduce the potential for spreading of contamination through flood or earthquake since the material will be greater depth than in Alternative 4.
2		The selection of Alternative 5 will not cause the elimination of the Mallinckrodt Company. So, an added benefit of this alternative is that is will not cause local economic disruption.	Alternative 6 also minimizes the potential economic consequences of post remedial conditions.
3		Regardless of any short-term economic impact, as neighborhood residents, we want the SLDS cleaned up completely, for once and for all. The cost of $140 mi lion is reasonable considering that it will ensure the future viability of this important part of our urban environment.	Alternative 6 will meet these concerns through minimizing the opportunity for significant exposure to residual radioactive materials.
4		Our organization has voted unanimously to support Alternative 5. We would like our decision to be part of the public record and for our comments to be used in guiding the complete excavation with offsite disposal of all of the radioactive waste at the SLDS location.	Your comments are part of the public record as a result of inclusion in this Responsiveness Summary. However, based on other commentors, support for Alternative 6 appears to be more widespread in the community than support for Alternative 5.

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY AND PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (May 1998) (continued)

Comments received 05/06/98, N.F. Brewer			
Comment No.	**pp/§/¶**	**Comment**	**Response**
1		RMI Environmental Services (RMIES) is a remediation company offering expertise and specialized technologies geared to individual site requirements. We are currently the prime contractor to DOE for remediation of a uranium extrusion plant in Ashtabula, Ohio. RMIES is also part of a joint venture team which demonstrated an effective soil treatment pilot plant at the Ashtabula site. Soil decontamination in the pilot scale plant was proven to be both fiscally and technically effective, and this success led the DOE to change the baseline remediation approach to include soil treatment. The change to soil treatment and the extraction of uranium from the soil is expected to provide a $20 million savings over standard soil transportation and disposal at Envirocare. A production scale soil treatment plant is under construction, and will begin operation this fall.	Alternative technologies which are viable and cost effective will be fully assessed and implemented at the SLDS as an integral part of remediation. Although such technologies have not been identified to date, additional investigations will be conducted as appropriate to minimize remediation costs.
2		The Feasibility Study for the SLDS states that soil treatment may be a viable alternative for the downtown site (page 3-31). Soil treatment removes contamination from the soil, substantially reduces the quantity of soil shipped offsite for disposal, and offers corresponding reductions in environmental impact and project costs. These potential benefits warrant an amendment to the Proposed Plan for the SLDS so that it will specifically call for the performance of a volume reduction via soil treatability study necessary to select and design an effective soil treatment process.	Soil treatment is a conditional component of any and all remedial alternatives and will be used as appropriate based on viability and cost effectiveness. (SLDS FS para. 5.3.4, pg. 5-58)

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY AND PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (May 1998) (continued)

Comments received 05/08/98, Rev. Richard Creason, Holy Trinity Church			
Comment No.	**pp/§/¶**	**Comment**	**Response**
1		Pursuant to the public meeting at Clay CEC on Tuesday, April 21, at which I made oral comments, I am now providing my opinion in writing concerning cleanup of the Mallinckrodt site. My opinion is not a scientific one, rather it is from a pastoral point of view. I hope that it will be given adequate consideration for it is a holistic view that is being offered.	USACE appreciates multiple perspectives on the issues involving SLDS remediation.
2		When I view the historical development of the Hyde Park community, I see it as always having been a working class community: factory workers, trades people, and shop keepers. This parish, founded in 1848, has been at the heart of this community seeking to connect family, faith, and human dignity. In any era, when people launch out on this path, three elements are important: 1) Where will I live? 2) Where will my children go to school? 3) Where will I shop for needed goods and services? Add on to that the larger questions of meaning: 1) Where will I find meaningful employment? 2)Where will faith and spirituality be nurtured, that is, will there be churches to serve a spectrum of belief? Now 150 years later, in the Hyde Park community, these concerns are even more critical: 1) 50% of households have an income below $15,000 per year (second lowest in St. Louis City); 2) the unemployment rate is 12.7%; 3) According to Project Respond research (1997), children in zip code 63107 are more at risk than any other neighborhood in the City of St. Louis; and 4) The dropout rate for St. Louis City Public Schools is almost 25%, the highest in the metropolitan area.	Noted.
3		Mallinckrodt, Inc., has been a corporate citizen in the Hyde Park community as well for over 100 years. I can only speak from a perspective of the last three years that I have been the pastor of Holy Trinity Church, but my experience is that Mallinckrodt has been very active in community affairs. Mallinckrodt is an anchor; if we were to lose this plant because of relocation, it would spell disaster for North St. Louis.	Noted.
3		Because Mallinckrodt is willing to stay in this community, the issue of remediation of hazardous soil at their plant site on North Broadway takes on greater importance in terms of future development. Having heard all of the proposed remedies at the public hearing, I want to reiterate my support for Alternative 6, that is to remove the contaminated soil and to replace the soil in the near surface of the building zone. This will allow Mallinckrodt to redevelop this site and enhance their investment.	USACE has selected Alternative 6 in the Record of Decision in response to community support for Alternative 6.

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY AND PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (May 1998) (continued)

Comments received 05/08/98, Douglass Eller			
Comment No.	**pp/§/¶**	**Comment**	**Response**
1		I attended and testified at the Tuesday, April 21st, public hearing at Clay Elementary School. I work in the neighborhood with an environmental project developing the Riverfront Trail that runs between Mallinckrodt and the river. I am also active with neighborhood issues in Hyde Park and live on North 20th Street with my wife and two children. Our neighborhood has an annual income averaging $7000 per family. More than 60% of the community does not hold a high school degree. Little interest or caring exists for the neighborhood outside of its community borders. Very few "anchors" (neighborhood stabilizing forces) remain. And business anchors are even rarer. Mallinckrodt, Inc., has been a real strength to neighborhood improvements, particularly through the contribution of time and expertise by their staff. Mallinckrodt has brought area neighborhood organizations together, helped plan events, strategized with residents on political issues, supported small businesses, encouraged the recovery of chemically addicted parents, fostered solutions to environmental issues, employed area residents, and revealed its waste disposal practices in an open manner. The company has also invested funds to strengthen community efforts. Mallinckrodt is our business anchor that we cannot afford to lose.	Noted.
2		As I understand the issues, without the soil contamination removed to a specified level, Mallinckrodt cannot reinvest with new construction on those sites within its grounds. Our neighborhood must have Mallinckrodt remain a viable entity. My comments are in vigorous support of Alternative 6, as described in the Proposed Plan for the St. Louis Downtown Site.	USACE has selected Alternative 6 in the Record of Decision at this site in response to community concerns.
3		I feel that if more effective publicity was given within our neighborhood for the public meeting, a greater showing of support for Alternative 6 would have been demonstrated.	Noted.

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY AND PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (May 1998) (continued)

Comments received 05/08/98, Melvia J. Forniss			
Comment No.	**pp/§/¶**	**Comment**	**Response**
1		Mallinckrodt Chemical Company has been very supportive of Grace Hill Family Center clients, staff, and the community. Mallinckrodt has made many contributions, donations, and volunteer time to families of the Family Center for over six years. Grace Hill Family Center recommends to the Army Corps of Engineers to select Alternative 6 so that Mallinckrodt Chemical can remain in our community. The Grace Hill Family Center is the only long-term residential treatment program in the State of Missouri providing services to pregnant and post-partum substance abusing women and their children. It is also currently the only treatment program of any kind on the north side of St. Louis. The Grace Hill Family Center opened on March 4, 1994. It has served 148 women and 174 children since it opened. Thirty-two babies have been born drug free since that time. This fact has saved the state and estimated $900,000 in neonatal medical costs to date. The Grace Hill Family Center is a comprehensive program which offers intensive substance abuse treatment, education, job training, and medical services in the frame of work of community based self help.	USACE has selected Alternative 6 in the Record of Decision for SLDS in response to community concerns.

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY AND PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (May 1998) (continued)

Comments received 05/06/98, Hyde Park Eco-Justice Community			
Comment No.	**pp/§/¶**	**Comment**	**Response**
1		At a recent meeting of the Old North St. Louis Restoration Group, we learned of the effort being made to clean up the radioactive contamination at the Mallinckrodt Site. Because of our interest in ecology, we were encouraged to know that the Corps of Engineers was looking at this dangerous piece of property located so close to our neighborhood and trying to come up with some solutions. Of the six alternatives listed on the Proposed Plan, only Alternative 5 offers any real or permanent protection to the people who live nearby. To do anything short of complete excavation with offsite disposal makes no real sense. We would like to encourage you to choose Alternative 5 which would remove at least one of the many environmental health risks in this section of St. Louis.	An analysis to determine the risk from residual materials for various cleanup levels criteria was performed in order to determine the most cost effective cleanup criteria that would be protective of human health and the environment. The results of this analysis, which are published in Appendix C of the FS, indicate Alternative 4 provides the best balance between cost and risk. In response to public comments, USACE has selected Alternative 6 in this Record of Decision. Alternative 6 extends the depth of excavation for the most stringent criteria to a depth of 4 to 6 feet. This will offer both real and permanent protection to the residents of the community.

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY AND PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (May 1998) (continued)

Comments received 05/08/98, Donovan Larson			
Comment No.	**pp/§/¶**	**Comment**	**Response**
1		Since the FUSRAP meeting this morning, certain residents of the neighborhood surrounding Mallinckrodt have contacted me and expressed unhappiness about their ability to comment on the SLDS FS/PP and associated decision. Perhaps an extension of the comment period would be reasonable to allow these unheard voices to be given a chance to comment.	The USACE followed applicable CERCLA guidance in notifying residents about the public meeting. We regret that not all residents received notification in time to attend the public meeting and comment on the FS/PP. However, overwhelming stakeholder response has caused USACE to reconsider selection of the preferred alternative.

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY AND PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (May 1998) (continued)

Comments received 05/06/98, St. Louis Sites FUSRAP Oversight Committee			
Comment No.	**pp/§/¶**	**Comment**	**Response**
1		After reviewing the Feasibility Study and Proposed Plan submitted by the USACE for remediation under FUSRAP of the St. Louis Downtown Site, the St. Louis Sites FUSRAP Oversight Committee unanimously recommends that the USACE implement Alternative 6, Selective Excavation and Disposal, rather than Alternative 4 for remediation of SLDS. The SLSFOC believes that Alternative 6 is more protective of human health and will be more conducive to the continued long-term growth and operation of the Mallinckrodt St. Louis Plant.	Agree. USACE will select Alternative 6 in the Record of Decision in response to widespread community support.
2		The selection of Alternative 4 by the USACE is not consistent with the recommendations of the St. Louis Site Remediation Task Force. Alternative 6 appears to best meet the community's wishes as expressed in the SLSRTF final report submitted to DOE.	USACE believes both Alternatives 4 and 6 are consistent with the Task Force recommendations. However, Alternative 6 has been selected in response to these and other community comments.
3		It also appears that the USACE has not considered all the costs associated with implementation of Alternative 4. USACE has not included the cost of managing, excavation, handling, and disposal of near-surface soils that will be removed as a result of ongoing maintenance and/or development activities at the SLDS. Excavation of soils during maintenance and/or construction work in the 4–5 foot depths that remain under Alternative 4 could result in the unacceptable exposure of site employees or construction workers to residual radiological contamination. Additionally, the potential for adverse impacts on human health and the environment is increased as these smaller excavation projects will not be implemented as part of a single remedial effort.	These costs could not be predetermined because the volumes of these potential future excavations and the frequency of such intrusions could not be estimated with any degree of certainty. The FS does acknowledge the potential for these additional costs but does not attempt to quantify them.
4		The presence of radioactive contamination which will remain in place under USACE's Alternative 4 and resultant restrictions on development of that site will likely have a significant adverse impact on the future investments in the SLDS by Mallinckrodt. These future decisions on investments will also have an adverse economic and social affect on the community surrounding this site and the Metropolitan St. Louis area as a whole.	These effects do not fall within the evaluation criteria required by CERCLA. However, considerations of state and community points of view are required in the final remedy selection. In response to these community concerns USACE has selected Alternative 6.
5		The SLSFOC requests that the USACE revise its proposed plan to recommend the implementation of alternative 6 for remediation of the SLDS. Additionally, the SLSFOC reminds the USACE that the SLSRTF had recommended to the USDOE that the SLDS Vicinity Properties be cleaned up to standards that provide for unrestricted future use. The proposed plan should be modified to reflect the community's desire that vicinity properties, whether in North County or Downtown St. Louis, should be cleaned up to the same unrestricted standards.	The proposed plan will not be revised. The Record of Decision has selected Alternative 6 as the preferred alternative and provided reasons for changing from the Proposed Plan in the Explanation of Significant Differences Section. This section also specifies the more stringent standard for the vicinity properties.

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY AND PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (May 1998) (continued)

Comments received 05/06/98, Nancy Weber			
Comment No.	**pp/§/¶**	**Comment**	**Response**
1		The proposed plan for the cleanup of the Mallinckrodt Plant is not consistent with the recommendations of the Remediation Task Force. The USACE has not considered all the costs associated with the implementation. Mallinckrodt is a viable and growing business in the St. Louis area and any plan that is recommended should have a positive impact on this facility and the surrounding area.	USACE has selected Alternative 6 for implementation instead of Alternative 4, which was identified as the preferred alternative in the proposed plan, due to community concerns such as are expressed by this comment.
2		Please consider alternative plans that would not have an adverse effect. The feasibility and proposed plans failed to address how the Corps or other government agencies would take responsibility for long-term management of contaminated soil which are not removed by the cleanup. Who will take future responsibility for this project?	
3		The presence of radioactive contamination which will remain in place under the recommendation will have significant impact on Mallickrodt and the surrounding areas. Please look to an alternative plan that would not have an adverse impact on this area.	

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY AND PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (May 1998) (continued)

Comments received 05/05/98, R.M. Wester & Associates			
Comment No.	**pp/§/¶**	**Comment**	**Response**
1		I have only recently received a fax copy of a letter dated April 8, 1998, well after the public meeting of April 21, 1998, which announces a distribution of the SLDS FS/PP via the Internet and availability of the document at several libraries for review. May I point out that none of these libraries are within easy access to those of us interested who reside in St. Charles County. I have requested a copy be sent to me via the U.S. Mail, and may I also request that I be maintained on file to receive any and all notices of meetings and document distribution in the future. I participated in all proceedings and served on subcommittees for the St. Louis Task Force for several years while the remediation programs were under the Department of Energy, and I feel that with the change in responsibility from DOE to the Corps of Engineers many of us who are interested have been lost and no longer kept abreast of your plans for remediating the various affected areas of our region.	USACE welcomes input from all interested citizens.
2		I understand that people and businesses in the region of the Downtown Site have voiced concerns about the overall approach, and that the approach in fact deviates significantly from that which was the desire of the participants of the original Task Force. If this is true, then I am very concerned because it would seem that the Corps of Engineers has taken several steps backwards. One of the last series of meetings that I attended included the presentation of a document which fully described the wishes of the local community to the responsible parties of the DOE.	We believe the approach taken at SLDS is consistent with that recommended by the Task Force.
3		It seems to me that the Corps of Engineers could begin making progress in remediating the sites much sooner, with cost-effective measures, by following the community guidance documents. After three years of tedious deliberation by the state and local governments, along with industry and affected private parties, the challenges were successfully overcome, and this document of recommendations represents the consensus of opinion which provided solutions to remediate these properties.	The alternative selected recognizes the predicted future use of the impacted properties recommended by the Task Force Report.
4		The National Research Council has recommended that the decision maker incorporate all relevant stakeholders in the decision-making process from the start. It is further recommended that an analytic-deliberative process be employed to deal with decisions that involve all stakeholders. The basic premise is that, by employing the analytic-deliberative process with the participation of the stakeholders, the decision-making process will be enhanced, and the previous failing and cause for mistrust will be overcome. This basically describes the process that the stakeholders went through to arrive at the unanimous decision for the directives issued in the report. I further recommend that the document submitted as the final report of the St. Louis Task Force be the beginning of your work, and the effort and time devoted to develop this report not be discarded or wasted.	We agree that incorporation of stakeholders needs is a relevant and necessary part of the process. On the basis of that, USACE has chosen Alternative 6 as the remedy to be implemented at SLDS.

COMMENTS AND RESPONSES ON THE FEASIBILITY STUDY AND PROPOSED PLAN FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (May 1998) (continued)

Comments received 05/08/98 from Shannon D. Work - Givens, Funke & Work (Attorneys at Law)			
Comment No.	**pp/¶**	**Comment**	**Response**
Letter		I am Special Legal Counsel to the Spokane Tribe of Indians on various natural resource matters. You may recall that last month I submitted to you a letter similar to this concerning the St. Louis Airport Site and Hazelwood Interim Storage Site EE/CA documents. You may also recall I explained that one of the matters on which I work for the Tribe concerns an inactive uranium millsite located just off the Spokane Indian Reservation, but immediately adjacent to it and to an important Reservation waterway known as Chamokane Creek. Operated for decades by Dawn Mining Company, the millsite is known to contaminate both surface and ground waters, including waters to which the Tribe holds federally protected and adjudicated rights. See United States v. Anderson, 736 F. 2d 1358 (9th Cir. 1984). Under its off-reservation authority, the State of Washington in February 1995 licensed Dawn to convert a vast open impoundment at the site into a disposal cell for Atomic Energy Act 11e (2) byproduct material. Due to unresolved concerns for the health and safety of Reservation residents and visitors, as well as for Tribal trust resources, the Tribe has consistently opposed Dawn's waste and visitors, as well as for Tribal trust resources, the Tribe has consistently opposed Dawn's waste importation proposal. These comments are submitted on behalf of the Spokane Tribe regarding the USACE's Feasibility Study/Proposed Plan (FS/PP) Documents prepared in support of proposed actions to remove for off-site disposal radioactively contaminated soils from the St. Louis Downtown Site (SLDS). Although these documents do not appear to specifically describe the presence of 11.e(2) byproduct material, these comments are nonetheless submitted to raise issues of specific impacts to the Spokane Indian Reservation anticipated to be caused by alternatives which require off-site disposal, in the event removal of 11.e(2) byproduct material from the site is contemplated.	The USACE has not yet selected the disposal location for soils to be removed from SLDS. Only appropriately licensed or permitted facilities will be considered at the time of disposal. The disposal facility will be determined in accordance with all applicable laws and regulations including federal procurement laws and the EPA regulations on Federal use of offsite disposal facilities stated in the NCP, 40 CFR 300.440.