

**RESPONSE TO COMMENTS ON
RESPONSE TO COMMENTS
FINAL PROJECT WORK PLAN
DATED APRIL 21, 2006
BASE-WIDE STORM DRAIN AND SANITARY SEWER REMOVAL
HUNTERS POINT SHIPYARD
SAN FRANCISCO, CALIFORNIA**

Comments dated: April 24, 2006

Comments by: Mr. Kurt Jackson and Ms. Deirdre Dement, Associate Health Physicists
Department of Health Services, State of California (DHS)
Environmental Management Branch

GENERAL COMMENTS

Comment 1: *In general it appears that responses to General Comments 2, 3,4 and 5 refer back to the response to Comment 1 without a clear meaning as to this referral and they do not respond to parts of these comments. Also, there is no reference in the responses to comments to Attachment 1, so perhaps some of the referrals to the response to Comment 1 were meant to be referrals to Attachment 1? See the comment specific notes below for details:*

Response 1: Comment noted. The response would have been better understood if Attachment 1 was referenced, rather than Comment 1.

SPECIFIC COMMENTS

Comment 1: *Response to Comment 2: Refers to response to Comment 1 and then goes on to address the second part of Comment 2. Should the reference to the Comment 1 response actually have been a reference to Attachment 1?*

Response 1: Comment noted. The response would have been better understood if Attachment 1 was referenced, rather than Comment 1.

Comment 2: *Response to Comment 3: Refers to the response to Comment 1, which does not address the comment. Again, perhaps a response to Attachment 1 was intended.*

Response 2: Comment noted. The response would have been better understood if Attachment 1 was referenced, rather than Comment 1.

Comment 3: *Attachment 1: The scan MDCs calculated in Attachment 1 do not appear to take into account attenuation from the six-inch thickness of soil being scanned. Therefore, it is still not clear what objectives would be met by the direct scans. It appears that the MDC calculation would apply to soil only at or near the surface being scanned without significant attenuation.*

Response 3: The scan MDCs calculated in Attachment 1 took into account attenuation from the 6-inch thickness of soil being scanned. Page 11 of the Response to Comments (Attachment 1) specifies the modeling that was used to derive the net exposure rate produced by 1 picocurie per gram (pCi/g) of radium-226 (^{226}Ra) in 6 inches (15 centimeters [cm]) of soil. The modeling includes the factors used to establish this value, as follows:

“Modeling (using Microshield TM Version 6.02) was used to determine the net exposure rate produced by 1 pCi/g of ^{226}Ra and progeny in soil.

The factors considered in the modeling included:

Source geometry is cylindrical volume with end shields

Source dimensions are 15.2 cm height (depth) and 28.2 cm radius

Dose points are $x = 0$, $y = 25.2$, and $z=0$

Shields are sand (1.6 g cm^{-3}) and air ($0.122 \times 10^{-3} \text{ g cm}^{-3}$)

The depth of the area of elevated activity was 15 cm.

The circular dimension of the cylindrical area of elevated activity was 0.25 m^2 .”

The modeling included the depth of elevated activity at 15 cm, which equates to the 6 inches of surface soil identified in the Work Plan.

Comment 4: *Response to Comment 5: Refers to the response to Comment 1. If this was meant to be a reference to Attachment 1, the scan MDCs calculated in Attachment 1 do not appear to take into account attenuation from the six-inch thickness of soil being scanned. Therefore, the scan MDCs would not appear to meet objectives, except to the extent that the elevated levels of contamination are present at the surface of the lift in sufficient concentration to detect them. So, the one hundred percent coverage of the scan at sufficient sensitivity to*

meet objectives would only be for the surface or unattenuated soil in the lift.

Response 4:

The scan MDCs calculated in Attachment 1 took into account attenuation from the 6-inch thickness of soil being scanned. Page 11 of the Response to Comments (Attachment 1) specifies the modeling that was used to derive at the net exposure rate produced by 1 pCi/g of ²²⁶Ra in 6 inches (15 cm) of soil. The modeling includes the factors used to establish this value, as follows:

“Modeling (using Microshield™ Version 6.02) was used to determine the net exposure rate produced by 1 pCi/g of ²²⁶Ra and progeny in soil.

The factors considered in the modeling included:

Source geometry is cylindrical volume with end shields.

Source dimensions are 15.2 cm height (depth) and 28.2 cm radius.

Dose points are $x = 0$, $y = 25.2$, and $z=0$.

Shields are sand (1.6 g cm^{-3}) and air ($0.122 \times 10^{-3} \text{ g cm}^{-3}$).

The depth of the area of elevated activity was 15 cm.

The circular dimension of the cylindrical area of elevated activity was 0.25 m^2 .”

The modeling included the depth of elevated activity at 15 cm, which equates to the 6 inches of surface soil identified in the Work Plan.



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FROM: Neil Hart, Program Manager

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