

January 12, 2004

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SUBJECT: EVALUATION OF REVISION 1 OF FINAL STATUS SURVEY REPORTS FOR
AREAS VA-I THROUGH VA-VI: DOW CHEMICAL COMPANY'S BAY CITY,
MICHIGAN, SITE

Dear Mr. Baker:

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the Dow Chemical Company's (TDCC's) responses to comments and Revision 1 of the final status survey reports (FSSRs) for Verification Areas (VAs) VA-I through VA-VI of the Bay City site (TDCC submittal dated March 1, 2003). Your response and revisions of the FSSRs were in response to NRC staff comments provided in our letter of August 16, 2002.

For most of the original NRC comments, the TDCC responses and FSSR revisions are acceptable. However, the response to one previous comment was insufficient, and the NRC staff has follow-up comments based on review of some of the other TDCC responses and revisions. Most of the open comments relate to incomplete or unclear documentation of the verification results. Details of the open comments and remaining deficiencies are described in the enclosed evaluation. Before the NRC staff can conclude that TDCC has demonstrated that VAs I-VI meet the cleanup guidelines and are acceptable for release for unrestricted use, TDCC needs to address the deficiencies.

Mr. Ben Baker

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January 12, 2004

We request your response within 60 days from the date of this letter. If you have any questions concerning this letter and our comments, please contact me at (301) 415-6919.

Sincerely,

/RA/

Duane Schmidt, Acting Project Manager
Decommissioning Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosure: As stated

cc: Dow Distribution List

Docket No.: 040-00017

License No.: STB-527

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**EVALUATION OF REVISION 1 OF FINAL STATUS SURVEY REPORTS FOR
VERIFICATION AREAS VA-I THROUGH VA-VI:
THE DOW CHEMICAL COMPANY'S
BAY CITY, MICHIGAN FACILITY**

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the Dow Chemical Company's (TDCC's) responses to comments and Revision 1 of the final status survey reports (FSSRs) for Verification Areas (VAs) VA-I through VA-VI of the Bay City site (TDCC submittal dated March 1, 2003). The NRC staff reviewed each TDCC response and the associated revisions to the FSSRs. For most of the original NRC comments, the TDCC response and FSSR revisions are considered acceptable by the NRC staff. Such comments are considered closed and are not discussed in this evaluation. Table 1 provides a summary of the status of NRC comments on the FSSRs. Numbering of the previous comments below follows the numbering used by TDCC in its responses of March 1, 2003, and TDCC responses are quoted directly from the TDCC submittal. Open comments, and comments for which further explanation is appropriate, are discussed in detail below. In general, most of the open comments relate to documentation of the verification results. Before the FSSRs can be approved by the NRC staff, the open comments must be resolved.

Table 1. Summary of Status of NRC Comments on FSSRs for VAs I–VI			
General Comments (GC)		Specific Comments (SC)	
Comment	Status	Comment	Status
GC 1A	closed	SC 1A	closed
GC 1B	closed, but see new GC 7, SC 8, and new SC 10	SC 1B	closed
GC 2	closed	SC 1C	closed
GC 3	closed, but see new SCs 11–14	SC 2	closed
GC 4	closed	SC 3	closed
GC 5	closed	SC 4	closed
GC 6	closed	SC 5	closed
GC 7	new , follow-up from GC 1B	SC 6	closed, but see new SC 13
		SC 7A	closed, but see discussion
		SC 7B	closed, but may apply to future FSSRs
		SC 8	open
		SC 9	closed
		SC 10	new , follow-up from GC 1B
		SC 11	new , follow-up from GC 3
		SC 12	new , follow-up from GC 3
		SC 13	new , follow-up from GC 3
		SC 14	new , follow-up from GC 3

GENERAL COMMENTS

General Comment 1B

Comment:

Additionally several concerns were identified such as the contradictory statements between the report text and the data presented. For example, page 11 of the report for Verification Area VA-VI states "since none of the verification soil sample concentrations exceeded the guideline values (no hot spots), it was not necessary to apply averaging techniques in any of the grids." However, in reviewing the residual soil activity results, numerous individual samples were identified in the various verification area reports, that exceeded the stated gross activity guideline of 14.5 pCi/g total thorium and/or the unity rule. Therefore staff recommends that the reports be revised to clearly document in the data table that the 100 m² average activity levels satisfy the guideline and unity rule.

TDCC Response:

Individual soil samples exceeding the total thorium guideline value were Identified In VA-IV and VA-VI. The statement, "since none of the verification soil sample concentrations exceeded the guideline values (no hot spots), it was not necessary to apply averaging techniques in any of the grids," has been deleted from VA-IV and VA-VI. Section 4.2.2 of VA-IV and VA-VI has been revised to describe the actions taken by Dow when an Individual sample exceeded the guideline value. In the case of VA-IV, the samples were a composite over 100 m² and therefore, the hot spot averaging criteria could not be applied. The sample areas were remediated and re-surveyed as part of the VA-VI survey unit (BCS-K4-9-v1, BCS-K5-7-v1, BCS-K5-8-v1). In the case of VA-VI, two of the individual samples exceeded the guideline value (BCS-J6-1-A and BCS-I4-9-C). Since the samples were a composite over 25 m², the 100 m² and (100/A)^{1/2} hot spot averaging criteria were applied. One of the samples passed and one failed. The failed sample has been deleted from the VA-VI database and will be remediated and re-surveyed at a later date as part of a subsequent Verification Area Report.

Current Status:

This TDCC response and revisions to the VA reports appear to correct the contradictory statements indicated. Thus, this response is considered generally acceptable. However, removing from VA-VI the survey unit that failed the criteria creates a verification area with holes. This situation must be addressed in future reports from TDCC (see new general comment 7).

In addition, VA-VI is composed of three noncontiguous areas, which should not be considered a single survey unit (see specific comment 8).

The TDCC response also indicates that a single sample, representing one quadrant (I4-9-C) of a subgrid, has been deleted from the VA-VI database. See new specific comment 10 for details of an NRC staff concern regarding removal of part of a survey grid.

This general comment is considered closed.

General Comment 3

Comment:

NRC staff performed confirmatory surveys on all six of the verification areas promptly after the licensee had completed the final status survey for each area. Based on these confirmatory

surveys, only Verification Area VA-I was initially found to comply with the release criteria. All of the other verification areas (i.e., VA-II to VA-VI) were found to have locations that contained radioactive material exceeding the release criteria. (Note that NRC performed a follow-up confirmatory survey only in VA-II.) Although these locations were subsequently remediated by the licensee, it appears the FSSRs reviewed have not been revised to include the findings of the NRC confirmatory surveys nor do they indicate that the final status surveys and analyses were redone to verify release-criteria compliance. Table 1 [of NRC letter of August 16, 2002, not included here] shows that the FSSRs predate the confirmatory surveys. In the case of VA-III, the FSSR was revised after the confirmatory survey identified slag exceeding the release criteria; however, the revision addressed only the relabeling of subgrids. Staff concludes that until these FSSRs are revised to include data and analyses for final status surveys conducted after the NRC confirmatory surveys, the information provided is incomplete for demonstrating compliance with the release criteria. If revised reports were submitted after completion of NRC's confirmatory surveys, please provide the dates and indicate whether the reports were sent to NRC Headquarters and/or Region III.

TDCC Response:

Section 4.2.4, NRC Confirmatory Surveys, has been added to each of the FSSRs to address confirmatory findings and Dow actions to those findings. Each of the confirmatory survey findings indicated in Table 1 [not included in this current evaluation] of NRC's comments has been fully resolved in Section 4.2.4 of Reports I-VI.

Current Status:

The TDCC response and the additions of section 4.2.4 to the VA reports address part of the NRC staff concern, and the response is considered generally acceptable to NRC staff. However, as a result of the confirmatory surveys, additional remediation was performed, and additional verification sampling was then performed. In some of these cases, the verification data provided the VA reports have not been updated to provide the most current results for the grids. In addition, in some cases, verification data are provided in more than one VA FSSR for the same grid or subgrid. New specific comments 11, 12, 13, and 14, and Table 2, address these concerns. This general comment is considered closed.

New General Comment 7

The reports for each verification area contain a map of the affected area for the complete Bay City facility (Figure 3-2 in the VA reports) and a map of the grid locations for the specific verification area (Figure 4-1 in each report). In some cases, there are inconsistencies between the specific grid maps, the general affected area map, and the data presented in the FSSR.

Two examples are for VA-I. First, for grid R10 of VA-I, Figure 4-1 shows verification for the entire grid, but no data were provided for subgrids R10-8 and R10-9. Second, for grid P14 of VA-I, Figure 4-1 does not show verification measurements for subgrids P14-1, P14-2, and P14-3, but data for these subgrids is provided in Table A.3 of the FSSR.

There are additional examples for VA-II. First, Figure 4-1 shows Grid Block L2 as affected yet Figure 3-2 shows the same block as unaffected. Also, the survey unit boundary depicted in Figure 4-1, is far more irregular than that depicted in Figure 3-2. For example, both figures depict Grid Block L6 as unaffected but Figure 4-1 shows this grid bounded on all sides by affected areas, whereas Figure 3-2 shows only one side bounded by an affected area. Furthermore, it is unclear why Grid Block L6 was not designated as an affected area.

In addition, some grids or subgrids have been removed from VA-IV and VA-VI, to be considered in later verification areas. Also, two grid blocks in VA-VI (C2-2 and D2-9) have had verification performed for only half of the block.

Because of the inconsistencies and removal of grids or subgrids, the verification areas may not be contiguous, and may have holes where verification has yet to be completed. Thus, the NRC staff will not approve release of the verification areas for unrestricted use. In order to release areas from TDCC's license or to terminate the license, the NRC staff will need to have reasonable assurance that all affected areas have been verified with acceptable results. Thus, the NRC staff will not approve release of areas until results are obtained for grids removed from verification areas and until any inconsistencies are resolved. The conditional approval by NRC staff at this time is limited to those grids or subgrids for which verification data is included in the VA reports.

TDCC could make changes in the current VA reports to address this issue, but NRC staff does not require that. Alternatively, TDCC may consider developing a list or database (perhaps with maps) of all affected grids and subgrids, with a cross-reference to which report contains the verification results.

In addition, because not all of the Bay City facility has been remediated, there is the possibility that previously remediated areas may be cross-contaminated during further cleanup work. Before release of the site for unrestricted use, TDCC must demonstrate that previously verified areas have not been cross-contaminated.

SPECIFIC COMMENTS

Specific Comment 6

Comment:

The FSSR for Verification Area VA-IV contains several subgrids with final verification soil concentrations in excess of the release criteria (i.e., K4-9, K5-7, and K5-8). Regarding these subgrids, the report contains no information on satisfying the area weighted average over 100m² or the hot spot criteria. In addition, no summary statistics were provided for the final status survey.

TDCC Response:

Since the above referenced samples were a composite over 100 m², the weighted average test could not be applied. These three areas were removed from the scope of VA-IV and were subsequently remediated and re-surveyed as part of VA-VI. FSS Summary Statistics have been included in all of the revised FSSRs, including VA-IV.

Current Status:

The TDCC response clarifies the status of the cited subgrids. The NRC staff has verified that the subgrids are included in the FSSR for VA-VI. The response is acceptable to NRC staff and this comment is considered closed. However, see also Specific Comment 13 for a related concern regarding verification data remaining in the VA-IV FSSR.

Specific Comment 7A

Comment:

The footnote to Table 4-4, Final Verification Soil Concentrations, in the FSSRs for Verification Areas VA-V and VA-VI, contains factors of 1.63 to convert concentrations of Th-232 to Th-230 and 0.94 to convert Th-232 to Th-228. How these factors were derived needs to be explained. Also, these factors do not appear to be consistent with the factors used to determine the thorium soil concentrations for Verification Areas VA-I through VA-IV.

TDCC Response:

A detailed review was conducted of the analytical methods used to generate the data provided in FSSRs VA-I – VA-VI. There was no clear documentation in the Thorad project files describing the basis for the 0.94 and 1.63 correction factors. It appears that the 1.63 Th-230/Th-232 conversion factor was based on the background data provided in the FSSRs. The 0.94 Th-228/Th-232 conversion factor could be derived assuming that all of the pure thorium metal feedstock arrived at the site in 1970, the last year of thorium alloy production at the site, and that the onsite gamma spectroscopy analyses were performed in 1998. The Th-228 concentration would be about 94% of the Th-232 concentration, i.e., 0.94 conversion factor. The actual equilibrium would be closer to 1.0 since onsite thorium processing started in the early 1940's.

The 1.63 and 0.94 conversion factors were used to generate the results provided in FSSRs IV – VI. However, the data provided in FSSRs I – III was generated using Isotope specific analyses for Th-232, Th-228, and Th-230.

The 0.94 conversion factor is technically justified based on the decay calculation shown above. However, without additional documentation, the use of the 1.63 correction factor for Th-230 does not appear justified since it was based on background data as opposed to licensed material. The only clearly documented Th-230/Th-232 ratio appears to be that provided in the March 1996 Dow Response to NRC Comments, i.e., 3:1.

The use of a 3:1 ratio, as opposed to 1.63:1 has an insignificant affect on the reported average and standard deviation of the FSS data in FSSRs IV-VI and therefore the previously reported data was not modified in Revision I of the respective FSSRs. However, the data was reviewed to identify any results that did not exceed the 14.5 pCi/g limit using the 1.63 correction factor but would exceed the 14.5 pCi/g limit if a 3.0 correction factor were applied. In addition, a review of the gamma spectroscopy procedures for the Thorad site NaI system indicated that the Th-232 results were determined by the analysis of Pb-212, assuming equilibrium of all daughter products. This is reasonable considering that all of the samples are very close to background and that thorium processing on the site began in the early 1940s. However, the assumption of equilibrium used in the gamma spectroscopy analyses could be interpreted as potentially non-conservative data if a Th-228/Th-232 ratio of 0.94 is assumed. Therefore, the recalculation test of the higher results in FSSRs IV-VI included not only the 3/1 correction factor for Th-230, but also an adjustment for the fact that Pb-212 represents Th-228, not Th-232, and assuming a 0.94 Th-228/Th-232 ratio. Attachment 1 contains a memorandum from the site RSO to the project files that contains the recalculated results for the highest reported values to demonstrate that the affect is insignificant.

The recalculation is a very minor technical/administrative correction that is performed to satisfy all potential future questions about the reported data and does not justify a revision to the FSS

data tables and does not change any conclusions regarding the acceptability of areas VA-I – VA-VI for unrestricted use.

For all future FSS sample analysis, a Th-232/Th-228 ratio of 1:1 and a Th-230/Th-232 ratio of 3:1 will be assumed.

Current Status:

The TDCC response provides sufficient information about the derivation of the ratios used to estimate Th-230 and Th-228 from Th-232 concentrations. NRC staff agrees that there was no basis for using 1.63 as the Th-230:Th-232 ratio. NRC staff further agrees that the value of 3.0 for the Th-230:Th-232 ratio has been approved by NRC staff (license condition 12B approves use of release criteria provided in March 11, 1996 letter, which letter indicates that TDCC will use limiting concentrations based on a Th-230 to Th-232 ratio of 3).

As discussed in the TDCC response, TDCC reevaluated verification results from VAs I through VI, to ensure that when corrected radionuclide ratios are used, all VA subgrids would still meet the release criteria. The NRC staff reviewed the additional data provided in the TDCC memorandum (internal memorandum from Robert F. Yetter, dated February 26, 2003) attached to TDCC's responses. For VAs I–III, where isotopic measurements had been performed, TDCC performed the unity rule comparison for the samples in each VA with the three highest total thorium concentrations. For VAs IV–VI, where Th-230 and Th-228 concentrations had been estimated from Th-232 concentrations, TDCC reevaluated results for samples with Th-232 concentration greater than 2.75 pCi/g. TDCC recalculated the concentrations of each isotope (Th-232, Th-230, and Th-228) and summed to calculate the total thorium concentration, for comparison with the total thorium guideline of 14.5 pCi/g. TDCC's reevaluation demonstrated that all subgrids (100 m² areas) of VAs I–VI still meet the release guidelines when the corrections are made. The NRC staff agrees with TDCC's conclusion that the change in ratios does not appear to impact compliance with the guidelines, for the areas of VAs I–VI. NRC staff considers the TDCC response and changes to the FSSRs acceptable, and considers this comment closed.

As mentioned above, TDCC presented a table of isotopic thorium results for the samples from VAs I–III with the three highest total thorium concentrations. In reviewing the TDCC reevaluation discussed above, the NRC staff computed ratios of Th-230 to Th-232 for these nine samples. The ratios ranged from 1.6 to 45.8 (with mean 10.5), with six of the nine results greater than 3 (the approved value). This limited portion of the data set seems to be inconsistent with the approved ratio of 3. The NRC staff evaluated the significance of these data. The samples described in the TDCC memorandum are only the samples with the highest total thorium concentrations from the three VAs, and generally had the highest concentrations of Th-230 from the VAs as well. Thus, these samples may be expected to have Th-230:Th-232 ratios higher than for most samples. The NRC staff evaluated the detailed data for all verification samples for VAs I–III, provided in the FSSRs, and concludes that none of the samples (other than described in other comments) would exceed the unity rule comparison. The NRC staff concludes that a relatively similar distribution of concentrations would be expected in the remaining VAs (for which Th-230 was not measured). The NRC staff thus concludes that for grids in VAs IV–VI, it is unlikely that there would be sufficient Th-230 present to cause the thorium mixture to exceed the unity rule. The NRC further concludes that there is no significant basis upon which to reconsider the previously approved ratio of 3.

Specific Comment 7B

Comment:

Finally, there needs to be a discussion in each report on the derivation of the site specific thorium release criteria of 14.5 pCi/g. Relevant reference information is provided in the Decommissioning Plan Supplement (December 1996) and the Dow Response to Comments in NRC Letter of February 5, 1996 (March 1996).

TDCC Response:

The derivation of the 14.5 pCi/g total thorium criteria is included in Section 2.3 of each FSSR.

Current Status:

Section 2.3 of each FSSR does provide the derivation of the total thorium criteria (14.5 pCi/g). The derivation is based on application of the unity rule to the concentrations and limits for Th-232, Th-230, and Th-228. The individual guidelines used are 10 pCi/g for Th-232+228 and 21 pCi/g for Th-230, which are the previously approved guidelines. TDCC used relative isotope concentrations based on the average soil concentrations of all verification samples analyzed at the Bay City site (to date at which TDCC performed the analysis). However, NRC staff notes that these relative isotopic concentrations differ somewhat from the relative concentrations that would exist at the approved ratios (see General Comment 7A). The NRC staff repeated the calculation of the total thorium guideline, but using the ratios of TH-230:Th-232 of 3 and Th-228:Th-232 of 1. The result is essentially the same as TDCC calculated. Thus, the staff concludes that the total thorium guideline value of 14.5 pCi/g is acceptable and this comment is considered closed. However, the NRC staff concludes that the relative isotopic concentrations used are unacceptable, because the relative concentrations differ from the approved ratios. Thus, for future FSSRs, TDCC should revise the derivation of the total thorium guideline to be based on approved isotopic ratios.

Specific Comment 8

Comment:

Section 3.1 Survey Objectives of the FSSRs for Verification Areas VA-I and VA-II, states "The entire Bay City storage area (affected area) is treated as a single survey unit, and the 95% level of confidence will be applied to the entire survey unit. While the residual concentration values are being provided for individual VAs for convenience of the final validation, the 95% level of confidence will be demonstrated on for the entire site (survey unit) upon completion of the project." The licensee needs to explain how the statistical test (i.e., *t* test) will be done, since some of the final status surveys involved sample compositing while others did not. Also, it needs to be explained how FSS data from the yet to be remediated area will be considered in this statistical analysis.

TDCC Response:

Section 3.1 of VA-I and VA-II has been revised to state, "A 95% minimum level of confidence that the above conditions have been met was to be demonstrated. The entire Section (VA-I or VA-II) of the Bay City storage area (affected area) is treated as a single survey unit, and the 95% level of confidence was applied to the entire survey unit." This statement is consistent with FSSRs VA-III – VA-VI and NUREG/CR-5849.

Current Status:

The TDCC response and revision to the FSSRs for VA-I and VA-II clarifies the method used for the 95% level of confidence comparison. The NRC staff agrees that application of the 95% confidence comparison to individual verification areas is, in general, consistent with the guidance of NUREG/CR-5849.

However, the guidance of NUREG-5849, which TDCC is following for the surveys, indicates that survey units may combine contiguous land areas. Verification area VA-VI consists of three separate, noncontiguous areas. In addition, because certain grids have been removed from the current VAs, future FSSRs might also address noncontiguous areas. In the report for VA-VI, TDCC evaluated compliance with the 95% confidence interval for the survey unit average for all 100 m² grid blocks of VA-VI. Thus, NRC staff considers the 95% level of confidence comparison for VA-VI inadequate. For purposes of the 95% confidence comparison, TDCC should divide VA-VI into at least three survey units, each of which is a contiguous group of grid blocks. The 95% confidence comparison should be evaluated for each such survey unit. TDCC should also keep this in mind for future FSSRs which may involve noncontiguous areas. This comment is considered open.

New Comment 10

As discussed in TDCC's response to general comment 1B, TDCC removed quadrant I4-9-C from the VA-VI database. In TDCC's grid system, a quadrant is one-quarter of a 100 m² area. Compliance with the radiological criteria is primarily based on 100 m² areas (subgrids in TDCC's system). Thus, NRC staff concludes that after additional remediation of quadrant I4-9-C, TDCC will need to demonstrate compliance for the entire subgrid I4-9, not just the quadrant.

New Comment 11

Section 4.2.4 of the FSSR for VA-II discusses findings of the NRC confirmatory survey. This section indicates that elevated gamma scan readings were found in grid K3. As a result, TDCC subsequently remediated grid K3 and re-scanned grid K3 and the surrounding area. After the additional remediation, three areas of elevated activity were identified in subgrids K2-1, K3-4, and K3-5. Further remediation was performed in those three subgrids, and the subgrids were rescanned and resampled. Section 4.2.4 then provided measured Th-232 concentrations for the three subgrids. However, it appears that the verification results for grid K3 and surrounding areas in Table A3 have not been updated from the initial FSSR; the results are the same in the current, revised report as in the initial report, and the results in the current report do not match the values described in the text of Section 4.2.4 (see also Table 2 below). TDCC should update the results in Table A3 for these affected grids and subgrids, or otherwise provide the updated measurement data.

In addition, Section 4.2.4 indicated the Th-232 concentration for subgrid K3-4 was 3.19 pCi/g. Since this result is not included in Table A3 (which provides more details of the measurements), it is unclear if the value is gross Th-232 or net Th-232 above background. Thus, it is unclear if the value meets the guideline value (2.9 pCi/g for Th-232, or the unity rule for the mixture of isotopes). This should be addressed by TDCC when the results in Table A3 are updated.

New Comment 12

Section 4.2.4 of the FSSR for VA-IV discusses findings of the NRC confirmatory survey. In part, this section states:

“There were 18 individual locations with activity levels above three times background as identified through NaI scans. These locations were remediated to activity levels below three times background during the inspection. Dow personnel collected 20 soil samples, per NRC staff direction, at the 18 individual locations after remediation. The soil samples were analyzed for Th-232 at the Bay City field laboratory, under inspector observation, following QA/QC and calibration checks of the counting systems. When analyzed, no activity above release guidelines was found in any of the samples.”

To NRC staff, it appears that after additional remediation, new verification samples were obtained for these subgrids. However, based on comparison of the initial FSSR and the revised FSSR, it appears that the verification results for these grids have not been updated, and thus the results in the revised FSSR do not appear to be the correct (i.e., latest) values (see also Table 2 below). TDCC should indicate if these soil sample results have been included into Table A.3, Final Verification Soil Concentrations. If not, then TDCC needs to provide the revised concentration results.

New Comment 13

Sections 4.2.2 and 4.2.4 of the VA-IV FSSR indicate that grids J5 and J6, and some subgrids of K4 and K5 (K4-9, K5-7, and K5-8) were removed from VA-IV. The FSSR indicates that these areas were to be further remediated, and then resurveyed as part of VA-VI. However, the results for these grids were still included in the revised VA-IV FSSR (see Table 2 below). TDCC needs to clarify the status of the data provided for these subgrids in the VA-IV FSSR.

In addition, other subgrids immediately surrounding grids J5 and J6 have results presented in both the VA-IV and VA-VI FSSRs (see Table 2 below). It appears these areas also may have been remediated further and resurveyed. The presence of results for the same grids in two FSSRs is confusing. TDCC needs to clarify the status of the data provided for these subgrids in the VA-IV FSSR.

New Comment 14

Section 4.2.4 of the FSSR for VA-V discusses findings of the NRC confirmatory survey. In part, this section states:

“There were 10 individual locations with activity levels above three times background as identified through NaI scans. These locations were remediated to activity levels below three times background during the inspection. Dow personnel collected 10 soil samples, per NRC staff direction, at the 10 individual locations after remediation. The soil samples were analyzed for Th-232 at the Bay City field laboratory, under inspector observation, following QA/QC and calibration checks of the counting systems. When analyzed, no activity above release guidelines was found in any of the samples.”

To NRC staff, it appears that after additional remediation, new verification samples were obtained for these subgrids. However, based on comparison of the initial FSSR and the revised

FSSR, it appears that the verification results for these grids have not been updated, and thus the results in the revised FSSR do not appear to be the correct (i.e., latest) values (see Table 2 below). TDCC should indicate if these soil sample results have been included into Table A.3, Final Verification Soil Concentrations. If not, then TDCC needs to provide the revised concentration results.

Table 2. Summary of Grids with Apparently Missing or Inconsistent Data in Verification Areas VA-I through VA-VI

Verification Area (VA)	Affected Grids or Subgrids	Issue
VA-II	K2-1, K3-4, K3-5	Section 4.2.4 of VA-II FSSR indicated that the NRC confirmatory survey (after initial FSSR) indicated that 3 areas of elevated radiation were found, further remediated, and resurveyed and resampled. However, revised verification results were not provided in the revised FSSR. In addition, revised Th-232 results for subgrid K3-4 appear to exceed the guideline, but updated isotopic results were not provided. See specific comment 11.
VA-IV	Various, per confirmatory survey/sampling (letter of 10/20/1998)	Section 4.2.4 of VA-IV FSSR indicated that the NRC confirmatory survey (after initial FSSR) indicated that 18 areas of elevated radiation were found, further remediated, and resurveyed. However, revised verification results were not provided in the revised FSSR. See specific comment 12.
	K4-9, K5-7, K5-8	Section 4.2.2 of VA-IV FSSR indicated that these grids exceeded the DCGL, and were removed from VA-IV, to be resurveyed in VA-VI. But, results were still provided in VA-IV FSSR. See specific comment 13.
	J5, J6	Section 4.2.4 of VA-IV FSSR indicated that these grids were to be dewatered, further remediated, and resurveyed as part of VA-VI. But, results were still in VA-IV FSSR. See specific comment 13.
	I5-2, I5-3, I6-3, J4-3, J4-6, K5-9, K6-7, K6-8, K6-9	Not specifically discussed in VA-IV report, but results are in VA-IV and VA-VI report. May have been remediated and resurveyed along with J5, J6 (Section 4.2.4 of VA-IV report indicated remediation proposed for areas immediately surrounding J5 and J6). See specific comment 13.
VA-V	B8-5, C8-2, C8-5, C8-6, C9-1, C9-2, C9-5, E9-3	Section 4.2.4 of VA-V FSSR indicated that the confirmatory survey (after initial FSSR) indicated that 10 areas (which are in 8 subgrids) of elevated radiation were found, further remediated, and resampled. However, revised results were not provided in the revised FSSR. See specific comment 14.