



DEPARTMENT OF THE ARMY
ST. LOUIS DISTRICT, CORPS OF ENGINEERS
9170 LATTY AVENUE
BERKELEY, MISSOURI 63134

REPLY TO
ATTENTION OF:

October 7, 1999

Formerly Utilized Sites Remedial Action Program Project Office

Mr. Dan Wall
U. S. Environmental Protection Agency
Region VII, Superfund Branch
726 Minnesota Avenue
Kansas City, Kansas 66101

**SUBJECT: POST REMEDIAL ACTION REPORT (PRAR) FOR THE ST. DENIS
BRIDGE**

Dear Mr. Wall:

The subject final PRAR is attached as Enclosure 1 for your information and retention. This report provides applicable information relevant to the associated removal action. Responses to the Missouri Department of Natural Resources' comments received on the draft version of this document are also attached (as Enclosure 2) for your retention. As you may remember from previous communication, subsequent PRARs will be provided in final form with the appropriate content.

Please contact Mr. Dennis Chambers at (314) 524-3329 if you have any questions with regard to this plan.

Sincerely,

Sharon Cotner
FUSRAP Program Manager

Enclosures (2): St. Denis PRAR
Responses to MDNR comments on the Draft St. Denis PRAR



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REPLY TO
ATTENTION OF:

October 7, 1999

Formerly Utilized Sites Remedial Action Program Project Office

Mr. Robert Geller
Missouri Dept. of Natural Resources
P. O. Box 176
Jefferson City, Missouri 65102

**SUBJECT: POST REMEDIAL ACTION REPORT (PRAR) FOR THE ST. DENIS
BRIDGE**

Dear Mr. Geller:

The subject final PRAR is attached as Enclosure 1 for your information and retention. This report provides applicable information relevant to the associated removal action. Responses to your comments received on the draft version of this document are also attached (as Enclosure 2) for your retention. As you may remember from previous communication, subsequent PRARs will be provided in final form with the appropriate content.

Please contact Mr. Dennis Chambers at (314) 524-3329 if you have any questions with regard to this plan.

Sincerely,

Sharon Cotner
FUSRAP Program Manager

Enclosures (2): St. Denis PRAR
Responses to MDNR comments on the Draft St. Denis PRAR

**MDNR COMMENTS AND RESPONSES FOR
THE POST REMEDIAL ACTION REPORT (PRAR) FOR THE ST. DENIS BRIDGE AREA
ST. LOUIS, MISSOURI (April 1999 Draft)**

Comments received 10/27/98			
Comment No.	Page/§/¶	Comments	Responses
1		In general the level of detail included in the PRAR for the St. Denis Bridge Area was satisfactory for review by Federal Facilities Section (FFS). There does need to be consistency in the document. One example is the fact that the clean up criteria is listed in several areas of the report but if you look at page 6 it is stated "The concentration-based remedial action guidelines set forth in the EE/CA are 15 pCi/g for Ra-226 and Th-230 (subsurface soils, below 15 cm depth), and 50 pCi/g for U-238 for all depths" then look at page A-3 it is stated "The site specific cleanup levels were 5 pCi/g Th-230 in the top 15 cm of soil and 15 pCi/g of Th-230 in any 15 cm layer of soil below that." Another example is the differences between the Sum-of-Ratio (SOR) equations found on page B-3 and on page 6.	The document will be revised to include the EE/CA criteria for both surface and subsurface soils. Th-232 and Ra-228 will be added to both Table 1 and the SOR equation to clarify the calculation of the SOR.
2		The report should include results from all environmental monitoring done for the specific area. That would include but is not limited to radon monitoring, air monitoring, and stormwater monitoring. During a site visit on October 22, 1998 I didn't observe any air monitoring being done by Bechtel, Inc. I was told by Bechtel, Inc. and the U.S. Army Corps of Engineers (USACE) that the air monitoring had been done. The monitoring data was not included in this report, just a statement on page A-5 that stated "The air results were below criteria".	The St. Denis Street Bridge PRAR has been developed following EPA's guidance "Remedial Action Report, Documentation for Operable Unit Completion" (PB92-963364, June 1992). As such, only those elements of the remediation that are applicable to documenting that the remedial action has met its objectives (i.e., that document the final status of the remediated area) are included. The primary objective of the PRAR is, therefore, to document that material contaminated above the EE/CA criteria has been satisfactorily removed and that the remaining material is in compliance with the site criteria. Environmental Monitoring data for the St. Louis FUSRAP sites is included in other documents where appropriate.
3		The section "Chronology of events" outlines the sequence of events, which is good but I would also like to see information on any event, which caused a change in any health & safety procedure or excavation boundaries, etc. An example would be that during the Department of Energy work on the West End they required workers at the Eva Load out who work in the back of the trucks removing the liners to wear respirators because the air monitoring indicated an exceedence of the 10% DAC limit. Another example would be finding a drum filled with an unknown material or unusual weather event, which stops work. A brief description of how those events were handled by the contractor or USACE. While observing the work at the St. Denis Bridge on October 22, 1999 I observed the excavator operator stop work because of the constant movement of personnel around the excavator. How was that handled to insure a safe work environment? See comment #6 for an outtake from FFS site notes from that October 22, 1998 visit.	No significant "off normal" events occurred during the remediation to necessitate inclusion in the PRAR as a lessons learned.

**MDNR COMMENTS AND RESPONSES FOR
THE POST REMEDIAL ACTION REPORT (PRAR) FOR THE ST. DENIS BRIDGE AREA
ST. LOUIS, MISSOURI (April 1999 Draft) (continued)**

Comments received 10/27/98			
Comment No.	Page/§/¶	Comments	Responses
4	Page 12, Table 1	Summary of Final Status Samples Results from the St. Denis Street Bridge Area; I used the equation on page 6 to calculate the gross SOR for several of the sample points. I couldn't get the same results as listed in the gross SOR column in table 1. For SVP00060 I calculated an SOR_G of 0.22 pCi/g while the table has an SOR_G of 0.28 pCi/g. The problem was that I didn't include the greater of Th-232 or Ra-228 in the calculation. A solution to this problem is to include a sample calculation in the document.	As per comment #1 above, both Th-232 and Ra-228 concentrations will be included in Table 1 and the equation in Section 3.0.
5	Page A-3 & A-4	Several references are made to elevated levels found on the east bank after the initial remediation effort. What radioisotopes and levels were detected which caused the additional excavation work? The preliminary samples corresponding to the elevated readings should be included in the text along with which final samples corresponding to those same areas. The information may be in the tables in the back of the report but the maps with the preliminary sample locations are not clear. Attachment A has two maps, which give different locations for SVP0933 and SVP0934. An example of what could be included in the text "The preliminary gamma spec data provided after page A-9 showed several samples which exceeded the Th-230 cleanup criteria specifically SVP0603 19.12 pCi/g, SVP0606 21.22 pCi/g, and SVP0832 21.41 pCi/g. After additional excavation, additional samples were taken the new results are SVPXXXX 15 pCi/g as shown in Table B-1. There are different concerns if the levels detected were 17 pCi/g (including background) or 300 pCi/g (including background). Table B-2 lists several samples which have a net SOR greater than 1.0, do those samples from Table B-2 correspond to the areas with elevated readings?	<p>The objective of the PRAR is to document the final condition of the remediated area, rather than to document each excavation/sampling iteration that occurred prior to verifying (via the final status surveys and sampling) that the criteria had been achieved. Data contained in Appendix A is "remedial action support data" rather than final status data. As described in MARESIM, remedial action support samples and surveys 1) support remediation activities, 2) determine when a survey unit is ready for final status survey, and 3) provide updated estimates of the site-specific parameters to use for planning the final status survey. The results recorded on page A-9 document BNI's determination that the excavation was ready for final status sampling. They are not the samples obtained to properly document the final condition of the site.</p> <p>The figure depicting sample number SVP0933 was determined to be in error and subsequently removed from the document.</p> <p>Table B-2 represents the maximum possible concentrations for each of the individual samples making up the composites (which were all below the SOR criteria). The concentrations in Table B-2 are not actual analytical results but rather theoretical maximums determined by assigning background concentrations to two of the composite samples and determining the concentration of the third sample that would be required to obtain the actual composite result. None of the composite final status sample results exceeded a SOR of 1.0.</p>

**MDNR COMMENTS AND RESPONSES FOR
THE POST REMEDIAL ACTION REPORT (PRAR) FOR THE ST. DENIS BRIDGE AREA
ST. LOUIS, MISSOURI (April 1999 Draft) (continued)**

Comments received 10/27/98			
Comment No.	Page/§/¶	Comments	Responses
6	Page A-5	<p>Second full paragraph; during a site visit of October 22, 1998 I observed both the Bechtel contractor and the city's contractor working in the same area. Access to the site was not being controlled as stated in the paragraph. Comments from FFS personnel site visit of October 22, 1998</p> <p>[Text Deleted from original comment]</p> <p>The document doesn't accurately represent site conditions during the remediation efforts at the St. Denis Bridge Vicinity Property. The report should include any data that was taken to verify that there were no health & safety concerns.</p>	<p>The primary objective of the PRAR is to document that material contaminated above the EE/CA criteria has been satisfactorily removed and that the remaining material is in compliance with the site criteria. Health and Safety data for the St. Louis FUSRAP sites is included in other documents where appropriate.</p>
7	Page A-5	<p>Air monitoring data should be included in the report. The report indicates that the air results were below criteria. The only criteria (DAC limit) listed in the report was for Th-230 7.0×10^{-12} $\mu\text{Ci/ml}$. What about the DAC limits for Uranium and Radium?</p>	<p>The primary objective of the PRAR is to document that material contaminated above the EE/CA criteria has been satisfactorily removed and that the remaining material is in compliance with the site criteria. Environmental Monitoring data for the St. Louis FUSRAP sites is included in other documents where appropriate. (The DAC for Th-230 is used as it is the most restrictive of the DACs for the contaminants at the site.)</p>
8	Page A-5	<p>"Measures were also taken to minimize the potential for migration of radioactive contaminated material to adjacent, uncontaminated areas of the site and Coldwater Creek." Please include examples because many of the measures to be implemented were not done at the site. Comments from FFS personnel site visit of October 22, 1998.</p>	<p>The remediation plan specified potential contaminant migration mitigation techniques to be employed during the remediation if needed. During remediation it was determined that, due to the slope of the excavated area and the natural barriers created by sides of the creek bed, no migration barriers would be employed.</p>
9	Page A-5	<p>"All equipment was surveyed, and if above the release criteria, decontaminated before it was removed from the controlled area." Was any equipment required to be decontaminated and how was it done to avoid spreading contamination? The area was not set up like a normal hazardous waste site, e.g., support zone, CRZ, and exclusion zone.</p>	<p>Equipment, and equipment laydown and transfer areas, were surveyed as necessary prior to release. Data from these surveys is considered "operational data" and is therefore beyond the scope of the PRAR. No equipment was found to exceed the limits.</p>
10		<p>Attachment A includes the results of the walkover scans performed at the St. Denis Bridge site along the west and east banks. Were the areas used to stockpile debris and load trucks also scanned before releasing the site? This question arises from the fact that concrete removed from the bank was dropped onto the ground so the excavator could break it up into smaller pieces.</p>	<p>Contaminated material handling and transfer areas, were surveyed as necessary and prior to release. Data from these surveys is "operational data" and is therefore beyond the scope of the PRAR.</p>

**MDNR COMMENTS AND RESPONSES FOR
THE POST REMEDIAL ACTION REPORT (PRAR) FOR THE ST. DENIS BRIDGE AREA
ST. LOUIS, MISSOURI (April 1999 Draft) (continued)**

Comments received 10/27/98			
Comment No.	Page/s	Comments	Responses
11	Page 9, Sect. 5.4	Please clarify this paragraph, specifically this statement "Since no individual sample results (for composite samples) exceeded 1.0, further analysis of the three individual samples comprising the composite was not required." See page B-14 Table B-2 which has two individual samples (SVP0068 & SVP0073) which net SOR exceed 1.0. This fact is handled in two different ways in this report on page 9 and page B-7.	As stated in Appendix B (section 3.1) Table B-2 represents the maximum possible concentrations for each of the individual samples making up the composites (which were all below the SOR criteria). The concentrations in Table B-2 are theoretical maximums rather than actual analytical results. They were determined by assigning background concentrations to two of the composite samples and determining the concentration of the third sample that would be required to obtain the actual composite result. No final status sample results exceeded a SOR of 1.0. The text will be revised in section 5.4 and Appendix B to reiterate that no theoretical maximum for an individual sample (each representing an area of approximately 7.7 m ²) would exceed the EE/CA hot spot criteria nor would it contribute to a dose greater than 1 mrem/yr. i.e., no individual sample result (real or theoretical) would necessitate the removal of additional soil.
12	Page A-9	Was the data on this page preliminary data acquired by Bechtel? Sample results SVP0832, and SVP0933 would cause an exceedence of the SOR less than 1.0 requirement. Does sample SVP0861 replace SVP0832? Was Thorium-230 the only thing that was analyzed for with these samples? Has Bechtel or USACE validated this data?	The BNI results should be considered "remedial action support samples" or screening results, rather than final status samples. The results recorded on page A-9 were used by BNI in determining that the excavation was ready for final status sampling. These results do not document the final condition of the site. Because these samples were used for screening purposes rather than for final documentation of the concentrations of the remaining soils, detailed validation was not necessary.

Cataloging Form
{Technical/Project Managers fill in C through G, K through Q. RM completes other fields}

A. Document ID Number: Assigned by database 58

00-589

B. Further Information Required?: ☐

C. Operable Unit (Choose One):

USACE ☐
St. Louis Sites ☐
Downtown ☐
North County ☒
Madison Sites ☐
Inaccessible Areas ☐
PRP ☐
Oversight Committee ☐

D. Site (Optional):

SLDS VPs ☐
Mallinckrodt ☐
SLAPS ☐
SLAPS VPs ☐
CWC ☒
HISS ☐
Madison ☐

E. Area (Optional): St. Denis Bridge

F. Primary Document Type (Choose One):

Site Management Records ☐
~~Removal Response~~ ☒
Remedial Investigation ☐
Feasibility Study ☐
Record of Decision ☐
Remedial Design ☐

Remedial Action ☒
Public Affairs/Community Relations ☐
Congressional Relations ☐
Freedom of Information Act ☐
Real Estate ☐
Project Management ☐

G. Secondary Document Type (see back of form): Correspondence

H. Bechtel Number: _____

I. SAIC Number: _____

J. MARKS Number(Choose One): FN: 1110-1-8100e ☐ FN: 1110-1-8100f ☐ FN: 1110-1-8100g ☐

Response to EPA/MDNR Comments on the Post Remedial

K. Subject/Title: Action Report (PRAR) for the St. Denis Bridge

L. Author: Sharon Cotner

M. Author's Company: PRM-R

N. Recipient(s): Distribution

O. Recipient(s) Company: EPA, MDNR

P. Version (Choose One): Draft ☐

Final ☒

Q. Date: 10/07/99

R. Include in the ARF? ☒

S. Include in the AR? ☐

T. Filed as Confidential/Privileged? ☐

U. Document Format (Choose one):

Paper ☒
Electronic ☐

Photographic ☐
Audio-visual ☐

Cartographic/Oversize ☐
Microform ☐

V. Filed in AR Volume Number: _____

W. Physical Location (Choose One):

Central Files ☒
Records Holding Area ☐

Microfilm Vendor ☐
Department of Energy ☐

In ARF ☐
In AR ☐

X. Associated with Document(s): _____

Secondary Document Types

- ☐ Amendments to Record of Decision (ROD)
- ☐ Anomaly Review Board Documents (Management Plan, Correspondence, Standard Operating Procedures, Findings)
- ☐ Applicable or Relevant and Appropriate Requirements (ARAR) Determinations
- ☐ Archives Search Reports (ASR)
- ☐ Briefing Papers
- ☐ Chain of Custody Forms
- ☐ Community Relations Plan
- ☐ Correspondence
- ☐ Daily Operations Summary/Situation Reports
- ☐ Engineering Evaluation and Cost Analysis (EE/CA) Action Memo
- ☐ Engineering Evaluation and Cost Analysis (EE/CA) Approval Memorandum
- ☐ Engineering Evaluation and Cost Analysis (EE/CA)
- ☐ Explanation of Significant Differences
- ☐ Fact Sheets/Newsletters
- ☐ Feasibility Study (FS) Reports
- ☐ Federal, State, Local Tech. Records
- ☐ Final Approved Findings and Determinations
- ☐ Final Remedial Design Documents
- ☐ Freedom of Information (FOIA) Requests
- ☐ Freedom of Information (FOIA Responses)
- ☐ Health and Endangerment Assessments
- ☐ Interagency Agreements/Memoranda
- ☐ Interim Deliverables
- ☐ Inventory Project Report (INPR) Risk Assessment Code (RAC)
- ☐ Invoices/Contractor Payments/Cost Reports
- ☐ Land Grants/Deeds
- ☐ Mailing Lists
- ☐ News Clippings and Press Releases
- ☐ No Further Action Docs (NOFA)
- ☐ On-Scene Coordinator Reports
- ☐ Proposed Plans for Remedial Action
- ☐ Public Meeting Minutes/Transcripts
- ☐ Public Notices
- ☐ Public notices, Comments Received, Responses to the Comments
- ☐ Published Hearings
- ☐ Record of Decision (ROD)
- ☐ Reference Documents
- ☐ Remedial Action Documents
- ☐ Remedial Investigation (RI) Reports
- ☐ Removal Response Reports (Emergency Evacuation Orders)
- ☐ Rights of Entry Documents
- ☐ Sampling/Analysis Data and Plans
- ☐ Scopes of Work/Contractual Documents
- ☐ Site Descriptions and Chronologies
- ☐ Site Inspection Documents
- ☐ Site Photographs and Maps
- ☐ Testimonies
- ☐ Title Search Documents
- ☐ Work Logs
- ☐ Work Plans and Progress Reports
- ☐ Work Plans/Site Safety and Health Plans and Progress Reports
- ☐ Work Register and Logs